Eleventh Five Year Plan 2007-12 VOLUME III

Eleventh Five Year Plan
2007-12

VOLUME III

AGRICULTURE, RURAL DEVELOPMENT, INDUSTRY, SERVICES, AND PHYSICAL INFRASTRUCTURE

Planning Commission
Government of India

Eleventh Five Year Plan (2007–2012)

Agriculture, Rural Development, Industry, Services and Physical Infrastructure

Volume III

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Acronyms

3G	Third Generation
A&N Islands	Andaman and Nicobar Islands
AAI	Airports Authority of India
AAUI	Automobile Association of Upper India
ABB	Asea Brown Boveri Ltd
ACA	Additional Central Assistance
ACI	Aero Club of India
ACZs	Agro-Climatic Zones
ADB	Asian Development Bank
AGR	Adjusted Gross Revenue
AI	Air India
AIBP	Accelerated Irrigation Benefit Programme
AICL	Air India Charters Limited
AICRP	All-India Co-ordinated Research Project
AIDS	Acquired Immuno Deficiency Syndrome
AIR	All-India Radio
ALHW	Andaman Lakshadweep Harbour Works
ALIMCO	Artificial Limbs Manufacturing Corporation
AMR	Addition, Modification and Replacement
ANDA	Abbreviated New Drug Application
AP	Annual Plan
AP	Andhra Pardesh
APDRP	Accelerated Power Development and Reforms Programme
APEDA	Agricultural and Processed Food Products Export Development Authority
APES	Apparel Parks for Exports Scheme
API	Active Pharmaceutical Ingredient
APM	Administered Price Mechanism
APMC	Agricultural Product Marketing Committee
ARAI	Automotive Research Association of India
ASI	Annual Survey of Industries
AT&C	Aggregate Technical and Commercial
ATF	Aviation Turbine Fuel
ATI	Automotive Training Institutes
ATM	Air Traffic Management
ATMAs	Agriculture Technology Management Agencies
AUWSP	Accelerated Urban Water Supply Programme
AVT	Artisan, Village, and Tiny
AWBI	Animal Welfare Board of India
BALCO	Bharat Aluminium Co. Ltd
BARC	Bhabha Atomic Research Centre
BC	Business Correspondents
BCAS	Bureau of Civil Aviation Security
BCCL	Bharat Coking Coal Limited
bcm	billion cubic metre
BCPL	Brahmaputra Cracker and Polymer Ltd

BCPL	Bengal Chemicals and Pharmaceuticals Limited
BDDS	Bomb Detection and Disposal Squad
BE	Budget Estimate
BEE	Bureau of Energy Efficiency
BG	Broad Gauge
BHEL	Bharat Heavy Electricals Ltd
BIFR	Bureau of Industrial and Financial Reconstruction
Bih	Bihar
BIFR	Bureau of Industrial and Financial Reconstruction
BIS	Bureau of Indian Standards
BkWh	billion kilowatt hours
BLA	BLA Industries
BMI	Body Mass Index
BMTC	Bangalore Metropolitan Transport Corporation
BMTPC	Building Materials and Technology Promotion Council
BMS	Basic Minimum Services
BOO	Build–Own–Operate
BOT	Build, Operate, and Transfer
BPCL	Bharat Petroleum Corporation Ltd
BPL	Below Poverty Line
BPO	Business Process Outsourcing
BRDB	Border Roads Development Board
BRGF	Backward Regions Grant Fund
BRK	Brick Kiln
BRO	Border Roads Organization
BRPL	Bongaigaon Refineries and Petrochemicals Ltd
BRPSE	Board for Reconstruction of Public Sector Enterprises
BS	Budgetary Support
BSNL	Bharat Sanchar Nigam Ltd
BSUP	Basic Services to the Urban Poor
Bt	Billion tonne
BTKM	Billion Tonne Kilometre
btu	British Thermal Unit
BU	Billion Unit
C-DOT	Centre for Development of Telematics
CAA	Constitution Amendment Act
CACP	Commission for Agricultural Costs and Prices
CAD	Command Area Development
CAD	Computer Aided Design
CADWM	Command Area Development and Water Management
CAGR	Compound Annual Growth Rate
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CARA	Central Adoption Resource Agency
CART	Credit Appraisal and Rating Tool
CAS	Conditional Access System
CBM	Coal Bed Methane
CBOs	Community Based Organizations
CBSP	Capacity Building for Service Provider
CBVS	Chanderi Bunkar Vikas Samiti
CBWE	Central Board for Workers' Education
CCA	Culturable Command Area
CCBs	Central Co-operative Banks
CCDA	Coal Conservation and Development Act
CCEA	Cabinet Committee on Economic Affairs
CCL	Central Coalfields Limited
CCO	Coal Controller Organization
CDI	Coal Dust Injection
CDMA	Code Division Multiple Access
CDP	City Development Plan
CDSCO	Central Drugs Standard Control Organization
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CENVAT	Central Value-Added Tax
CERT-In	Indian Computer Emergency Response Team
CFC	Common Facility Centre
CFS	Container Freight Station
CFt	Cubic Feet
CGWB	Central Ground Water Board
Cha	Chhattisgarh
CHMS	Complaints Handling Management System
CIC	Community Information Centre
CIDC	Construction Industry Development Council

CII	Confederation of Indian Industries
CIL	Coal India Limited
CIPET	Central Institute of Plastics Engineering and Technology
CIRT	Central Institute of Road Transport
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLA	Central Loan Assistance
CLCS	Credit-Linked Capital Subsidy
CLCSS	Credit Linked Capital Subsidy Scheme
CLIFF	Community-linked Finance Facility
CMTI	Central Manufacturing Technology Institute
CNS	Communication, Navigations and Surveillance
CoI	Committee on Infrastructure
COIN	Co-operative Bank Information Network
COSCAP	Co-operative Development of Operational Safety and Continuing Airworthiness Programme
CPCL	Chennai Petroleum Corporation Ltd
CPCSEA	Committee for the Purpose of Control and Supervision of Experiments on Animals
CPDS	Chemical Promotion and Development Scheme
CPL	Commercial Pilot Licence
CPP	Calling Party Pays
CPP	Captive Power Plant
CPPRI	Central Pulp and Paper Research Institute
CPSE	Central Public Sector Enterprise
CPSU	Central Public Sector Undertaking
CRC	Chawki Rearing Centre
CRF	Central Road Fund
CRRI	Central Road Research Institute
CSB	Central Silk Board
CSC	Common Service Centre
CSD	Cutter Suction Dredger
CSIR	Council of Scientific and Industrial Research
CSL	Cochin Shipyard Ltd
CSO	Central Statistical Organization
CSS	Centrally Sponsored Schemes
CST	Central Sales Tax
CTL	Coal To Liquid
CTSA	Central Tibetan School Administration
CUM	Cubic Metre
CUSP	Cryogenic Upper Stage Project
CVs	Commercial Vehicles
CWC	Central Water Commission
CWDB	Central Wool Development Board
CZA	Central Zoo Authority
DAC	Department of Agriculture and Co-operation
DAE	Department of Atomic Energy
DAHDF	Department of Animal Husbandry, Dairying, and Fisheries
DAP	Di-Ammonium Phosphate
DARE	Department of Agricultural Research and Education
DBT	Department of Biotechnology
DC	Development Commissioner
DCI	Dredging Corporation of India
DD	Doordarshan
DDHPY	Deen Dayal Hathkargha Protsahan Yojana
DDP	Desert Development Plan
Del	Delhi
DFC	Dedicated Freight Corridor
DFID	Department for International Development
DFP	Directorate of Field Publicity
DFPD	Department of Food and Public Distribution
DGCA	Directorate General of Civil Aviation
DGH	Directorate General of Hydrocarbon
DGLL	Directorate General of Lighthouses and Lightships
DGMS	Directorate General of Mines Safety
DGPS	Differential Global Positioning Systems
DG (S)	Directorate General of Shipping
DHI	Department of Heavy Industry
DIL	Direct Industrial License

DIPP	Department of Industrial Policy and Promotion
DIT	Department of Information Technology
DMF	Drug Master File
DMIC	Delhi–Mumbai Industry Corridor
DPAP	Drought Prone Area Programme
DPC	District Programme Co-coordinator
DPE	Department of Public Enterprises
DPR	Detailed Project Report
DoDWS	Department of Drinking Water Supply
DOE	Directorate of Extension
DoNER	Development of North East Region
DoP	Department of Posts
DoRTH	Department of Road Transport and Highways
DoT	Department of Telecommunications
DRDA	District Rural Development Agency
DRM	Digital Radio Mondiale
DSIR	Department of Scientific and Industrial Research
DSL	Digital Subscriber Lines
DSM	Demand Side Management
DTH	Direct To Home
DTO	District Transport Office
DVC	Damodar Valley Corporation
DWCUA	Development of Women and Children in Urban Areas
DWT	Dead Weight Tonnage
E&I	Roads of Economic and Interstate Importance
E&P	Exploration and Production
EAPs	Externally Aided Projects
EBR	Extra Budgetary Resources
EC	Expert Committee
ECBC	Energy Conservation Building Codes
ECE	Economic Commission for Europe
ECL	Eastern Coalfields Limited
EDI	Electronic Data Interchange
EDP	Entrepreneurship Development Programme
EFC	Expenditure Finance Committee
EFR	Environment Flow Releases
EGS	Education Guarantee Scheme
EIA	Environmental Impact Assessment
EIC	Export Inspection Council
EMSC	Environmental Measures and Subsidence Control
EOR	Enhanced Oil Recovery
ERC	Expenditure Reform Committee
ERM	Extension, Renovation, and Modernization
ERP	Enterprise Resource Planning
ESA	External Support Agencies
EU	European Union
EV	Electric vehicle
EWS	Economically Weaker Sections
FAB	Fabrication Units
FAO	Food and Agricultural Organization
FAR	Floor Area Ratio
FASAL	Forecasting Agriculture Output using Space, Agro-Meteorology, and Land-based Observation
FBRs	Fast Breeder Reactors
FCI	Food Craft Institute
FCRI	Fluid Control Research Institute
FDA	Forest Development Agency
FDDI	Footwear Design and Development Institute
FDI	Foreign Direct Investment
FICCI	Federation of Indian Chambers of Commerce and Industry
FM	Frequency Modulation
FO	Furnace Oil
FOB	Free On Board
FOIS	Freight Operation Information System
FPI	Food Processing Industry
FPR	Flood Prone River
FR	Feasibility Report
FRM	Fertilizer Raw Material
FSI	Floor Space Index
FSI	Forest Survey of India
FTA	Free Trade Agreement
FTII	Film and Television Institute of India
FTL	Fluorescent Tube Light
FWW	Four Wheeler Wagon
G&P	Ginning and Pressing
GAIL	Gas Authority of India Ltd
Gbps	Gigabits per second
GBS	Gross Budgetary Support
GCF	Gross Capital Formation
GCV	Gross Calorific Value

GDCF	Gross Domestic Capital Formation
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GHz	Gigahertz
GI	Geographical Indication
GIS	Geographic Information Systems
GLP	Good Laboratory Practices
GMP	Good Manufacturing Practice
GoI	Government of India
GoM	Group of Ministers
GP	Gram Panchayat
GPS	Global Positioning System
GQ	Golden Quadrilateral
GRE	Graduate Record Examination
GSI	Geological Survey of India
GSM	Global System for Mobile Communications
GSPC	Gujarat State Petroleum Corporation Limited
GSRDC	Gujarat State Road Development Corporation
GST	Goods and Service Tax
GT	Gross Tonnages
Guj	Gujarat
GVA	Gross Value Added
GW_e	Gigawatt Electrical
GW-Yr	Gigawatt Year
ha	Hectare
HACCP	Hazard Analysis and Critical Control Point
Har	Haryana
HCI	Hotel Corporation of India
HCL	Hindustan Copper Ltd
HCR	Headcount Ratio
HDTV	High Definition Television
HEMM	Heavy Earth Moving Machinery
HEP	Hydro Electric Project
HFC	Housing Finance Company
HH	Household
HMCPs	Hardware Manufacturing Cluster Parks
HP	Himachal Pradesh
HOCL	Hindustan Organics Chemicals Limited
HPC	High Powered Inter-Ministerial Committee
HPCL	Hindustan Petroleum Corporation Ltd
HPL	Hindustan Prefab Limited
HR	Human Resource
HRD	Human Resource Development
HSL	Hindustan Shipyard Ltd
HUDCO	Housing Urban Development Corporation
HZL	Hindustan Zinc Ltd
I&B	Information and Broadcasting
I&M	Industry and Minerals
IAY	Indira Awaas Yojana
IBM	Indian Bureau of Mines
IBP	Indo Burma Petroleum Company Ltd
IC	Integrated Circuits
ICAR	Indian Council of Agricultural Research
ICDS	Integrated Child Development Services
ICE	Information, Communication and Entertainment
ICFRE	Indian Council of Forestry Research and Education
ICML	Integrated Coal Mining Ltd
ICPS	Integrated Child Protection Scheme
ICRIER	Indian Council for Research on International Economic Relations
ICT	Information and Communication Technology
ID	Industrial Dispute
IDA	International Development Association
IDLS	Integrated Development of Leather Sector
IDSMT	Integrated Development of Small and Medium Towns
IDTR	Institute of Driving Training and Research
IEBR	Internal and Extra Budgetary Resource
IEC	Information, Education, and Communication
IEM	Industrial Entrepreneur Memoranda
IEPR	Integrated Energy Policy Report

IFFCO	Indian Farmers Fertilizer Co-operative Ltd
IGCAR	Indira Gandhi Centre for Atomic Research
IGCC	Integrated Gasification Combined Cycle
IGRUA	Indira Gandhi Rashtriya Uran Akademi
IHM	Institutes of Hotel Management
IHSDP	Integrated Housing and Slum Development Programme
IID	Integrated Infrastructure Development
IIFM	Indian Institute of Forest Management
IIM	Indian Institute of Management
IIMC	Indian Institute of Mass Communication
IIP	Index for Industrial Production
IISCO	Indian Iron and Steel Company
IIT	Indian Institute of Technology
IITM	Indian Institute of Tropical Metereology
IITTMs	Indian Institute of Tourism and Travel Management
IIUS	Industrial Infrastructure Upgradation Scheme
IL&FS	Infrastructure Leasing and Financial Services Ltd
ILCS	Integrated Low Cost Sanitation Scheme
ILD	International long distance
ILDP	Indian Leather Development Programme
IMD	Indian Meteorological Department
IMF	Irrigation Maintenance Fund
IMO	Instant money-order
IMR	Infant Mortality Rate
IMU	Indian Maritime University
INCOIS	Indian National Centre for Ocean Information Services
Indal	Indian Aluminium Company Limited
INSA	Indian National Shipowners' Association
IOC	Indian Oil Corporation
IODP	Integrated Ocean Drilling Programme and Geotechnoic
IOR	Improved Oil Recovery
IP	Internet Protocol
IPE	Institute of Public Enterprise
IPEA	International Preliminary Examining Authority
IPFT	Institute of Pesticides Formulation Technology
IPIRTI	Indian Plywood Industries Research and Training Institute
IPM	Integrated Pest Management
IPO	Indian Intellectual Property Office
IPRs	Intellectual Property Rights
IPTV	Internet Protocol Television
IR	Internal Resources
IRDA	Insurance Regulatory and Development Authority
IREDA	Indian Renewable Energy Development Agency
IREP	Integrated Rural Energy Programme
IRMRA	Indian Rubber Manufacturers Research Association
IRQP	Improvement of Riding Quality Programme
ISA	International Searching Authority
ISO	International Organization for Standardization
ISP	Internet Service Provider
IT	Information Technology
ITC	Industrial Training Centres
ITES	IT-enabled Services
ITI	Industrial Training Institute
ITS	Intelligent Transportation System
IWAI	Inland Waterways Authority of India
IWDP	Integrated Wasteland Development Project
IWT	Inland Water Transport
J&K	Jammu and Kashmir
JBIC	Japan Bank for International Cooperation
JFM	Joint Forest Management
Jha	Jharkhand
JKML	Jammu and Kashmir Mineral Ltd
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
JNPT	Jawaharlal Nehru Port Trust
JSMDCL	Jharkhand State Mineral Development Corporation

JSPL	Jindal Steel and Power Ltd
JV	Joint Venture
JVC	Joint Venture Company
K–G	Krishna–Godavari
Kar	Karnataka
KBK	Koraput, Bolangir, and Kalahandi
Kcal	Kilocalorie
KCCs	Kisan Credit Cards
Ker	Kerala
Kg	Kilogram
Kgoe	Kilogram of oil equivalent
Km	Kilometre
KPO	Knowledge Process Outsourcing
KRIBHCO	Krishak Bharati Co-operative Limited
KRL	Kochi Refineries Ltd
KV	Kilo Volt
KVI	Khadi and Village Industries
KVIC	Khadi and Village Industries Commission
KVK	Krishi Vigyan Kendra
KW	Kilowatt
KWh	Kilowatt hour
KWp	Kilowatt peak
LEAP	Lifelong Education and Awareness Programme
LED	Light-emitting diode
LIC	Life Insurance Corporation
LIG	Low-Income Groups
LMT	Lakh Metric Tonnes
LNG	Liquefied Natural Gas
LOI	Letter of Intent
LSIs	Large-Scale Industries
m	metre
m^2	square metre
m^3	cubic metres
Mah	Maharashtra
MAMID	Mine Accident Analysis and Modernization of information Database
MAP	Medicinal and Aromatic Plant
MAT	Management Aptitude Test
MBC	Mail Business Centre
MCA	Model Concession Agreement
MCA	Ministry of Corporate Affairs
MCDR	Mineral Conservation and Development Rules
MCuM	Million Cubic Metres
MDM	Mid-day Meal
MDF	Mineral Development Fund
MDR	Major District Road
MECL	Mineral Exploration Corporation Ltd
MEMU	Mainline Electric Multiple Unit
MFI	Micro Finance Institution
MFPI	Ministry of Food Processing Industries
MGIRI	Mahatma Gandhi Institute for Rural Industrialization
MH	Million Hectare
MHRD	Ministry of Human Resources Development
MI	Minor irrigation
MICE	Meetings Incentives Conventions and Exhibitions
MIS	Management Information Systems
MITI	Model Industrial Training Institute
ML	Mining Lease
MLAs	Members of Legislative Assembly
MMA	Macro Management Scheme
MMBtu	Million British Thermal Unit
MMI	Major and Medium Irrigation
MMP	Mission Mode Project
MMDR Act	Mines and Minerals (Development and Regulation) Act
MMSCMD	Million Standard Cubic Metres per Day
MNC	Multi-National Company
MNRE	Ministry of New and Renewable Energy
MoA	Union Ministry of Agriculture
MoC	Ministry of Coal
MoCA	Ministry of Civil Aviation
MoEF	Ministry of Environment and Forest
MoHUPA	Ministry of Housing and Urban Poverty Alleviation
MoI&B	Ministry of Information and Broadcasting
MoP	Ministry of Power
MOP	Muriate of Potash
MORD	Ministry of Rural Development
MoSRTH	Ministry of Shipping, Road Transport, and Highways
MoT	Ministry of Tourism

MoU	Memorandum of Understanding
MoWR	Ministry of Water Resources
MP	Madhya Pradesh
MPC	Metropolitan Planning Committee
MPLAD	Member of Parliament Local Area Development Programme
MPP	Marketing Promotion Programme
MPP	Multipurpose Project
MRIN	Marketing Research Surveys and Information Network
MRO	Maintenance, Repair, and Overhaul
MRPL	Mangalore Refineries and Petrochemicals Ltd
MRP	maximum retail price
MRTD	Marine Research and Technology Development
MRTS	Mass Rapid Transit System
MSE	Micro and Small Enterprise
MSME	Micro, Small, and Medium Enterprise
MSMED Act	Micro, Small, and Medium Enterprises Development Act
MSP	Minimum Support Prices
mt	metric tonnes
MTA	Mid-Term Appraisal
MTNL	Mahanagar Telephone Nigam Ltd
Mtoe	Million Tonne of Oil Equivalent
MU	Million Unit
MUTP	Mumbai Urban Transport Project
MUV	Multi-Utility Vehicle
MVA	Million Volt Amperes
MW	Megawatt
MW_e	Megawatt Electrical
NABARD	National Bank for Agriculture and Rural Development
NAEB	National Afforestation and Eco-development Board
NAEEB	National Afforestation, Ecorestoration, and Eco-development Board
NAEP	National Afforestation and Eco-Development Project
NAFUS	National Fund for the Unorganized Sector
NAIS	National Agricultural Insurance Scheme
NAL	National Aerospace Laboratories
NALCO	National Aluminium Company Ltd.
NAP	National Afforestation Programme
NARDCO	National Real Estate Development Council
NARS	National Agricultural Research System
NASSCOM	National Association of Software and ServiceCompanies
NATRIP	National Automotive Testing and R&D Infrastructure Project
NBC	Net Bank Credit
NBCC	National Building Construction Corporation
NBFC	Non-banking Financial Company
NBO	National Building Organization
NBS	Net Budgetary Support
NCA	Normal Central Assistance
NCAER	National Council for Applied Economic Research
NCAOR	National Centre for Antarctic and Ocean Research
NCCBM	National Council for Cement and Building Materials
NCDC	National Climatic Data Centre
NCERT	National Council of Educational Research and Training
NCEUS	National Commission for Enterprises in the Unorganized Sector
NCIWRD	National Commission on Integrated Water Resources Development
NCL	Northern Coalfields Ltd
NCLT	National Company Law Tribunal
NCMP	National Common Minimum Programme
NCMRWF	National Centre for Medium Range Weather Forecast
NCPCR	National Commission for Protection of Child Rights
NCR	National Capital Region
NCRPB	National Capital Region Planning Board
NDC	National Development Council
NDE	Non-Departmental Enterprise
NDDB	National Dairy Development Board
NDMA	National Disaster Management Authority
NE	North East/Eastern

NEC	North Eastern Coalfields
NEDFI	North Eastern Development Finance Corporation Ltd
NEF	National Electricity Fund
NEF	National Equity Fund
NEF (R&D)	National Energy Fund
NeGP	National e-Governance Plan
NEIP	North East Industrial Policy
NEKRTC	North East Karnataka Road Transport Corporation
NELP	New Exploration Licensing Policy
NER	North Eastern Region
NFBS	National Family Benefit Scheme
NFDB	National Fisheries Development Board
NFHS	National Family Health Survey
NGN	Next Generation Networks
NGOs	Non-Governmental Organizations
NH	National Highway
NHAI	National Highways Authority of India
NHB	National Housing Bank
NHDP	National Highway Development Programme
NHFDC	National Handicapped Finance and Development Corporation
NHM	National Horticulture Mission
NH (O)	National Highways (Original)
NHPC	National Hydroelectric Power Corporation Ltd
NIAM	National Institute of Agricultural Marketing
NIC	National Informatics Centre
NIC	National Industrial Classification
NICFS	National Institute of Criminology and Forensic Sciences
NICNET	National Informatics Centre Network
NID	National Institute of Design
NIFM	National Institute of Finance Management
NIFT	National Institute of Fashion Technology
NIOT	National Institute of Ocean Technology
NIPER	National Institute of Pharmaceutical Education and Research
NITs	National Institutes of Technology
NITA	National Institute of Tribal Affairs
NLC	Neyveli Lignite Corporation
NLCPR	Non-Lapsable Central Pool of Resources
NLD	National Long Distance
NLDCP	National Livestock Disease Control Programme
NLI	National Labour Institute
NLW	Non Linked Washery
NMBS	National Maternity Benefit Scheme
NMCC	National Manufacturing Competitiveness Council
NMDFC	National Minorities Development and Finance Corporation
NMT	Non-motorized Transport
NNM	National Nutrition Mission
NOAPS	National Old Age Pension Scheme
NOCs	National Oil Companies
NOVOD	National Oilseeds and Vegetable Oils Development Board
NPC	National Productivity Council
NPCIL	Nuclear Power Corporation of India Limited
NPK	Nitrogen–Phosphorus–Potassium
NPPA	National Pharmaceutical Pricing Authority
NPS	New Pricing Scheme
NRAA	National Rainfed Area Authority
NRC	National Referral Centre
NRC	National Research Centre
NRCP	National River Conservation Plan
NREG	National Rural Employment Guarantee
NREGA	National Rural Employment Guarantee Act
NREGP	National Rural Employment Guarantee Programme
NREGS	National Rural Employment Guarantee Scheme
NRHM	National Rural Health Mission
NRI	Non-Resident Indian
NRM	Natural Resource Management
NRSA	National Remote Sensing Agency
NS–EW	North–South and East–West
NSAP	National Social Assistance Programme

NSC	National Seed Corporation
NSDP	National Slum Development Programme
NSDP	National State Domestic Product
NSIC	National Small Industries Corporation
NSS	National Sample Survey
NSSO	National Sample Survey Organization
NSVS	National Service Volunteer Scheme
NTFP	Non-Timber Forest Produce
NTH	National Test House
NTKM	Net Tonne Kilometre
NTP	New Telecom Policy
NTPC	National Thermal Power Corporation
NUIF	National Urban Infrastructure Fund
NUIS	National Urban Information System
NW	National Waterway
NWDA	National Water Development Agency
NWDPRA	National Watershed Development Project for Rainfed Area
NWKRTC	North West Karnataka Road Transport Corporation
NWP	National Water Policy
NYKS	Nehru Yuva Kendra Sangathan
O&M	Operation and Maintenance
O&OEG	Oil and Oil Equivalent of Gas
OBCs	Other Backward Classes
OECD	Organization for Economic Co-Operation and Development
OEM	Original Equipment Manufacturer
OFC	Optical Fibre Cable
OIL	Oil India Ltd
OMIFCO	Oman India Fertilizer Company
OMS	Output per Man-Shift
OMT	Operation, Maintenance, and Tolling
ONGC	Oil and Natural Gas Corporation
OOH	Out-of-Home
OOIS	Ocean Observation and Information System
OSVs	Offshore Supply Vessels
OTC	Open Technology Centre
OVL	ONGC Videsh Ltd
PAP	Project-Affected Person/People
PBITEP	Profit before interest, tax, and EP
PCC	Pulverized Coal Combustion
PCO	Public Call Office
PCPDS	Pharma and Chemical Promotion and Development Scheme
PCPIRs	Petroleum, Chemicals, and Petrochemical Investment Regions
PCS	Port Community System
PCUs	Passenger Car Units
PDS	public distribution system
PEPSURTC	Punjab and East Punjab States Union Road Transport Corporation
PESA	Panchayat (Extension to Scheduled Areas) Act
PFDF	Pooled Finance Development Fund
PFMs	Postal Finance Marts
PGE	Platinum Group of Elements
PHE	Public Health Engineering
PHED	Public Health Engineering Department
PHHL	Pawan Hans Helicopters Ltd
PHM	Post-harvest Management
PHWR	Pressurized Heavy Water Reactor
PIA	Programme Implementation Agency
PIB	Public Investment Board
PIM	Participatory Irrigation Management
PIU	Programme Implementation Unit
PL	Prospecting License
PLF	Plant Load Factor
PLR	Prime Lending Rate
PMEGP	Prime Minister's Employment Generation Programme
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMN	Polymettalic Nodules
PMRY	Prime Minister's Rozgar Yojana
PMS	Pavement Management Systems
POL	Petroleum, Oil, and Lubricants
PPP	Public–Private Partnership
PRIs	Panchayati Raj Institutions
PRODIP	Product Development, Design Intervention, and Packaging
PSCs	Powerloom Service Centres
PSCI	Postal Staff College India
PSE	Public Sector Enterprise
PSP	Pump Storage Project

PSU	Public Sector Undertaking
Pun	Punjab
PURA	Provision of Urban Amenities in Rural Areas
PVC	Polyvinyl Chloride
PWC	Pricewaterhouse Coopers
PWD	Persons With Disabilities
PWD	Public Works Department
QCI	Quality Council of India
Qts	Quintals
R&D	Research and Development
R&M	Renovation and Modernization
Raj	Rajasthan
RAS	Reclamation of Alkali Soil
RBI	Reserve Bank of India
RCF	Rashtriya Chemicals and Fertilizers Ltd
RCPs	Rural Community Phones
RCSRC	Regional Cyber Security Research Centre
RDG	Route Dispersal Guidelines
RE	Revised Estimate
REACH	Registration, Evaluation, and Authorization of Chemicals
REC	Rural Electrification Corporation Ltd
REGP	Rural Employment Generation Programme
RF	Radio Frequency
RFI	Radio Frequency Identification
RGGVY	Rajiv Gandhi Grameen Vidyutikarn Yojana
RGSY	Rashtriya Gram Swaraj Yojana
RIDF	Rural Infrastructure Development Fund
RINL	Rashtriya Ispat Nigam Ltd
RISC	Rural Industries Service Centes
RKM	Route Kilometres
RKVY	Rashtriya Krishi Vikas Yojana
RMC	Ready-Mix Concrete
RMK	Rashtriya Mahila Kosh
RMS	Risk Management System
RNI	Registrar of Newspaper for India
ROB	Road Over Bridge
RP	Reconnaissance Permit
RPO	Regional Project Office
RPS	Retention Price Scheme
RR	Rural Roads
RRBs	Regional Rural Banks
RSVY	Rashtriya Sam Vikas Yojana
RSY	Rashtriya Sadbhavana Yojana
RTA	Regional Trading Arrangement
RTKM	Revenue Tonne Kilometres
RTOs	Regional Transport Authorities
RUB	Road Under Bridge
RVP	River Valley Project
RW	Road Wing
S&T	Science and Technology
SAIL	Steel Authority of India Ltd.
SARDP-NE	Special Accelerated Road Development Programme for the North Eastern Region
SARS	Severe Acute Respiratory Syndrome
SAT	Scholastic Aptitude Test
SAUs	State Agricultural Universities
SBIRI	Small Business Innovation Research Initiative
SBLP	SHGs–bank linkage programme
SC	Scheduled Caste
SCA	Special Central Assistance
SCB	Scheduled Commercial Banks
SCCL	Singareni Collieries Company Ltd
SCDC	Scheduled Caste Development Corporation
SCI	Shipping Corporation of India
SCP	Special Component Paln
SDA	State Designated Agency
SDC	Strategic Distribution Centre
SDD	Song and Drama Division
SDF	Sustainable Development Framework
SDF	Sugar Development Fund
SEB	State Electricity Board
SECL	South Eastern Coalfields Ltd
SEI–CMM	Software Engineering Institute–Capacity Maturity Model
SERCs	State Electricity Regulatory Commissions
SES	Selected Educational Statistics
SEWA	Self Employed Women's Association
SEZ	Special Economic Zone
SFCI	State Farm Corporation of India

SFURTI	Scheme of Fund for Regeneration of Traditional Industries
SGRY	Sampoorna Grameen Rozgar Yojana
SGSY	Swaranjayanti Gram Swarozgar Yojana
SH	State Highway
SHG	Self-help Group
SHPI	SHG Promoting Institution
SHTP	Special Handicrafts Training Project
SIAs	State Implementing Agencies
SIDBI	Small Industries Development Bank of India
SISI	Small Industries Service Institutes
SITP	Scheme for Integrated Textile Parks
SJSRY	Swarna Jayanti Shahri Rozgar Yojana
SLDB	State Land Development Bank
SLNA	State-level Nodal Agency
SLPEs	State-level Public Enterprises
SME	Small and Medium Enterprise
SMP	Statutory Minimum Price
SOCFOD	Strengthening of Core Functions of DGMS
SPA	School of Planning and Architecture
SPS	Sanitary and Phytosanitary
SPUs	State Power Utilities
SPV	Special Purpose Vehicle
Sq M	Square Metre
Sq Km	Square Kilometre
SRs	State Roads
SREP	Strategic Research Extension Plans
SRFTI	Satyajit Ray Film and Television Institute
SRR	Seed Replacement Rate
SRSF	Special Railway Safety Fund
SRTUs	State Road Transport Undertakings
SRU	Ship Repair Unit
SS	Secondary School
SSA	Sarva Shiksha Abhiyan
SSCP	Sethusamudram Channel Project
SSIs	Small-Scale Industries
ST	Scheduled Tribe
STD	Sexually Transmitted Disease
STPI	Software Technology Parks of India
SWAN	State-Wide Area Network
T&CS	Thrift and Credit Societies
T&D	Transmission and Distribution
T&T	Travel and Tourism
TAT	Technical Assistance in Telecom Sector
TB	Tuberculosis
TCD	Metric Tonnes crushed per day
TCF	Trillion Cubic Feet
TCIDS	Textile Centres Infrastructure Development Scheme
TDSAT	Telecom Disputes Settlement and Appellate Tribunal
TEC	Telecom Engineering Centre
TETC	Telecom Testing and Security Certification Centre
TFC	Twelfth Finance Commission
TISCO	Tata Iron and Steel Company
TMC	Technology Mission on Cotton
TMT	Thousand Metric Tonne
TN	Tamil Nadu
TPD	Tonnes Per Day
TPY	Tonne per Year
TRAI	Telecom Regulatory Authority of India
TSC	Total Sanitation Campaign
TSD	Trailer Suction Dredger
TSP	Tribal Sub-Plan
TUFS	Technology Upgradation Fund Scheme
TVEs	Town and Village Enterprises
TWh	Trillion Watt hour
UAE	United Arab Emirates
UCG	Underground Coal Gasification
UGC	University Grants Commission
UHV	Useful Heat Value
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
UIP	Ultimate Irrigation Potential
UK	United Kingdom
ULBs	Urban Local Bodies
UMA&N	Undersea Cabling between Mainland and Andaman & Nicobar (A&N) Islands
UMBVS	Urmul Marusthali Bunkar Vikas Samiti
UMPP	Ultra-mega Power Project
UNCCD	United Nations Convention to Combat Desertification

UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFC	United Nations Framework Classification
UNIDO	United Nations Industrial Development Organization
UP	Uttar Pradesh
UPA	United Progressive Alliance
URIF	Urban Reform Incentive Fund
US/USA	United States of America
USAID	United States Agency for International Development
USFDA	United Sates Food and Drug Administration
USO	Universal Service Obligation
USOF	Universal Service Obligation Fund
USP	Unique Selling Point
UT	Union Territory
Utt	Uttarakhand
VAMBAY	Valmiki Ambedkar Awas Yojana
VAT	Value-Added Tax
VGF	Viability Gap Funding
VLCC	Very Large Crude Carrier
VLF	Village Level Federation
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
VPT	Village Public Telephone
VRS	Voluntary Retirement Scheme
VSAT	Very Small Aperture Terminal
VSE	Village and Small Enterprises
VSNL	Videsh Sanchar Nigam Limited
WB	West Bengal
WCCU	World Class Central University
WCD	Women and Child Development
WCL	Western Coalfields Ltd
WDF	Watershed Development Fund
WDPSCA	Watershed Development Project for Shifting Cultivation Area
WHO	World Health Organization
WiFi	Wireless Fidelity
WII	Wildlife Institute of India
WiMAX	Worldwide Interoperability for Microwave Access
WLL	Wireless in Local Loop
WMO	Wireless Monitoring Organization
WPC	Wireless Planning & Co-ordination
WTO	World Trade Organization
WUA	Water Users Association
ZBB	Zero Based Budgeting

I
Agriculture

1

Agriculture

INTRODUCTION

1.1 Although its share in Gross Domestic Product (GDP) has declined from over half at Independence to less than one-fifth currently, agriculture remains the predominant sector in terms of employment and livelihood with more than half of India's workforce engaged in it as the principal occupation. Agriculture still contributes significantly to export earnings and is an important source of raw materials as well as of demand for many industries.

1.2 India's agriculture sector has an impressive long-term record of taking the country out of serious food shortages despite rapid population increase. This was achieved through a favourable interplay of infrastructure, technology, extension, and policy support backed by strong political will. The main source of long-run growth was technological augmentation of yields per unit of cropped area. This resulted in tripling of foodgrain yields, and foodgrain production increased from 51 million tonnes in 1950–51 to 217 million tonnes in 2006–07. Production of oilseeds, sugarcane, and cotton have also increased more than four-fold over the period, reaching 24 million tonnes and 355 million tonnes and 23 million bales, respectively, in 2006–07.

1.3 But, although GDP from agriculture has more than quadrupled, from Rs 108374 crore in 1950–51 to Rs 485937 crore in 2006–07 (both at 1999–2000 price), the increase per worker has been rather modest. GDP per agricultural worker is currently around Rs 2000 per month, which is only about 75% higher in real terms than in 1950 compared to a four-fold increase in overall real per capita GDP. While slower growth of GDP in agriculture than non-agriculture is expected, the main failure has been the inability to reduce the dependence of the workforce on agriculture significantly by creating enough non-farm opportunities to absorb the labour surplus in rural areas and equipping those in agriculture to access such opportunities. Half of those engaged in agriculture are still illiterate and just 5% have completed Higher Secondary education. Incomes and education are of course least among agricultural labourers. Even families operating farms now suffer from much smaller holdings (70% below 1 hectare in 2003 compared to 56% in 1982), and farming members in such families are twice as likely to be illiterate as non-farming members. Ensuring food security and farmer welfare thus require support systems to extend technology and scale benefits in a sustainable manner to a huge existing workforce in agriculture that lacks non-farm skills and is also ageing and getting feminized.

RECENT TRENDS AND CONCERNS

1.4 The Mid-Term Appraisal (MTA) for the Tenth Five Year Plan had drawn attention to the loss of dynamism in agriculture and allied sectors after the mid-1990s. In fact, during the last decade or so Indian agriculture has faced a number of severe challenges, superimposed on the long-term demographics. Recent

trends that have raised concern regarding food security, farmers' income, and poverty are:

- Slowdown in growth.
- Widening economic disparities between irrigated and rain-fed areas.
- Increased vulnerability to world commodity price volatility following trade liberalization. This had an adverse effect on agricultural economies of regions growing crops such as cotton and oilseeds.
- Uneven and slow development of technology.
- Inefficient use of available technology and inputs.
- Lack of adequate incentives and appropriate institutions.
- Degradation of natural resource base.
- Rapid and widespread decline in groundwater table, with particularly adverse impact on small and marginal farmers.
- Increased non-agricultural demand for land and water as a result of the higher overall GDP growth and urbanization.
- Aggravation in social distress as a cumulative impact of the above, reflected in an upsurge in farmers' suicides.

1.5 Growth of agricultural GDP decelerated from over 3.5% per year during 1981–82 and 1996–97 to only around 2% during 1997–98 and 2004–05 (see Table 1.1). This deceleration, although most marked in rain-fed areas, occurred in almost all States and covered almost all major sub-sectors, including those such as horticulture, livestock, and fisheries where growth was expected to be high (see Table 1.3). Consequently, growth of agricultural GDP has been well below the target of 4% set in both Ninth and Tenth Plans. In fact, Tenth Plan growth averaged even less than that during

TABLE 1.1
Average GDP Growth Rates—Overall and in Agriculture
(% per Year at 1999–2000 Price)

Period	Total Economy	Agriculture and Allied Sectors	Crops and Livestock
1. Pre-green revolution 1951–52 to 1967–68	3.69	2.54	2.65
2. Green revolution period 1968–69 to 1980–81	3.52	2.44	2.72
3. Wider technology dissemination period 1981–82 to 1990–91	5.40	3.52	3.65
4. Early reforms period 1991–92 to 1996–97	5.69	3.66	3.68
5. Ninth Plan 1997–98 to 2001–02	5.52	2.50	2.49
6. Tenth Plan period 2002–03 to 2006–07	7.77	2.47	2.51
of which 2002–03 to 2004–05	6.60	0.89	0.89
2005–06 to 2006–07	9.51	4.84	4.96

Source: National Accounts Statistics 2008 (New Series), Central Statistical Organization, Ministry of Statistics and Programme Implementation, New Delhi.

TABLE 1.2
Growth Rates of National State Domestic Product (NSDP) from Agriculture
(States Ranked by % of Rainfed Area)

State	Growth Rate in NSDP Agriculture		Rainfed (%)	State	Growth Rate in NSDP Agriculture		Rainfed (%)
	1984–85 to 1995–96	1995–96 to 2004–05			1984–85 to 1995–96	1995–96 to 2004–05	
1	2	3	4	5	6	7	8
Punjab	4.00	2.16	3	Gujarat	5.09	0.48	64
Haryana	4.60	1.98	17	Rajasthan	5.52	0.30	70
Uttar Pradesh	2.82	1.87	32	Orissa	–1.18	0.11	73
Tamil Nadu	4.95	–1.36	49	Madhya Pradesh	3.63	–0.23	74
West Bengal	4.63	2.67	49	Karnataka	3.92	0.03	75
Bihar	–1.71	3.51	52	Maharashtra	6.66	0.10	83
Andhra Pradesh	3.18	2.69	59	Kerala	3.60	–3.54	85
All-India	3.62	1.85	60	Assam	1.65	0.95	86

Source: National Accounts Statistics, (State Series) Central Statistical Organization, Ministry of Statistics and Programme Implementation, New Delhi.

TABLE 1.3
Growth Rate in Output of Various Sub-sectors of Agriculture
(Gross Value of Output at 1999–2000 Price)

Period	Cereals	Pulses and Oilseeds	Fruits and Vegetables	Other Crops	All Crops	Livestock	Fishery
1951–52 to 1967–68	4.19	2.98	2.67	2.42	3.00	1.02	4.68
1968–69 to 1980–81	3.43	0.97	4.82	2.98	3.00	3.26	3.08
1981–82 to 1990–91	3.52	5.41	2.84	1.71	2.97	4.78	5.74
1991–92 to 1996–97	2.36	2.92	6.07	2.18	3.09	4.00	7.05
Ninth Plan 1997–98 to 2001–02	1.49	–1.43	4.11	3.82	2.25	3.53	2.63
Tenth Plan 2002–03 to 2006–07	1.28	4.29	2.97	3.58	2.46	3.69	3.23
of which 2002–03 to 2004–05	–1.27	5.95	0.30	1.57	0.42	3.32	1.77
2005–06 to 2006–07	3.52	1.61	6.97	6.59	5.53	4.23	5.49

Source: New Series of National Accounts Statistics, Central Statistical Organization, Ministry of Statistics and Programme Implementation, New Delhi.

Ninth Plan because, as was noted in the MTA, growth plummeted to below 1% during its first three years, that is from 2002–03 to 2004–05. There has been some upturn since then and growth has averaged more than 4% in the subsequent two years, with early indications that this is likely to be maintained in 2007–08 also. This revival gives hope that at least some of the causes of recent poor agricultural performance are being reversed and that the Eleventh Plan target, set at 4%, may actually be attainable.

1.6 The improved performance in the second half of Tenth Plan is a welcome development, but there is no reason for complacency. Not only is the period too short to reach firm judgment on trends, the prolonged deceleration over several years has meant that despite the improvements, per capita output of cereals, pulses, oilseeds, and also of some major vegetables and fruits (e.g., potatoes and bananas) in 2006–07 remained below 1996–97 levels. Moreover, despite significant imports, food prices flared up in 2006. This was unlike during 2000–05 when, although production was even lower, prices remained subdued because of low domestic demand and depressed world prices. Part of the recent production upturn is clearly price-led, following a marked hardening of world commodity prices and possibly also responding to the fact that domestic food demand has responded positively to higher overall GDP growth and the introduction of Rural Employment Guarantee. However, although important in the short-run, such price response alone cannot be the basis of sustained agricultural growth at 4%. The recent trend towards diversion of food crops for biofuels in surplus countries means that food security needs a stronger production response based on tackling supply side problems in the foodgrains sector.

1.7 The supply side performance of agriculture is affected by a large number of factors, several of which interact among each other. These factors are the natural resource base (including rainfall), technology, infrastructure (including irrigation), and the economic environment comprising price signals and institutions (Table 1.4). Analysis by the Steering Group for the Eleventh Plan has identified technological change (using yield potential of varieties of major crops released by the National Agricultural Research System [NARS] as a proxy), public investment (including investment on irrigation), and diversification (represented by area under fruits and vegetables) as the most important proximate determinants of growth. The Steering Group analysis shows (Table 1.4) that progress on first two of these factors slowed down from early 1990s. However, the negative effect in growth was offset by private investment, which was the fourth most important factor in the analysis, because the terms of trade, which affect profitability and thus private investment, improved during 1990–97. As a result, growth continued to be relatively high in this period. However, terms of trade turned against agriculture from 1999–2000 to 2004–05 and reduced profitability of farming quite sharply. This occurred partly because of low domestic food demand and partly because removal of quota

TABLE 1.4
Trend Growth Rate in Area, Input Use, Credit and Capital Stock in Agriculture—1980–81 to 2005–06

(% per Year)

Period	1980–81 to 1990–91	1990–91 to 1996–97	1996–97 to 2005–06
Technology#	3.3	2.81	0.00
Public sector net fixed capital stock	3.86	1.92	1.42*
Gross irrigated area	2.28	2.62	0.51*
Electricity consumed in agriculture	14.07	9.44	–0.53@
Area under fruits and vegetables	5.60	5.60	2.71@
Private sector net fixed capital stock	0.56	2.17	1.17*
Terms of trade	0.190	0.95	–1.69*
Total net fixed capital stock	2.00	2.06	1.28*
NPK use	8.17	2.45	2.30
Credit supply	3.72	7.51	14.37*
Total cropped area	0.43	0.43	–0.10
Net sown area	–0.08	0.04	–0.22
Cropping intensity	0.51	0.39	0.12

Note: # Yield potential of new varieties released of paddy, rapeseed/mustard, groundnut, wheat, maize, and cotton; * Upto 2003–04; @ Upto 2004–05.

restrictions under World Trade Organization (WTO) made Indian farm prices to become more aligned with corresponding international prices at a time when these were in decline. Private investment in agriculture stagnated as a result, the area cultivated fell, and diversification slowed down—all leading to deceleration. Moreover, public investment remained low and technology generation became negligible. Cutbacks following the Fifth Pay Commission in 1997 may have contributed to the problem as these cutbacks severely weakened the reach of critical support institutions—notably co-operatives, seed farms, and the extension system.

1.8 An important reason for recent farm distress was that after improving steadily from 1980 to 1997, terms of trade turned against agriculture from 1999 and, almost for the first time in post-independent India, farm prices actually fell at the same time that farm production decelerated. This not only depressed incomes, but also increased farm debt considerably. More generally, farmers are now subject to greater risk because variability of world prices is much higher than what Indian farmers have been used to in the past. There is need to evolve a clear policy on how to deal with this situation and some suggestions are made later in this chapter.

1.9 In the meantime, commodity futures markets that can potentially reduce price variability have grown massively in crop coverage and trading volume. At Rs 36.76 lakh crore in 2006–07, futures volumes now far exceed the volume of actual physical trade in agricultural commodities. But direct participation of farmers is negligible and price volatility does not appear to have reduced. A reason why futures markets are not being able to perform efficiently could be that these markets are very new and still in a learning phase. Quality specifications, delivery norms, margin, and lot size of most commodities traded at the bourses make it difficult for the average farmers to directly participate in exchange trading as hedgers. There is also a need to look at legal and regulatory regime and modify these to enable direct farmers' participation. For example, the passage of the Warehousing (Development and Regulation) Act 2006 makes possible the introduction of a regulated system of warehouse receipts which, along with investment in rural marketing infrastructure, can improve the effective reach of futures trading. Besides the poor direct participation of farmers, which is not unusual, available evidence is also that indirect benefit through reduced spot price volatility has been insignificant so far and the cash–future linkage is not very strong. However, futures markets do appear to have better integrated different spot market

prices with each other and with world prices. This can benefit farmers by reducing local monopsony power, but it can also be problematic if the policy objective is to insulate domestic prices from full variability of world prices. Unless trade policy is broadly predictable in advance, futures can too quickly transmit international price shocks leading to controversy and knee-jerk reactions.

1.10 Another important development of market institutions is the rise of modern food retailing which offers the prospect of lower marketing costs and reduced spoilage leading to lower prices for consumers and higher realization for farmers. Modern retailing has become controversial partly because those involved in existing trading mechanisms feel their vested interests threatened. However, although there is room for mutually beneficial modernization in this area and this will undoubtedly evolve, a legitimate area of concern is that if front-end investment outpaces the backward linkage with farmers, the immediate outcome may simply be higher imports and lower farm prices. Clearly, efforts must be made to ensure more efficient spot and futures markets and more rapid development of the backward farm linkages of retailing.

1.11 An unfortunate trend over the past two decades has been that expenditure control efforts following fiscal shocks such as the Pay Commissions awards have led to cutbacks in agricultural investment and extension, but not in subsidies. Budgetary subsidies to agriculture have increased from around 3% of agriculture GDP in 1976–80 to about 7% in 2001–03. During the same period, public investment in agriculture declined from over 4% of agriculture GDP to 2%. Most of the subsidies are on fertilizer, power, and irrigation water and these have actually contributed to the degradation of natural resources. Further, a considerable amount of Plan expenditure on agriculture is not on investment but on subsidies not accounted for in the above list. Simplistic fiscal rules such as protecting Plan expenditures more than non-Plan expenditures add to the problem. For example, although the Plan share in States' total expenditure on agricultural and allied sectors has improved considerably from a low just after Fifth Pay Commission, much of this represents increase in Plan subsidies at the cost of essential staff, particularly in the extension system and the co-operative sector. With hindsight, it appears that the policy of restraining new hiring may have been excessive, as is evident from the age composition and high vacancies among extension staff and reduced reach of co-operatives. Even a relatively small percentage reduction in subsidies can finance relatively large increase in public investment in crucial areas such as soil amelioration, watershed development, groundwater recharge, surface irrigation, and other infrastructure and can also allow substantial expansion in the reach of critical farm support systems.

1.12 Nonetheless, an important policy gain of recent years is the turnaround in public investment in later years of the Tenth Plan, reversing years of decline. Overall capital formation in the sector is now 12% of agricultural GDP, which is the highest in 25 years. This must have contributed to the recent upturn in growth. But figures in Table 1.5 also imply that Incremental Capital Output Ratio has risen from about 2.5 to around 4. Unless efficiency of investment is restored, investment would need to increase much further, to about 16% of agricultural GDP, to achieve the 4% agricultural growth target.

1.13 In light of the above, the Eleventh Plan certainly needs to increase public investment further, from 3% of agricultural GDP to about 4%. But it also needs to do much more to ensure that future growth is more efficient, sustainable, and inclusive. This can be achieved by focusing on the following:

- With availability of land and water fixed, growth in agriculture can be achieved only by increasing productivity per unit of these scarce natural resources through effective use of improved technology. The research system has so far focused mainly on breeding varieties that increase the yield potential of individual crops by enabling more intensive use of inputs. Although such research did increase potential yields substantially in the past, it put less emphasis on efficient and sustainable use of soil nutrients and water, or on identifying location-specific farming systems with proper mix of crops and livestock, especially for rain-fed areas. Besides, the potential yields of new varieties being released

TABLE 1.5
Investment in Agriculture
(Rs in Crore at 1999–2000 Price)

Year	GDP from Agriculture	Gross Capital Formation (GCF) in Agriculture			GCF in Agriculture as % of GDP from Agriculture		
		Public Sector	Private Sector	Total	Public Sector	Private Sector	Total
1980–81 to 1984–85	239678	12007	13132	25139	5.0	5.5	10.5
1985–86 to 1989–90	274034	9601	14370	23971	3.5	5.2	8.7
1990–91 to 1994–95	325957	7915	19348	27263	2.4	5.9	8.4
1995–96 to 1999–2000	383330	7724	22631	30354	2.0	5.9	7.9
2000–01	407176	7155	31872	39027	1.8	7.8	9.6
2001–02	433475	8746	39468	48215	2.0	9.1	11.1
2002–03	398206	7962	38861	46823	2.0	9.8	11.8
2003–04	441360	9376	35457	44833	2.1	8.0	10.2
2004–05	441183	12273	36835	49108	2.8	8.3	11.1
2005–06	468013	15006	39899	54905	3.2	8.5	11.7
2006–07	485939	17749	43013	60762	3.7	8.9	12.5

Source: National Accounts Statistics 2008 (New Series), Central Statistical Organization, Ministry of Statistics and Programme Implementation, New Delhi.

seem to have plateaued suggesting that the current system is no longer leading to adequate outcomes. This 'technology fatigue' has to be countered by changing research priorities suitably.

- At the same time, frontline trials of various research departments provide clear evidence of large gaps between what can be attained at the farmer's field with adoption of available technology as compared to what is obtained with existing practices. Exploiting this potential must be the main source of yield growth in the Eleventh Plan because overcoming technology fatigue will take time. Moreover, since yield gaps vary considerably from crop-to-crop and from region-to-region, the strategy must enable specific plans for each agro-climatic region. As Table 1.6 shows, constraints vary considerably even by very aggregate zones. This will also require much stronger links between research, extension, and farmers.
- The pressing need to accelerate agriculture growth should not be at the cost of sustainability of our natural resource base, which is starkly limited. Deforestation has affected both soils and water and this is compounded by soil degradation and overexploitation of groundwater. Besides watershed development in watersheds where agriculture is important, a concerted effort is needed to afforest upper catchments at higher elevations of river basins. In addition to erosion, salinity, and alkalinity, soils are losing soil carbon and micronutrients due to irrational and unbalanced fertilizer use (Table 1.6). This must be addressed urgently since this directly affects input use efficiency. The seriousness of the problem can be seen from the fact that nearly two-thirds of our farmlands are in some way either degraded or sick and only about one-third are in good health. Rapid expansion of groundwater use for irrigation was a key factor in the relatively rapid growth of agriculture between the mid-1960s and late 1980s. But further expansion should be strictly monitored, especially in regions where aquifer levels have dropped causing concern about future sustainability. Action on the environmental front cannot wait in face of a possibly looming adverse climate change due to global warming.

1.14 For growth to be at all inclusive, the agricultural strategy must focus on the 85% of farmers who are small and marginal, increasingly female, and who find it difficult to access inputs, credit, and extension or to market their output. While some of these farmers may ultimately exit from farming, the overwhelming majority will continue to remain in the sector and the objective of inclusiveness requires that their needs are attended to. For example, credit has grown at unprecedented rates (30% per annum) to other sectors but not to small and marginal land holders and women who lack collateral security. Besides issues such as rights to land (especially for women), it is now well recognized that the poor are best empowered if they function as a group rather than as individuals. Hence there

TABLE 1.6
Region-specific Factors Causing Low Productivity

Agro-climatic Region	States/Parts of States	Region-specific Constraints
Western Himalayan region-I	J&K, HP, Uttaranchal	Severe soil erosion, degradation due to heavy rainfall/floods and deforestation, low SRRs, poor road, poor input delivery, inadequate communication infrastructure and marketing
Eastern Himalayan region-II	Assam, NE States, Sikkim	Aluminium toxicity and soil acidity, soil erosion and floods, shifting cultivation, low SRRs, non-availability of electricity, poor road, poor input delivery system and communication infrastructure
Lower and middle gangetic plains regions-III and IV	West Bengal, Bihar, Eastern UP	Flood/water logging, improper drainage, salinity/alkalinity, arsenic contamination, low SRRs, non-availability of electricity, high population growth, poor road and communication infrastructure
Upper and trans-gangetic plains region-V and VI	Western UP, Punjab, Haryana	Groundwater depletion, decreasing total factor productivity, micronutrient deficiency, non-availability of electricity, and high population density
Eastern plateau and hills region-VII	Orissa, Jharkhand, Chhattisgarh	Moisture stress, drought, and soil acidity, iron toxicity, low SRRs, non-availability of electricity, high population growth, poor road, poor input delivery and communication infrastructure

Source: Cited in Report of the Working Group of Sub-Committee of National Development Council on Agriculture and Related Issues on Region/Crop Specific Productivity Analysis and Agro-Climatic Zones, Planning Commission, Government of India (February 2007).

is a need to encourage a 'group approach' for the poor and for women to reap economies of scale and be effective farmers. A group approach could also improve the bargaining power of small cultivators in contract farming. The few examples where small and marginal farmers have benefited from contract farming are those where they have entered into contracts collectively rather than individually. In Punjab, Mahindra Shubhlabh Services Ltd followed this approach for maize farming with a number of safeguards for risk protection, etc., built in. Again in South India, the United Planter's Association of South India signed contracts with women's self-help groups (SHGs) for tea cultivation. One way forward to encourage marginal farmers and women to form groups for purposes of farming would be to shift at least some of the current subsidies to be available only to groups of such farmers rather than to individuals.

TENTH PLAN OUTLAYS AND EXPENDITURE

1.15 Against the projected Tenth Plan outlay of Rs 58933 crore on agriculture and allied sectors, the utilization is about the same as outlay in current price but likely to be only around 84% at the 2001–02 price. The utilization in the case of irrigation and flood control sector is also of the same order, that is 85%. In both the cases, much larger shortfalls in the first two years of the Plan were made up in subsequent years. Plan outlays in agriculture and allied sectors and in irrigation and flood control for the Centre, States, and union territories (UTs) are presented in Annexure 1.1.

1.16 The progress of outlay and expenditure during the Plan period for the three departments of the Union Ministry of Agriculture (MoA), namely, the Department of Agriculture and Co-operation (DAC), the Department of Animal Husbandry, Dairying, and Fisheries (DAHDF), and the Department of Agricultural Research and Education (DARE) is given in Table 1.7.

1.17 As may be seen, a substantial increase in outlay was provided to the Ministry of Agriculture since 2004–05 taking the Central Government's share of total plan expenditure on agriculture and allied sectors (Centre and States) from 33% in 2002–03 to 44% in 2006–07. The Ministry has introduced several new programmes during Tenth Plan aimed at diversification of agriculture, strengthening technology validation, demonstration and dissemination, water saving, and development of infrastructure. These include:

- The National Horticulture Mission (NHM) approved by the Cabinet Committee on Economic

TABLE 1.7
Outlay and Expenditure of Ministry of Agriculture during the Tenth Five Year Plan

(Rs Crore)

S. No.		Current Price				2001–02 Price			
		DAC	DAHDF	DARE	TOTAL	DAC	DAHDF	DARE	TOTAL
1.	Tenth Plan outlay (2002–07)*	13200.00	2500.00	5368.00	21068.00	13200.00	2500.00	5368.00	21068.00
2.	2002–03 (Expenditure)#	1655.94	238.90	650.75	2536.95	1593.9	221.6	626.4	2441.9
3.	2003–04 (Expenditure)#	2050.34	271.76	748.98	3068.67	1901.4	249.8	694.6	2845.8
4.	2004–05 (Expenditure)#	2656.26	566.22	816.01	4035.72	2360.2	500.6	725.1	3585.9
5.	2005–06 (Expenditure)#	3817.46	589.37	1046.75	5453.37	3247.5	501.2	890.4	4639.2
6.	2006–07 (RE)#	4860.00	679.32	1430.00	7040	3909.1	603.2	1150.2	5662.5
7.	Total expenditure	15040.00	2345.57	4692.49	22134.71	13012.1	2076.5	4086.7	19175.4
8.	Total expenditure as % of Tenth Plan outlay	114%	94%	87%	105%	99%	83%	76%	91%
9.	2007–08 BE	5520.00	910.00	1600	8030	–	–	–	–

Note: RE = Revised Estimate, BE = Budget Estimate.
Sources: * Tenth Five Year Plan (2002–07), Planning Commission, Government of India; # Union Expenditure Budgets, Vol. I, Ministry of Finance, Government of India, from 2002–03 to 2007–08.

Affairs (CCEA) on 19 May 2005 became operational during 2005–06.

- The government approved a Centrally sponsored 'Micro Irrigation' programme to help spread the network of water-saving implements such as sprinkler and drip irrigation throughout the country.
- A National Gender Resource Centre in Agriculture was set up in the directorate of extension as a focal point for convergence and co-ordination of gender-related issues within the DAC.
- Jute Technology Mission was approved in June 2006.
- The National Agricultural Innovation Project was launched by the Indian Council for Agricultural Research in July 2006. A National Fund for Basic and Strategic Research in Agricultural Sciences has also been set up in 2005–06. Both these will support agricultural research in project mode.
- The National Fisheries Development Board (NFDB) was formally set up at Hyderabad in September 2006 with the main objectives of bringing major activities relating to fisheries and aquaculture for focused attention and professional management.
- A new Centrally sponsored scheme (CSS) 'National Mission on Bamboo Technology and Trade Development' was approved in October 2006.
- The government decided to set up a Krishi Vigyan Kendra (KVK) in each rural district (578) in the country. So far over 537 KVKs have been established. These Kendras disseminate farm technologies to farmers and provide training to enhance the productivity and hence the income earning capacity of the farmers.
- Technology dissemination efforts are being strengthened further by establishing Agriculture Technology Management Agencies (ATMAs), which are autonomous bodies for extension planning and reform, in 252 districts. These will be extended to all rural districts.
- The National Rainfed Area Authority (NRAA) was constituted as an expert body to bring technical focus to problems of rainfed agriculture and to advise on design and convergence of various watershed development schemes.
- The Constitution (106th) Amendment Bill 2006 in respect of co-operatives was introduced in Lok Sabha on 22 May 2006.
- The government approved a rehabilitation package amounting to Rs 16978.69 crore for the farmers in distress in 31 selected districts in the four States, namely, Andhra Pradesh, Karnataka, Kerala, and Maharashtra. The package comprises relief from the Prime Minister's Relief Fund, strengthening institutional credit support, irrigation development, promotion of micro irrigation, watershed development, extension services, enhancing seed replacement rate (SRR) and income augmentation through horticulture, livestock, and fishery in these districts.

AREAS OF CONCERN IN IMPORTANT EXISTING PLAN SCHEMES

1.18 Among major ongoing schemes of DAC, the largest is the Macro Management Scheme (MMA) which was initiated in 2000–01 by integrating 27 CSS so as to provide flexibility to the States to develop and pursue a mix of activities on the basis of their regional priorities. The approved pattern of assistance is in the ratio of 90:10 for the Centre and the States, respectively, except in the case of North Eastern States that get 100% Central assistance. With the launching of NHM in the year 2005–06, 10 schemes pertaining to horticulture development were taken out of the purview of this scheme. An evaluation of the scheme (in August 2004) by three institutions, namely, the Indian Institute of Management, Kolkata, the National Bank for Agriculture and Rural Development (NABARD) Consultancy Services Limited, and the Agricultural Finance Corp. Ltd brings out that the objective of flexibility was achieved but the work plans prepared by the States did not necessarily originate from the grass root level. These were generally prepared in a top-down process, and often did not reflect State priorities, thrust areas, and the initiatives for agricultural development. Further, there appeared to be lack of co-ordination among different departments. The funds were mainly retained by the nodal department, that is the Agriculture Department, resulting in neglect in some of the States of the schemes that were in the areas of Natural Resources Management and Co-operative Departments.

1.19 The Technology Mission on Oilseeds, Maize, Oil palm, and Pulses is being implemented for two decades for oilseeds. Pulses, oil palm, and maize were brought under the ambit of the mission in 1990–91, 1992, 1995–96. Although there has been a fairly substantial increase in production of oilseeds since its inception in 1986, domestic production of oilseed is short of the demand of edible oils in the country. The pulses production in the country has continued to be stagnant for decades suggesting that the pulses mission has not been effective.

1.20 Crop insurance was introduced in the country two decades ago. The present version, the National Agricultural Insurance Scheme (NAIS) has been available since 1999–2000. The Scheme's coverage is limited to a few States and a few crops only. If NAIS is to be retained, it is important to impart a measure of permanency to the Scheme by shifting it to non-Plan, with banks that are its principal beneficiaries contributing to the subsidy. If so, new additional actuarial schemes with subsidy on premia, involving larger number of service providers and wider menu of insurance products, can be considered for Plan financing. Some further details of agricultural insurance have been discussed later in the chapter.

1.21 The National Project on Cattle and Buffalo Breeding is the flagship scheme of DAHDF. Initiated in October 2000 for a period of 10 years, this envisages genetic upgradation of indigenous cattle and buffaloes, development and conservation of important indigenous breeds, and to evolve sustainable breeding policy. The project is being implemented by State Implementing Agencies (SIAs) in 26 States and 1 UT. This scheme suffers from many shortcomings, particularly quality of progeny bulls and inadequate attention to tagging and registry. Further, feed and fodder are a perennial problem for exotic breeds and efforts made during the Tenth Plan to improve feed and fodder resources for livestock were not very successful. The performance of the Central Fodder Development Organization was evaluated by The Centre for Management Development, Thiruvanthapuram and found to be unsatisfactory. Moreover, with the completion of 'Operation Flood' Project by National Dairy Development Board (NDDB), the pace of investment in dairy sector has slowed down. The allocation for dairy development by the Central and State Governments has also diminished over the last two plans. Assistance from Government of India under CSS, Intensive Dairy Development Programme, has gone to non-viable areas without conducting proper feasibility studies and has been implemented without proper technical supervision. Delicensing and the subsequent decision to do away with the concept of milk sheds were expected to boost private sector investment in dairying, but this has not happened. Furthermore, there appears to have been no concentrated efforts to invest in technology for development of value-added and innovative milk products. Consequently, in the first four years of the Tenth Five Year Plan, the growth rate of milk has been less than 3% per annum.

CHALLENGES FOR THE ELEVENTH PLAN

Agricultural Research

1.22 The major challenges facing us in formulating policy for the Eleventh Plan are discussed below.

1.23 The DARE has an extensive network comprising 48 Central Institutes, 5 National Bureaux, 12 Project Directorates, 32 National Research Centres (NRC), and 62 All-India Co-ordinated Research Projects (AICRP). It also supports research and education in 41 State Agriculture Universities, 5 Deemed Universities, and 1 Central Agriculture University. During Tenth Plan period 2 Indian Council of Agricultural Research (ICAR) institutes, 1 National Bureau, 3 Project Directorates, and 10 State Agricultural Universities (SAUs) have been established. Over the years, its co-ordinated trials have helped the nation improve varieties of sugarcane, rice, wheat, maize, sorghum, groundnut, mustard, etc., considering the ecological variations with respect to each crop. However, two glaring features are now obvious. First, the productivity achieved on farms has fallen short of those in the field trials. Clearly, the KVKs that have the mandate of technology validation and transfer have not delivered their full potential. Second, as observed earlier, there is some evidence of technological fatigue in terms of yields obtainable with the newest varieties being delivered by the NARS. Since access to international research is now much more circumscribed by intellectual property rights (IPRs), this will have to be addressed largely by toning up NARS capacity.

1.24 The following are critical research gaps:

- Integrating methods of traditional and modern biology giving attention to both yield and quality aspects.
- An orientation of public sector research in 'hybrid development with commercial viability' has to be reintroduced on a mission mode at least in crops like pigeon pea, soybean, and mustard.
- Indigenous plant types that inherently possess genes responsible for higher nutritive value (more protein, micronutrients, etc.) need to be identified and used for enriching nutrients in rainfed crops.
- The implications of climate change on agriculture and vice versa need to be studied and a dedicated research programme should be initiated to combat global warming.
- A major research thrust is warranted in areas of balanced and site-specific nutrient supply and efficient water management strategies.
- Integrated Pest Management (IPM) needs greater emphasis. The existing package of practices is not fully integrated between various plant protection sciences. This results in duplication, overlapping as well as unrealistic recommendations in the name of IPM. There is a need for interdisciplinary research in plant protection to elucidate basic issues of herbivory as well as to develop suitable mitigations.
- In horticulture, the research agenda needs to emphasize survey of indigenous biodiversity for resistance to various biotic and abiotic stresses for improvement in production, productivity, and quality of produce.
- In livestock, there is an urgent need to reorient research and assess the genetic potential of indigenous breeds. Intensive research work needs to be undertaken for genetic identification of traits of excellence in Indian breeds, such as Jaffarabadi buffalo, Black Bengal goat, Garole sheep, etc., and identify the functional genomics associated with their traits of excellence.
- With endemic shortage of animal feeds, research should explore technologies to augment feed resources, including genetic modification of micro-organism to utilize high lignin forage grasses.
- With large quantities of animal products now being produced, research on process technologies, value addition, packaging, storage, transportation, and marketing should receive high priority. In the absence of a proper slaughter regime, there is considerable wastage and an effective package of practices for management of slaughterage needs to be evolved. Prevention of animal losses due to disease should be the major area of focus with emphasis on development of diagnostic kits and vaccine. The health of the human population is intimately connected to the health of the animal with several fatal and debilitating diseases being common to both man and animal. Serious attention to animal health care, disease diagnosis, and

prophylactics will go a long way in ensuring human health also.
- Overall, there is a need to identify integrated farming systems in different agro-ecological regions, internalizing synergies of different components to enhance resource utilization, income, and livelihood generation and minimize environmental loading.

1.25 It is necessary to take a comprehensive view of the functioning of the agricultural research system and make systemic changes in the course of the Eleventh Plan. Thus far, research has tended to focus mostly on increasing the yield potential by more intensive use of water and bio-chemical inputs. Far too little attention has been given to the long-term environmental impact or on methods and practices for the efficient use of these inputs for sustainable agriculture. These features are widely known but efforts to correct them have not been adequate; at any rate they have not made much of a difference.

1.26 Agricultural research is underfunded but lack of resources is not the only problem. Available resources also have not been optimally utilized because of lack of a clearly stated strategy that assigns definite responsibilities, prioritizes the research agenda rationally, and recognizes that the research mode is not always best suited for product development and delivery:

- Dominance of commodity-based research and development (R&D), that is lack of a holistic approach involving a matrix of farm enterprises.
- Strict compartmentalization of R&D agencies, i.e., lack of effective bilateral flow of information among research, extension, and implementation departments.
- Lack of large-scale on-farm validation of techniques and feedback thereon, leading to practically no scope for their refinement.

1.27 As far as possible, ICAR institutes should mainly undertake basic, strategic, and anticipatory research in line with national priorities, while SAUs do applied and adaptive research addressing location-specific problems, with complementarities also found between the public and private sectors in product development. A distinction also needs to be made between basic research which has knowledge advancement and scientific curiosity as its major focus and strategic research which is aimed at well-defined researchable problems which are of high development priority and worthy of multi-discipline and multi-institution effect on a mission mode.

1.28 A major paradigm shift is needed to transform the present commodity-based research to a systems approach. Since farm-level problems are specific to agro-climatic zones (ACZs), what is needed is a convergence between R&D agencies within individual ACZs so as to bring region-specificity in technologies and their time-bound assessment. This requires a seven-step mechanism:

- Problem identification and prioritization;
- Convergence of existing technologies to match the need;
- Generation of need-based viable technologies using the holistic farming system approach;
- On-farm assessment and evaluation;
- Feedback on the technologies;
- Refinement of technologies, if necessary;
- Ensuring timely availability of inputs.

1.29 This kind of approach will help in establishing a research-development-technology transfer continuum involving all stakeholders.

1.30 SAUs are the key to regionally relevant research and for generating quality human resources. Unfortunately, SAUs are so poorly funded by their own State Governments that some are in chronic overdraft, only a quarter are accredited, and almost all rely mainly on ICAR funding for research. This situation, where States still provide salary and establishment costs but SAUs look to ICAR for other funds, not only affects their education function adversely but it also distances SAUs from State Agricultural Departments and reduces relevance of their research for local problems. Thus, although Central support for revamping SAUs is justified, this is likely to be effective only where States recognize the value of agricultural education and research. An important criterion for identifying SAUs for support from the Centre should be the investment that the State itself is making. Moreover,

the biggest problem with NARS remains that it is strictly governed by the same rules and regulations relating to expenditure and filling up of positions as operative in government departments of States and the Centre. This robs the system of flexibility and discretion which are essential for healthy functioning of scientific institutions.

Extension

1.31 Frontline demonstrations of various departments provide clinching evidence of large gaps between what can be attained at farmers' fields with the adoption of improved technology and what is obtained with the existing practices followed by the farmers. This is a clear pointer to the large potential for raising output through the effective dissemination of technology, especially in the eastern Gangetic plains. But this is not happening because of the absence or weak research–extension–farmer linkages. While technologies more adaptable to wider regional variations are required, effective extension remains vital for realization of demonstration trials yields at farmers' field on a large scale.

1.32 The challenge before extension agencies is how to deliver knowledge to all farmers, and especially how to involve and motivate the resource-poor farmers with a holding size below 1 hectare to take command of their situation and reduce the innovation adoption period. Given the meagre marketable surplus at individual farmer level for small farmers, there is need to organize the farmers around the commodity for getting them the benefits both mutually within the community and in interaction with external agencies supporting the development process. Developing farmer's organizations and federating them at block/district/State level and linking their economic activities with the market assumes special significance as it helps to attain the power of scale economies and collective bargaining to the advantage of farmers.

1.33 Public extension system has a key role in educating farmers and helping them to take right decisions. In this context, it is to be noted that extension should be treated as a service delivery mechanism and not be viewed as a revenue-generating programme. Hence, the principles governing business models of revenue-generating programmes should not be made applicable for extension services. Adequate fund allocation to reach large number of small and marginal farmers by extension agency is essential. Infrastructure below district level is needed to support capacity building of farmers. In view of the above, it is essential to upscale the ATMA to all 588 development districts by incorporating the modifications and taking consideration of all the pre-requisites to meet the emerging and imminent changes in the context of 'Wake up Call' given by the National Commission on Farmers and 'Regaining Agricultural Dynamism'. These provisions are expected to enhance the acceptability of the scheme by States and effective operationalization of the scheme in original spirits.

1.34 There are many extension service providers in the field, providing different kinds of useful services such as information and service support to farmers. They are State Government and Central Government agencies, agri-business companies, agripreneurs, input dealers, manufacturing firms, non-governmental organizations (NGOs), farmers' organizations, and progressive farmers. There is duplication of efforts with multiplicity of agents attending extension work without convergence. There should be co-ordinated attempt to synergize and converge these efforts at the district level and below to improve the performance of various stakeholders. It is essential to route all the State and Central Government extension funds through single agency like ATMA for effective utilization of crucial resources.

1.35 At zonal level, institutions like Zonal Research Stations and line departments need to prepare a zonal agricultural development strategy through consultative approach. At district/block/village level, the key institutions such as KVK, ATMA, and farmers' organizations need to have a close link with each other for technology assessment, refinement, and for creating a platform between farmers' organization and market opportunities. The research and extension agenda of the district needs to be set by multi-disciplinary team involving scientists, extension workers, farmers, and other stakeholders who would ensure research–farmer–extension–market linkage.

1.36 Public–private partnership (PPP) in extension has to be promoted for convergence and sharing of

resources. Horizontal expansion of private sector increases through partnership with the public extension system, while vertical expansion of public extension increases through partnership with the private sector. The potential private extension service providers could be identified and made partners in PPP mode for effective management of services and for nurturing a plurality of institutions. Under extension reform, minimum 10% of the fund allocation is made to undertake extension activities through private extension agencies. This needs to be continued and, where appropriate, even expanded by framing suitable guidelines.

Price Policy

1.37 Pricing policy concerns arising from the volatility of international prices need to be addressed. In periods of falling international prices, as for example in the case of edible oils after the East Asian crisis, farmers experience income losses although consumers benefit. In a period of rising international prices, as for example in the case of wheat at present, farmers stand to benefit but consumers lose. It is logical for government to want to balance producer and consumer interests and this can be done through careful calibration of import duties and minimum support prices (MSP) . Our policy has not been entirely consistent in this respect. For example, import duties on edible oils were lowered in the mid-1990s when international edible oil prices were high, but they were not adjusted when edible oil prices declined sharply after 1997. Domestic producers of oil seeds experienced a substantial price shock. The reaction to the recent increase in wheat prices has been different in the sense that farmers did not experience the full benefit of higher prices because efforts were made to protect consumer interests by wheat imports for the public distribution system (PDS) that were undertaken at what are implicitly subsidized rates.

1.38 A symmetric approach would be to moderate price fluctuation both for upswings and downswings. This requires a clear understanding of how to calibrate import tariffs and the MSP depending upon how international prices move. For downward movements in international prices beyond a certain level, import tariffs should be adjusted automatically to stabilize Cost, Insurance, and Freight prices. No change needs to be made in the MSP once announced, but persistence of high or low prices internationally should be taken into account by the Commission for Agricultural Costs and Prices (CACP) to adjust the MSP for the next year. As a general rule, we should not impose bans on exports but rely only on export taxes to ease domestic price pressure by moderating export if this is felt to be needed. In case international prices rise sharply, there is a case for lowering tariffs. In such situations, for food products supplied through the PDS, there is a case for offering a bonus on the MSP before the marketing season begins to ensure adequate supplies for the PDS. This could be supplemented by imports on the government account for meeting PDS requirements and/or rebuilding depleted stocks. This amounts to a targeted subsidy for PDS consumers. If high international prices continue, the CACP should take this into account in fixing the MSP for next year. An important feature of the system must be that increases in import tariffs in periods of low international prices must be accompanied by a simultaneous upward revision of duty drawback rates to ensure that exporters are not hurt. This is essential in cases such as cotton where the absence of such adjustment would hurt the competitiveness of our textile or garment export. A coherent policy along these lines would provide an internally consistent and predictable way for dealing with international price volatility in a manner which balances producer, consumer, and exporter interests.

Soil Health Management and Fertilizer Subsidy

1.39 Soil degradation through use of agro-chemicals is a serious issue that needs to be addressed on a priority basis during Eleventh Plan. Imbalanced use of chemical fertilizer has led to declining fertilizer response in the fertile irrigated regions. Excess use of some nutrients, driven in part by imbalanced subsidies, has led to depletion of other nutrients from the soil leading to deterioration of the soil health. The nature and extent of problem differ in different of parts of the country.

1.40 Lack of knowledge on the part of the farmers about the importance of soil health and information about the status of the soil on his particular farm is an

important constraint. Soil health cards, giving regularly updated information on major and micro nutrient, should be issued to all the farmers. This would require strengthening of soil testing labs in all parts of the country and expanding their testing capacity to cover micro-nutrients as well. Initial capital investment will have to be made by the government and subsequent maintenance may be funded out of the fee to be charged for the services rendered by these labs. The PPP mode can be explored wherever possible to expand reach and ensure accountability.

1.41 The present system of fertilizer subsidy is irrational and has become counter-productive. Fertilizer is sold at almost the same controlled price throughout the country. However, because nitrogenous fertilizers are subsidized more than potassic and phosphatic fertilizers, the subsidy tends to benefit more the crops and regions which require higher use of nitrogenous fertilizer as compared to the crops and regions which require higher application of potassic and phosphatic fertilizers. The imbalance in the use of nitrogen–phosphorus–potassium (NPK) brought about by distortions in prices ratio in favour of nitrogenous fertilizer is creating serious problem of soil degradation and adversely affecting productivity. Balanced use of fertilizer can be achieved either by redistributing the present amount of fertilizer subsidy over NPK in a manner which is nutrient neutral or by increasing subsidy on P and K in such a way that farmers are induced to use NPK in the right proportion. The price control system also discourages producers from adding micro-nutrients to standard fertilizer eligible for subsidy because the controlled price parameter for that fertilizer cannot be adjusted to cover the cost of micro-nutrient added. Immediate steps should be taken to allow the major producers to charge costs for adding micro-nutrients. Many of the micro-nutrients are also reserved for small-scale production. This segment should be dereserved in the interest of the agricultural community.

SEEDS

1.42 Seed management is a very crucial element for growth in productivity and the present situation is highly unsatisfactory. There is practically no change in the SRR in the States of Orissa, Bihar, Uttar Pradesh, Jharkhand, Assam, Madhya Pradesh, and Chhattisgarh. At present the SRRs in respect of various crops in different States are still relatively low and need to be raised. The desirable SRRs, without which it is not possible to achieve higher productivity, are 25% for self-pollinated crops, 35% for cross-pollinated crops, and 100% for hybrids.

1.43 Production of breeder seeds, foundation seeds, distribution of certified seeds for the year 2004–05 to 2006–07 as compared to those in the triennium ending 1996–97 and 2001–02 are given in Table 1.8. Although the production of breeder seeds has increased significantly, the production of foundation seeds has not. There is a large increase in the distribution of certified seeds but the quality of these seeds is often questioned by farmers.

1.44 There are missing links in the seed production system. There is very little focus on hybrid seed production in public sector. However the private sector has expanded to fill the gap. The private sector seed industry in India is growing appreciably and has made significant contributions to BT cotton, hybrids of maize, rice, sunflower, etc. As shown in Table 1.9, the share of private sector in seed production is increasing whereas that of public sector is decreasing.

TABLE 1.8
Production and Distribution of Seeds

Programme	Unit	Use/Production in Triennium Ending				
		1996–97	2000–01	2004–05	2005–06	2006–07
Production of breeder seeds	Thousand Qts	43.72	44.27	66.46	64.88	73.83
Production of foundation seeds	Lakh Qts	6.45	5.77	6.90	7.40	8.00
Distribution of certified/quality seeds	Lakh Qts	79.01	86.41	120.26	126.74	191.98

Source: Report of the Working Group on Crop Husbandry, Agricultural Inputs, Demand and Supply Projections and Agricultural Statistics for the Eleventh Five Year Plan (2007–12), Planning Commission, Government of India (December 2006).

TABLE 1.9
Changing Share of Private and Public Sector in Seeds Production

Year	Share in Seed Production	
	Private (%)	Public (%)
2004	49.11	50.89
2005	58.00	42.00
2006	57.75	42.25

Source: Report of the Working Group on Crop Husbandry, Agricultural Inputs, Demand and Supply Projections and Agricultural Statistics for the Eleventh Five Year Plan (2007–12), Planning Commission, Government of India (December 2006).

During the Tenth Plan the private seed supply had overtaken the seed sourcing from public sources. However, not surprisingly, the private sector remains absent in the production of seeds of self-pollinating varieties.

HORTICULTURE

1.45 While the first few Five Year Plans assigned priority to achieving self-sufficiency in foodgrain production, over the years, horticulture has emerged as an indispensable part of agriculture, offering a wide range of choices to the farmers for crop diversification. It also provides ample opportunities for sustaining large number of agro-industries which generate substantial employment opportunities. The horticulture sector contributes around 28% of the GDP in agriculture from about 13.08% of the area. It also provides 37% of the total exports of agricultural commodities. The sector encompasses a wide range of crops namely fruit crops, vegetables crops, potato and tuber crops, ornamental crops, medicinal and aromatic crops, spices, and plantation crops. New introductions such as mushroom, bamboo, and bee keeping (for improving the crop productivity) has further expanded the scope of horticulture.

1.46 India accounts for an area of 4.96 million hectares (MH) under fruit crops with a production of 49.29 million metric tonnes (mt). During the period 1991–92 to 2001–02 growth in area, production, and productivity of fruits was observed at the rate of 3.4%, 4.2%, and 0.7%. Area growth accelerated between 2001–02 and 2004–05 to 7.37% but with negligible acceleration in production growth. Among various States, Maharashtra ranks first and contributes 27% in area and 21.5% in production. Andhra Pradesh ranks second in area and production contributing 13% and 16% of fruits. The maximum productivity was observed in Madhya Pradesh (22.6 mt/hectare), followed by Tamil Nadu (19.9 mt/hectare), Gujarat (15.9 mt/ hectare), Karnataka (15.9 mt/hectare), and West Bengal (12.8 mt/hectare). The growth in productivity was maximum (5%) in Kerala from 1991–92 to 2001–02 while it was 10.2% in Uttar Pradesh from 2001–02 to 2004–05.

1.47 Total vegetable production in India before independence was 15 million mt and since Independence for decades the growth rate was stabilized around 0.5%. The impetus on vegetable research and policy intervention to promote vegetable crops witnessed a sudden spurt in growth rate of 2.5%, a hike of five times during the last decade. The potential technological interventions with improved gene pool and precise management can take growth rate to nearly 6% per annum. The area under vegetables increased from 5.59 MH in 1991–92 to 6.76 MH during 2004–05. The production in this period increased from 58.53 million mt to 101.43 million mt. During the period, productivity of vegetables increased from 10.5 mt/hectare to 15.0 mt/hectare. While West Bengal continues to be the leading State in area and production, the productivity is higher in Tamil Nadu followed by Uttar Pradesh and Bihar.

1.48 India is the second largest producer of flowers after China. The traditional flower sector registered an impressive growth during the Eighth, Ninth, and Tenth Plan periods and grew from 71000 hectares at the end of the Eighth Plan period to 106000 hectares by the end of the Ninth Plan. During the Tenth Plan an additional 10000 hectares has been brought under the traditional flowers sector by the end of 2004–05 to register an overall area of 115921 hectares. The productivity per hectare is the highest in Bihar (17.05 mt) followed by Haryana (11.55 mt). On the other hand, the productivity of flowers is the least in Rajasthan (0.59 mt). The overall productivity of the country during 2004–05 was recorded at 5.64 mt. Nearly 77% of area under floricultural crops is concentrated in seven States comprising Tamil Nadu, Karnataka, Andhra Pradesh, West Bengal, Maharashtra, Haryana, Uttar Pradesh, and Delhi. The production of cut flowers

increased over Plan periods to attain a production of 1952 million flowers during the Tenth Plan period from 615 million cut flowers during the end of Eighth Plan period.

1.49 The medicinal plants-based industry is growing at the rate of 7%–15% annually. According to a conservative estimate, the value of medicinal plants-related trade in India is to the tune of about Rs 5000 crore per annum while the world trade is about 62 billion US dollars and is expected to grow to the tune of 5 trillion US dollars by the year 2050. The Indian Systems of Medicine have identified 1500 medicinal plants, of which 500 species are mostly used in the preparation of drugs. At present different Medicinal and Aromatic Plant (MAP) species are under cultivation in the country out of which about 32 are listed in the priority list of the National Medicinal Plant Board, Ministry of Health and Family Welfare for commercial cultivation and processing in the country. However, unorganized collection from forest area has been banned in many states; the trade in this important sector is far from being organized and is also under private hands leading to distress sale by the growers and causing loss making ventures for new growers. Hence, in this sector it is important that only need-based cultivation of any medicinal and aromatic crops is taken up with assured buy back arrangements. Furthermore, in some Council of Scientific and Industrial Research (CSIR) institutes the plants are available but the costs are higher and not affordable for the growers. There is dearth of planting material in many key species and limited improved varieties are available. Hence, different institutions under public domain are required to multiply plants for supply to the growers. The centres to be entrusted with this task are NRC on MAP, Anand, Central Institute for Medicinal and Aromatic Plants, Lucknow, AICRP Centres of the network projects; Madhya Pradesh, West Bengal, Orissa, Jharkhand, Chhattisgarh, etc.

1.50 In the area of horticulture, a major beginning has been made with the NHM. Already the government is implementing Technology Mission for Integrated Development of Horticulture in North Eastern States, Sikkim, Jammu and Kashmir, Himachal Pradesh, and Uttaranchal. The most important constraints to establish the required linkages are in the area of agricultural marketing and processing. Since high-value agriculture is based on perishable commodities, large investments are required in modern methods of grading, post-harvest management (PHM), and development of cold chains. Such investment in turn requires that new players, including large corporate players, be able to enter existing markets and set up new marketing channels. The NHM therefore incentivizes the ongoing marketing reforms based on amending existing Agricultural Product Marketing Committee (APMC) Acts to allow this. This process has started in earnest, with many business houses investing in the area and with most States having already made APMC amendments. However, this must be taken to its logical conclusion. Many States have made APMC amendments but are yet to frame the necessary rules. This uncertainty needs to be removed as soon as possible.

1.51 Most States have also endorsed, and many have encouraged, contract farming. This can be a useful instrument for linking farmers to corporate buyers who can provide information and also inputs and extension tailored to the specific crops. It needs to be backed by ensuring effective mechanisms for contract registration and dispute resolution, along with adequate information and support so that small farmers are able to enter into collective contracts.

1.52 Planting material is the single most important factor around which the entire gamut of horticultural activities revolves. It is of special significance especially in perennial horticultural crops which have a long juvenile/gestation phase and any mistake committed by the grower in the initial stage will result in enormous loss in the later stages. Hence, genuineness, quality, and health of plant material are the major requirements of multiplication, sale, and adoption of any plant material. At present, farmers have to depend on private sources of which the majority of the units are not regulated or monitored in most of the States. Hence, farmers do not have access to genuine and disease-free elite to certified planting material in different crops and as a result suffer with respect to production, productivity, and quality of the produce. Most of the old

existing nurseries lack modern infrastructure such as greenhouses, mist propagation units, cold storage, mist irrigation systems, efficient nursery tools, implements, and machineries and even facilities for soil sterilization, etc. Ignorance of the farmers, acute shortage of mother plants of improved varieties, and absence of quality testing and monitoring mechanisms make the situation complex.

1.53 The situation is comparatively better in the case of vegetables with the private sector taking a major share of the production and supply of seeds of hybrids/improved varieties, and enforcement of the provision of Seed Act by the government agencies. However, the gap between the demand and supply of genuine quality material is too large to be met out of the present efforts. Therefore, in the Eleventh Plan it is envisaged that a massive programme on planting material be initiated so that a sound basis for further growth and development of this sector can be taken up. The government would also consider setting up a Central Certification Agency and a Planting Material Authority to take care of good quality planting material.

1.54 There are at present 10 Central institutes with 27 regional stations, 12 NRC, 9 multi-disciplinary institutes, 15 AICRPs with 223 centres, 1 full-fledged SAU on horticulture and forestry, 25 SAUs with horticulture discipline, 5 network projects, 330 ad hoc research projects, and 29 revolving fund schemes which are dealing with research on different horticultural crops. Besides the above, a large number of CSIR laboratories and centres aided by Department of Biotechnology (DBT), Bhabha Atomic Research Centre (BARC), and Indian Space Research Organization are also undertaking basic and strategic research on horticultural crops. In addition, the Ministry of Commerce has established one research institute each for coffee, rubber, and spices and two research institutes for tea which work on different aspects of these commodity crops. In spite of several research leads, there are still gaps that require focused attention. Development of improved varieties/hybrids of fruits, vegetables, plantation crops, medicinal and aromatic crops, flowers and ornamental crops, spices, cashew, oil palm with high production potential, biotic and abiotic stress resistance is the need of the hour. There is also need to evolve appropriate horticultural-based cropping systems for different agro-climatic areas. Although the private sector has emerged as a major supplier of new varieties, there is a need to evolve appropriate horticulture-based cropping systems for different agro-climatic areas.

1.55 Protected cultivation/greenhouse/low poly tunnels production techniques are now available for growing cut-flowers and vegetables. Crops, such as tomato, cucurbits, cabbage, cauliflower, cucumber, lettuce, onion, spinach, brinjal, pepper, turnip, radish, can be successfully grown achieving high quality under protected cultivation. It has enabled farmers to produce vegetables in places such as Leh and also off-season production of vegetables in north India. Technology for protected cultivation of flowers such as rose, chrysanthemum, gerbera, and carnation in polyhouse, shade net, etc., has been perfected. Low-cost greenhouse technology has also been developed for high quality flower production in hilly States of Jammu and Kashmir, Himachal Pradesh, Uttaranchal, and North Eastern States. These structures are now used commercially for export of quality flower production in plains of Maharashtra and Karnataka.

Plant Protection

1.56 IPM, inter alia, aims at employment of alternate methods of pest control like cultural, mechanical, and biological control in a compatible manner. Chemical control which has several ill-effects should be resorted to only when other control methods fail to provide desired results. IPM is economical and ecologically safe, an important consideration since food safety issues are an area of growing concern all over the world. To ensure ecologically safer food products, it is necessary to control pesticide residue contents by fixing maximum residue limits so as to bring them down to internationally accepted minimum tolerance levels. At present implementation of IPM itself is disintegrated as IPM component in different Plan schemes. These fragmented elements need to be co-ordinated.

1.57 The Plant Quarantine (Regulations of Import into India) Order 2003, made operational from 1 January 2004, contains adequate provisions to prevent the introduction of exotic pests, diseases, and weeds

into India. Other allied responsibilities are the issuance of a Phytosanitary Certificate as per the International Plant Protection Convention 1951, of the Food and Agricultural Organization (FAO), and to undertake the Post Entry Quarantine inspections in cases of imports of agricultural products. These functions should be enlarged with a view to facilitating international trade in agricultural products.

Agricultural Credit

1.58 Credit is an essential requirement for revitalizing agriculture and there have been some important positive developments in this area. The total credit to agriculture increased from Rs 62045 crore during 2001–02, the terminal year of the Ninth Five Year Plan, to Rs 200000 crore during 2006–07, the final year of the Tenth Five Year Plan. This was a more than threefold increase over five years. The share of commercial banks in total agricultural credit increased from 54% in 2001–02 to around 69% in 2005–06. The share of investment credit increased from 35% in 2001–02 to around 41% in 2004–05, despite the negative growth achieved by the long-term co-operative credit structure. As against a target of Rs 736570 crore, the total institutional credit flow to agriculture during the Tenth Five Year Plan is expected to be above Rs 650000 crore, that is, a likely compound annual growth rate (CAGR) of 26%. This is much better than the CAGR of 18% achieved during the Ninth Five Year Plan.

1.59 The growth of credit was especially impressive during the last two years of the Tenth Plan on account of the 'Farm Credit Package' announced by the Government of India (GoI). A Special 'Farm Credit Package' as enunciated by the GoI on 18 June 2005 for doubling the credit flow to agriculture, contained various innovative propositions for credit growth. As per provisional figures available for 2005–06, the ground-level credit flow to agriculture during 2005–06 was Rs 180446 crore; 128% of the target of Rs 141000 crore, and registering an annual growth of 44%. While commercial banks registered a growth of 54% during the year, co-operative banks recorded 25% growth, followed by regional rural banks (RRBs) at 22%.

1.60 However, although the total agricultural credit has increased during the Tenth Plan period, there are serious quantitative as well as qualitative concerns. The outreach of the formal institutional credit structure is very limited. The findings of the National Sample Survey Organization (NSSO) 59th Round (2003) revealed that only 27% of the total number of cultivator households received credit from formal sources while 22% received credit from informal sources. The remaining households, comprising mainly small and marginal farmers, had no credit outstanding. It is unlikely that the situation has changed much since 2003.

1.61 Comprehensive measures aimed at financial inclusion in terms of innovative products and services to increase access to institutional credit are urgently required. Issues such as credit flow to tenant farmers, oral lessees and women cultivators, complex documentation processes, high transaction costs, inadequate and ineffective risk mitigation arrangements, poor extension services, weak marketing links, and sectoral and regional issues in credit are also required to be addressed expeditiously. The agrarian crisis also led to default by many farmers, and a consequent freeze on their ability to access institutional credit. The overhang of such non-performing debt also needs to be reduced.

1.62 The share of direct accounts with a credit limit of less than Rs 25000 in total direct accounts declined from 97% in 1990 to 67% in 2005, while their share in direct credit has declined precipitously. The coverage of operational holdings needs to be increased significantly, with sub-targets for the less developed States and small and marginal farmers. Considering that for small and marginal farmers the only alternate sources of finance are expensive loans from moneylenders, the share of direct accounts with a credit limit of Rs 25000 in total direct finance may be targeted at a substantially higher level.

1.63 At present direct finance to agriculture under priority sector lending includes credit for the purchase of trucks, mini-trucks, jeeps, pick-up vans, bullock carts, and other transport equipment to assist the transport of agricultural inputs and farm produce. Direct finance also includes credit for the construction and running of cold storage facilities, warehouses,

and godowns. As alternate formal sources of finance are available for these activities, their inclusion under direct finance for agriculture needs to be reconsidered.

1.64 Special credit packages with varying and flexible repayment periods may be thought of for the agriculture sector to take care of mismatches of income and expenditure flows of farmers and the seasonal nature of agricultural income. Doorstep banking implemented through designated agent of commercial banks has now been facilitated by recent decision of the Reserve Bank of India (RBI) and provides an opportunity for farmers to interact with banks with timings suitable to the farming community. The banks are currently allowed to extend financial outreach by utilizing the services of civil society organizations, Farmers' clubs, NGOs, post offices, etc., as 'Business Facilitators' or as 'Business Correspondents'. NABARD could look into the reasons which are coming in the way of the banks using intermediaries as facilitators/correspondents and approach RBI for necessary changes/amendments in the instructions on the subject.

Co-operatives

1.65 The credit disbursal by commercial banks covers only 11.7% of operational holdings in the country. As may be seen from Table 1.10, credit growth by the co-operatives to the agriculture sector has gradually picked up during the course of the Tenth Five Year Plan. The number of loan accounts have, however, declined from 224.6 lakh in 2004–05 to 192.8 lakh in 2005–06. The most potent means *for widening and deepening access to institutional* credit to the innumerable small and marginal farmers are the co-operative credit societies that are autonomous and democratic. The revitalization of the co-operative credit structure in order to transform them into vibrant and viable democratic financial institutions is therefore vital. It is, therefore, extremely important, that the restructuring of co-operative credit now in progress, on the lines of the recommendations of the A. Vaidyanathan Committee are implemented speedily and rigorously. Memorandum of Understanding (MoU) has been signed by 13 State Governments and the process of auditing of accounts is under way. It is necessary to move quickly to take the next steps in depoliticizing the system.

TABLE 1.10
Credit Flow to Agriculture Sector by Co-operatives

Year	Credit (Rs in Crore)	Growth (%)	Number of Loan Accounts (Lakh)
2001–02	23604	–	–
2002–03	23716	–	–
2003–04	26959	14	–
2004–05	31424	17	224.6
2005–06	39404	25	192.8
2006–07	42480	8	188.7

Source: Various Issues of *Economic Survey*, Department of Economic Affairs, Ministry of Finance, and information provided by Department of Agriculture and Co-operation, Krishi Bhawan, New Delhi.

Risk Management

1.66 The frequency and severity of risks in agriculture particularly in last few decades have increased on account of climate variability. The principal evidence of climatic change has been rising temperatures, erratic rainfall pattern, and increase in the severity of droughts, floods, and cyclones which have caused huge losses in agricultural production and the livestock population. India has developed response mechanisms for primary (crop failures) and to some extent secondary (livestock deaths) consequences of climate variability. However, a tertiary mechanism which goes beyond resource transfer to resource assessment and management, through climate forecasting, climate information generation and dissemination, early warning system, mapping of agricultural losses through remote sensing technology, and a pre- and post-climate change response need to be put in place on a decentral-ized basis. Such a response mechanism must include putting in place a catastrophe protection insurance mechanism as also provision of bankruptcy legislation for the farmers.

1.67 Crop insurance was introduced in the country two decades ago. The present version, the NAIS is available since 1999–2000. Despite States' support for coverage of the NAIS being tardy, NAIS is a useful device, especially for farmers growing relatively risky crops. The main problem is that NAIS is not really actuarial insurance. Premiums for most important crops are fixed at all-India level irrespective of risk and the government pays for entire excess of claims over premium

received. Moreover, being compulsory for all borrowers from banks in States where it is in force, and with relatively few non-loanee farmers involved, it mainly insures banks against default following poor harvest. Further, its popularity with farmers is limited since it is based on crop-cutting experiments, which delays claims payments until well after harvest and the risk covered is only of yield shortfalls at the block level. There is a scope for improving the coverage of NAIS in terms of regions and crops, substitution of long-term yield rate as a benchmark, and ensuring prompt payment of the indemnities. Decision to devolve the area of damage assessment from blocks to smaller units may be done with care, as the costs of such decentralization and the moral hazards will be very high compared to the likely benefits. Other indicators, such as rainfall, could be used for assessing the damage due to natural factors. Some States are devising their own crop insurance policies including weather insurance, which can be supported in suitable ways. However, for the next few years they should not be treated as a substitute to NAIS.

1.68 An important lacuna, which many researchers have pointed out, is the rather indifferent attitude of the banks towards crop insurance. All commercial banks, RRBs, and the co-operative banks should make crop insurance mandatory for all agricultural loanees, especially because such insurance can indirectly contribute to the viability of rural banking. An equally important aspect is the need for much larger involvement of the States in the functioning of the scheme. The government needs to take up agricultural reinsurance more extensively with appropriate insurance products. Recently some of the successful insurance products like Weather based Insurance have been developed by Agriculture Insurance Company of India Ltd (AIC), ICICI-Lombard General Insurance Company, and by IFFCO-Tokyo General Insurance Company. Under the scheme, coverage for deviation in rainfall index is extended and compensations for economic losses due to the less or more than normal rainfall are paid. There is a lot of interest in private sector for insurance business. Necessary incentives should be devised for insurance companies to design suitable products for the agriculture sector.

Marketing

1.69 The agriculture sector needs well-functioning markets to drive growth, employment, and economic prosperity in rural areas. Currently agricultural markets are regulated under respective State Agricultural Produce Marketing (Regulation) Acts, generally known as APMC Act. Besides, there are other regulations, viz. Essential Commodities Act and various Control Orders issued thereunder. All these have created restrictive and monopolistic marketing structures, which have resulted in inefficient operation and high degree of marketing costs. They have also had an adverse impact upon agricultural production and system, inefficient flow of commodities, and lack of competitiveness.

1.70 The markets lack even basic infrastructure at many places. When the APMCs were first initiated there was significant gain in market infrastructure development. However, this infrastructure is now out of date, especially given the needs of a diversified agriculture. At present only one-fourth of the markets have common drying yards, trader modules, viz., shop, godown, and platform in front of shop exist in only 63% of the markets. Cold storage units are needed in the markets where perishable commodities are brought for sale. However they exist only in 9% of the markets at present and grading facilities exist in less than one-third of the markets. The basic facilities, viz., internal roads, boundary walls, electric lights, loading and unloading facilities, and weighing equipment are available in more than 80% of the markets. Farmers' rest houses exist in more than half of the regulated markets. Covered or open auction platforms exist in only two-thirds of regulated markets. It is evident from the above that there is considerable gap in the facilities available in the market yards. Also the farmers have to deal with non-transparent methods of price discovery and there is often lack of auction of graded items. Some modern markets with electronic auctioning have been introduced, but they are the exception. A major modernization of this aspect of the infrastructure is urgently needed.

1.71 On the basis of the recommendation of the Inter-Ministerial Task Force, Ministry of Agriculture drafted a model law on marketing which would allow

new markets to be established by private entities or co-operatives. Several State Governments have already amended their APMC Acts allowing varying degrees of flexibility. The present status of the amendment in the APMC Acts by the States is given at Table 1.11. However several States are yet to notify the relevant rules that would make the amendment fully operational. These steps should be speedily completed to provide a boost to promotion of direct marketing, contract farming, and setting up of markets in private and co-operative sectors. Some of the important issues relating to agricultural marketing which would be addressed during the Eleventh Plan include marketing system improvement and conducive policy environment; strengthening of marketing infrastructure and investment needs; improving market information system with the use of Information and Communication Technology (ICT); human resource development for agricultural marketing; and promotion of exports/external trade. We should move to a regime of professionally managed wholesale markets.

1.72 In the context of market regulation and development, all States and UT governments should:

- Hold regular elections of agricultural produce market committees and bring professionalism in the functioning of existing regulated markets.
- Plough back the market fee for development of marketing facilities and investments for creation and/or upgradation of infrastructure in market yards/sub-yards.
- Extend greater flexibility to stakeholders, sellers, as well as buyers to interact in the markets.
- Promote grading, standardization, packaging, and certification in the market area.
- Ensure transparency in auction system, penalization on arbitrary deductions from the farmers' realization, prompt payments to farmers, dissemination of market intelligence, and speedier and hassle free transactions in the market.
- Improve weighing systems by installing bulk weighment system and handling in a time-bound manner.

1.73 There are issues concerning legal framework and fiscal matters which will have to be attended to during the Eleventh Plan. Some of these include a need for bringing uniformity in the State-level tax structure in agricultural commodities for improving the market efficiencies; rationalizing taxes and fees on raw agricultural commodities, and removing de facto restrictions on movement of goods across State borders by harmonizing State-level taxes and providing for their hassle free collection at convenient points. Further, the country should be conceptualized as a unified

TABLE 1.11
Progress of Reforms in Agricultural Markets (APMC Act) as on March 2008

Stage of Reforms	Name of States/Union Territories (UTs)
1. States/UTs where reforms to APMC Act has been done for direct marketing, contract farming, and markets in private/co-operative sectors	Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Goa, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Rajasthan, Sikkim and Tripura
2. States/UTs where reforms to APMC Act have been done partially	(i) *Direct Marketing:* National Capital Territory of Delhi (ii) *Contract Farming:* Haryana, Punjab, and Chandigarh (iii) *Markets in Private/Co-operative Sectors:* Punjab and Chandigarh
3. States/UTs where there is no APMC Act and hence not requiring reforms	Kerala, Manipur, Andaman and Nicobar Islands, Dadra and Nagar Haveli, Daman and Diu, and Lakshadweep. Bihar has recently repealed the APMC Act w.e.f. 1.9.2006
4. States/UTs where APMC Act already provides for the reforms	Tamil Nadu
5. States/UTs where administrative action is initiated for the reforms	Mizoram, Meghalaya, J&K, Uttarakhand, West Bengal, Pondicherry, Jharkhand, and Uttar Pradesh

Source: Information provided by Department of Agriculture and Co-operation, Krishi Bhawan, New Delhi.

integrated national market. Essential Commodities (Amendment) Act should be modified to provide for imposition of trade and marketing restrictions only during the exceptional situations of demand–supply dislocation, market aberration, and price volatility.

1.74 The rules and regulations under the Food Safety and Standards Act 2006, which has been passed by the Parliament, should be expeditiously formulated and notified. The Warehousing (Development and Regulation) Bill 2005 has been passed by the Parliament. This will facilitate early introduction of negotiable warehousing receipt system. There is need to set up an accreditation agency for certified warehouses and warehouse receipts; encourage private sector, co-operatives, and Panchayats to set up rural godowns and specify standards and permit warehousing receipt system.

Post-harvest Management (PHM)

1.75 At present, the post-harvest losses are about 20%–30% in different horticultural crops. This happens because of inadequate infrastructure development for PHM including pre-cooling. Packing materials like corrugated fibreboard boxes, perforated punnettes, cling films, sachets, wraps, etc., have been standardized for fresh horticultural produce. Tetra packs of different products are now household items.

Agro-processing

1.76 Demand for horticultural products will be sustained by developments in agro-processing. In fact there is a rising demand for new products such as dried powder fruit based milk mix, juice punches, banana chips and fingers, mango nectar, and fruit kernel derived cocoa substitute, essential oils from citrus, fruit wines, dehydrated products from grape, pomegranate, mango, apricot and coconut, grape wines, value-added coconut products like snowball tender coconut, milk powder, and pouched tender coconut water (Cocojal). Improved blending and packaging of tea and coffee have opened new markets. Consumer-friendly products such as frozen green peas, ready-to-use salad mixes, vegetable sprouts, ready-to-cook fresh cut vegetables are major retail items. The private corporate sector has a major role to play in developing this aspect in the agriculture–consumer linkage. Technology development has been in vogue but its adoption is far below the requirements.

Mechanization

1.77 To keep pace with improved production and productivity, different machines have been developed for effective cultivation, intercultural operations, harvesting, grading, packaging, and value-addition. Machines such as mango harvesters, kinnow clippers, potato diggers, coconut peelers, etc., are being adopted by the growers. Machines have also been developed/installed for different specialized uses such as cool sterilization (irradiation) for sprouting in potato and onion, dehydration of different produce, vapour heat treatment in major mango growing belts, packaging of coconut water, banana fig, and chip-making machine, etc.

Animal Husbandry, Dairying, and Fisheries

1.78 Livestock plays an important role in Indian economy and is an important sub-sector of Indian agriculture. The contribution of livestock to the GDP is about 4.5% and the sector employs about 5.5% of the workforce. Livestock provides stability to family income especially in the arid and semi-arid regions of the country and is an insurance against the vagaries of nature due to drought, famine, and other natural calamities. Major part of the livestock population is concentrated in the marginal and small size of holdings. Growth during the Tenth Plan has been at the rate of 3.6%.

1.79 The goals for the Eleventh Five Year Plan for the livestock sector would be (i) to achieve an overall growth between 6% and 7% per annum for the sector as a whole with milk group achieving a growth of 5.0% per annum and meat and poultry group achieving a growth of 10% per annum; (ii) the benefit of growth should be equitable, benefiting mainly the small and marginal farmers and landless labourers and should benefit poorly endowed areas like draught prone, arid, and semi-arid areas; (iii) to provide adequate animal health services for effective disease control; (iv) the sector should generate additional employment opportunity to people in the rural areas especially to the female population; (v) livestock should provide major source of income in the selected areas having potential for mixed crop-livestock farming system; and (vi) the

growth in the sector should result in the improvement of environment, specially in the rural areas. Market opportunities have opened up for the livestock sector following the economic liberalization. But the sector's ability to capitalize on new market opportunity is constrained by the availability and quality of support services which, at present, are mainly provided by the government. Moreover, these services are not available at the doorsteps of the producers. There is a need to restructure service delivery mechanism to become conducive to the requirement of the rural livestock producers. Lack of credit for livestock production has been a major problem. Public sector lending is very low. The strategy should be to correct these distortions and ensure timely availability of inputs and services including credit to livestock farmers.

1.80 Presently, fisheries and aquaculture contribute 1.04% to the national GDP of the country and 5.34% to agriculture and allied activities. The fisheries sector has been providing employment to over 9 lakh full time and 11 lakh part time fishermen whose occupation is highly prone to natural calamities. The projected exports from the fisheries sector by end of the Eleventh Plan is 1.06 million tonnes in quantity and Rs 15000 crore in value. The future of fisheries export would be influenced by the consistent compliance with food safety measures (Hazard analysis and Critical Control Point [HACCP] and Sanitary and Phytosanitary [SPS] standards).

1.81 Seed, being the critical input for successful culture practices, needs focused attention with regard to strengthening of the existing infrastructure for production and rearing, transport, and quality aspects. The projected requirement of seed of carps, in pond culture, wetland, and reservoir fisheries that are mostly carp-based, is to the tune of 34400 million annually. Sustainable fisheries can only be achieved through improvement of the quality, technical skills, and management of human resource managing fisheries in the country, in consonance with the rapidly changing needs. Raising a cadre of officers at various levels to plan and execute fishery development programmes is critically important. Fishes in waters, whether seas or inland waters, are impacted by a number of processes, both natural and anthropogenic. While fisheries is a State subject like agriculture, it is necessary to develop a broad framework for harmonizing the various acts under which fisheries is administered. This would enable addressing international issues.

Rainfed Agriculture

1.82 Rainfed areas in the country, which account for 60% of the cultivated area and are home to majority of our rural poor and marginal farmers, have suffered neglect in the past in not having received differentiated technological, institutional, infrastructural, and investment support. These areas are characterized by high incidence of poverty, low education and health status, high distress in the farming sector, distress migration, low employment opportunities, and vulnerability to a variety of high risks. Apart from these conditions, the population in these areas also suffers from various exploitative social structures and practices, poor attention by government departments, poor quality of service delivery, and so on. Repeated water scarcities leading to large-scale droughts have severely affected livelihoods of these rural poor. The challenge, therefore, is to improve rural livelihoods through participatory watershed development projects, reinforced by an integrated farming system approach that would increase productivity in a sustainable manner and contribute to livelihood security.

1.83 After a high growth in rainfed agriculture during 1985–96, the deceleration in its growth since 1996 was more than that of the irrigated sector partly due to liberated trade policies in vegetable oils and ineffective domestic support prices of rainfed crops. Therefore, stabilization of domestic support price is called upon for internalizing improved technology. Efforts will have to be made to fill up productivity gaps of the existing technologies and their scaling up through proper extension mechanisms, supply of inputs, institutions, and proper governance. The coarse cereals in these areas are being diversified into a better option of pulses crops which need to be promoted by providing improved seeds of pulses, availability of specific nutrients of sulphur and phosphorous, and better market linkages. Improving productivity of rainfed rice in eastern India would also help in ensuring food security in the country. Similarly, sweet sorghum for ethanol production could be more competitive in the

relatively dry regions of southern and western States. Crop residues could be used as fodder or feed stock to add more value to the cultivation of sweet sorghum. Risk moderation through in situ rain water conservation, rejuvenation of traditional water bodies, and improving efficiency of harvested water may be given high priority to reduce vulnerability to climatic variability. Livestock, agro-forestry, and dryland horticulture and value addition through processing, storage etc., of these commodities are significant coping mechanisms of managing risk and uncertainties. Diversification and expansion of predominantly rainfed crop of soybean by market linkage is an excellent example to be pursued in other commodities. There are some niche attribute crops like seed spices, guar, and medicinal crops which are very relevant at micro level in which contract farming needs to be promoted to avoid periodic crash in prices. Credit requirement of rainfed regions are also more specific. The repayment strategies should be planned to cover the risks; for example, total livelihood portfolio with extended repayment period would be more appropriate. Convergence with employment guarantee schemes, Backward Regions Grant Fund, Artificial Groundwater Recharge, as well as renovation of existing water bodies may be promoted to have complementarities of different programes. Upgradation of skills of the landless, assetless, artisans, and small and marginal farmers should be promoted keeping in view the new marketing demands. Intensification of biofuels in farming system in these areas can add significantly to livelihood security. Comprehensive District Agricultural Plans have been initiated on pilot basis to capture such variations and develop appropriate strategies.

1.84 Systematic reviews and appraisals conducted on watershed development projects by various organizations and departments have established the merits of the watershed-based approach. These are:

- Soil loss and surface runoff reduced by 52% to 58% respectively in completed watersheds.
- Area under irrigation increased from 34% to 100% in different watersheds.
- The area under sowing increased. The cropping intensity increased.
- Productivity/yields of crops increased and the net returns also increased (up to 63%).
- The Benefit Cost Ratio of watershed ranged from 1.10 to 15.72, depending on the above factors.
- The availability of drinking water and groundwater situation improved in all project villages.
- Other benefits such as fodder availability, employment opportunities (and also equal wages in limited number of cases), and income generation opportunities improved significantly in all villages where watershed projects were implemented.
- Human and cattle migration reduced significantly.

1.85 These findings suggest that there is a strong case for a massive expansion of the rainfed areas programme in the country.

1.86 The integrated watershed development projects implemented since 1994 have unique strengths in project management, project content, and processes which need to be reinforced (see Box 1.1).

1.87 The analysis of benefits/strengths and weaknesses of the watershed development projects implemented so far establish the following essential principles for guiding policy and its execution in the future. These are:

- Equity: Watershed Development Projects should be considered as instruments for increased land productivity and inclusiveness.
- Decentralization: Establishing suitable institutional arrangements within the overall framework of the Panchayati Raj Institutions (PRIs), professional and dedicated human resources, and operational flexibility in norms to suit varying local conditions will enhance decentralized decision making.
- Facilitating Agencies: Social mobilization, community organization, building capacities of communities in planning and implementation, ensuring equity arrangements, etc., need intensive facilitation by professional teams. They need to be provided financial support to perform the above specific functions.
- Centrality of Community Participation: The community organizations should be closely associated and accountable to the Gram Sabha in project

Box 1.1
Strengths and Weaknesses of Watershed Development Projects in India after 1994

Strengths

- Project Management Related:
  - All ministries issued guidelines.
  - Community-based Project Management including financial aspects.
  - Support for capacity building agenda (Community Organization and Training).
  - Provisions for maintenance of assets.
  - Formal role for NGO and partnerships between government and NGOs.
  - Several models emerged at operational level for project management at State/district level.
- Project Content Related:
  - Integrated NRM approach with a focus on area of micro watershed.
  - Bilateral projects joined the ongoing projects and diversified the scope of the projects.
- Process Related
  - Community-level decision making, planning, and execution of watershed projects.
  - Fund management at community level.
  - Specific roles of PRIs and other Community Based Organizations (CBOs).
  - Building block approach (user groups, SHGs form the building blocks of institutional arrangements).
  - Clear support and institutional arrangement for project facilitation (Project Implementation Agency [PIA] and Watershed Development Teams).

Weaknesses

- Project Management Related:
  - No dedicated project management teams at State/district levels.
  - Poor delivery of capacity building services.
  - Fluctuating partnerships between government organizations (GOs) and NGOs.
  - State/district level offices gave low priority to watershed projects.
  - Good experiences could not be up scaled effectively.
- Project Content Related:
  - Strong focus on engineering treatment at the cost of integrated approaches.
  - Little formal support to productivity and livelihoods related agenda.
  - Post-project sustainability is grossly neglected.
- Process Related:
  - Low level of internalization of participatory approaches by project teams.
  - Lip service to equity and gender concerns at operational level.
  - Weak institutional arrangements at community level and reducing role of CBOs.

implementation and get the support of the Gram Panchayat (GP) for convergence of all programmes in the area.

- Monitoring, Evaluation, and Learning: Laying specific milestones, institutionalizing the process of participatory evaluation and learning are important instruments. A participatory, outcome/impact-oriented and user-focused approach has to be instituted.
- Capacity Building and Software Support: Ensuring effective capacity building inputs to all key stakeholders at multiple levels (national to local) through long-term institutional arrangements with competent capacity building organizations and allocation of financial resource for the purpose are key instruments.
- Organizational Restructuring: Establishing appropriate technical and professional support structures

at national, State, district, and project levels and developing effective functional partnerships among project authorities, implementing agencies and support organizations is essential for ensuring effective project management.

1.88 Estimates of the extent of degraded land vary from 55 MH to 175 MH depending upon the definition of wasteland and also the source of information. As per the 25 year perspective plan of the Planning Commission (1997), 88.5 MH was to be developed under watershed programme by the end of Thirteenth Five Year Plan. Out of the above, 22.2 MH has already been developed during Ninth and Tenth Plan through a watershed approach. The latest attempt to harmonize the above data (ICAR–National Remote Sensing Agency [NRSA]–NRAA Expert Group 2007) has brought out that the degraded land which has the potential for development under watershed development projects amounts to a total of 64 MH consisting of 50 MH of water eroded, 5 MH of wind eroded, and 9 MH in notified forest. It is proposed to develop 36.6 MH during the Eleventh Plan through integrated watershed approach. The rest of the area, that is 29.7 MH, would be considered for development in the subsequent Five Year Plans.

1.89 The major thrust in the Eleventh Plan must be laid on developing the untreated area in Desert Development Plan (DDP) and Drought Prone Areas Programme (DPAP) blocks and watershed development projects of the Ministry of Agriculture. In addition, special attention is to be devoted to developing villages where groundwater is over exploited. For this purpose, priority would be laid to work in 425 blocks in 100 districts, where groundwater depletion is very high and the number of dug wells is also high. The priority for Integrated Watershed Development projects during the Eleventh Plan would be arid, semi-arid, and dry sub-humid areas.

1.90 In order to develop an integrated approach for rainfed areas a farming system approach would be emphasized. Common guidelines for watershed management programmes in different ministries are being prepared to be put before the newly created NRAA. The Authority will also work towards developing a watershed plus approach for improving agricultural productivity. This would involve an emphasis on integrating crop husbandry, livestock, horticultural, and other sub-systems appropriate to the agro-climatic conditions. A new programme on Rainfed Farming would be launched for the purpose of augmenting the existing programmes of Ministry of Rural Development (MoRD) and Ministry of Agriculture.

1.91 The investment requirement for treatment of 36.6 MH in Eleventh Plan is estimated at approximately Rs 36600 crore. Although only about Rs 23000 crore is likely to be available from concerned Central ministries (Rs 17000 crore from MoRD and Rs 6000 crore from Ministry of Agriculture), it is envisaged that substantial additional resources can became available through convergence with National Rural Employment Guarantee (NREGA) and Backward Regions Grant Fund (BRGF) programmes. The possibility of some additional funding by the State Governments would also be explored.

The Social Context: Need to Modernize Agrarian Relations for Equity and Efficiency

1.92 Land is the prime resource of the vast majority of the poor in India deriving livelihood from agriculture. The Land Administration is plagued by many infirmities. Unclear titles, informal tenancy arrangements, and other related problems have not only affected productivity of agriculture, they have also forced migration of people, both landless and marginal farmers, in search of employment to urban areas as well as of the landed gentry, giving rise to absentee landlordism, who do not lease out land for fear of losing the land titles. Therefore, an efficient and corruption free land administration, coupled with a dynamically adaptive land policy, has a vital role in increasing agriculture growth and poverty reduction. The key elements of an effective land policy are the following:

- Modernization of management of land records.
- Reforms relating to land ceiling.
- Security of homestead rights.
- Reforms relating to tenancy laws.
- Protection of the rights in land of tribals.
- Access to agricultural services.

Modernization of Management of Land Records and Titles

1.93 Correct and updated land records are crucial for the security of land rights and to encourage investment. These result in fewer disputes and conflicts, allow land to be used as collateral, lower transaction costs and corruption, ensure efficient land markets, and help in implementation of land reforms and planning for various development programmes.

1.94 Efforts thus far have remained focused on the system of computerization of textual land records. However, by itself it has limited benefits, unless the land records are accurate and updated in real time. The steps to be taken to put in place effective and modern land administration system are:

- The process of registration and mutation should be integrated into one function of registration of deeds. Before registering the deed, the concerned officer should check the legality of the transaction and competence of parties to take part in the transaction. Computerization should also be taken up of records of the previous 50 years, or such length of time as may be prescribed in this regard in the relevant State laws, so that the title being registered is clear and uncontested.
- The computerization of spatial records should be taken up in all the States and all the cadastral maps should be digitized.

1.95 Setting up a system on the above lines in all States and UTs would facilitate citizen services based on land data, such as providing records of rights with maps-to-scale; other land-based certificates such as caste certificates, income certificates (particularly in rural areas), domicile certificates, etc.; information for eligibility for development programmes; land passbooks with the relevant land information for access to agricultural credit; and access to the data to the co-operative banks and other credit institutions.

1.96 In addition to the above steps, it would also be desirable to integrate three layers of data: (i) forest summary maps, (ii) cadastral maps, and (iii) revenue records, and harmonize them on a Geographic Information System (GIS) pattern, so as to provide a comprehensive tool for planning developmental, regulatory, and disaster management activities and for any other purpose where location-specific information is needed.

1.97 The modernization of the land administration system through computerization of textual and spatial records and integration of the registration office should open the doors to exploring, by setting up a few pilot projects, the possibility of shifting to the 'Torrens' system which is 'title' based rather than the present 'deed' based system. This will ensure that the deed document is a proof of title and reflects reality; search costs for ascertaining title will thus reduce to negligible and title guarantee by the State would be feasible.

1.98 Two CSS currently under implementation are the computerization of land records and strengthening of Revenue Administration. These would be subsumed in the proposed National Land Records Management Programme, which would be launched shortly as a pilot project in one district in each State. After the validation of the proof of concept within the next two years, the scheme would be extended to the entire country. It is expected that digitization of land records after undertaking comprehensive land survey would be completed by the end Twelfth Plan period. It is expected that after availability of this basic record, the country could move towards the Torrens system in the Thirteenth Five Year Plan.

Reforms Related to Land Ceilings

1.99 One of the basic objectives of land reforms was to bring about a more equitable distribution of land. The main instrument for realizing this objective was the imposition of ceiling on land. In line with the prescription of the five year plans, laws on imposition of ceiling on agricultural holdings were enacted by several States during the 1950s and 1960s. These were implemented with varying degrees of effectiveness in different States. The quantum of land declared surplus is far short of land which was estimated to be surplus on the basis of various national surveys. Thus, it is clear that reform measures have not been able to achieve the desired impact. The total area declared surplus so far has been 73.5 lakh acres only, of which 53.9 lakh

acres have been distributed. The distribution of the remaining area of land declared surplus is held up mainly due to litigation.

1.100 There are also widespread complaints that lands allotted to the rural poor under the ceiling laws are not in their possession. In some cases, it has also been alleged that *patta*s were issued to the beneficiaries but possession was not delivered in respect of the lands shown in the pattas or corresponding changes in the records of rights were not made. It has also been the experience that rural poor allottees of ceiling surplus land are dragged into litigation by the erstwhile landowners and against which the allottees are unable to defend themselves. Besides, a number of *benami* and clandestine transactions have resulted in illegal possession of significant amounts of lands above ceiling limits. For all these reasons the results of implementation of the ceiling laws are far from satisfactory. The following measures can be taken up:

- Since large areas of good quality ceiling surplus land are unlikely to be available for distribution to the landless poor, efforts must be made to take steps to release and distribute the land locked in litigation through speedy disposal of court cases.
- In such cases where the land has been distributed but the beneficiary is not in a position to enjoy the land due to being dispossessed or not having a well-defined title to the land, these cases should be surveyed and reopened and such land be restored.
- A special squad of revenue functionaries and Gram Sabha members should be set up for identification of benami and fictitious transactions in a time-bound manner.
- There should be a survey of the government land encroached by ineligible persons and such land should be identified and distributed to the landless. An inventory of the government lands should be made and wherever surplus land is available, it should be distributed to the landless persons.
- Asset in the form of land can lead to poverty reduction. However, to the extent that distributing government lands is not an option, acquisition of land through purchase by the State and distribution to the poor as individuals or in a group may be considered.

Protection of Rights in Land of Tribal People

1.101 Land is the major tangible productive asset that members of scheduled tribes (STs) possess. Tribals also have very strong emotional attachment to their land. Some of the social practices and religious rituals of tribals are also connected with land, which occupies a pivotal place in their psyche. An important fact is that community ownership of tribal land continues to be the dominant mode in tribal societies and takes precedence over individual ownership.

1.102 The increase in extremist activities in many tribal districts can be linked to issues related to land including alienation of tribal land. These are:

- Sale and transfer of land by tribals to other tribals and non-tribals.
- Indebtedness and consequent sale of land.
- Forcible eviction of tribals from land or unauthorized occupation of tribal land by non-tribals or by public authorities.
- Conversion of land from communal ownership to individual ownership.
- Treating tribals traditionally occupying forest lands as encroachers.
- Government land allotted to tribals under various schemes but substantive possession not given.
- Large-scale displacement on account of development projects, such as multi-purpose irrigation and power projects, mining, industry, highways, and urbanization.
- Environment-disturbing developments taking place close to tribal habitats, forcing the tribals to move out, though there is no formal transfer and acquisition of land.

1.103 The following measures are necessary for preventing alienation of tribal land and restoration of alienated tribal land:

- Highest priority should be accorded to the preparation and updating of land records in tribal areas, and with active participation of tribal communities.
- The legal provisions prohibiting the alienation of tribal land in Schedule V areas and its restoration should be extended to the non-Scheduled areas also. A cut-off date should be prescribed while

extending these provisions to the non-Scheduled areas.
- A complete ban on all forms of transfers of tribal lands should be enforced.
- The district authorities should be empowered to take suo moto action for the detection and restoration of land belonging to the STs. It should be ensured that once order of restoration is passed by the competent authority, land is speedily restored to the tribal.
- At present Panchayat (Extension to the Scheduled Areas) Act 1996 (PESA) is applicable only to the Scheduled areas, but a large part of the tribal population lives outside the Scheduled areas. Therefore, provisions of PESA should be applicable mutatis mutandis to villages/areas where majority of the population consists of STs.
- Major alienation of tribal land in the scheduled areas has taken place through the means of compulsory acquisition using the government process of land acquisition. As provided under PESA, no acquisition should take place without the prior concurrence of the Gram Sabha.

1.104 The present arrangements of resettlement and rehabilitation are detrimental and prejudicial to the interests of the tribals. The process of erosion of corpus of tribal land continues at an accelerated pace under the new economic dispensation while the policy options are being debated. The proposed revisions to the Land Acquisition Act and to the current policy and practices relating to resettlement and rehabilitation would provide the much desired policies and packages for more humane and relevant approach in dealing with displacements. There is a strong need for enactment by Parliament of an enabling legislation (like PESA) regarding alienation of land belonging to STs. Incorporating the provisions of the enabling legislation should be mandatory in all laws/regulations made by the respective State Governments.

1.105 Implementation of the Scheduled Tribes and other Traditional Dwellers (Recognition of Forest Rights) Act 2006, passed by the Parliament, and rules framed under it, will provide the much needed protection and respite from exploitation for large numbers of those whose rights could not be recorded or recognized for generations.

Security of Homestead Rights

1.106 An estimated 13 to 18 million families in rural India today are reported to be landless, of which about 8 million lack homes of their own. They either live in a house constructed on the land of others or provided by landowners in return for some forced labour. Some of these persons do not have land to construct a house, while others may have small patches of land but no resources to build a hutment.

1.107 The right to a roof over one's head needs to be seen as a basic human right, along with the right to freedom from hunger and right to education. The Supreme Court, in *UP Avas Evam Vikash Parishad* vs *Friends Co-operative Housing Society* (List All India Reporter [AIR], 1997, Supreme Court [SC] 152), held that right to shelter is a fundamental right. The Eleventh Five Year Plan provides the opportunity to realize this vision.

1.108 Several State Governments have already taken steps to provide each family with a minimum size of land (10–15 cents), so that they have enough space to live and, also a little space extra for supplementary livelihood activities, such as growing fodder and keeping livestock, planting fruit trees or vegetables, or undertaking other land-based economic activities (farm or non-farm) to improve their food, nutrition, and livelihood security. Kerala has a scheme of providing 10 cents of land to each landless family and this has had a notable impact on poverty reduction in the State. Similarly, in 2005, the governments of Karnataka and West Bengal initiated schemes to give homestead-cum-garden plots to landless families. These experiments should be generalized across all States.

1.109 The following steps are needed to ensure this objective:

- All landless families with no homestead land as well as those without regularized homestead should be allotted 10–15 cents of land each. Female-headed families should have priority.
- Some of the required resources could be arranged

through reallocation of the resources from existing schemes, such as the Indira Awas Yojana, NREGA, etc. This must be completed during the Eleventh Five Year Plan.

- When regularizing the homesteads of families occupying irregular and insecure homesteads, the homesteads so regularized should be in the name of the wife.
- The beneficiaries should be given homestead land in a contiguous block, within 1 km or less of their existing village habitation, with proper roads and infrastructural connectivity. In such a consolidated block, essential facilities should also be provided, such as primary school, primary health centre, drinking water, etc.
- The beneficiaries of homestead-cum-garden plot should be assisted by Panchayats and line departments of government to develop plans and receive financial assistance for undertaking suitable economic activities, such as livestock rearing, fodder development, and planting of high-value trees if water is available.

Tenancy Reforms

1.110 Tenancy legislations were introduced after independence to confer ownership on the tenant and some measure of security of tenure, coupled with rent regulation to prevent exploitation of tenants and increase agricultural productivity in such farms. There is a need for giving a fresh look at the tenancy legislations to reflect changes that have occurred in a manner which balances the interest of the landowner and the tenant and improves access to land, its utilization and releases the forces of production leading to improved agricultural productivity.

1.111 Legislative provisions have been made in many States, providing for conferment of ownership rights on tenants or for allowing cultivating tenants to acquire ownership rights on payment of a reasonable compensation to the landowners. Some States have acquired ownership of land from the landowners and have transferred them to the tenants who have to pay a certain amount or premium to the State. The national policy, however, permits landowners who are members of the Defence Services, widows, unmarried women, minors, and persons suffering from physical and mental disability to lease out lands to tenants without loss of ownership. Provisions for security of tenure have been made even in States which do not provide for conferment of ownership rights on tenants, sub-tenants, and sharecroppers.

1.112 Although agricultural tenancies are banned in most States, the incidence of some type of tenancy, particularly in various forms of crop sharing, is still substantial in some regions. As tenancy is contracted orally, and in most cases in violation of law, the tiller's position is precarious and she/he has no incentive to cultivate land efficiently. In several regions, the existing provisions lead landowners to keep the land fallow for fear of losing their rights. It also restricts poor peoples' access to land through leasing in. Experience has shown that measures to ban tenancy are not usually effective and large amount of oral/concealed tenancy continues to exist among all categories of rural households. Thus decrease in lease market participation with economic growth indicates that tenancy restrictions are constraining the supply of land in the rental market. Tenancy legislation has also led to the demise of longer term contractual arrangements and led to even seasonal tenancy in some areas. This discourages the use of farm yard manure and investments which have a long-lasting effect.

1.113 In a majority of States landless and marginal farmers are net leasers in of land. On the other hand, in some of the States, large and medium farmers lease in land from smaller farmers, giving rise to 'reverse tenancy'. This indicates that the transactions for leasing in and leasing out pervade all along the farm size continuum and it appears that it is economic factors rather than power relationships which are defining these leasing arrangements.

1.114 Security of tenure is necessary for producers to have the incentive for investment for productivity and security of tenure should not be confused with ownership rights. Land tenure security should signify that legitimately held rights-to-use in land will not be disturbed without legitimate cause and without due process, and any such contested rights will be resolved by an appropriate dispute settlement mechanism. For protecting the interests of tenants and landowners

and also to increase agricultural productivity, the following reforms in tenancy legislation should be undertaken:

- Tenancy should be legalized in a 'limited' manner. It should provide security to the tenant for the contractual period, which could be long enough to encourage long-term investment by the tenant. It should also protect the rights to the land of the landowner so that he has an incentive to lease his land instead of keeping it fallow or underutilizing it. Long-term tenure arrangements should thus maximize agricultural production and increase the returns to both the farmer, the landlord, and the tenant.
- Instead of prescribed rentals, which are violated in informal tenancies, an upper and lower bound of rents may be prescribed at the State level. If these bands are wide enough, this will do away with the need for illegal arrangements, ensure that the rents are determined by market forces within the prescribed band, and thus increase efficiency and cooperation of both the willing parties.
- Legalizing of tenancy within the above framework will result in increasing the supply of land and will encourage all categories of rural households to participate in the lease market based upon resource endowment, education, employment prospects, prevailing wage levels, and the institutional backup available.
- As agrarian conditions vary across the States, a one-size fit-all prescription cannot be advocated. In cases where the landlords are dominant and there is strong likelihood that interests of tenants may not be safeguarded, special clauses could be necessary.
- Small land-owners who would otherwise have to operate small uneconomic holdings should have the opportunity to legally lease out land to other farmers with the assurance of being able to resume possession at the end of the stated period of tenancy.
- The marginal and small landowners should be assisted with adequate institutional support and rural development schemes, so that they are not compelled to lease out land to big farmers or corporate houses, thereby creating conditions for involuntary reverse tenancy. In the case of sharecroppers, they should have access to credit, once they enter into long-term contracts.

Access to Agricultural Services

1.115 Small and marginal farmers often lack access to major agricultural services, such as credit, extension, insurance, and markets. This is especially true of women farmers since there is pervasive male bias in provision of such services. With almost all sharecroppers and most marginal farmers unable to access credit from the formal system, a key issue relating to agricultural credit is the utter lack of financial inclusiveness. Recent suicides by farmers in many parts of India are linked with increase in indebtedness to non-institutional sources.

1.116 Small and marginal farmers, particularly women, have lower literacy levels compared to the bigger farmers. This limits their access to information sources like media, TV, etc. The government extension machinery also tends to focus on progressive or bigger farmers. Small and marginal farmers are also deprived of MSP because of low surpluses, and at times pledge of produce to moneylenders at less than market price.

1.117 Agricultural technology for enhancing efficiency should normally be scale neutral if markets exist for water and for rental use of lumpy machinery. In fact, small-sized farms actually have an advantage in using surplus family labour and saving monitoring costs, and this is the main argument for land reforms. But lack of access often results in significant yield gaps between bigger and smaller farmers. One solution is strong public intervention in favour of small producers, enabling them to access and benefit from the relevant markets and extension services. But while instructions from above can help, this is not a substitute for empowerment of the beneficiaries themselves.

1.118 The most potent vehicle that can empower the poor is group action. Among success stories, the Deccan Development Society has provided subsidized credit to landless scheduled caste (SC) women's groups for land purchase using an AP government scheme. Many groups have purchased land through this scheme and are farming it collectively. This has enhanced agricultural output, food security, and employment for poor women and their families. Many have brought uncultivated land into productive use. Another example

is a Government of India–United Nations Development Programme (GoI-UNDP) programme which covered 1357 villages and 50000 women in Andhra Pradesh, UP, and Orissa promoting group access to land and collective cultivation by women. This involved collective cultivation on land acquired in many ways: leasing in, releasing mortgaged land, etc. Undertaken in partnership with State Governments, women's groups, and NGOs, support for this programme has ended. It needs revising and extending.

THE WAY AHEAD

1.119 The strategy to accelerate agricultural growth to 4% per annum in the Eleventh Plan requires action in the following broad areas.

- Bringing technology to the farmers.
- Improving efficiency of investments, increasing systems support, and rationalizing subsidies.
- Diversifying, while also protecting food security concerns.
- Fostering inclusiveness through a group approach by which the poor will get better access to land, credit, and skills.

TECHNOLOGY

1.120 It is necessary to prepare a long-term vision envisaging synergy between SAU/ICAR institutions with other relevant research funded by CSIR, DBT, the Ministry of Earth Sciences, etc., especially to cope with longer climate change from global warming. It is also necessary to impart a strategic focus to adaptive research making it location-specific and aimed at identifying regionally relevant best practice.

1.121 Immediate action points are the following:

- Priority in agriculture research should be given to strategic research.
- Research priorities have to shift towards evolving cropping systems suited to various agro-climatic conditions and towards enhancing the yield potential in rainfed areas through development of drought- and pest-resistant varieties.
- The ICAR needs to restructure accordingly and to increase its accountability.
- SAUs also need to be made more accountable, and strengthened to develop, refine, and promote location-specific technologies. Their teaching capacity also requires to be strengthened.

1.122 Public expenditure (both Plan and non-Plan, Centre and States) on agriculture research will need to increase from around 0.7% of agriculture GDP at present to 1% by end of Eleventh Plan. Increased allocation by the Centre would take this to 0.9%. Additional investment by States would lead to public expenditure on agricultural research to 1% of agricultural GDP. To avoid business as usual, the additional resources should be conditional on:

- Improving the governance of the National Strategic Research Fund within the Ministry of Agriculture. An expert body independent of the NARS can assess potential and constraints, including climate change, and set the priorities for the much enhanced strategic research required.
- High-level expert committees at the Centre and in States should also be formed to oversee extended but incentivized SAUs to revitalize their teaching and location-specific research to enable stronger links with farmers. This, in turn, should have a demand-led component whereby States and districts could finance [from schemes such as Rashtriya Krishi Vikas Yojana (RKVY)] specific problem-oriented research arising from the district plans.

IRRIGATION

1.123 The scope for new large surface irrigation projects is getting smaller and the focus should be therefore on completing ongoing irrigation projects and on modernizing existing ones. In particular, much greater emphasis is required on investments in physical rehabilitation and on modernization of systems essential for improving the efficiency of water use. With these considerations in view, it is suggested:

- The allocation to Accelerated Irrigation Benefit Programme (AIBP) during Eleventh Plan should be increased but with much more effective monitoring using remote sensing data to incentivize the Central funds flow to the States.
- States should shift to 'fixed-time fixed-cost' contracts.

- One model modernization project should be in each State.
- More emphasis must be placed on Participatory Irrigation Management (PIM), including collection and retention of water rates by water user associations, to reduce the gap between potential created and the actual utilized.
- Comprehensive water balance accounts must be prepared of current use, both at the system level and at the level of water user associations, to highlight the extent of avoidable waste and identify possibilities of reducing this through better regulation of water deliveries and conjunctive use.
- The subsidy structure on micro-irrigation equipment must be restructured to enable promotion of community sprinkler systems by water user associations.
- National Rural Employment Guarantee (NREG)/ BRGF funds must be used to supplement Command Area Development.

1.124 As far as groundwater is concerned, the priority should be to exploit the abundant availability in Assam, Bihar, Chhattisgarh, Orissa and parts of Jharkhand, Uttar Pradesh, and West Bengal. The ongoing programme of rural electrification in this region under Bharat Nirman will help. The scope of Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) must be expanded to include energization of pump-sets by converging resources from BRGF and the newly formed RKVY.

1.125 However, it is vital to ensure both that adequate credit is available for pump-sets and that electricity rates are not reduced to the unsustainable levels reached elsewhere.

1.126 In other parts of the country where withdrawal currently exceeds recharge, the following are essential:

- There must be regular and accurate assessment of actual groundwater use in both rural and urban areas to correlate this with recharge and extraction.
- Separation of feeders for domestic and agricultural power and its timely but controlled supply for irrigation can help regulate water use.
- Ways must be explored to empower and entrust village communities with the right and responsibility to collect electricity charges and in dark blocks to regulate access through, for example, obligation on groundwater users to undertake rainwater harvesting and groundwater recharge.

Natural Resources Management and Watershed Development

1.127 Much of the country's agricultural area will remain rainfed even if we utilize irrigation potential fully. It is this area that has witnessed the largest deceleration although the untapped potential from existing yield gaps is high. Government has now constituted the NRAA to bring focus to the problems and potentials of these huge but hitherto neglected areas. The NRAA is expected to harmonize across the different Central Government efforts and offer expert advice to States on how to integrate these in their own agricultural plans.

1.128 The pace of watershed development must be accelerated to cover about 37 MH in the Eleventh Plan. To sustain people's participation, it is necessary to have longer treatment and inclusion of a farming systems component. With the higher unit costs envisaged, and including soil conservation measures, this would require a minimum investment of Rs 36000 crore on Natural Resource Management (NRM) during the Eleventh Plan. This magnitude of investment is feasible if the combined investment on irrigation and NRM increases at 12% per annum from their 2006–07 base, but only if the States progressively shift some of the resources currently expended on irrigation to NRM. States could utilize resources available from the RKVY for this purpose. At the same time, existing Central Sector NRM programmes under Macro Management and Sustainability of dry land farming will be linked to a new and larger programme for rainfed farming systems with a much wider focus so as to bring the watershed-plus element into programmes of the Ministry of Agriculture and of Rural Development. The National Rainfed Authority will provide guidelines and technical inputs.

Strengthening Input and Support Services and Rationalizing Subsidies

1.129 The present unbalanced and irrational system of fertilizer subsidy is an important cause of deteriorating soil quality. There is an urgent need to

rationalize subsidy across nutrients and also examine methods by which the delivery of some part of the presently huge subsidies can be transferred from fertilizer producers to farmers or a group of farmers directly.

1.130 Soil health awareness must be promoted through a credible system of soil testing and of advice on nutrient needs based on soil tests.

1.131 Agricultural extension is critical for narrowing the more general knowledge gaps that exists in our agriculture. States must begin by filling up field-level vacancies in extension and provide much better training, including at SAUs. At the same time, the Centre's plan to support the KVKs and ATMAs should be synergized and made part of a comprehensive and participatory district planning process. Alternate delivery channels spanning Rural Knowledge Centres, ICT-based extension, farmer-to-farmer extension, NGOs, and the private sector should also be promoted simultaneously. ATMAs capacity in relatively neglected areas, such as animal husbandry must be increased and the scope of Strategic Research Extension Plans (SREP) enlarged. The SREP and ATMAs will form a core part of agricultural district planning to be incentivized by the RKVY.

1.132 There is also a need to ensure adequate and timely supply of the quality inputs of which the supply of seed needs the most urgent attention. The seed production and distribution system must be revamped by strengthening public sector seed agencies and by involving private trade in seed multiplication and distribution system. States must simultaneously strengthen their systems to check quality of inputs since there is evidence that sale of spurious seed, fertilizer, and farm chemicals is on the rise.

1.133 An associated issue is that of credit outreach. In order to revamp the co-operative credit structure, all the States must act urgently to implement the Vaidyanathan Committee recommendations. Early reports are promising, but monitorable deadlines must be set to meet the required commitments.

1.134 Promoting financial inclusion should receive higher priority than the demand for lower interest rates. We need to move towards universal banking, including group lending and a rural credit information system aimed at smart Kisan Credit Cards (KCCs) for all. Although arbitrary debt waivers should be avoided, the present situation on farm debt requires that banks and State Governments act together to set up some appropriate formal mechanism to expedite one-time settlements.

1.135 The existing NAIS is a Plan Scheme with very limited coverage and there is strong demand to expand this massively and to reduce the basis of assessment from block to the village. This involves high cost if it is done in an actuarial basis and also raises issues of moral hazard. However, new insurance providers and products are emerging and could offer more choice than currently. Expansion of insurance should be a State initiative, which the Centre should support through an Additional Central Assistance (ACA)/CSS, while retaining the existing NAIS on the non-Plan side.

1.136 Another aspect of risk mitigation is to reduce price uncertainty. MSP exist, and farmers in every region need to be supported in at least one food and one non-food crop in each marketing season. The flexibility provided by our WTO bound tariffs should be used symmetrically to protect farmers from excessive international price volatility.

Food Security

1.137 Food security considerations remain an immediate priority. In view of this, and the large existing potential from yield gaps in eastern and central India, the Central Government has launched the National Food Security Mission as a Central sector scheme in mission-mode aimed at increasing foodgrains production by at least 20 million tonnes by the end of Eleventh Plan. This programme concentrates particularly on increasing seed replacement and the replacement of older varieties by newer ones. Adequate emphasis will also be given to better ground water utilization and linkage with RGGVY. A feature of this scheme is that it provides much more than earlier programmes on capacity building, monitoring, and planning and that the execution of the programme would be within the district planning framework.

Diversification

1.138 Available demand projections suggest that the demand for foodgrains, including for uses other than for direct human consumption, will grow at 2–2.5% per annum during Eleventh Plan, traditional cash crops such as oilseeds, fibres, and sugarcane at 3–4% per annum and livestock and horticulture at 4–6% per annum. Diversification towards horticulture and livestock therefore will have to be a very major element in the strategy for achieving 4% agricultural growth. Such diversification not only offers opportunity for raising farm incomes significantly, employment elasticity for these activities is quite high and these are also likely to put less pressure on natural resources.

1.139 The NHM is already the largest single scheme of the Union Ministry of Agriculture (MoA), with more allocation than for all other crops put together. However, this still largely excludes vegetable production and there is still a shortage of quality planting material. Moreover, horticulture statistics continue to be very weak so that there is inadequate benchmark to assess either the selections made regarding crop clusters or the Mission's overall impact. Although States have welcomed the NHM, their own efforts are still inadequate, for example, on possibilities of converging with other schemes such as integrating with watershed development, using the NREG to develop orchards or using the Mid-day Meals (MDM) scheme to provide a stable local source of demand. There is danger that full opportunities of horticulture may be missed if horticulture has less than full co-operation from other relevant departments. For this reason the district plans incentives by RKVY will put broad emphasis on such convergence.

1.140 Agricultural marketing is a critical element of the diversification strategy. Since high-value agriculture is based on perishable commodities, large investments are required in modern methods of grading, PHM, and development of cold chains. Such investment in turn requires that new players, including large corporate players, be able to enter existing markets and set up new marketing channels. The NHM therefore incentivizes the on-going marketing reforms based on amending existing APMC Acts to allow this. This process has started in earnest, with many business houses investing in the area and with most States having already made APMC amendments. However, this must be taken to its logical conclusion. Many States that have made APMC amendments are yet to frame the necessary rules. This uncertainty needs to be removed as soon as possible.

1.141 Contract farming is another mechanism whereby the private corporate sector can establish linkages between farmers and markets. This needs to be backed by ensuring effective mechanisms for contract registration and dispute resolution, along with adequate information and support so that small farmers are able to enter into collective contracts.

1.142 Food processing also needs to be strengthened to create demand for agricultural produce, cut down or eliminate post-production losses and provide value added products. Investment in food processing, especially in rural areas would lead to a higher realization to farmers as this would generate additional demand farm products as well as create employment opportunities in the non-farm sector crating a virtuous cycle in the process.

1.143 Livestock and fishery development need a major step-up in infrastructure and policy support. There is need to massively expand the breeding infrastructure for cattle and buffalo, utilizing scope for improvement through selective breeding using better quality indigenous stock. India needs a comprehensive disease control programme, including for small ruminants and poultry, and a definite policy to cope with the growing problem of surplus male cattle. New initiatives contemplated during Eleventh Plan include salvaging and rearing of male buffalo calves, entrepreneurial development for commercial rearing of small ruminants and pigs, a separate poultry capital venture fund to promote establishment of poultry estates, retail poultry outlets, and other poultry activities. During Eleventh Plan new initiatives are envisaged to provide infrastructure for deriving economic gains from the fallen animals and also for training of the primary producers to create awareness regarding acceptable level of food safety at various levels of animal husbandry. In fishery, there is need to establish more hatcheries and ensure stockable sizes of seed for ponds,

tanks, and reservoir sites. All this would require much more commitment from States than is indicated by their current annual plan (AP) allocation of only around Rs 2100 crore for all these activities, including dairy. The Centre, too, will require stepping up its efforts, especially in areas of feed/fodder supply, disease control, and in ensuring progeny testing and traceability.

1.144 The recently set up NFDB has huge potential and requires being up-scaled rapidly. It is also necessary to reduce the present duplication of efforts between the Department of Animal Husbandry and the NDDB and resolve the associated disagreements on a long-term strategy for dairy development. The NDDB has proposed a National Dairy Plan. This needs to be considered seriously by the States and their views incorporated in the Eleventh Plan.

EQUITY ISSUES

Small Farmers' Needs

1.145 Given that 80% of farmers are small and marginal, and, increasingly female, special steps will be needed to improve their effective access to inputs, credit, extension services, and output markets. It is now well recognized that the poor are best empowered if they function as a group rather than as individuals and that this is also the best way to secure economies of scale. Hence for the poor and for women to gain and be effective farmers we should encourage a 'group approach'. This could range from low levels of collective functioning such as joint investments in lumpy inputs such as tube wells or co-operatives for input purchase and marketing, to high levels of collective functioning such as land pooling or even joint purchase of leasing of land and joint farming. A group-oriented approach could benefit small farmers on many different fronts:

- Investment in irrigation and irrigation delivery systems.
- Information and input delivery.
- Product marketing.
- Promoting land access.
- Land pooling of owned land, or joint purchase or joint leasing in and group farming.
- Contract farming.

1.146 An important task in this context will be to examine the nature of subsidies in current schemes. There is a strong case to redesign these subsidies, giving greater benefits to PRIS/farmers groups than individuals, so as to incentivize group formation particularly amongst small, marginal, and female farmers.

1.147 Managing vulnerabilities and demographic change: All precaution must be taken to ensure that the poor do not get further excluded as a result of contingencies, whether natural or a part of the economic growth strategy. In particular, there should be no fear that they will lose their lands involuntarily to larger entities:

- Survey/settlement should be completed and land titles and their mutations issued and recorded properly. If this is done, modern IT/GIS technologies could be used to build an online registry of farmers and their land status. This would not only bring confidence but also enable better credit linkage and eventually allow subsidies to be passed on to farmers directly.
- There is no justification, at this stage, for encouraging corporate farming by relaxing the existing ceiling on land ownership. In fact, if the registry above is done properly, some ceiling-surplus land will be available for distribution. In any case, since many richer farmers are exiting agriculture voluntarily, small farmers should be assisted to buy land through the provision of institutional credit on long-term basis at a low rate of interest.
- At the same time, the land-lease market should be liberalized. The two major elements of such reform are: security of tenure for the tenants during the period of contract and the right of the land-owner to resume land after the period of contract is over. The right should be especially firmly available to small farmers.
- Special programmes need to be designed and implemented to enable small farmers to improve their capacity to go for high value commercial activities in crop production, dairy, poultry, fisheries, etc.

1.148 Gender equity: With the share of female workforce in agriculture increasing, and increased incidence of female-headed households, there is an urgent need

to ensure women's rights to land and infrastructure support:

- Women's names should be recorded as cultivators in revenue records on family farms where women operate the land having ownership in the name of male members.
- The gender bias in functioning of institutions for information, extension, credit, inputs, and marketing should be corrected by gender-sensitizing the existing infrastructure providers.
- Women's co-operatives and other forms of group effort should be promoted for the dissemination of agricultural technology and other inputs, as well as for marketing of produce.
- Wherever possible a group approach for investment and production among small scale women farmers, be it on purchased or leased land, should be promoted. Women farmers are typically unable to access inputs, information, and market produce on an individual basis. A group approach would empower them.

1.149 Regional balance: A problem, not peculiar to agriculture, is that poorer States that have poor infrastructure not only miss out on private investment but also cannot avail many Central government programmes. The Bharat Nirman initiative is attempting to rectify some of this so far as rural areas are concerned but two sources of bias in agriculture against poorer States need to be corrected:

- The Rural Infrastructure Development Fund (RIDF) recycles to States for infrastructure creation banks' shortfall in agricultural lending from priority lending norms. This should ideally go to those States and benefit those who have least access to credit. In fact, most RIDF funds go to States where rural credit–deposit ratios are relatively high. This should be corrected, along with RIDF allocations changed from being year-to-year to a longer allocation so that this can be built properly into State and district plans.
- Regions with poor market infrastructure are usually excluded from MSP operations by Central agencies. Since this leads to a double disadvantage for farmers in such regions, some arrangement needs to be made, for example a revolving price stabilization fund, so that short-term credit from this can be easily availed by PRIs to do their own MSP purchase which can then be delivered to the Central agencies involved.
- The new Eleventh Plan schemes will put special emphasis on regional balance. For example the RKVY gives special weightage to rainfed areas and the selection of districts under National Food Security Mission especially targets districts with currently low yields but high potential.

Restructuring Agriculture Planning

1.150 An important innovation during the Eleventh Plan is the new RKVY with an outlay of Rs 25000 crore, which is designed to give more flexibility to States, and incentivize them to spend more on agriculture on the basis of properly designed district and State plans. The RKVY provides a framework to achieve this objective since it requires that every district should draw up a district plan that fully utilizes an initial resource envelope available from all existing schemes, State or Central, including resources at district level from Central schemes such as those of Rural Development, Ministry of Panchayati Raj, Ministry of Water Resources (MoWR), and other ministries. The District Agricultural Plan should include livestock and fishing and be integrated with minor irrigation (MI) projects, rural development works, and with other schemes for water harvesting and conservation. The State agricultural plan should be based on these initial district plans, subject to reasonable resources from its own plan and adding those available from the Centre, aimed at achieving the State's agricultural growth objective, keeping in view the sustainable management of natural resources and technological possibilities in each agro-climatic region. This plan should then determine each district's final resource envelope, their production plan, and the associated input plan. Annual targets at the start of the fiscal year should be fixed and funds for relevant schemes ensured, with implementation reviewed every quarter both at district and State level.

1.151 Most agricultural activities figure in Schedule XI of the Constitution and form part of the domain of PRIs. The 74th Constitutional Amendment Act stipulates District Planning Committees at the district

level to integrate sectoral plans of a district which then get further integrated into the State plans. The Planning Commission has already issued detailed guidelines of Plan process which needs to be followed by the States while preparing District Agriculture Plan as well.

1.152 Unfortunately, State Agricultural Plans today are far from this ideal. In many cases these are only little more than an aggregation of the States' share of CSS whose guidelines are Centrally determined and whose release is often a problem. Moreover, since Central funds flow through different channels and to different levels, district plans are no more than a collection of proposals to different Central departments and since each Central department clears proposals on its own priorities, the resulting State and district plans lose the application of minds which can come up with better region-specific solutions. Things are, of course, somewhat better where the State plan component of total Plan expenditure on agriculture is high, but this is getting rare.

1.153 There is, therefore, a need to ensure that adequate resources are available for agriculture from both Centre and State and that this be known adequately in advance for meaningful planning at district and State levels. The RKVY is an attempt to address these issues. It is conditional on States adopting appropriate district planning and also on States maintaining a baseline share for agriculture in total Plan expenditure. The guidelines already issued strongly incentivize higher State expenditure on the sector and also stresses almost all the priorities outlined earlier in the chapter.

1.154 In this format, not only RKVY but also the work plans of existing schemes of macro-management and extension (including district-level SREPs) will be integrated into the district plans. On the basis of these, the State plan can be the basis for early discussion between the State, the Ministry of Agriculture, and the Planning Commission so that resource envelopes can accordingly be communicated to the districts. It would allow much more integration especially with NRM, on which the NRAA could advise and also provide incentives for States to maintain the share of agriculture in their own plans. The Planning Commission, along with Ministry of Agriculture and Panchayati Raj, has already started intensive consultation with States to put into effect adequate and comprehensive district agricultural planning. If this works, the Centre could consider, in consultation with States, decentralizing the administration of its CSS through empowered Regional Production Commissioners acting alongside ICAR regional co-ordinators so that the Central role in both R&D becomes more consistent, with the agro-economic requirements. However, the workability of this needs to be further discussed in detail with the State Government.

Financing of the Eleventh Plan

1.155 The Eleventh Plan strategy of inclusive growth rests upon substantial increase in public sector outlay. The Eleventh Plan allocation at 2006–07 price is projected at Rs 54801 crore as against a Tenth Plan outlay of Rs 20513 crore at 2001–02 price. The total projected Gross Budgetary Support (GBS) for the Eleventh Plan for Department of Agriculture and Cooperation is Rs 36549 crore (2006–07 price) and Rs 41337 crore (current price), for DAHDF is Rs 7121 crore (2006–07 price) and Rs 8054 crore (current price) and for Department of Agriculture Research and Education is Rs 11131 crore (2006–07 price) and Rs 12588 crore (current price). (Details at Annexure 1.3.)

As has been highlighted in the chapter, in addition to this, the government has already initiated measures to incentivize State Governments to increase investment in agriculture sector by provision of Rs 25000 crore ACA to States over the plan period through the RKVY. In addition to these budgetary supports provided to Ministry of Agriculture, Rs 17205 crore would be made available to MoRD for Natural Resource Management and support to the States for setting up an efficient Land Administration System. Investments in NREGA, BRGF, and Rural Infrastructure under Bharat Nirman would also strengthen the growth impulse in the agriculture sector. These measures are expected to create conditions for drawing in private investment as well which has been seen to be complementary to public investment in agricultural sector.

ANNEXURE 1.1
Plan Outlays for the Centre, States and UTs

(Rs Crore)

	Total Plan Outlay	Agriculture and Allied Sectors	Irrigation and Flood Control	Total (3) + (4)	Total Plan Outlay	Agriculture and Allied Sectors	Irrigation and Flood Control	Total (7) + (8)
		At Current Price				At 2001–02 Price		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Eighth Plan (1992–97) outlay	434100.0	22467.2 (5.2%)	32525.3 (7.5%)	54992.5 (12.7%)	853898.25	44194.2 (5.2%)	639793.0 (7.5%)	108173.2 (12.7%)
Ninth Plan (1997–2002) outlay	859200.0	42462.0 (4.9%)	55420.0 (6.5%)	97882.0 (11.4%)	1094541.7	54092.7 (4.9%)	70599.9 (6.5%)	124692.7 (11.4%)
Tenth Plan (2002–07) outlay	1525639.0	58933.0 (3.9%)	103315.0 (6.8%)	162248.0 (10.6%)	1525639.0	58933.0 (3.9%)	103315.0 (6.8%)	162248.0 (10.6%)
Annual Plan 2002–03 (Actual)	210202.9	7655.1 (3.6%)	11964.8 (5.7%)	19620.3 (9.3%)	202333.92	7368.5 (3.6%)	11516.9 (5.7%)	18885.8 (9.3%)
Annual Plan 2003–04 (Actual)	224827.0	8776.0 (3.9%)	12900.3 (5.7%)	21676.3 (9.6%)	208497.1	8138.6 (3.9%)	11963.3 (5.7%)	20101.9 (9.6%)
Annual Plan 2004–05 (Actual))	263665.2	10962.6 (4.2%)	19024.5 (7.2%)	29987.1 (11.4%)	234279.1	9740.8 (4.2%)	16904.2 (7.2%)	26644.9 (11.4%)
Annual Plan 2005–06 (RE)	351629.5	13439.8 (3.8%)	25007.0 (7.1%)	38446.8 (11.2%)	299132.7	11433.3 (3.8%)	21273.6 (7.1%)	32706.8 (11.2%)
Annual Plan 2006–07	441285.2	16162.8 (3.7%)	33189.4 (7.5%)	49352.2 (11.2%)	354941.2	13000.3 (3.7%)	26695.4 (7.5%)	39695.7 (11.2%)
Total Tenth Plan expenditure	1491616.2	56996.3 (3.82%)	102086.00 (6.84%)	159082.7 (10.67%)	1299183.98	49681.5 (3.82%)	88353.3 (6.84%)	138035.2 (10.67%)
Tenth Plan expenditure as % of outlay	97.8%	96.7%	98.8%	98.1%	85.1%	84.3%	85.5%	85.1%

Note: Figures in brackets indicate % of total Plan outlay.

Source: Economic Survey 2006–07.

ANNEXURE 1.2
Degraded Lands Developed under Various Watershed Development Programmes—since Inception upto the Tenth Five Year Plan

(Area in Lakh Hectares and Expenditure in Rs Crore)

S. No.	Ministry/Scheme and Year of Start	Progress since Inception up to Ninth Plan		Progress in Tenth Plan* (2002–07)		Total since Inception up to Tenth Plan*	
		Area	Expr.	Area	Expr.	Area	Expr.
(A) Ministry of Agriculture (Department of Agriculture and Co-operation)							
	NWDPRA (1990–91)	69.79	1877.74	23.30	1147.82	93.09	3025.56
	RVP and FPR (1962 and 1981)	54.88	1516.26	9.98	727.98	64.86	2244.24
	WDPSCA (1974–75)	2.58	166.27	1.35	129.31	3.93	295.58
	RAS (1985–86)	5.81	76.39	1.30	45.35	7.11	121.74
	WDF (1999–2000)	0.00	0.00	0.59	26.02	0.59	26.02
	EAPs	13.35	2039.81	4.80	1927.54	18.15	3967.35
Subtotal		146.41	5676.47	41.32	4004.02	187.73	9680.49
(B) Ministry of Rural Development (Department of Land Resources)							
	DPAP(1973–74)	68.95	3284.74	68.32	1557.76	137.27	4842.50
	DDP(1977–78)	33.56	797.38	45.17	1152.50	78.73	1949.88
	IWDP(1988–89)	37.34	616.51	62.22	1821.64	99.56	2438.15
	EAPs	1.40	18.39	3.60	274.28	5.00	292.67
Subtotal		141.25	4717.02	179.31	4806.18	320.56	9523.20
(C) Ministry of Environment and Forests							
	NAEP(1989–90)	0.70	47.53	0.00	0.00	0.70	47.53
Total (A+B+C)		288.36	10441.02	220.63	8810.20	508.99	19251.22

Note: * Includes tentative achievement of 2006–07.
Source: Report of the Working Group on Natural Resources Management for the Eleventh Five Year Plan (2007–12), Planning Commission, Government of India (February 2007).

ANNEXURE 1.3
Projection for Central Sector GBS—Ministry-wise for the Eleventh Plan

(Rs Crore)

S. No.	Ministry/Department	Tenth Plan BE (2001–02) Price	Eleventh Plan Base Year 2006–07 BE	Eleventh Plan	
				Constant (2006–07)	Current Price
1.	Department of Agriculture and Co-operation	13883	4800	36549	41337
2.	Department of Agricultural Research and Education	4422	1350	11131	12588
3.	Department of Animal Husbandry, Dairying, and Fisheries	2208	777	7121	8054

Note: In addition, Rs 25000 crore will be provided as Central Assistance to States through RKVY, to be administered by DAC.

2

Water Management and Irrigation

INTRODUCTION

2.1 Sustainable development and efficient management of water is an increasingly complex challenge in India. Increasing population, growing urbanization, and rapid industrialization combined with the need for raising agricultural production generates competing claims for water. There is a growing perception of a sense of an impending water crisis in the country. Some manifestations of this crisis are:

- There is hardly any city which receives a 24-hour supply of drinking water.
- Many rural habitations which had been covered under the drinking water programme are now being reported as having slipped back with target dates for completion continuously pushed back. There are pockets where arsenic, nitrate, and fluoride in drinking water are posing a serious health hazard.
- In many parts, the groundwater table declines due to over-exploitation imposing an increasing financial burden on farmers who need to deepen their wells and replace their pump sets and on State Governments whose subsidy burden for electricity supplies rises.
- Many major and medium irrigation (MMI) projects seem to remain under execution forever as they slip from one plan to the other with enormous cost and time overruns.
- Owing to lack of maintenance, the capacity of the older systems seems to be going down.
- The gross irrigated area does not seem to be rising in a manner that it should be, given the investment in irrigation. The difference between potential created and area actually irrigated remains large. Unless we bridge the gap, significant increase in agricultural production will be difficult to realize.
- Floods are a recurring problem in many parts of the country. Degradation of catchment areas and loss of flood plains to urban development and agriculture have accentuated the intensity of floods.
- Water quality in our rivers and lakes is far from satisfactory. Water in most parts of rivers is not fit for bathing, let alone drinking. Untreated or partially treated sewage from towns and cities is being dumped into the rivers.
- Untreated or inadequately treated industrial effluents pollute water bodies and also contaminate groundwater.
- At the same time water conflicts are increasing. Apart from the traditional conflicts about water rights between upper and lower riparians in a river, conflicts about quality of water, people's right for rainwater harvesting in a watershed against downstream users, industrial use of groundwater and its impact on water tables and between urban and rural users have emerged.

2.2 India with 2.4% of the world's total area has 16% of the world's population; but has only 4% of the total available fresh water. This clearly indicates the need for water resource development, conservation, and optimum use. Fortunately, at a macro level India is not short of water. The problems that seem to loom large

over the sector are manageable and the challenges facing it are not insurmountable.

AVAILABILITY OF WATER

Water Resources

2.3 The water resource potential of the country has been assessed from time to time by different agencies. The different estimates are shown in Table 2.1. It may be seen that since 1954, the estimates have stabilized and are within the proximity of the currently accepted estimate of 1869 billion cubic metre (bcm) which includes replenishable groundwater which gets charged on annual basis.

TABLE 2.1
Estimates of Water Resources in India

Agency	Estimate in bcm	Deviation from 1869 bcm
First Irrigation Commission (1902–03)	1443	–23%
Dr A.N. Khosla (1949)	1673	–10%
Central Water and Power Commission (1954–66)	1881	+0.6%
National Commission on Agriculture	1850	–1%
Central Water Commission (1988)	1880	+0.6%
Central Water Commission (1993)	1869	–

Utilizable Water Resources Potential

2.4 Within the limitations of physiographic conditions, socio-political environment, legal and constitutional constraints, and the technology available at hand, the utilizable water resources of the country have been assessed at 1123 bcm, of which 690 bcm is from surface water and 433 bcm from groundwater sources (CWC, 1993). Harnessing of 690 bcm of utilizable surface water is possible only if matching storages are built. Trans-basin transfer of water, if taken up to the full extent as proposed under the National Perspective Plan, would further increase the utilizable quantity by approximately 220 bcm. The irrigation potential of the country has been estimated to be 139.9 MH without inter-basin sharing of water and 175 MH with inter-basin sharing.

2.5 While the total water resource availability in the country remains constant, the per capita availability of water has been steadily declining since 1951 due to population growth. The twin indicators of water scarcity are per capita availability and storage. A per capita availability of less than 1700 cubic metres (m^3) is termed as a water-stressed condition while if per capita availability falls below 1000 m^3, it is termed as a water-scarcity condition. While on an average we may be nearing the water-stressed condition, on an individual river basin-wise situation, nine out of our 20 river basins with 200 million populations are already facing a water-scarcity condition. Even after constructing 4525 large and small dams, the per capita storage in the country is 213 m^3 as against 6103 m^3 in Russia, 4733 m^3 in Australia, 1964 m^3 in the United States (US), and 1111 m^3 of China. It may touch 400 m^3 in India only after the completion of all the ongoing and proposed dams.

Ultimate Irrigation Potential (UIP)

2.6 The demand for irrigation water in India is very large. However, the limits to storage and transfer of water restrict the potential for irrigation. UIP reassessed by the Committee constituted by the MoWR in May 1997, the potential created, and the potential utilized up to end of the Tenth Plan are given in Table 2.2.

2.7 The assessment of UIP needs to be periodically reviewed to account for revision in scope, technological advancement, inter-basin transfer of water, induced recharging of groundwater, etc. The creation of irrigation potential depends upon the efficiency of the system for delivering the water and its optimal use at the application level. With the modern techniques of integrating micro irrigation with canal irrigation as has been done in the case of Narmada Canal Project, Rajasthan, the UIP can further be increased. Similarly in the case of groundwater, innovative methods of recharging the groundwater and also storing water in flood plains along the river banks may enhance the UIP from groundwater to more than 64 MH.

Water for Nature

2.8 The question of a trade-off between competing claims on water becomes most important in the context of ecological requirement. The National Water Policy (NWP) places ecology in the fourth place in the order of priorities for water use. Yet, there is a general agreement amongst all that any water diversion

TABLE 2.2
Ultimate Irrigation Potential, Potential Created and Potential Utilized

(in MH)

Sector	Ultimate Irrigation Potential	Potential Created		Potential Utilized	
		Till End of Ninth Plan	Anticipated in Tenth Plan	Till end of Ninth Plan	Anticipated in Tenth Plan
MMI	58.47	37.05	5.3	31.01	3.41
MI					
Surface water	17.38	13.6	0.71	11.44	0.56
Groundwater	64.05	43.3	2.81	38.55	2.26
Subtotal	81.43	56.9	3.52	49.99	2.82
Total	139.9	93.95	8.82	81.00	6.23

needs to take care of river ecosystem downstream. The problem is of quantifying the Environment Flow Releases (EFR), that is the flow required for maintaining ecosystems. Usable water will be reduced to that extent. During 2004–05, the Ministry of Environment and Forests (MoEF) appointed a committee headed by Member, Central Water Commission (CWC), to develop guidelines for determining the EFR. The committee submitted its report in 2005. Depending on what the final accepted recommendation is, the minimum flow required for maintaining the river regime and environment will be decided and considered in water resources development and management.

Climate Change and Uncertainty in Water Availability

2.9 The threat of climate change is now considered an established fact. General Circulation Models simulate the behaviour of the atmosphere and paint 'what if' scenarios for various levels of greenhouse gas emissions. Using these models the weather experts have predicted that global warming will intensify the hydrologic cycle; more intense rainfall will occur in fewer spells; floods and droughts both will become more intense; the floods will be more frequent; the rainfall will shift towards winter; and there may be a significant reduction in the mass of glaciers, resulting in increased flows in the initial few decades but substantially reduced flows thereafter.

2.10 The MoWR has already initiated some studies in co-operation with research institutions and reputed academic institutions to assess the impact of climate change on water resources.

2.11 The hydrologists are yet to translate what climate change means for the water availability, its distribution in time and space, and changes in demand. An increase in mean temperatures would increase the energy flux for evapo-transpiration. The increased potential evapo-transpiration in the forests could trigger major changes in the environment, and it would result in an increased crop water requirement in the farms. The changes in seasonal temperatures could change the crop seasons. Enough data is now available to paint 'what if' scenarios for different possibilities, and to formulate some tentative plans to respond to these possibilities.

2.12 In the post-climate change scenario, systems that are more resilient will fare better than systems that are less resilient. Engineering infrastructure that enables the water managers to store and transfer water with greater certainty can reduce the impact of uncertainty. Climate change considerations need to be factored in as we plan water resource infrastructure.

WATER REQUIREMENT

2.13 The requirement of water for various sectors has been assessed by the National Commission on Integrated Water Resources Development (NCIWRD) in the year 2000. This requirement is based on the assumption that the irrigation efficiency will increase to 60% from the present level of 35–40%. The Standing Committee of MoWR also assesses it periodically. These are shown in Table 2.3.

TABLE 2.3
Water Requirement for Various Sectors

Sector	Water Demand in km³ (or bcm)					
	Standing Sub-Committee of MoWR			NCIWRD		
	2010	2025	2050	2010	2025	2050
Irrigation	688	910	1072	557	611	807
Drinking water	56	73	102	43	62	111
Industry	12	23	63	37	67	81
Energy	5	15	130	19	33	70
Others	52	72	80	54	70	111
Total	813	1093	1447	710	843	1180

WATER RESOURCES DEVELOPMENT AND USE: IRRIGATION

Historical Development

2.14 The planned development of irrigation sector started in a big way since the First Five Year Plan (1951–56). New projects were taken up in the Second Five Year Plan, the Third Five Year Plan, and the Annual Plans 1966–69. During the Fourth Five Year Plan emphasis was shifted to the completion of ongoing schemes. The widening gap between potential creation and utilization was felt in the Fifth Plan (1974–78) and accordingly Command Area Development (CAD) programme was launched. The Annual Plans 1978–80 and the Sixth Plan witnessed new starts and then the focus was shifted towards completion of irrigation projects. By the end of the Eighth Plan (1996–97), central assistance was provided under AIBP to help the State Governments in early completion of the projects.

2.15 Although plan expenditure on irrigation has increased from Rs 441.8 crore in the First Plan to Rs 95743.42 crore (outlay) in the Tenth Plan, the share in total plan expenditure has decreased from 23% in the First Plan to 6.3% in the Tenth Plan. The trends in change of per cent of total plan expenditure on irrigation sector are shown in Figure 2.1.

2.16 The anticipated irrigation potential created up to March 2007 is 102.77 MH, which is 73.46% of the UIP of 140 MH. MMI projects have an UIP of 58.47 MH against which irrigation potential created is 42.35 MH. MI potential created is 60.42 MH against the UIP of 81.43 MH. The irrigation potential creation and its corresponding utilization during the plan periods is given in Annexure 2.1.

2.17 The gross irrigated area in the country is only 87.23 MH. With an average irrigation intensity of 140%, the actual net irrigated area is likely to be around 62.31 MH, which is only 43% of the net sown area of the country (142 MH). Even after achieving the UIP of 139.89 MH. and considering the average irrigation intensity of 140%, the ultimate irrigated area in the country would be only 70% of the net sown area.

2.18 The increasing difference between irrigation potential created and utilized is ascribed to a number of reasons. Irrigation systems are designed for extensive irrigation for a 75% confidence level. Thus water availability in some basins would be less the designed amount. Excess withdrawal by farmers near the head

FIGURE 2.1: Expenditure on Irrigation

of canals deprives farmers at the tail end of water. Inadequate development of field channels, required to be developed by farmers, contribute to the gap. The missing links or breaks in the canal network may also reduce utilization. A part of this gap can be reduced by command area development programmes. Under the CAD Programme, 311 projects [with total culturable command area (CCA) of 28.58 MH] have been included so far. Till the end of March 2006, the construction of field channels has been completed in an area of 17.43 MH. The programme is presently being implemented in 136 projects with total CCA of 17.06 MH.

2.19 Details of the physical progress achieved in respect of core components under the Command Area Development and Water Management (CADWM) Programme during the Tenth Plan till the end of March 2006 and progress likely to be achieved till end of Tenth Plan are given in Table 2.4.

2.20 The total anticipated State share expenditure for the Tenth Plan under the CADWM Programme works out to Rs 1591.57 crore.

Major and Medium Projects

Physical and Financial Performance

2.21 The potential creation target fixed for the Tenth Plan by the Planning Commission was 9.93 MH. It was revised to 6.5 MH during the MTA of the Plan. The performance during the first three years of the Tenth Plan and anticipated performance for remaining two years is given in Table 2.5.

Completion of Projects

2.22 A total number of 490 projects spilled into the Tenth Plan from previous plans, and another 231 projects were to be taken up during the Tenth Plan. Besides, based on the current financial and physical status of the projects, it was also anticipated that 103 major, 210 medium, and 62 extension, renovation, and modernization (ERM) projects could be completed with adequate provision of funds. Since irrigation is a State subject, the projects are largely executed by State Governments. The Working Group for Water Resources for the Eleventh Five Year Plan has now assessed that 179 new projects have been taken up in the Tenth Plan, while 178 projects including 48 major, 91 medium, and

TABLE 2.4
Physical Progress under CAD and Water Management (CADWM) Programme in the Tenth Plan

(in MH)

S. No.	Item	Progress till the End of March 2006	Anticipated Progress during 2006–07	Total Anticipated Progress for Tenth Plan
1	Field channels	1.671	0.373	2.044
2	Field drains	0.476	0.108	0.584
3	*Wara Bandi*	0.929	0.124	1.053
4	Land levelling*	0.050	–	0.050

Note: * This component was discontinued w.e.f. 1 April 2004.

TABLE 2.5
Physical and Financial Performance of MMI Sector during the Tenth Plan

Year	Physical (in MH)		Financial (in Rs Crore)	
	Potential Created	Potential Utilized	Revised Outlay	Expenditure
2002–03	0.812	0.532	13131.51	9655.68
2003–04	0.922	0.639	12334.79	11046.40
2004–05#	1.064	0.685	15483.05	15483.05
2005–06#	1.069	0.625	30263.83	30263.83
2006–07*	1.428	0.928		
Total	5.295	3.409	71213.18	66448.96

Note: # anticipated; * targeted.

39 ERM projects would be completed during the Tenth Plan. The reasons for non-completion of the projects from the projected level include inadequate funds due to thin spread of funds over many projects, revision in the estimated costs, change in scope of the works, unforeseen bottlenecks involving other agencies, opposition by the project-affected persons (PAPs), etc.

Spillover Projects into Eleventh Five Year Plan

2.23 In the course of analysing the status of ongoing projects likely to spill over, it is observed that a number of previously unreported projects have now been reported; some of the ongoing projects deferred while some of the projects have been interchanged among the classified heads of major, medium, and ERM projects. After accounting for the number of new projects taken up in the Tenth Plan, projects likely to be completed in the Tenth Plan, and other factors inducing changes in the number of projects, the number of spillover projects into the Eleventh Five Year Plan works out to be 477 including 166 major, 222 medium, and 89 ERM projects. The status is given in Table 2.6.

2.24 Projects of all three types have been under execution for many years, some from as far back as the Second Five Year Plan. Around 63% of the above 477 projects are unapproved by the Centre and are ineligible for central assistance.

TABLE 2.6
Spillover Major, Medium and ERM Projects into the Eleventh Plan

Plan of Start of Project	Major	Medium	ERM	Total
I	0	0	0	0
II	2	0	0	2
III	5	1	0	6
1966–69	2	0	0	2
IV	8	5	4	17
V	33	19	1	53
1978–80	2	9	3	14
VI	25	19	6	50
VII	10	13	11	34
1990–92	2	2	0	4
VIII	19	48	11	78
IX	20	40	17	77
X	38	66	36	140
Total	166	222	89	477

Major and Medium Projects in Drought-prone Areas and Tribal Areas

2.25 Projects in drought-prone areas and tribal areas are approved with a lower cut-off ratio of benefits to costs to reflect the higher weight given to benefits accruing to these areas. About one-third of the total geographical area of the country is recognized as drought-prone area. A total of 99 districts in 14 States are identified as drought prone. These districts have cultivable area of about 77 MH which is 42% of the country's total cultivable area of 184 MH. Among the States, Gujarat and Rajasthan are the most drought-prone States followed by Karnataka and Maharashtra. At the beginning of Eleventh Five Year Plan, of the 477 projects under implementation, 148 major and 195 medium projects envisaged benefits to drought-prone districts. Among these, 76 major and 102 medium projects benefit tribal areas as well.

Unapproved Projects

2.26 The schemes under the Plan sector require formal investment clearance from the Planning Commission before execution. Accordingly, major schemes are scrutinized for techno-economic feasibility, inter-state and international aspects, ecology and environmental aspects, and rehabilitation aspects by the concerned Central ministries. Recommendations of various expert agencies are then considered by the Advisory Committee of the MoWR. Thereafter the proposal is considered by the Planning Commission for investment clearance. In case of MMI projects the State Planning Boards are empowered to clear the proposals if inter-state issues are not involved. In spite of well-defined policy and guidelines in place, a large number of major and medium projects have been under execution without investment clearance from Planning Commission. The unapproved projects in the Tenth Plan comprising 90 major, 136 medium, and 74 ERM projects are likely to spill over into the Eleventh Five Year Plan. Expenditure likely to be incurred on these projects up to the Tenth Plan will be about Rs 41128 crore with the break-up as shown in Table 2.7.

Accelerated Irrigation Benefit Programme (AIBP)

2.27 The additional irrigation potential created in the country from the beginning of the Sixth Plan (i.e. 1980)

TABLE 2.7
Unapproved Major, Medium and ERM Projects

	Number of Unapproved Projects	Latest estimated cost (Rs in Crore)	Expenditure up to Tenth Plan (Rs in Crore)	Ultimate Potential (thousand hectare)	Potential created up to Tenth Plan (thousand hectare)
Major projects	90	100017.85	31004.66	5960.58	930.85
Medium projects	136	12947.09	5943.78	809.82	153.16
ERM	74	9095.30	4234.31	1177.07	135.10
Total	300	122060.24	41127.75	7947.47	1219.11

to the end of the annual rolling plan of 1992 for the period of 12 years was 24.48 MH, which is at the rate of 2.04 MH per annum. This rate of creation sharply came down to 1.03 MH per annum during the Eighth Plan. Responding to this sudden decline in the rate of creation of irrigation potential as well as allocation to the irrigation sector in the States Annual Plan, the Central Government initiated AIBP from the year 1996–97 under which Central assistance is being extended to large irrigation schemes for the early completion and accelerating creation of additional irrigation potential.

2.28 Under this programme all the projects which have the investment approval of the Planning Commission are eligible for assistance. The programme which was entirely a loan from the Centre in the beginning had been modified as per programmes of the Normal Central Assistance (NCA) with a grant and loan component (mixed) from 2004–05. Also reform measures such as revision of water rates to cover Operation and Maintenance (O&M) charges have been introduced but the results were not satisfactory because of the sluggish efforts of State Governments to comply with the reform measures. Moreover, the incentive to the State Government, that is 70% loan, was not attractive enough to carry out the reforms. In the year 2005–06, the GoI launched Bharat Nirman Programme where 10 MH of additional irrigational potential creation was targeted in a period of four years and to achieve this target, the AIBP guidelines were further modified in December 2006 wherein Central assistance has been kept in the form of 25% grant of project cost under AIBP for non-special category States and 90% grant of project cost for special category States and projects benefiting drought-prone and tribal areas. It was also decided to treat projects in the undivided Koraput, Bolangir, and Kalahandi (KBK) districts of Orissa at par with special category States.

Performance of AIBP

2.29 A total of 229 MMI projects have been included under AIBP, out of which, 91 have been reported completed by July 2007. The UIP of the AIBP-assisted major and medium projects/components is 82.76 lakh hectare. Out of this, the irrigation potential created up to March 2007 is 43.56 lakh hectare which is about 53% of the UIP of all AIBP projects. Up to March 2007, 6205 MI schemes were provided assistance under AIBP of which 4418 schemes have been completed. The UIP of MI schemes included in AIBP was 3.85 lakh hectare and potential of 1.87 lakh hectare has been created up to March 2007. The completion rate has been quite satisfactory in respect of AIBP-assisted MI schemes as these have low gestation periods.

2.30 However, the performance of MMI projects in terms of completion of the projects as well as the potential creation is not very satisfactory. The outlays under the AIBP have been continuously stepped up since 1996–97. Creation of irrigation potential in the country under major and medium sector received a fillip after commencement of AIBP. During the Eighth Plan period, irrigation potential of 22.10 lakh hectare was created in the country under major and medium sector at an annual rate of 4.4 lakh hectare per annum. During the Ninth Plan, when AIBP was in operation, irrigation potential created in the major and medium sector was 41.0 lakh hectare out of which 16.5 lakh hectare (nearly 40%) was through AIBP schemes. The highest creation of irrigation potential from the First Plan to the Eighth Plan is in the Fifth Plan and

TABLE 2.8
Performance of AIBP Projects

(Rs Crore/Thousand Hectare)

Year	Central Loan Assistance (CLA)/ Grant Released	Potential Created (Normal)	Potential Created (Fast Track#)	Total Potential Created under AIBP	Total Potential Created
1996–97	500.00	72.08		72.08	559.97
1997–98	952.19	200.02		200.02	645.18
1998–99	1119.18	257.41		257.41	592.15
1999–2000	1450.48	220.21		220.21	666.04
2000–01	1856.20	531.43		531.43	983.53
2001–02	2601.98	443.37	0.00	443.37	1214.59
2002–03	3061.70	272.43	182.93	455.36	812.00
2003–04	3128.50	357.20	89.83	447.03	1004.00
2004–05	2867.34	408.67	82.58	491.25	1000.00*
2005–06	1900.31	735.85	144.09	879.94	1500.00*
2006–07	2301.97				
Total	21739.85	3498.67	499.43	3998.10	

Note: # Projects which are to be completed in two agricultural season (one year) with higher Central assistance; * Tentative.

this is 40.28 lakh hectare. With the introduction of AIBP the same pace of additional irrigational potential could be restored in the Ninth Plan and subsequently in the Tenth Plan. The year-wise funds released and potential created are shown in Table 2.8.

Minor Irrigation (MI)

2.31 Over the period 1951–2007, irrigated area from major projects has increased to 3.47 times, from tanks 1.9 times, and from groundwater 6.3 times. Groundwater use has expanded as it provides control over irrigation to the farmer and its growth stimulated by spread of electrification and subsidized power. Even in the command area of major irrigation projects, farmers often use groundwater as a matter of routine to supplement canal water to maximize agricultural production.

2.32 The outlay provided for the Tenth Plan by the Planning Commission was Rs 13873 crore for a target of 6.8 MH. The outlay has been subsequently revised to Rs 14764 crore and during MTA the target was revised to 4.0 MH. However, it is now anticipated that the achievement may be around 3.5 MH, out of which 2.81 MH is anticipated through groundwater development. The performance during the first three years of the Tenth Plan and anticipatory performance for remaining two years is given in Table 2.9.

TABLE 2.9
Physical and Financial Performance of MI Sector during the Tenth Plan

Year	Physical (in MH)		Financial (in Rs Crore)	
	Potential Created	Potential Utilized	Revised Outlay	Expenditure
2002–03	0.687	0.548	1950.45	1639
2003–04	0.628	0.502	2634.63	1957
2004–05	0.740	0.592	2780.35	2780.35
2005–06#	0.545	0.440	7398.75	7398.75
2006–07*	0.918	0.734		
Total	3.518	2.816	14764.18	13775.1

Note: # anticipated; * targeted.

2.33 The broad reasons for low performance are mentioned below:

- Poor economic status of small and marginal farmers.
- Non-availability of assured power supply.
- Highly subsidized water rates in canal command, whereas, no provision of subsidy for development of groundwater.
- In hard rock areas, probability of obtaining groundwater resource is low.
- Over-extraction in critical areas which has caused depletion of water tables resulting in failure of wells.

2.34 The rapid development of groundwater has led to over-exploitation of groundwater in the country. In 15% of the blocks the annual extraction of groundwater exceeds annual recharge and in 4% of the blocks it is more than 90% of recharge. As the groundwater recedes wells have to be deepened and more energy has to be used to pump water. Figure 2.2 shows the status of groundwater use in the country. The map shows two challenges: first, how to restrain groundwater use to sustainable level in over-exploited regions and second, how to develop the large untapped ground water potential in eastern India.

2.35 Rural electrification through the RGGVY is being completed in Eastern Uttar Pradesh, Bihar, and West Bengal. In the Eleventh Plan the objective should be to bring large part of the cultivable area in these States under irrigation through electrified agricultural pump sets. This would be the key to the breakthrough in the agricultural production and food security. As this is a viable action plan would need to be drawn up by the States involving provision of (i) adequate power for irrigation, (ii) soft credit for farmers to install tubewells, and (iii) subsidized rates for grant of electricity connections. With the implementation of the tariff policy of differential pricing for peak and off-peak supply of electricity, it should be possible to have modest rates for supply of off-peak electricity to agriculture.

Minor Irrigation Surface Water Schemes

2.36 Surface water schemes based on tanks and ponds have developed slowly. Due to the success of the Government in providing canal irrigation and heavily subsidized electricity for use of ground water there has been neglect of local storage through village ponds, tanks, etc. Many of these have begun to disappear. This is partly due to village communities losing a sense of their own responsibility for managing water optimally. Restoration of water bodies has been taken up in 24 districts of 14 States, namely, Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, and West Bengal. In the Eleventh Five Year Plan 20000 water bodies are likely to be renovated and restored.

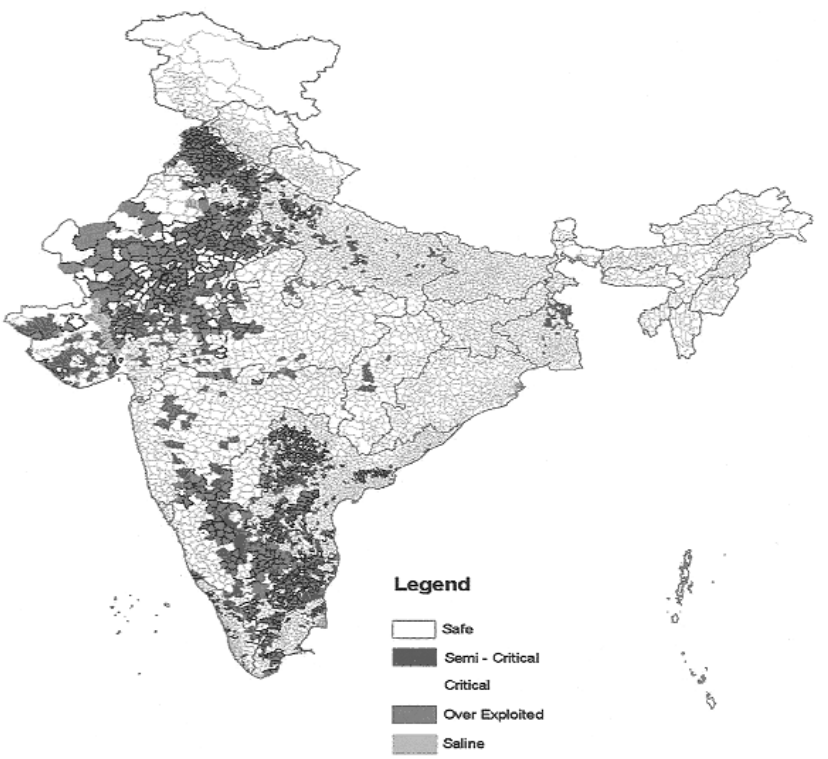


FIGURE 2.2: Categorization of Blocks/Mandals/Talukas as on March 2004

Flood Management

Physical Achievements

2.37 At the beginning of the Tenth Plan (2002), the area benefited or the area provided with a reasonable degree of protection was about 16.44 MH. The Planning Commission approved an outlay of Rs 4619 crore for State sector to protect 1.93 MH. The area likely to be protected as reported by the States in their respective annual plan documents is 1.78 MH. Thus, total area reasonably protected against flood by end of the Tenth Plan is likely to be 18.22 MH. The physical achievements per unit investment follow a reducing trend because of cost escalation and increased allocation for stabilization of existing works.

2.38 The year-wise outlays of the State and Central sectors for the Tenth Plan and the actual/anticipated expenditures are given in Table 2.10.

Flood Damages and Relief

2.39 During the first three years of the Tenth Plan, the flood damages as reported by the States and the relief fund released are given in Table 2.11.

2.40 The aforementioned relief funds also include assistance for cyclones and other such natural calamities. It would be seen from the above table that during the first three years of the Tenth Plan, the expenditure on relief was significantly high and the corresponding Plan outlays were inadequate. It is necessary that a more rational approach and optimum programme of works is adopted for flood management.

2.41 The preceding paragraphs describe the situation analyses of the irrigation sector in the country. As has been indicated at the beginning of the chapter, water scarcity and uncertainty in availability of water are important constraints that would need to be addressed in the Eleventh Five Year Plan. The strategy to be followed in the Eleventh Five Year Plan for this sector is described in the following section.

Eleventh Five Year Plan Strategy for Major, Medium, and Minor Irrigation

2.42 The GoI launched Bharat Nirman Programme in 2005–06. The irrigation component of the programme envisages creation of an additional 6.2 MH of irrigation potential. This target will be achieved through major, medium, and minor projects for surface water and ERM schemes. Owing to comparatively low allocation by the States for irrigation projects, intervention of the Centre for creation of irrigation potential will be required. AIBP is the only programme under MoWR to assist State Governments to achieve the targets set under the surface water component of irrigation programme of Bharat Nirman.

TABLE 2.10
Financial Performance in Flood Management during the Tenth Plan

(Rs Crore)

Year	Approved/Revised Outlay			Expenditure (Actual/Anticipated)		
	States	Centre	Total	States	Centre	Total
2002–03	624	151	775	698	86	785
2003–04	496	156	652	523	96	619
2004–05	669	184	853	644	100	744
2005–06	933	232	1165	830	181	1011
2006–07	1034	680	2520	1116	194	1310
Total	4562	1403	5965	3811	657	4468

TABLE 2.11
Flood Damage and Relief in the Tenth Plan

(Rs Crore)

Year	Flood Damage Reported	Recommended Calamity Relief Fund
2002–03	2575	1600
2003–04	4434	1587
2004–05	3337	1286

2.43 The Prime Minister has announced a rehabilitation package for agrarian distress districts of Andhra Pradesh, Karnataka, Kerala, and Maharashtra which includes early creation of irrigation facilities in these districts. The package includes 65 MMI projects to be completed through assistance to be provided under AIBP out of which 28 projects are already included under AIBP assistance. It has also been decided to provide assistance under AIBP to the projects providing irrigation facilities to drought-prone tribal areas as well as to States which are having irrigation development of their potential below national average.

Linkage of AIBP with Command Area Development

2.44 It has been observed that utilization of the created irrigation potential through AIBP is not up to the expected level. One of the reasons for non-utilization or low utilization of created irrigation potential is non-completion of CAD work in the area where irrigation facilities have been created. The CAD Programme should be integrated with the project implementation and upon completion of the project the water should reach to the farm gate instead of creating the irrigation potential which is not immediately utilized. It is also pertinent to mention that the cost of land development works should also be integrated with the project cost which may be funded under AIBP. The inclusion of CAD component with the cost of the project may affect the benefit–cost ratio of the project.

National Projects

2.45 For quite sometime many State Governments have been raising the issue of declaring some irrigation projects as 'National Projects'. The criteria for the selection of these projects, their mode of implementation and pattern of funding, etc. are yet to be finalized. However, it is obvious that the projects which are on international borders and the projects benefiting two or more States should figure as National Projects.

Monitoring of the Projects with Remote Sensing

2.46 During the end of the Tenth Plan, the Planning Commission insisted on monitoring of the project funded under AIBP through remote sensing. Accordingly a pilot scheme for monitoring Teesta and Upper Krishna projects through remote sensing has been taken up. The results of remote sensing have been matched with the ground realities and were found to the extent of 90% close to actuals. Accordingly the MoWR has assigned the job of monitoring of 53 projects covering the area of 5 MH for remote sensing monitoring.

Strategy

2.47 The following steps could be taken for major, medium, and minor irrigation sector for the Eleventh Five Year Plan.

Major and Medium Irrigation Projects

- Funds would be earmarked by the Planning Commission in the State plans so that the ongoing schemes under AIBP can be completed in time and cost over-run is avoided.
- Since the fund requirement for medium or minor irrigation projects are less, adequate funds may be made available for completion of these projects, without jeopardizing the programme for major projects. ERM projects should be given due priority where the eroded potential can be restored with moderate expenditure.
- Foremost priority should be given for completion of the ongoing projects.
- Ongoing projects which have already achieved 90% or more of the ultimate potential should be considered as completed. It is also neceesary to critically review all such projects which are having only marginal benefit left or are near impossible to complete because of various problems, and declare them completed or curtailed or deleted. The balance cost of the remaining projects should be updated realistically for consideration during the Eleventh Plan.
- Inter se priority should be decided considering various aspects such as externally aided projects, inter-state projects, projects benefiting drought-prone or tribal areas, etc. as per the guidelines prepared by National Commission for Integrated Water Resources Development Plan.
- High priority should be accorded to the Pre-Seventh and Seventh Plan Projects for funding under AIBP to complete these projects during the Eleventh Plan.
- Schemes should be given out on fixed cost time certain contract basis with incentive and penalty clause.
- Remote sensing satellite monitoring should be the

basis for the performance of the implementation and accordingly the next release of funds should be made.
- The CAD works and project execution should be in one package to ensure the availability of water upon completion of the project.
- The ERM projects are being funded under AIBP assistance and their funding should be linked with improvement in efficiency of the irrigation system and for this purpose minimum threshold target efficiency should be considered.
- To improve efficiency, irrigation projects should be benchmarked for performance evaluation by an independent expert group so that optimum use of water is realized. The AIBP assistance in the form of grant should be made according to the performance parameters.
- A separate budget head up to 15% of Plan fund may be provided as Irrigation Maintenance Fund (IMF) and full amount of irrigation revenue as collected should be credited to the IMF.
- In addition to the liabilities of completed projects and provision for ongoing and new projects, the State plan proposals should incorporate provisions for special repairs of existing irrigation systems, dam safety measures, improved water management, and water development aspect encompassing survey and investigation, R&D, training, and National Hydrology Project.
- System maintenance and revenue realization should be handed over to beneficiaries groups or Water Users Associations (WUAs).
- The existing regional and State-level institutions such as Water and Land Management Institutes should be strengthened and brought into mainstream activities for irrigation management improvement.
- Dam safety measures should be taken up systematically for Disaster Prevention and Management. 5% of plan fund may be allocated for undertaking dam safety activities to ensure that dams in distress get special and timely attention.
- The performance evaluation of completed projects needs to be continued for benchmarking and improvement in irrigation efficiency.
- New projects should be undertaken only after confirming that adequate funds for ongoing programmes are available, in the State plan as well as the availability of Central assistance by the Planning Commission.
- Introduce the concept of National Projects.
- Review the requirements and process of environmental clearance.

Minor Irrigation Sector

- Renovation and restoration of old tanks as well as old diversion channels in hilly regions may be given high priority.
- Micro irrigation system in water deficit areas should be promoted.
- Groundwater development in areas having untapped and unutilized potential, particularly in the Eastern Region should be promoted through a time-bound programme.
- A comprehensive strategy as recommended by the expert group for regulation of groundwater development and use on sustainable basis should be implemented.

Groundwater Exploitation and Governance for Preventing Over-exploitation of Groundwater

2.48 The two concerns about groundwater are over-exploitation in parts of the country and under-utilization in large parts of the country. The region-wise potential is as follows.

- Alluvial areas of the east and north east regions (NER) (particularly Assam, Bihar, West Bengal, and Uttar Pradesh) with low stage of groundwater development have an additional potential of around 2.7 MH from the unconfined aquifers.
- Hard rock areas of peninsular India have an additional potential of around 0.8 MH by judicious and scientific development of groundwater in Andhra Pradesh, Chhattisgarh, Jharkhand, Kerala, Maharashtra, Orissa, Tamil Nadu, and parts of Madhya Pradesh.
- Hilly areas of the north and the NER have a marginal additional potential of around 0.04 MH in Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Manipur, Tripura, and Uttaranchal.
- Deeper confined aquifers in the alluvial plains of Uttar Pradesh, Haryana, and Punjab have an

additional potential of 1.0 MH by tapping deeper confined aquifers. However, there is need to undertake detailed studies to establish the 'Safe Yield' from such aquifers to avoid any adverse environmental impacts.

2.49 Sustainable groundwater development and management need to be taken up by incorporating studies on artificial recharge to groundwater and rainwater harvesting, management of salinity ingress in coastal regions, sustainable management in areas with high levels of groundwater development, conjunctive use of surface water and groundwater, and regulation of groundwater development. There are number of groundwater extraction structures in the country which are very old, have outlived their working life, and are not functional. These structures, in reality, do not contribute to irrigation potential. Such structures need replacement for restoration of old/already created potential. As suggested by NABARD, replacement may be planned at 0.5 MH during the Eleventh Five Year Plan in only safe and semi-critical blocks/units.

2.50 MI and groundwater development provide plenty of scope for employment of unskilled labour forces. It is, therefore, very important to link National Rural Employment Guarantee Programme (NREGP) with MI and groundwater development.

2.51 The UIP through ground- water resources has been assessed to be about 64 MH in the country, out of which 46.03 MH has been created upto the end of the Tenth Plan. Since groundwater is an open access resource and everyone is entitled to pump water below his own land, it is over-exploited in a number of blocks in the country and the water table is going down. This increases the cost of irrigation and farmers are required to periodically deepen their wells.

2.52 In order to address the issues of sustainable use of groundwater and the question of ownership of the groundwater, the Planning Commission has set up an expert group on 'GroundWater Management and Ownership' chaired by Member (Water and Energy) Kirit S. Parikh. The group recommended that the ownership of the groundwater below the land will continue to remain with the owner of the land as per the Easement Act 1882 as long as the exploitation of groundwater is not causing depletion in the ground water levels so the similar rights of the adjoining landowners and public at large are not encroached upon. Centre's intervention would be required when the groundwater level falls below the replenishable level. In such events, the affected area will be declared as an area under threat and any exploitation will be regulated. The Central Ground Water Authority, under the provisions of Environment Act 1986, is empowered to make such declarations and it would be the responsibility of the State Government to ensure that the exploitation in the area is regulated.

2.53 The group has noted that the experiences at national and international levels have shown that a command and control mechanism has not yielded good results in protecting the groundwater resources from over-exploitation. The regulation/reduction/restriction on the groundwater usage can be made effective by the State Government only with the co-operation of user groups and community participation involving PRIs. The user groups will be responsible for regulating the ground water usage among various sectors, that is irrigation, drinking, and industrial. Such regulations by the user group can be made effective only if the State/Central Ground Water Board (CGWB) monitors and provides information on safely extractable water on the basis of water table levels recorded scientifically.

AUGMENTING UTILIZABLE WATER

2.54 Usable water availability can be increased by tapping water that otherwise would have run-off to the sea. Water storage above ground through dams and diversion through weirs are the conventional means. However, water can also be stored underground by enhancing percolation through artificial recharge. Rain water harvesting in many small ponds through construction of bunds can also add to water availability. Inter-basin transfer of water through inter-linking of rivers can substantially expand availability.

Artificial Recharge and Rain Water Harvesting

2.55 The groundwater levels are declining in many parts of the country. Artificial recharge of groundwater

with rainwater is an important strategy to arrest this trend. The CGWB has already prepared a master plan to recharge 36 bcm of rainwater into groundwater at a cost of Rs 24500 crore. Except for pilot projects in the Eighth and Ninth Plans, no serious effort has been made to implement this on a mission mode. In urban areas, many cities have by-laws making rainwater harvesting compulsory for new buildings. However in rural areas there is no such programme.

2.56 Local storage is cost effective. There is significant potential for increasing the overall utilizable water through rainwater harvesting, construction of check dams, watershed management, and restoration of traditional water bodies as well as creation of new ones. In areas where groundwater is under severe stress, artificial recharging would need to be undertaken with proper technical support. Resources under the NREGP, BRGF, etc. are available for this purpose. The multilateral agencies such as World Bank and Asian Development Bank (ADB) have also been requested to provide financing for this purpose. Alternatively, a cess on the bottled water (since many negative externalities are associated with it like generation of plastic waste, their improper disposal, etc.) can be levied and funds from such levy could be used for revival of traditional water bodies or for recharging ground water with community participation. The challenge is to motivate the local communities to undertake this work on priority basis and to build their capacity for this purpose. Technical support systems for developing an optimal water management master plan for a micro watershed/ hydrological unit need to be created. Groundwater mapping, GIS mapping, satellite imagery, etc. need to be utilized for assisting the village community in preparing water resource development and management of master plans. With broadband connectivity expected to reach all over rural India in the Eleventh Plan this is feasible. It does however pose a difficult challenge in creating the institutional systems and delivery mechanisms for providing technical back-up support to the village community for preparing water management master plans.

2.57 The flood plains in the vicinity of rivers can be good repositories of groundwater. A planned management of groundwater in the flood plain aquifers offers an excellent scope of its development to meet the additional requirements of water. The development of groundwater in the Yamuna flood plain area in Delhi is an example of scientific management of water resources. During rainy season, the flood water spreads over the plains but due to very shallow water table the recharge is small and the rejected recharge result in river out flows. CGWB constructed 95 tubewells in Palla Sector in the depth range of 38–50 m for Delhi Jal Board. The total pumpage during the pre-monsoon period of 2002 was 40 million gallons per day which created a regional drawdown of about 5 m in the flood plain area. It was observed that immediately after rainy season, the depleted aquifer fully recouped. Thus over-development of shallow aquifers in flood plains creates the necessary subsurface space for augmentation of groundwater from the river flows during the monsoon. Induced recharge is an effective management tool to meet the gap of demand and supply in areas adjacent to rivers with active flood plains.

Inter-basin Transfers through Inter-linking of Rivers

2.58 The inter-linking of rivers and the transfer of surplus water, especially in the monsoon period from the surplus basins to the deficient basins has been championed by many experts over time. The task force on the inter-linking of rivers has drawn up a set of project proposals. The total amount of water that can be usefully transferred is estimated to be about 220 bcm. However, there are apprehensions that the assessed surplus is somewhat illusory for many basins and future generations would actually need all the water. Sceptics have reservations about the economic viability of such large projects. Environmental concerns would need to be addressed through the environmental appraisal process of each project. For these reasons the pace of progress in the Tenth Plan period has been quite modest and is summarized in Table 2.12.

2.59 The availability of water in the country has vast variation both in time and space. The bulk of the rainfall is concentrated in the monsoon months June to September. While 51.12 MH is affected by droughts, mainly in peninsular India, 40 MH is affected by floods mainly in Bihar and Assam. The per capita availability of water is 1820 m^3 which is above the water

TABLE 2.12
Progress of Inter-linking of Rivers

S. No.	Item of Work	Progress Made So Far
1	Preparation of feasibility reports (FRs) by National Water Development Agency (NWDA)	NWDA has already prepared 16 FRs (14 under Peninsular Component, 2 under Himalayan Component). Draft FR of 4 links under Himalayan Component in advance stage of completion and remaining are in progress.
2	Inter-linking of rivers is to be pursued continuously with a focus on peninsular component	The MoWR is laying special emphasis on undertaking the works of the peninsular components on priority and accordingly NWDA is working on this component.
3	Priority links Ken–Betwa	(i) After signing of MOU by concerned states of UP and MP for preparation of DPR for Ken–Betwa link on 25 August 2005, work started by NWDA.
	Parbati–Kalisindh–Chambal	(ii) Concerned States of MP and Rajasthan are discussing bilaterally to sort out differences for MOU of Parbati–Kalisindh–Chambal link.
4	Identification of another priority link	NWDA has identified three more links in Peninsular Component namely Damanganga–Pinjal and Par–Tapi–Narmada and Polavaram–Vijayawada link as priority links.

stress condition threshold value of 1700 m^3. However the per capita availability varies from 18417 m^3 in the Brahmaputra river to 380 m^3 in some east-flowing rivers in Tamil Nadu showing that many basins in the country are already critically starved of water. Out of the annual precipitation and snowfall of 4000 bcm, 747 bcm runs waste to the sea, mainly from the Ganga and Brahmaputra rivers systems, which have 60% of the water potential. Only 19% of the water potential is available in Mahanadi, Godavari, Krishna and Cauvery.

2.60 In the above backdrop, inter-linking of rivers assumes importance as a part of the 747 bcm running waste to sea (about 160–220 bcm) is proposed to be transferred through a series of 30 inter-linking proposals from surplus basins to deficit basins. Long-distance, trans-basin transfer of water is not a new concept. Many examples of existing projects can be given in this regard—Western Yamuna canal, Periyar project, Kurnool Cuddapah canal, Indira Gandhi canal, and Sardar Sarovar canal. International examples can be given of California water transfer project from north to central and southern parts of the US, China, the erstwhile USSR, Sri Lanka, and Mexico. Pioneering work was earlier done on a National Water Grid by K.L. Rao and Capt. Dastur. These were refined by the MoWR and 30 links identified—16 as peninsular component and 14 as Himalayan component. Pre-feasibility studies of 16 links (14 in peninsular component) have also been completed.

2.61 Before detailed project reports (DPR) are taken up, consensus among States is required so that implementation can smoothly begin after the DPRs are appraised. Five links have already been identified for DPR preparation and dialogue with concerned States initiated by MoWR. Co-operation of States is thus a sine qua non for success of the inter-link projects. The National Common Minimum Programme (NCMP) also stresses for a consultative approach to the project. One could even think of monetary compensation to the donor States in the form of a royalty as is being done for other natural resources such as coal and oil.

2.62 Since water will be transferred at a great cost, the economics of the proposal will need a careful evaluation taking into consideration not only primary benefits but also secondary and tertiary benefits. The environmental impacts of such a large-scale transfer will also need a very careful study and integration into the economic evaluation. Stress needs to be laid on promotion of drip and sprinkler irrigation and horticulture crops from the point of view of water saving and optimum returns. The funding will have to come

from a mix of budgetary support, market borrowings, and external assistance. For the implementation of such a mega project, an authority may have to be set up akin to the National Highways Authority of India (NHAI) with full autonomy for raising loan, approvals, etc. The maintenance of the created assets will have to be properly done with required revenues generated from the project.

2.63 Inter-linking of rivers is a challenging project and is essential for meeting the looming water crisis in future. The syndrome of drought and floods is hampering the required growth in agriculture and inter-linking of rivers offers an effective solution to the problem. In the Eleventh Plan the inter-basin transfer of water needs to be pursued more vigorously. Where a consensus emerges regarding the prima facie feasibility of specific projects their DPR preparation, environmental appraisal and decision on investment as well as execution modalities need to be completed in a time-bound manner. The execution of some projects should commence in the Eleventh Plan period.

IMPROVING WATER USE EFFICIENCY

2.64 For a gross irrigated area of about 87 MH, the water use is 541 bcm which gives a delta of 0.68 m per ha of gross irrigated area. The average annual rainfall is 1170 mm (1.17 m). Taking 70% of the rainfall as effective for crop consumptive use, the gross water use is about 1.45 m (4.8 feet) per ha of the gross irrigated area. This is very high as compared to water use in irrigation systems in say the US where water allocation is about 3 feet. This overuse in the country reflects a low irrigation efficiency of about 25% to 35% in most irrigation systems, with efficiency of 40% to 45% in a few exceptional cases. A basin-wise study conducted by A. Vaidyanathan and K. Sivasubramaniam of the Madras Institute of Development Studies (MIDS) using potential evapotranspiration data and gross water withdrawals reports the overall irrigation efficiency in the country as 38%. The study reveals that the Krishna, Godavari, Cauvery, and Mahanadi systems have a very low efficiency of around 27% while the Indus and Ganga systems are doing better with efficiencies in the range of 43%–47%. This is understandable as the peninsular rivers have large areas under irrigation in delta areas, where the water management practices are poor, while the rotational water supply (wara bandi) is practised in the Indus and Ganga systems. However, this is only a macro-level study. Project-level data available on irrigation efficiency unfortunately is minimal. It needs to be appreciated that 55% of the area irrigated is by groundwater sources where the efficiencies are quite high (70%–80%) in view of absence of long conveyance systems. Consequently the efficiencies in surface irrigation systems must be much lower than the average figure of 38%.

REASONS FOR LOW IRRIGATION EFFICIENCY

2.65 The reasons that contribute to low irrigation efficiency can be identified as follows:

- Completion of dam/head works ahead of canals.
- Dilapidated irrigation systems.
- Unlined canal systems with excessive seepage.
- Lack of field channels.
- Lack of canal communication network.
- Lack of field drainage.
- Improper field levelling.
- Absence of volumetric supply.
- Inadequate extension services.
- Low rate for water.

2.66 The equitable and optimal use of water from canal irrigation has been a matter of continuing concern. The traditional approach of pursuing these objectives through the field-level functionaries of irrigation department had its limitations. The participation of actual beneficiaries through PIM and the maintenance of village-level distribution channels through WUAs have been found useful. There is broad consensus that this has been a step in the right direction. This needs to be pursued more vigorously with genuine empowerment of WUAs. The objective should be to cover the entire command of all major and medium projects with WUAs by the end of the Eleventh Plan. The experience across States has been uneven. It is reported that 55501 users associations has been created and their State-wise position is indicated in Table 2.13.

ON-FARM WATER MANAGEMENT

2.67 On-farm water management covers a gamut of areas such as field channels, field drains, land levelling,

TABLE 2.13
State-wise Number of WUAs Formed and Irrigated Area Covered

S. No.	Name of State	Number of WUAs Formed	Area Covered (Thousand Hectare)
1	Andhra Pradesh	10790	4800.00
2	Arunachal Pradesh	2	1.47
3	Assam	37	24.09
4	Bihar	37	105.80
5	Chhattisgarh	945	NA
6	Goa	42	5.00
7	Gujarat	576	96.68
8	Haryana	2800	200.00
9	Himachal Pradesh	875	35.00
10	Jammu and Kashmir	1	1.00
11	Karnataka	2279	1052.41
12	Kerala	3930	148.48
13	Madhya Pradesh	1470	1501.45
14	Maharashtra	1299	444.00
15	Manipur	62	49.27
16	Meghalaya	99	NA
17	Nagaland	25	NA
18	Orissa	11020	907.00
19	Punjab	957	116.95
20	Rajasthan	506	219.65
21	Tamil Nadu	7725	474.28
22	Uttar Pradesh	24	10.55
23	West Bengal	10000	37.00
	Total	55501	10230.08 (say, 10.23 MH)

and irrigation scheduling with the objective of reducing field application losses. The works below the outlet are traditionally taken as CAD works and are not included as a part of the scope of the irrigation project which stops at the outlet. Out of an investment of Rs148000 crore in major, medium, and minor irrigation till the Ninth Plan, the investment in CAD works has been only Rs 6800 crore or 4.6%. This low outlay is an important contributory factor to poor on-farm water management, viz. low application efficiency and shortage in supplies to tail-enders. Since stepping up of CAD allocations by the States will be difficult, one measure that could be taken is to include all CAD works as a part of the project itself so that infrastructure required for irrigation water to reach every field is implemented alongwith the dam. This, together with conjunctive use, will no doubt hike project cost but since compartmentalized approach has not succeeded, an integrated approach will have to be seriously considered. There is an option to dovetail these works with the rural development programmes such as NREGP, BRGF, district plan, etc.

MICRO IRRIGATION

2.68 Micro irrigation, comprising drip and sprinkler, has emerged as a tool for effective management of resources which save water, fertilizer as well as electricity and distribute water evenly unlike other irrigation systems. Drip irrigation is ideally suited for horticulture crops such as pomegranate, grapes, mango, banana, guava, coconut, *amla*, and cash crops such as sugarcane. Drip irrigation saves 25%–60% water and upto 60% increase in yield can be obtained. Sprinklers are useful in undulating land with cereals crops and save 25%–33% of water. Out of the 69 MH net irrigated area in the country, only 0.5 MH under drip and 0.7 MH under sprinkler has been achieved. Maharashtra has 46% of the area under drip in the country. Karnataka, Tamil Nadu, and Andhra Pradesh follow with percentage area of 21%, 14%, and 12%, respectively. Drip irrigation methods range from simple bucket kit systems for small farms to automated systems linking release of water to soil moisture conditions measured continuously by tensiometers.

2.69 It is suggested that while sanctioning new irrigation projects, it would be made obligatory for project authorities to implement micro irrigation in at least 10% of the command area. The various suggestions of the Task Force on Micro Irrigation also need to be taken note of as micro irrigation has the potential to transform Indian agriculture.

RURAL AND URBAN DRINKING WATER AND SANITATION

2.70 These issues and programmes are discussed in Volume II, Chapter 5, 'Drinking Water, Sanitation, and Clean Living Conditions'.

MEETING INDUSTRIAL WATER DEMAND

2.71 Industrial demand for water is growing. Also disposal of waste water from industries without appropriate treatment pollutes water bodies, underground aquifers, and soils. In addition long-term land use planning for urbanization and industrialization is now a necessity and provision of water on a sustain-

able long-term basis should be a key factor in such planning exercises. In the absence of such planning demand for water emerges in areas where the provision of water requires enormous investments in carriage systems over long distances or even treatment of sea water. With proper long-term planning in terms of location of special economic zones (SEZs), industrial parks, and townships it should be possible to optimize costs of industrial development. For meeting the water needs of industry the approach discussed next appears appropriate.

2.72 New industries should ideally be located only in planned industrial areas, industrial parks, townships on industrial/zones identified in township Master Plans. They should be provided water by the local authorities who should charge prescribed rates on a volumetric basis. These rates should fully cover:

- the cost of supply.
- a premium to reflect the scarcity value of water in areas where there is water shortage.
- the cost of treatment to enable the discharge to go back into the water system through drainage into irrigation canals, rivers, lakes, etc.

2.73 Where groundwater is the source of supply and is under stress, the cost of supply should include the cost of recharge wherever such recharge is required and the recharge component should be credited to a dedicated Recharge Fund (RF) so that its utilization is suitably monitored. For new and existing industries which would use groundwater on their own there should be a system of IT-based volumetric metering of actual extraction by water-intensive industries in those areas where ground water levels have become critical. For these areas, there should be prescribed rates for ground water use by industry in a particular hydrological unit. The option of recycling the water and using it for secondary needs, that is other than drinking, should be a strategy for the Eleventh Plan.

FLOOD MANAGEMENT

2.74 Every year some part or other of the country gets flooded. A multi-pronged approach consisting of measures of prevention, protection, management, forecasting, and early warning are needed.

Prevention and Protection

2.75 Floods can be prevented or significantly moderated by watershed management of the catchment area of rivers. Agriculture, which is the nodal ministry for the watershed management works, should work out a detailed programme in consultation with the MoWR. For international rivers originating in Nepal and Bhutan, a joint mechanism for watershed management needs to be evolved. Another way is to preserve and augment flood cushions like natural swamps and lakes which can be developed into detention basins. Also, capacity of existing depressions can be improved for absorbing flood waters. Special drives for development of Tal and Diara areas are needed. Construction of dams and reservoir schemes with adequate flood cushion provide long-term solution of flood problems. Efforts should also be made for utilizing the existing reservoirs in the country for flood moderation to the extent possible. Even in reservoirs constructed for power or other purposes, the rule curves may be framed in such way that effective flood moderation is achieved. Rule curves guide the operation of a reservoir and ensure that a desired level of storage cushion is maintained to absorb floods of specified probability. Raising and strengthening of the existing embankments, if required after detailed studies of hydrological, morphological, topographical, and developmental aspects, provide some protection.

2.76 Watershed management in the hilly catchments of the rivers originating in Nepal, Bhutan, and hilly areas of India should be selectively chosen and fully funded. Implementation should be done through a joint mechanism.

2.77 The ideal solution for flood control is the creation of adequate storages in flood prone river systems. The Damodar Valley Corporation (DVC) is the best example of a series of storage projects which have made floods in the Damodar river basin a matter of history. The Ganga–Brahmaputra–Barak basins are our most flood-prone basins. There is clearly a need to build storage reservoirs in the northern tributaries of the Ganga and in the Brahmputra and its tributaries in the NER. These storage projects need to be investigated designed and executed expeditiously.

For the northern tributaries of the Ganga, co-operation with Nepal would be required. Negotiations would need to be pursued with vision and constructive pragmatism.

2.78 The strategy of flood control through embankments has been pursued by the States over the years. A holistic view of an entire tributary or a large stretch of a tributary needs to be taken. Wherever feasible a one time decisive investment for a flood protection project should be made. The recommendations of expert groups and contemporary international experience in other rivers in Asia with monsoon climate need to be looked into.

Managing Floods

2.79 Construction at appropriate location of spilling sections/sluices in the flood embankment for the controlled flooding of the protected areas for restoring fertility, recharge of soil moisture and groundwater can be useful. Drainage sluices should be integral part of embankments to prevent water-logging in the protected areas. Flood management schemes should be integrated with other infrastructural development programmes in the sectors of roads, railways, inland waterways, and canal/command area development works. Drainage improvement in critical areas in the country should be given priority. Also dredging at selective locations, that is outfalls, etc. in the rivers and the tributaries, helps reduce flood levels in low-lying areas and also helps in quick drainage. Erosion of land by rivers should be minimized through suitable cost effective measures. The Centre should continue to assist the States in the Ganga and Brahmaputra Valleys through Plan Funds to counter land erosion by river action. In order to give adequate emphasis on the O&M of the flood protection measures already created, a percentage of outlay of the flood sector should be earmarked for this purpose. R&D activities for improved flood management need to be encouraged.

2.80 To the extent groundwater is intensively utilized for irrigation for multiple cropping in north Bihar and Bengal and local water bodies are restored, the capacity for recharge of groundwater in the monsoon period would increase and flooding would get mitigated partially. In other parts of India flash floods would get minimized if local drainage and restoration/creation of local water bodies was done with watershed planning under NREGP, BRGF, etc.

Forecasting and Early Warning

2.81 Development of digital elevation model of flood-prone areas for taking up schemes for inundation forecast, preparation of flood risk maps, planning of flood management schemes, etc. should be taken up. Steps should be taken to ensure implementation of Action Plan prepared by National Disaster Management Authority (NDMA) for flood management.

SUSTAINABILITY

2.82 Two major challenges are being faced in ensuring sustainability of water, that is quality and quantity, to meet the needs. Groundwater use has to be restricted to average recharge and quality of water has to be improved and should be protected from biological and chemical contamination. Sustainable use of groundwater has been already discussed.

Preserving Water Quality

2.83 The threats to water quality are from untreated industrial effluents and municipal wastes from habitations, pollution from open defecation, and run-off from farms containing fertilizers and pesticides. Upscaling total sanitation campaign (TSC) programme for rural sanitation (see Volume II, Chapter 5), strict enforcement of industrial effluent standards, and treatment of all municipal wastes are needed. At the same time farming practices have to be adjusted to use as little chemical fertilizers and pesticides and apply them in ways that minimize residues in run-off water, which is a waste for the farmer, are called for.

CONVERGENCE

2.84 The subject of water is presently being dealt at the Centre by a number of Ministries/Departments. The linkages of water with other sectors are many. Water availability and quality impact on social, human development and economic activities. Effective coordination among different ministries and convergence of programmes is essential. Suitable institutional arrangements would be made in the Eleventh Plan in this regard.

FINANCING THE ELEVENTH PLAN

2.85 The total projected GBS for the Eleventh Plan for MoWR is Rs 2870 crore (2006–07 price) and Rs 3246 crore (current price). As per the constitution, irrigation is a State subject; hence, the substantial investment will be contributed by the State Governments in this sector. The details of the recommended outlays for the Eleventh Five Year Plan and physical targets are indicated in Tables 2.14 and 2.15.

TABLE 2.14
The Overall Outlay for the Eleventh Five Year Plan

(Rs Crore)

State plan	182050
State sector schemes, i.e. AIBP and others	47015
Central plan	3246
Total	232311

2.86 The following five core programmes of MoWR have been identified as important:

- River management activities and works related to border rivers.
- CAD and water management.
- AIBP.
- Repair renovation and restoration of water bodies.
- Flood management programmes other than border rivers.

2.87 In recognition of the fact that the actual requirements of the water resources sector, in general, and above schemes, in particular, could exceed the provisions made in the plan document, the size of the actual yearly allocations may exceed the pro rata allocation during AP discussion and the issue of an overall increase could be revisited at the time of MTA.

EMPLOYMENT GENERATION

2.88 When irrigated area increases it generates additional employment year after year. Water resources projects, particularly irrigation development and flood control works, generate significant employment opportunities during construction period as well as in the post-project phase. The overall employment potential likely to be generated in the Eleventh Five Year Plan in irrigation sector is as per Table 2.16 below.

TABLE 2.15
Physical Target

No. of Projects included in Eleventh Plan	Major	Medium	ERM
(i) Completion of Projects			
Tenth Plan projects spilling into Eleventh Plan	166	222	89
New projects of Eleventh Plan	78	145	86
Total	244	367	75
Projects likely to be completed in Eleventh Plan	72	133	132
(ii) Creation of Potential (in MH)			
MMI sector	9.00		
MI sector	7.00		
Surface water	1.50		
Ground water	4.50		
Restoration of water bodies and ERM	1.00		
(iii) Physical Targets for CADWM (in MH)			
Development of CCA	3.5		
Correction of conveyance deficiency	6.25		
Reclamation of water logged, saline, and alkaline lands	0.5		
(iv) Physical Target under Flood Control Works (MH)			
Area to be benefited against flood: 2.18 MH			

TABLE 2.16
Overall Employment Potential

(Million Person Years)

	Direct Employment	Indirect Employment
MMI	2.1	10.1
MI	5	1.05
Flood Control	2.5	–
Total	9.6	11.15

THE WAY FORWARD

2.89 The measures suggested for the Eleventh Plan address the whole range of issues concerning water management and irrigation. The long gestation period in building irrigation infrastructure and thin spread of resources are the main reasons for delay in completion of a number of ongoing projects. During the Eleventh Plan a total of 477 projects including 166 major, 222 minimum, and 89 ERM projects are likely to spill-over. The spill-over cost of these projects during the Eleventh Plan is estimated to be about Rs 133746 crore. There is a need for reducing the gestation period and making available the benefits of irrigation to the users by way of integrating CAD programme with the projects. The projects should be implemented on a construction schedule not more than four to five years. The land acquisition and R&R works should be taken simultaneously with the project formulation. Irrigation efficiency in the systems needs to be upgraded from the present level of 35% to about 60% in case of surface water system and from about 65% to 75% in groundwater system. The efforts of the other departments such as Rural Development and Agriculture, etc. should be converged and an integrated approach for water resources development and conservation should be adopted. The various schemes of MoRD for rain water harvesting, watershed development, and NREG Act should be implemented in consultation with MoWR and Department of Drinking Water Supply (DoDWS). There is a need for (PPP) in development of water resource projects as this issue has already been addressed by NWP, 2002. The modern scientific development of water resources conservation, transfer, and application to the field is needed to be applied in the irrigation command. In flood management, the recurrence interval of the floods should be the guiding factor for taking up flood control measures. The flood control measures should not be taken in isolation but it should be based on master plan approach in an integrated manner. The sustainability of ground water is one of the core areas which require attention for meeting irrigation and drinking water requirements. Use of ground water should be limited and linked with the quantum of water being recharged. The issue of monitoring ground water levels through scientific methods such as Piezo meters, etc. should be left to the group of beneficiaries with proper technical support from the Central Government and the State Governments.

ANNEXURE 2.1
Plan-wise Cumulative Potential Created and Utilized

(In MH)

Plan	Potential Created					Potential Utilized				
	Major and Medium	SW	Minor GW	Total	Total	Major & Medium	SW	Minor GW	Total	Total
Upto 1951 (Pre-Plan)	9.7	6.4	6.5	12.9	22.6	9.7	6.4	6.5	12.9	22.6
First Plan 1951–56	12.2	6.43	7.63	14.06	26.26	10.98	6.43	7.63	14.06	25.04
Second Plan 1956–61	14.33	6.45	8.3	14.75	29.08	13.05	6.45	8.3	14.75	27.8
Third Plan 1961–66	16.57	6.48	10.52	17	33.57	15.17	6.48	10.52	17	32.17
Annual Plan 1966–69	18.1	6.5	12.5	19	37.1	16.75	6.5	12.5	19	35.75
Fourth Plan 1969–74	20.7	7	16.5	23.5	44.2	18.39	7	16.5	23.5	41.89
Fifth Plan 1974–78	24.72	7.5	19.8	27.3	52.02	21.16	7.5	19.8	27.3	48.46
Annual Plan 1978–80	26.61	8	22	30	56.61	22.64	8	22	30	52.64
Sixth Plan 1980–85	27.7	9.7	27.82	37.52	65.22	23.57	9.01	26.24	35.25	58.82
Seventh Plan 1985–90	29.92	10.9	35.62	46.52	76.44	25.47	9.97	33.15	43.12	68.59
Annual Plan 1990–92	30.74	11.46	38.89	50.35	81.09	26.31	10.29	36.25	46.54	72.85
Eighth Plan 1992–97	32.95	12.51	40.8	53.31	86.26	28.44	11.07	37.7	48.77	77.21
Ninth Plan 1997–2002	37.05	13.6	43.3	56.9	93.95	31.01	11.44	38.55	49.99	81
Tenth Plan 2002–2007	42.35	14.31	46.11	60.42	102.8	34.42	12	40.81	52.81	87.23

3

Forest

INTRODUCTION

3.1 National Forest Policy 1988 acknowledged the importance and primacy of local communities and provided for a sustainable management approach with maintenance of environmental stability as the prime objective. Commitment to conservation of nature is highlighted by the targets of maintaining one-third of land under the forest/tree cover. The social concerns are targeted through increasing productivity to meet local and national needs and creating a people's movement for afforestation. Industries have been advised to network with farmers for industrial raw material.

3.2 Forest cover is critical for a living environment as it influences the quality and quantity of air and water. The role of forests as carbon sinks endows them added recognition as an important environmental factor. Therefore, forest cover and afforestation have been dealt with in Volume I, Chapter 9, 'Environment and Climate Change'.

3.3 In India, per capita forest area is only 0.064 ha against the world average of 0.64 ha. (FAO). The productivity of our forests is only 1.34 m^3/ha/year against the world average of 2.1 m^3/ha/year. While 78% of the forest area is subjected to heavy grazing and other unregulated uses, adversely affecting productivity and regeneration, nearly 10 MH of forest area is subjected to shifting cultivation. Land use changes such as diversion of community areas for non-biomass purposes have directed nearly all biomass needs towards forests.

3.4 Plan investment in forestry and wildlife sector so far, including State and Central plan, has been about 1% of the total plan outlay. The National Forestry Commission (2006) has recommended an investment of 2.5% of the plan outlay in the forestry and wildlife sector.

3.5 As the State forest administration is responsible for management of forests, the focus of Central interventions should be on reinforcing the capacity of States to undertake the national policy mandates towards conservation and sustainable use. The strategy for the Eleventh Plan will, therefore, be to create an environment for achieving sustainable forestry and wildlife management with specific focus on the socio-economic targets. Accordingly, the following scenario will be the core of the forestry sector development strategy:

- The objective of enhancing the green cover will be integrated with livelihood opportunities. Suitable policy and legal measures for this purpose will back-up the programmatic interventions. The Tenth Plan strived to universalize Joint Forest Management (JFM). The resolve of the Eleventh Plan is to strengthen the regime by incorporating the concepts of harvesting, value addition, and facilitated marketing of forest produce.

- The ultimate aim of the State forest management will be to achieve optimally productive forests capable of providing timber and non-timber products, apart from the ecological services without unnatural change in the composition of the forests.
- The forests in the vicinity of habitations will be managed for livelihood needs of the neighbouring populations. For this, adequate support and empowerment will be ensured.
- The harvest of forest products will be governed by the availability. However, strategy for widening the production base beyond forests will be pursued to ensure sustainable use of the land resources of the country.
- Protected areas will be integrated with the sensitivities of local populations and protected area management planning will be based on the optimization of local community resources and the use of non-invasive benefits from the PAs directed towards the neighbouring population, on village eco-development principles.
- Support systems for attaining these results will be evolved in terms of R&D, capacity building, and strong information system for long as well as short term objective monitoring.

LINKING FORESTS TO LIVELIHOOD AND STRENGTHENING PARTICIPATORY PROCESSES

National Afforestation Programme

3.6 The CSS National Afforestation Programme (NAP) of National Afforestation and Eco-development Board (NAEB) assists rehabilitation of degraded forests through JFM Committees. Forest Development Agencies (FDAs) have been created at the district level to function as a link between the Ministry of Environment and Forest (MoEF) and JFM Committees for the scrutiny of projects, release of funds, and implementation of the sanctioned programmes.

3.7 NAP, as a CSS, has been the epicenter of the JFM movement. Out of about 22 MH forest area looked after by 1.07 lakh JFM Committees, NAP covers about 9 lakh ha through 23750 committees, which represents only 24% of the total committees and 4.20% of the total area under JFM. NAP as a stand-alone scheme may not have any impact unless it is able to influence the States to orient their programmes towards strengthening JFM.

3.8 There have also been certain shortcomings in the way JFM has been functioning. The modalities of JFM do not recognize the existing informal traditional institutions engaged in conservation. At the national level, centralized control on activities for NAP components has resulted in a slow pace of awareness and development of interface between the forest managers and community institutions.

3.9 In a national-level study conducted by the Indian Institute of Bio-Social Research and Development in 2004–05, JFM was evaluated in about 500 JFM Committee areas in 13 States across the country. The criteria were clarity and purpose of roles, institutional mechanisms, capacity of JFM Committees, and resource management. Impact on forest profile, socio-economic aspects such as household income, village development, women empowerment, and social unity were studied. The average score for institutionalization is 51% with high scores for West Bengal (68%), Rajasthan (62%), and Maharashtra (56%). However, no State has reached the state of incorporating and routinization of JFM. The effectiveness of the institutions has been rated as 50.28% with strong correlation with resource management. To achieve success the need for more motivation than mechanisms has been felt. Highest effectiveness was observed in Uttaranchal, West Bengal, Orissa, and the least in Karnataka, Andhra Pradesh, and Chhattisgarh.

3.10 Close analysis has revealed that conflicts and failures have been more where the benefits from managed resources are scarce or not clearly visible. This situation demands investment for improving productivity of the resources and rationalizing the modalities of sharing. Products from the forests could form a share of communities while ecological benefits including aperpetual green cover could be the national share. Products can then be accounted as the value paid by the State to the communities for the environmental services rendered by them for conserving forests.

3.11 National Afforestation/Eco-restoration Programme, as the flagship programme of the Central Government, will be designed for augmenting ecological resources and resultant benefits will accrue to the participating community. The main objective will be

to empower all participatory institutions to ensure forest conservation.

- For improving the outreach of the Programme, States will also need to implement their forest improvement programmes through the Forest Development Agency (FDA) mechanism.
- It will be ensured that the micro plans evolve from the JFM Committees and the decisions on species for afforestation are based on a naturally compatible combination of species with local ownership.
- The JFM framework will duly recognize the existing Van Panchayat and other community forestry institutions and honour their democratic decisions related to management of forests. The gram sabhas under the PESA in Schedule V areas and the traditional institutions in the North East can act as community forestry institutions. The green cover of the community forests and the environmental services will be treated as the share of the State and the harvested products as the share of the community.
- The programme may also include a component for encouraging forest-based small enterprises with appropriate mechanisms for accessing forest produce. Self-employment programmes will be supported with training and capacity building of educated unemployed youth.
- The social component in the Programme can also include specific projects on decentralized energy solutions such as biomass gasification-based electricity, solar systems, etc., for improvement of community services, linking these to planting projects.
- The programme for afforestation/eco-restoration should leverage part of allocation under NREGP for augmenting the ecological resource base.

National Afforestation, Eco-restoration, and Eco-development Board

3.12 The NAEB may be renamed as the National Afforestation, Eco-restoration, and Eco-development Board (NAEEB) to broaden its vision to include non-tree ecosystems. The NAEEB programme will have the following components:

- Grants-in-Aid for Greening India Scheme will include assistance for setting up well-equipped nurseries for quality planting material, supported by well-networked genetic improvement plans and well-monitored seed/clone testing and certification programme, apart from afforestation efforts by NGOs.
- Monitoring and evaluation of the state of desertification and afforestation/eco-restoration programmes and co-ordination of programmes for combating desertification based on the defined criteria and indicators, as mandated within United Nations Convention to Combat Desertification (UNCCD).
- Support to regional centres of the NAEB to assist in dissemination of technologies and NAEEB programmes through mass awareness and studies.
- **Eco task forces** for afforestation/eco-restoration of the areas where afforestation/eco-restoration is not possible with participation of people due to harsh conditions.

Augmenting Common Biomass Resources

3.13 More than four lakh villages in the country do not have a forest in the vicinity. For augmenting the biomass resource base, community controlled and other accessible lands need to be made optimally productive.

3.14 Panchayat Raj Institutions should identify such available lands and empower the community groups for their regeneration and management on locally relevant terms. States will provide technology and wages through the social forestry wing, with the support of the Central Government through a new CSS. Thus the funds and technical support under this programme will be available where Panchayats are willing to put the underproductive lands under productive regimes.

3.15 The NREGP can be linked for building these common resources. However, this would presuppose proactive action by fund users and sustained supply of manpower till the establishment of the plantations.

Promotion of Agro-forestry

3.16 Agro-forestry offers ancillary opportunities of sustained income per unit investment in agricultural lands as subsidiary to the main crops. While in

commercial agriculture, bund planting has been popular, net returns are better than conventional practices in many situations in rainfed areas. Subsistence or commercial agro-forestry has thus scope to grow from the existing indicative contribution of about 3% to about 10% of the forest/tree cover.

3.17 India today imports large quantities of timber as well as pulp. For ensuring impetus in greening in farm sector, organizing markets and facilitating fair trade will be the priority. Concessions for cheap and duty-free import of pulp need to be reviewed. Market options and incentives including overseas markets should be available to the farmers. R&D for enhancing productivity and testing indigenous alternatives to conventional agro-forestry species such as Eucalyptus and Acacias, suitable for the farm sector, should be taken up.

MITIGATION OF DEGRADATION OF FORESTS

3.18 The management of government forests is handled by the State Governments whereas capacity building and research have been with the Central Government.

3.19 Apart from a network of regional centres of MoEF for monitoring the compliance of central regulations, a CSS Integrated Forest Protection was launched in the Tenth Plan. The programme could be made fully operational only in 2005–06 and is yet to show an impact. Assistance provided under this programme needs to be thoughtfully used for building modern sustainable forest management capacity of the states. This will include management information, inventory and assessment, and adoption of modern methods for planning and monitoring. Accordingly the following two programmes of MoEF, viz., Integrated Forest Protection, and Strengthening Forestry Divisions, are proposed to be reoriented in the Eleventh Plan.

Intensification of Forest Management Scheme

3.20 The Integrated Forest Protection Scheme will be redesigned to provide assistance to the states for building capacity and basic infrastructure for modern forest management. Improving Management Planning and Survey (land records) set-up will be the first priority for Central assistance. The following components will be provided for modernization of the State forest management:

- Modernization of the management planning (Working Plan) units with equipment, infrastructure, and manpower. This may include forest inventories, training and satellite imagery processing, and GIS facilities. This will also include professional services such as ecologists and sociologists for relevant inputs.
- Forest Land Information System for land records, with modern and empowered survey, and land record maintaining mechanisms for documenting the legally recognized individual rights, concessions, ownerships including those under the Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act.
- Forest boundary demarcation by providing assistance for the state-of-the-art infrastructure, training/outsourcing survey work, fixing permanent boundary pillars, updating the forest block indices and compartment histories.
- Installation of forest fire surveillance and warning systems, along with fire management planning in participatory mode. This fire management system will also be integrated with a national network for forest fire surveillance and monitoring.
- Assistance for general infrastructure for accommodation in remote areas, communication, improvement of road network, etc., will also be a part of this programme.

Strengthening Forest Management

3.21 The programme will cover consultations and studies on relevant matters for efficient management of the sector including monitoring of compliance through the network of regional offices of the Ministry. Following specifically earmarked components should be part of this programme:

- A National Forestry Information system may be set up, along with networking with the States, for tracking the changes in forest development, harvesting, trade, and utilization scenarios. This will include information on non-timber forest produce

(NTFP) resources including medicinal and aromatic plants.
- The National Working Plan Code may be revisited for incorporating aspects dealing with ecological and biodiversity concerns of the forest areas. This will also include NTFP, medicinal, and aromatic plant resources.
- A mechanism for internationally recognized independent sustainable forest management certification regime for forest resources and products may be set-up.

Management of Gregarious Flowering in the North East

3.22 Muli bamboo, *Melocanna baccifera*, grows over an area of approximately 18000 square kilometre (sq km) in the States of Mizoram, Tripura, Manipur, and parts of Assam, Nagaland, and Meghalaya. The largest population of the species exists in Mizoram covering about 6700 sq km. Gregarious flowering has commenced after a flowering cycle of about 48 years and the whole flowered bamboo population will dry off after seed setting. This may result in ecological, economic, and social problems in the area due to destruction of large tracts, rendering them vulnerable to forests fires, depletion of important bamboo resources for the artisans and industry, and increase in rodent population causing further destruction and health hazards. For working out a strategy for management of gregarious flowering in the North East, consultations began in April 2002 which resulted in the launching of a CSS for which a sum of Rs 85 crore was approved by the Central Government as part of an action plan of Rs 366 crore. The programme actually took off in 2005–06 and will continue till 2008–09. The action plan has the following priorities:

- Resource survey and mapping be taken up for assessment of the growing stock affected.
- Harvesting of the standing crop of bamboo to the extent possible before flowering, including arrangements to facilitate transport by road, railway, waterways, etc. Effective ways of disposal of the harvested bamboo by linkages with paper mills like Hindustan Paper Corporation Ltd, promoting bamboo-based cottage industries and establishing mini mechanical chipping and pulping units in small-scale industrial sector.
- Regeneration of flowered areas including introduction of economically important bamboo species for subsequent use.

CAPACITY BUILDING AND RESEARCH

Capacity Building

3.23 The ongoing paradigm change in the forestry sector necessitates fundamental orientation and attitudinal changes of the personnel in line with multifarious roles of forests, corresponding variety of externalities, and for coping with traditional forestry management practices. This includes social sensitivities along with the scientific basis of the processes of nature.

3.24 An integrated capacity building programme will be designed for forestry personnel including training of trainers for State frontline staff training institutions and will also enable stakeholders to understand the perspective of conservation in human well being by providing them state-of-the-art information and knowledge base.

Indian Institute of Forest Management (IIFM)

3.25 IIFM has emerged as a premier forestry institution and has contributed to the development of criteria and indicators for sustainable forest management and participatory forest management processes. Based on an evaluation, IIFM intends to enlarge its educational and management development programmes as well as policy-relevant research focused on forestry and its linkages with rural institutions and natural resource-based rural livelihoods. The Institute will take up policy and development research including the valuation of ecosystem services, evaluation of the economy of participation in natural resource, especially forest management, and modelling of impact of climate change on livelihood and forest resources.

Wildlife Institute of India (WII)

3.26 Apart from the training, research, and advisory role of WII, the new approaches would include developing workable framework for mainstreaming conservation in development projects and policies, empirical studies on processes for ecological impacts

of developmental projects and human activities, strengthening common property resource management, and developing expertise in managing wildlife in isolated and fragmented landscapes. The use of modern tools and technology and development of analytical capabilities will be undertaken.

Indian Council of Forestry Research and Education (ICFRE)

3.27 The Council was created in 1986 to evolve a scientific environment in forestry, in view of the new scope of genetic, ecological, climatic, and economic roles, compared to pre-1988 mandates, of largely silviculture-based management systems, and ancillary aspects on regeneration, harvest, and utilization. Accordingly, the management of research and education needs to be supported by enabling decision-making through consultation and in a professional capacity.

- The Council should have specific separate mandates regarding the administration of its institutes and co-ordination of research. For this purpose, a task group may be set up, involving top-level research managers, forest managers, and policy makers, to propose a working mechanism including resource mobilization for its research and education components. This group may also deliberate on integrating wildlife, biodiversity, and habitat/landscape/ecological research concerns within the Council.
- For the plan period, 50% of the total grants-in-aid to ICFRE will be earmarked exclusively for research and education. The Council will encourage its institutes to collaborate with other institutions of repute in relevant fields including State Forest Research Institutes.
- Research programmes will be oriented towards meeting the priority areas of productivity, genetic improvements, ecosystem research, and updating growth and yield parameters required for analysis in management planning. Management of natural forests for improvement of their profile will be the main focus. The research and education programme in the field of utilization of wood and wood products should also include Indian Plywood Industries Research and Training Institute (IPIRTI).
- Nation-wide long-term genetic improvement programmes for indigenous species, screening of Indian species for fast growing, short rotation alternatives for traditional species for industry and protocols for survey, inventory, and management planning for NTFP, medicinal, and aromatic plants in forests will be launched.
- Specific thrust will be given for developing technologies and processes for agro-forestry and social forestry. Quality seed and planting material programmes in public or private sector will be supported by credible testing and certification regimes.
- A forest biodiversity network will be established for integrating the available information on one platform and for studies in the left out areas. It will be compatible with the management planning systems of forest administration and the other existing/evolving information resources.
- Inter-sectoral impacts, trade, and market aspects of forest economics, ecosystem research, policy research, and concerns of climate change including carbon trade methodologies, will be taken up.

Indian Plywood Industries Research and Technology Institute (IPIRTI)

3.28 Besides the specific mandate of developing technologies for efficient utilization of wood in structural material, development and promotion of technologies for alternative and efficient use of residual waste like bamboo, husk, wood waste, small wood, etc., will be the thrust areas. Better utilization of the agro-forestry species including treatments for longevity of the products will be the focus of research for utilization. Apart from its own grants in aid, IPIRTI will be integrated with ICFRE for wood utilization research and technology. Technology transfer being the mandate of IPIRTI, professional courses on wood technology should be planned.

Forest Survey of India (FSI)

3.29 Present scope of the FSI is limited to the assessment of tree canopy cover. The information is not sufficient for objective assessment and planning for the sector.

3.30 Scope of interpretation of satellite data for tree cover will include separate canopy status in forest lands,

patterns of degradation, and state of commercial plantations. With redefined green cover, appropriate indicators compatible with the technologies used by FSI need to be developed. Monitoring of ecological status of landscapes/habitats in terms of the dynamics of vegetation and early warning systems, productivity, consumption, and supply from forest and non-forest resources will be taken up. On the basis of these priorities, rationalization of the present network of regional units and manpower will be taken up. The scope, definition, and components of FSI inventories will be decided at an expert group level, in order to render them compatible with various national and international formats, definitions, and organizations for collaboration.

SOCIO-ECONOMIC AND POLICY IMPERATIVES

Tribals, NTFP, and PESA

3.31 State governments will need to provide support for implementation of the Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act for preparing the forest land records for the recognized rights, mapping of common forests for community management, and developing management plans.

3.32 To maximize economic benefits to the communities with sustainable forest use, the available mechanisms for dealing with NTFP will be reviewed. As the large volume NTFPs require dealing and trading at higher scale, professional services can be organized through the marketing federations of NTFP gatherers/processors. Nationalized system of collection through corporations and contracts will be dealt with in the light of the settled policy and legal position. Improving livelihood through gainful employment opportunities will be encouraged by organizing value addition of NTFP at community level under the NAP. For capacity building and technology assistance, linkages with voluntary organizations and programmes such as National Bamboo Mission, National Mission on Bamboo Applications, Village and Small Scale Industries, and institutes of rural development and technologies will be established.

Gender Perspective

3.33 Women are the principal stakeholders in natural resource use and management. It is crucial to ensure equal representation of women in the decision making and implementation processes in participatory planning and development programmes. JFM principles indicate 50% participation of women in JFM institutions. However, the models vary among States. The participation of women should be ensured in all community activities and the decisions should be based on their considered opinions. This should hold good for not only JFM but also processes such as afforestation through Panchayats, protected area management, planning, and use of common property resources including NTFP under the Tribal Rights Act or PESA. Thus gender perspective should be a visible component of any community-based programme.

Mobilization of Resources for Afforestation

3.34 Apart from enrichment activity for forests, afforestation/eco-restoration helps in sustaining the livelihood of the rural poor. Developing multipurpose resources in underproductive forest or non-forest areas must be a component of any employment generation programme. A shelf of afforestation/eco-restoration programmes will be generated for village communities for implementation under the NREGP. Necessary institutional initiatives will include notification of afforestation as one of the activities, and dovetailing afforestation programmes with the NREG programme.

Compensatory Afforestation Fund Management and Planning Authority (CAMPA)

3.35 While considering the proposals for diversion of forest lands for non-forestry purposes under Forest (Conservation) Act, 1980, MoEF generally levies cost of compensatory afforestation in equivalent non-forest lands offered by the user agencies or in degraded forest land. Net present value of the land allowed to be diverted is also realized from the user agency. The funds thus accrued were to be made available by the respective States for identified compensatory afforestation and other forest development activities. The Apex Court had, however, observed that the funds were not

appropriated to the implementing authorities. It, therefore, directed the Central Government in 2002 to constitute an authority for management of the funds received from the user agencies and their exclusive and prompt utilization for the intended purpose. MoEF notified the constitution of CAMPA on 23 April 2004 for management and use of this fund for forest development. However, the mechanism is yet to take effect. It is understood that presently an amount of about Rs 5000 crore is available with CAMPA for utilization in forest conservation activities. The amount should be made available in the current plan period on the basis of specific project proposals from the States.

Forest Plantations

3.36 For sustaining forest cover, existing commercial plantations should be intensively managed for optimum productivity and provided with scientifically designed inputs including quality planting material, cultural/silvicultural treatments, etc. Harvesting and replanting should be the interlinked operations. In the context of the required thrust on agro-forestry, it should be ensured that plantation projects in forest lands avoid agro-forestry species.

3.37 On the other hand, afforestation works should be taken up with a specific context and habitat profile in mind and only in participatory mode with local communities. The species selection should be a part of the micro plans. The Central Government is responsible for the approval and monitoring of Working Plans. Therefore, MoEF should ensure that no new commercial plantations are created in the name of afforestation/eco-restoration.

Private Forestry Initiatives

3.38 The Central Government has been deliberating on modalities of PPP. The concept of multi-stakeholder partnership in forestry is primarily based on granting tenure on degraded lands (including forest lands) to investors with benefit-sharing arrangements. Considering the multiple stakes of local communities over the forest lands, and the accepted position of first charge of communities on natural resources, such partnership with industry for forest lands is not desirable. However, with the explicit consent of the communities in public-hearing mode, possibilities of such ventures in non-forest wastelands can be explored.

3.39 Encouraging industry as a dedicated destination for agro-forestry products will be desirable and focus should be on establishing appropriate linkages with the farmers for cultivation of tree crops as suggested in the National Forest Policy 1988. The examples of ITC-Bhadrachalam and other similar initiatives within the private sector are worth emulating in this context.

Areas under Shifting Cultivation

3.40 The North Eastern hill areas need to be viewed as cultivated and uncultivated domains—both with extensive tree cover owned by people, individually or collectively. The length of the *jhum* cycle is the main determinant of degradation of jhum lands. The reduced amount of land available for jhum shortens the fallow period and results in increased economic pressure on low-income families. Most of the shifting cultivation is practiced on lands with customary community rights. In such areas, any afforestation activity beyond fallow management is expected to face resistance. Replacement of these practices by settled agriculture or horticulture has resulted in alienation of the lands from common categories, putting further pressure on the remaining commons.

3.41 For the areas with jhum cycles above 10 years, the tree farming model of Nagaland Environmental Protection and Economic Development Project may be studied. It provides for planting of fast-growing indigenous trees along with main crop to ensure that the trees attain harvestable girths by the subsequent slash and burn stage, and find demand in the timber market. While tree planting can be supported under NAP, appropriate market linkages for ensuring economic benefits to the farmers from the tree products will be quite useful. For this, opening up markets beyond NER with appropriate safeguards is important.

Eco-tourism

3.42 Eco-tourism, including homestead tourism, offers excellent possibilities of taking the benefits of nature conservation to local communities in many

ways. The protected areas and the adjoining terrestrial and wetland ecosystems have the potential to contribute to the rural economy and community development. A long-term policy is needed on eco-tourism, complementary with the conservation objectives and participation of the local stakeholders from the serving communities.

3.43 The eco-tourism plans should include modalities of managing the ecological and socio-economic integrity of the area, designs to strengthen the capacities of locally formed institutions, such as land management committee, waste management committee, alternative fuel technology institutions, tour operators committee, etc. The programmes should be taken up with the tourism sector and build on community ownership to promote equitable distribution of the net benefits.

PRESERVATION OF WILDLIFE AND FOREST BIODIVERSITY

3.44 The 1952 National Forest Policy provided for setting up of sanctuaries and national parks for preservation of wildlife. Enactment of the Wildlife (Protection) Act, 1972, launch of Project Tiger in 1973, Project Elephant in 1992, and the Biological Diversity Act 2002 are other milestones. Indian Ivory is banned and India is a member of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. On the R&D front, WII, Central Zoo Authority (CZA), the new Tiger Conservation Authority, and National Wildlife Crime Control Bureau show the increasing Central resolve to support the responsibility of States for conservation.

3.45 The public forests dedicated to the protection of wildlife habitats include 96 national parks and 509 wildlife sanctuaries. The total area of 15.7 MH, which is about 4.78% of the geographical area of the country covering about 20% of the total forests, is maintained under this protected area network. Scientific assessments of biodiversity of fauna, flora, and micro-organisms and well-organized retrievable databases for these are yet to be achieved.

3.46 During the Eleventh Plan, initiatives will be taken for mitigation of wildlife–human conflicts, involving and compensating local communities, management of habitats outside PAs, rehabilitation of displaced communities, and strengthening and protection of indigenous knowledge while improving research and monitoring systems.

Integrated Development of Wildlife Habitats

3.47 The CSS 'Development of National Parks and Wildlife Sanctuaries' provides assistance to the States for conservation activities in the wildlife areas. During the Tenth Plan, out of the outlay of Rs 350 crore, Rs 240 crore was allocated and 342 PAs have been covered. MoEF has prioritized the PAs on conservation value basis. However, all PAs do not have scientifically drafted management plans. At present, about 204 PAs

Box 3.1
Avoided Deforestation Incentive Mechanism for States

- There is no incentive to the States to protect forests. In the era of climate change, India has to depend on avoided deforestation as a mitigation step. In this context, there should be a mechanism that supports and encourages avoided deforestation. This money must be shared between the States and the forest dwelling communities.
- Satellite imagery can be used for determining the extent of avoided deforestation. The aim would be to pay for existing dense forest cover, at rates which reflect the opportunity costs of the forests. This will create local stakes and economic interest in dense forest protection.
- It is important to develop a compensation structure for the State Government and the local community. The Central Government should create a system for cess on all tax payers—a forest services tax (replace the road cess) to fund this mechanism.
- If such a strategy is developed internally in India, it can provide the framework to source carbon funds for avoided deforestation that can enhance economic benefits of protection and livelihood security.

are reported to have approved management plans. The principal objective of Central assistance being developing efficient management, the assistance needs to have linkages with the management plans.

3.48 The scheme may be renamed as 'Integrated Development of Wildlife Habitats' with wider scope for conservation. The support for management, protection, and development of PAs can be augmented by the following initiatives by MoEF:

- Evaluation of the non-recurring investment in the PAs should form the basis of further non-recurring assistance. The Central assistance can also be linked to the deployment of sanctioned frontline staff strength in the first place. The concept of project-based assistance with a provision of mid-course third-party appraisal may be considered.
- States should constitute specialized units for undertaking surveys, inventories, and the socio-economic analysis required for management planning and baseline landmarks for the PAs including the community and conservation reserves.
- Assistance for development of PAs should be based on the management plan and assessment of outcomes of the past interventions. Participatory management with village eco-development will be an earmarked component of the programme. Ministry will issue an eco-development resolution to the States with guiding principles, as was done in case of JFM in 1990.
- Assistance should also be provided for management of the identified special vulnerable habitats of high conservation value outside PAs on similar terms. This may include assisted regeneration for the vegetation components of such habitats.
- Species recovery and conservation programmes should also be supported for endangered species/ecosystems such as the Snow Leopard, the Great Indian Bustard, the Dolphin, and their habitats. Wide consultation will be undertaken for threat assessment and project formulation, considering the larger landscapes and socio-economic issues involved.
- Management of human–wildlife conflict may include compensation for damage from wildlife, measures to mitigate and avoid ingress of wildlife movement into habitations, tracking, capture, and translocation of wildlife from high conflict areas in excess of carrying capacity, to other suitable habitats on case to case basis.

Strengthening Wildlife Management

3.49 The Directorate of Wildlife Preservation with a network in major ports of import/export has been reinforced with National Wildlife Crime Control Bureau. The following components may be added to the programme.

- Studies and consultations needed for important areas of concern such as conservation values, biodiversity impact assessments, cost–benefit analysis of relocation proposals of habitations from wildlife areas, etc.
- Pilot projects for species focused initiatives and relocation of viable populations of wildlife species to new habitats, monitoring of the impact of rescue/conservation/outreach efforts, etc.
- A programme for rehabilitation of traditional hunting communities with the participation of NGOs, activists, forest department, and the revenue department.

Central Zoo Authority (CZA)

3.50 The CZA provides financial assistance to recognized public sector zoos having adequate land, potential, and willingness to develop as modern zoos. A laboratory for conservation of endangered species at the Centre for Cellular and Molecular Biology Hyderabad and five veterinary centres for zoo animal health care have been supported. The assistance to zoos includes modern housing and upkeep of animals including relocation of the existing zoos. During the Eleventh Plan, this may also include the following components.

- Support for rehabilitation and upkeep of animals of seven rescue centres created by CZA for rehabilitation of captive animals from the circuses.
- Development of a National Referral Centre at the Indian Veterinary Research Institute, Izatnagar (Bareilly) for specialized services and diagnostic facilities for health care of wild animals in Indian zoos.

Project Tiger

3.51 The Tenth Plan period saw the depletion of tiger population from the Sariska Tiger reserve, resulting in the introspection through the Tiger Task Force. The methods of monitoring the status of wildlife have been found primitive. The recommendations of the Tiger Task Force are relevant for not only protected area management but also general forest management. The follow-up of the recommendations has resulted in the constitution of the Tiger Conservation Authority and Wildlife Crime Control Bureau at the Centre. Critical activities such as identification of areas feasible for relocation and inclusive protection strategies remain to be worked on. Out of about 1500 villages in tiger reserves, only 80 have been relocated so far including nine during the Tenth Plan period.

3.52 India eco-development project was taken up in seven tiger reserves during the Ninth Plan and the Tenth Plan at a cost of Rs 142 crore. The investments made for evolving a protected area management strategy with village eco-development as an important component are yet to be evaluated for sustainability. The evaluation of the project remains to be analysed for utility and cost efficiency in the context of extension to other protected areas.

3.53 The National Tiger Conservation Authority provides an institutional mechanism for Project Tiger. The prerequisites for efficient management, namely, filling up vacancies of frontline staff, capacity building for working in conservation areas, management planning on the acceptable principles of participatory processes, and scientifically sound systems for documentation and monitoring of the key constituents of the habitats should be ensured:

- Relocation of villages from the existing tiger reserves is a priority. The resources for this purpose will be earmarked in the annual plans on the basis of the project reports and feasibility.
- Specific arrangement for documentation of landmarks and progress on the basis of the socio-economic, population, habitat, and ecological indicators should be laid down for effective monitoring of the impact of management inputs in the tiger reserves.
- Village eco-development should be the core activity in the project. The assistance for the tiger reserves can be linked to the eco-development activities based on micro plans developed with full participation of local communities.
- Notification of any new tiger reserves should be considered based on the scientific data analysis as well as assessment of impact on local communities.

Project Elephant

3.54 The aim of Project Elephant is long-term conservation of viable elephant populations in the larger landscapes through strengthening or creation of corridors. Not enough attention has been paid to reduce human–wildlife conflicts. Much of the activities have been short-term responses to conflict situations. With increasing population, wild elephants are observed to be increasing their range by dispersing into new areas.

3.55 The project should focus on strategies for strengthening and developing elephant movement corridors. Possibility of relocation from the areas with the potential of restoration of habitats should be explored. For the captive elephant population, a complete database for monitoring the status of health and productivity should be aimed at. For State Governments maintaining domestic elephants, component for improving the *kraal*s and training of *mahout*s may also be provided.

Animal Welfare

3.56 The Animal Welfare Board of India (AWBI) has been working on ensuring a humane dealing of animals in experimentation, during stress, of stray animals, and general protection from cruelty. The Animal Welfare movement has been largely based on NGO participation. The following components of animal welfare are dealt with by the Ministry under the plan:

- Provision of shelter houses.
- Provision of ambulance services for animals in distress.
- Animal birth control and immunization of stray dogs.
- Scheme for relief to animals during natural calamities and unforeseen circumstances.
- Assistance to AWBI.

- Assistance to Committee for the Purpose of Control and Supervision of Experiments on Animals.
- National Institute of Animal Welfare.

3.57 Proposed programmes for rabies control, *gaushala*s, and capacity building should be structured within the existing components. An information base along with fact sheets on the voluntary groups working in the field of animal welfare should be prepared. For National Institute of Animal Welfare, curricula need to be designed based on the larger scope of career opportunities and subject related courses. A good programme of monitoring the status of stray dog population in the country can be taken up through collaborative, free, public domain knowledge resources based on student projects.

3.58 The total projected GBS for the Eleventh plan for the MoEF is Rs 8842 crore (at 2006–07 price) and Rs 10000 crore (at current price).

II
Rural Development

4

Rapid Poverty Reduction

THE POOR IN INDIA: A PROFILE

4.1 India is a nation with over 300 million poor people, a number that has barely declined over the last three decades of development. It is therefore essential that the Eleventh Five Year Plan address the task of reducing the numbers of the poor frontally. It is clear that rapid growth will be essential to reduce the number of the poor and for sustainable poverty reduction, but for growth to benefit the poor disproportionately, it will have to be accompanied by more rapid employment expansion than hitherto, greater investment in health, education, water/sanitation, and child nutrition than so far, and directly targeted poverty-reduction programmes.

MEASURING AND PROFILING THE POOR IN INDIA

The Headcount Ratio (HCR)

4.2 India has successfully reduced the share of the poor in the population by 27.4 percentage points from 54.9 in 1973 to 27.5 in 2004. Between 1973 and 1983, the HCR of the poor had declined from 54.9% to 44.5%, and it fell further to 36% in 1993–94 and to 27.5% by 2004–05 (Table 4.1). Thus, 60 years after independence, over a quarter of our population still remains poor. There is growing consensus that the poverty line (Rs 356 monthly per capita consumption expenditure for rural areas and Rs 539 for urban areas in 2004–05) in India is much too low, and continues to be based on a consumption basket that is too lean. If the poverty line was higher, the share of the population below the poverty line would be accordingly higher.

TABLE 4.1
Percentage of People Below Poverty Line in India (1973–2004)

Years	Rural	Urban	Combined
1973	56.4	49.0	54.9
1983	45.7	40.8	44.5
1993	37.3	32.3	36.0
2004	28.3	25.7	27.5

Source: Planning Commission.

4.3 Some States have been particularly successful in reducing the share of the poor in the total population. In 2004–05, the States with the lowest HCR were J&K (5.4%), Punjab (8.4%), Himachal Pradesh (10%), Haryana (14%), Kerala (15%), Andhra Pradesh (15.8%), and Gujarat (16.8%); at the other end of the spectrum are Orissa (46.4%), Bihar (41.4%), Madhya Pradesh (38.3%), and Uttar Pradesh (32.8%)—which also happen to be among the most populous States of India. The States that were formed recently (Chhattisgarh 40.9%, Jharkhand 40.3%, Uttarakhand 39.6%) also have among them the highest poverty ratio (Annexures 4.1 to 4.3).

The Absolute Number of Poor

4.4 Over time, while the HCR of the poor fell, the number of the poor barely changed over the last three decades, remaining constant over two decades before falling (3213 lakhs in 1973, 3229 lakhs in 1983, 3204

lakhs in 1993–94) to 3017 lakhs in 2004–05 (Table 4.2). Therefore, number of poor in the country has declined over the last decade (1993–94 to 2004–05) by 1.86.

TABLE 4.2
Number of Persons Below Poverty Line in India (1973–2004)

(in Lakh)

Years	Rural	Urban	Combined
1973	2612.90	600.46	3213.36
1983	2519.57	709.40	3228.97
1993	2440.31	763.37	3203.68
2004	2209.24	807.96	3017.20

Source: Planning Commission.

4.5 In some States, the absolute numbers of the poor in the population has actually increased over the last three decades: in Uttar Pradesh (including Uttaranchal) from 535.7 lakhs in 1973 to 626 lakhs in 2004–05; in Rajasthan from 128.5 lakhs to 134.9 lakhs; in Maharashtra from 287.4 lakhs to 317.4 lakhs, and in Nagaland from 2.9 lakhs to 4.0 lakhs. The total number of poor has also increased in Madhya Pradesh (including Chhattisgarh) taken together from 276 lakhs to 341 lakhs and in Bihar (including Jharkhand) from 370 lakhs to 485.5 lakhs over the same period. There are many States where the number of poor overall has remained roughly constant over the last two decades: Haryana, Himachal Pradesh, Orissa, and Mizoram. However, there are also States that have succeeded in reducing the absolute number of the poor in rural areas over the three decades from 1973 to 2004–05: Andhra Pradesh from 178.2 lakhs to 64.7 lakhs; Karnataka from 128.4 lakhs to 75 lakhs; Kerala from 111.4 lakhs to 32.4 lakhs; Tamil Nadu from 172.6 lakhs to 76.5 lakhs; and West Bengal from 257.9 lakhs to 173.2 lakhs (Annexures 4.1 to 4.3), and Assam and Gujarat to a much smaller extent. These are the relative success stories in reducing the numbers of the poor in India.

4.6 Overall, the number of poor in *rural* areas in the country as a whole has declined from 2613 lakhs in 1973 to 2209 lakhs in 2004–05, i.e., by just 404 lakh people over a 31 year period. That means the rate of decline in the numbers of the poor has been 13 lakhs per year. But in *urban* areas the numbers of the poor has gone on increasing from 600.5 lakhs in 1973 to 808.0 lakhs in 2004–05 (Annexures 4.1 to 4.3); this is hardly surprising since the share of the urban population in India's total population has also gone on increasing, driven partly by rural urban migration.

4.7 The fact that the numbers of the poor have declined in rural areas, and increased in urban areas over the last three decades suggests that to escape rural poverty, the poor migrate to urban areas. In fact, the total number of *migrant workers* in India in 1999–2000 was 10.27 crore—a staggering number. The number of seasonal or cyclical migrants in India may be 2 crore or so. But migration, both rural–rural (from relatively poor to relatively richer States and districts) and rural–urban, has the effect of disenfranchising the poor, leaving them without a safety net. Nevertheless, rural–urban migration will, and should continue; the policy imperative is that migrants are provided the basic social services that all citizens are entitled to according to the Constitution of India.

4.7(a) While the earlier two subsections examined the headcount ratio and the absolute numbers of the poor, it is also useful to examine which States contribute most of India's Poor. Four States account for nearly 58% of India's poor population in 2004–05: Uttar Pradesh (19.6%), Bihar (12.23%), Madhya Pradesh (8.3%) and Maharashtra (10.5%). In 1983, these States (including undivided Bihar and Madhya Pradesh) accounted for 49% of India's total poor population (Annexure 4.1).

Composition of the Poor

4.8 The composition of the poor has been changing and rural poverty is getting concentrated in agricultural labour and artisanal households and urban poverty in casual labour households. Agricultural labour households accounted for 41% of rural poor in 1993–94 as well as in 2004–05. The share of self-employed in agriculture among the rural poor had fallen from 32% to 21.6%. Casual labour households accounted for 62.6% in 1993–94 in urban areas and 56.5% in 2004–05.

4.9 The occupational composition of rural poor varied across the States. In general, in developed States poverty was highly concentrated among agricultural labour households, and in contrast in backward States poverty extended to other occupational groups including self employed in agriculture.

4.10 Among social groups, SCs, STs, and backward castes accounted for 80% of the rural poor in 2004–05, considerably more than their share in the rural population (Working Group on Poverty, Planning Commission, 2006). In 2004–05, while the HCR of the poor in the total rural population was 28.3%, among the SCs it was 36.8%. In urban areas, the HCR overall was 25.7%, but among SCs it was even higher than in rural areas at nearly 40%.

4.11 The proportion of STs population among the rural population living in poverty is high. It is about 15% in 2004–05—double that of their share in the total population of India. For rural population, the incidence of poverty among STs had fallen from 51.94% in 1993–94 to 47.3 % in 2004–05 whereas it had fallen from 37.3% to 27.5% in the total population. In 2004–05, the incidence of poverty among the STs had barely fallen compared to a decade earlier and it was a good 20 percentage points higher for the STs than for the rest of the population.

4.12 The share of poor in the total urban population in 2004–05 was 25.7% but 33.3% of the STs in urban areas were poor. The HCR of the STs (47.3%) is higher than that of SCs (36.8%) in rural areas, but the situation is the other way around in urban areas, i.e., of all STs living in rural areas a higher proportion is poorer than all SCs living in rural areas. On the other hand, of all SCs living in urban areas, more SCs are poor than all STs. In rural areas SCs don't have access to land and therefore are forced to migrate to urban areas more often. On the other hand, STs (unlike SCs) in rural areas have much better access to land, especially in the forested areas, but the quality of that land, and its productivity is low, and yields low incomes. In terms of assets, unlike SCs, the STs have less of a problem in respect to land. Thus, in the total rural population, 63.2% of households held land, and that share was 61.3% for STs.

4.13 In terms of both income poverty and other indicators of human development (such as education and health) the STs are at the bottom. The increasing concentration of the tribals among those who suffer from multiple deprivations is a matter of concern.

Multiple Deprivations of the Poor

4.14 Deprivation of SCs and STs shows itself also in the form of inequalities of wealth. SCs own fewer assets than the rest of the population. Most SCs live in rural areas, where land is the main asset. In the overall population, 60% of the rural households were cultivator households. But SC households are more disadvantaged among rural households; only 47% were cultivators and a quarter of the SC households were agricultural labour households (Table 4.3). About 6% to 7% of the SC households were artisan households. If we examine the value of assets held by social groups in rural areas, we find that in the total population about 12% of the households in the 'Other category' (i.e., non-SC, non-ST, and non-OBC) have assets worth less than Rs 30000; but 22% of rural SCs have assets worth less than Rs 30000. Conversely, only 9% of SC households have assets worth Rs 3 lakh and above, while 37% of households in the 'Other category' (who are not either SC or ST or OBC) hold such assets. This difference in asset holdings becomes sharper in urban areas, with as much as 29% of SC households with assets less than Rs 30000. Only 16.7% of SC households hold assets worth Rs 3 lakh, while 43.5% of 'other households' hold such assets in urban areas.

TABLE 4.3
Percentage of Households by Asset-holding Categories, by Social Group

Social Group	Household Asset-holding (Rs in '000s)			
	Rural		Urban	
	less than 30	300 and above	less than 30	300 and above
ST	23.5	9.1	32.5	20.1
SC	22.1	9.0	29.1	16.7
OBC	13.3	24.4	23.7	28.5
Others	11.9	37.1	20.0	43.5
All	15.9	24.8	23.0	33.7

Source: All-India debt and investment survey, Ministry of Statistics and Programme Implementation, GoI, NSS 59th Round, 2003.

4.15 Land is the most important asset for rural people. Although SCs were 21.6% of the rural households, they held only 9% of the land (Table 4.4). On average SC households barely owned 0.3 ha of land in rural areas. Land distribution was even further skewed against the SCs in urban areas. Other Backward Classes (OBCs) on average held 0.758 ha (or approx. 1.5 acres) per household, although the share of total rural land held by them was comparable to their share in the population.

4.16 With fewer assets, it was also not possible for SCs and STs to borrow (Table 4.5), and thus emerge out of poverty. This is true for both sets of communities in both rural and urban areas.

4.17 SCs and STs have much worse health, education, and nutrition indicators than the rest of the population, followed by OBCs, and others (Table 4.6). While infant mortality rates (IMR) were 49 for Others, for SCs it was 66, for STs 62 and for OBCs 57. Their nutritional status is also worse; the mean body mass index (BMI) for SCs, STs, and OBCs is 5–10% below that for Others, and very close to the cut-off for malnutrition (>18.5). (BMI is a measure of a person's nutritional status [weight for height, measured in kg per square metre, sq m, of height.])

4.18 SCs and STs have Gross Enrolment Rates at primary level which are comparable with the general population (Table 4.7), as they have risen sharply for

TABLE 4.4
Land Owned per Household by Social Group, 2003

Characteristic	Rural				
	SC	ST	OBC	Others	All
Percentage of area of land owned	9.04	11.2	43.5	36.3	100
Average area (ha) owned per household	0.3	0.77	0.76	1.003	0.73
Percentage of households	21.6	10.6	41.6	26.26	100
	Urban				
	SC	ST	OBC	Others	All
Percentage of area of land owned	4.76	3.25	36.8	55.21	100
Average area (ha) owned per household	0.04	0.15	0.14	0.151	0.13
Percentage of households	15	2.91	34.5	47.57	100

Source: Household Ownership Holdings in India, Ministry of Statistics and Programme Implementation, GoI, NSS 59th Round, 2003.

TABLE 4.5
Incidence of Indebtedness by Social Group

Indicators	Rural				
	ST	SC	OBC	Others	All
Average debt per household (Rs)	3205	4641	8288	10437	7539
Debt asset ratio (%)	2.3	3.7	3.1	2.4	2.8
Incidence of indebtedness (%)	17.9	27.1	28.9	25.7	26.5
	Urban				
	ST	SC	OBC	Others	All
Average debt per household (Rs)	9233	7744	11200	13577	11771
Debt asset ratio (%)	3.8	4.2	3.4	2.4	2.8
Incidence of indebtedness (%)	12.2	19.2	21.2	15.3	17.8

Source: All-India debt and investment survey, Ministry of Statistics and Programme Implementation, GoI, NSS 59th Round, 2003.

TABLE 4.6
Health and Nutrition Indicators by Social Groups in 2005–06 (NFHS-3)

Indicators	Rural			
	SC	ST	OBC	Others
Infant Mortality	71.0	63.9	61.1	55.7
Under-five Mortality	94.7	99.8	78.7	68.2
	Urban			
	SC	ST	OBC	Others
Infant Mortality	50.7	43.8	42.2	36.1
Under-five Mortality	65.4	53.8	54.5	42.1
	Total (Combined)			
	SC	ST	OBC	Others
Fertility	2.92	3.12	2.75	2.35
Infant Mortality	66.4	62.1	56.6	48.9
Under-five Mortality	88.1	95.7	72.8	59.2
Nutritional Status				
Mean BMI for Men	19.7	19.3	20.2	20.9
Mean BMI for Women	19.9	19.1	20.4	21.3

Source: National Family Health Survey (NFHS-3), 2005–06, International Institute for Population Sciences, Mumbai.

TABLE 4.7
Gross Enrolment, Dropout at Primary Stage (I–V) by Social Groups, 2004–05

Indicators	SC		
	Boy's	Girl's	Total
Gross Enrolment Ratio (GER)	123.33	106.62	115.30
Dropout Rate	32.73	36.14	34.21
	ST		
	Boy's	Girl's	Total
Gross Enrolment Ratio (GER)	128.06	115.49	121.91
Dropout Rate	42.55	42.04	42.32
	General		
	Boy's	Girl's	Total
Gross Enrolment Ratio (GER)	110.70	104.70	107.80
Dropout Rate	31.81	25.42	29.00

Source: Selected Educational Statistics, Ministry of Human Resource Development (MHRD), GoI, 2007.

all sections of the population in the recent decade. However, their dropout rates, before they complete five years of schooling (a minimum if they are to retain literacy acquired during those five years), are higher than for the general population. ST children are dropping out far more. Thus, we have a serious situation, in that in 2004–05 not only were 29% of the entire nation's children dropping out before completing primary schooling, but the SCs and STs were doing even worse.

Poverty Among Women

4.19 The incidence of income poverty among females tended to be marginally higher in both rural and urban areas. The percentage of female persons living in poor households was 28% in rural and 26% in urban areas in 1993–94, and 29 and 23 respectively in 2004–05. In contrast, the percentage of male persons living in poverty was 27 in rural and 26 in urban areas in 1993–94, and 27 and 23 in 2004–05 . The lower percentage of female persons among the poor despite higher female poverty ratio was due to an adverse sex ratio—which itself is a reflection of the discrimination that women and girls face over their life-cycle. It should be noted that the above measure of gender poverty ignores intra-household inequalities in consumption. There are other dimensions of poverty such as food insecurity, malnutrition, and illness associated more with female members.

4.20 That women are much worse off in terms of most social indicators is quite well known. SC and ST girls are the worst off in terms of most educational outcome indicators. For instance, in the critical age-group of 15–49 years, when women are in their reproductive and most productive years, it is remarkable that 73% of SC women , 79% of ST women , and 61% of OBC women are illiterate. 61% of Muslim women were also illiterate; this percentage is relatively low, only because the rate of urbanization among Muslims is higher than for other social groups.

4.21 The nutritional status of SC and ST women remains a source of worry as well. A good 42% of SC women and 46% of ST women had a BMI less than 18.5, which is seen as the cut-off for malnutrition. The fact that as much as 30% of the 'Other' women were also malnourished clearly indicates that there is a serious problem of under-nutrition among most segments of the population, not just SCs and STs.

Poverty Among Children

4.22 Child poverty is widespread in India both in rural and urban areas. The percentage of children below 15 years living in below poverty line (BPL) households constituted 39 in rural and 41 in urban areas in 1993–94 and 44 in rural and 32 in urban areas in 2004–05. Among the poor population, the percentage of children increased from 44 in rural and 39 in urban areas in 1993–94, to 46 and 42 respectively in 1999–2000. This rising tendency in the proportion of children among the poor contrasts with the proportion of children in the population which was a constant 44% in rural areas in 1993–94 as well as in 2004–05 and a marginal decline from 39% to 32% in urban areas during the same period. The high and rising level of child poverty is not only linked to a high incidence of child malnutrition, but also undermines their future capabilities and adversely affects equality of opportunity.

Measuring and Identifying the Poor: A Note on Revision of Poverty Lines

4.23 There are two policy-relevant sets of issues about poverty in the country at present. First, there has been controversy around the measurement of poverty, as presented in the official statistics of the Planning Commission. Second, there are issues around the identification of the poor who are potential beneficiaries of government programmes, as carried out by the Union MoRD. The two are not unconnected, since for some programmes State Governments have to accept the HCR of poor as measured by the Planning Commission.

4.24 There are many unresolved issues regarding measurement of poverty in India and upon the question of poverty line itself, which necessitate a revisit of this entire question. Accordingly, an Expert Group has been constituted by the Planning Commission whose recommendations, hopefully, will provide acceptable measures of both poverty and the population below the poverty line.

4.25 The identification of the poor since 1992 has been done in quinquennial surveys carried by the MoRD. The first one (1992) used income to identify the poor, the second one (1997) used consumption. The third one (2002) adopted a 13-criteria questionnaire giving each criteria equal weightage. This survey has been questioned in the Supreme Court in Public Interest Litigation. Before commissioning a new BPL survey for identification of poor, which is due, there is need to constitute an Expert Group with representatives from States, academics, and civil society and evolve an acceptable criteria and methodology for the forthcoming BPL survey. Suitable adjustments of the district specific and State specific poverty population yielded from this survey should be negotiated with the State Governments so that this number is not out of sync excessively with the poverty as measured by Planning Commission based on National Sample Survey (NSS) data.

Directly Targeted Poverty Reduction Programmes and the Strategy for Inclusive Growth

4.26 Given the chronic and multi-dimensional nature of poverty in India, it is imperative that the programmes to address poverty rely on a multi-pronged approach. The preceding analysis has identified that there is a geography of poverty, with poverty being concentrated in the rural areas of certain States. It also pointed out that there is a sociology of poverty, with certain social groups increasingly concentrated among those who are identified as poor. It also noted that there are identifiable occupational features of the poor: they are concentrated in agricultural labour and artisanal households in rural areas, and among casual labourers in urban areas. Casual labourers in urban areas are essentially distress migrants from rural areas in States where agricultural land-man ratio is very adverse, and where agricultural incomes have not been growing—reinforcing the need for both land reforms as well as measures to increase productivity. Accordingly, in the next section, the strategy and programmes directly relevant to the emerging features of poverty groups in India are discussed.

4.27 First, regions which have large number of chronic poor people include tribal in forests concentrated in arid, semi-arid, and sub-humid areas in central and eastern parts of the country. However, in many semi-arid regions, where agriculture is mainly rainfed rather than irrigated, located in the more industrial States of western and southern India, there has been

more dynamism. Migration from semi-arid areas may result in improvement of economic conditions for people in the rainfed areas due to better investment opportunities and market functioning compared to the forest-based regions. In forest regions, poor people's access to the resources which are located there in those regions have been limited, and their own low human capital endowment (e.g., low literacy and poor health services) have resulted in their incorporation into labour markets at disadvantageous terms. It is for this reason that the strategies that are needed for each of these agro-climatic regions have to rely upon an area-development approach. This is particularly true of rain dependent water stressed areas, where watershed development has been neglected. Thus watershed development in rainfed agriculture has to take center-stage in the poverty reduction strategy for the Eleventh Plan. Watershed development is discussed in the chapter on Agriculture (Chapter 1, Volume III). Similar initiatives that hold promise to impart dynamism to Backward districts/regions are (i) the Backward Regions Grant Fund, (ii) Border Area Development Programme, and (iii) Hill Area Development Programme. These initiatives are discussed in the chapter on Spatial Development (Chapter 6, Volume I).

4.28 Second, the poor are geographically concentrated in India. They also happen to be in States where a significant proportion of agriculture is irrigated, and not rainfed (and where the land-man ratio is the lowest in the country). In other words, without effective (i) land reforms and (ii) agricultural services, none of these regions are likely to be able to reduce poverty. There is also a need for programmes to modernize land relations in an era of rapid industrialization. We discuss agricultural services in the chapter on Agriculture, as we do land reforms including issues related to alienation of tribal lands.

4.29 Third, dependence on casual labour has grown, and a large proportion of the chronic poor are dependent on wage labour. There has been a steady increase in the share of the Indian population working as hired labour. All of the increase in recent decades has been due to the expansion of the share of casual hired labour. Most of these are SCs and STs. While male rural casual labourers have increasingly worked in the non-farm sector over time, women have increasingly been concentrated in agricultural casual labour and have lost jobs overall, especially in the 1990s. Growth in casual labour was strong among the landless and especially rapid after the 1987 drought. In the 1990s there was an explosion of self-employed people choosing to do subsidiary work as casual labourers. The incidence of poverty among rural casual workers is greatest among non-workers who do occasional casual work and especially among women. Most ST and 40% of SC casual workers are poor, the landless casual workers being the poorest. On an average, women are poorer than men casual labourers. Clearly, this calls for an effective wage employment programme in rural areas, especially focusing on women, of the NREG kind.

4.30 Fourth, the poor have to be enabled to increase their incomes by diversifying away from agriculture, and relying on non-farm sources for at least a subsidiary income. Casual labourers and artisans, especially women, can be brought together through social mobilization to form SHGs, and with credit support, to diversify their sources of income. In certain parts of India (e.g., Kerala, Andhra Pradesh, Gujarat) the success of such efforts have already borne fruit, and it is essential to make sure that this programme goes to scale in the country in regions which need it most—in the eastern and northern parts—where it has hardly taken root.

4.31 Finally, the poor need a safety net, if they are to escape the cycle of inter-generational transfer of poverty. At least 18 million rural people do not have a home over their heads, and the rural housing programme needs to focus on giving a homestead to at least those who are houseless. Homesteads will not only give them a home, but also provide a small plot of land where they can diversify their income by rearing goats and poultry and growing vegetables on the family plot. Similarly, the elderly destitute, widows, and disabled among the rural poor, need social assistance.

4.32 The poor also suffer from low human capital. Household size is closely related to both malnutrition of adults and children, and to the inter-generational transfer of poverty. The directly-targeted poverty

reduction efforts of the government will fail in the Eleventh Plan if the quality of public health services and the integrated child development services do not improve, and also if the universalization of elementary education with quality does not happen. However, an inclusive growth strategy that focuses only on human capital formation or directly targeted poverty reduction is likely to fail. The structure of growth and also the pattern of production have to be employment-generating, especially outside agriculture. In other words, the simultaneous focus on a three-legged strategy—economic growth, income-poverty reduction through targeted programmes, and human capital formation—will put India on a sustainable growth path, since there is a recognized synergy between these outcomes.

Guaranteed Wage Employment—National Rural Employment Guarantee Act (NREGA)

4.33 Workfare programmes have been important programme interventions in India and elsewhere in developing countries since long. These programmes typically provide unskilled workers with short-term employment on public works. They provide income transfers to poor households during periods when they suffer on account of absence of opportunities of employment. In areas with high unemployment rates and under employment, transfer benefits from workfare programmes can prevent poverty from worsening, especially during lean periods. Durable assets that these programmes create have the potential to generate second-round employment benefits as requisite infrastructure is developed.

4.34 We have a long history and experience in implementing wage employment programmes. However, beginning with Jawahar Rojagar Yojana in 1989, the outreach of these programmes increased significantly as in the period 1989 to 2006, ultimately culminating in NREGA. These wage employment programmes implemented by State Governments with Central assistance were self-targeting, and the objective was to provide enhanced livelihood security, especially of those dependent on casual manual labour.

4.35 Based on the experience of these programmes the NREGA was enacted to reinforce the commitment towards livelihood security in rural areas. The Act was notified on 7 September 2005. The significance of NREGA lies in the fact that it creates a right based framework for wage employment programmes and makes the government legally bound to provide employment to those who seek it. In this way the legislation goes beyond providing a social safety net, and towards guaranteeing the right to employment. The experience with NREGA so far suggests that it is one of the main planks of rapid poverty reduction in the Eleventh Five Year Plan.

4.36 Starting with 200 districts across the country in Phase-I during 2006–07, NREGA was extended to additional 130 districts in Phase-II during 2007–08. From 1 April 2008 onwards the Act will cover the whole of rural India. As a district is notified under the Act, Sampoorna Grameen Rozgar Yojana (SGRY) is automatically merged in the NREGA and would therefore cease to exist with effect from 1 April 2008.

4.37 The objective of the NREGA is to enhance the livelihood security of the people in rural areas by guaranteeing 100 days of wage employment in a financial year to a rural household whose members volunteer to do unskilled manual work. The Act further aims at creating durable assets and strengthening the livelihood resource base of the rural poor. The choice of works suggested in the Act address causes of chronic poverty like drought, deforestation, soil erosion, etc., so that the process of employment generation is on a sustainable basis.

4.38 Employment is dependent upon the worker exercising the choice to apply for registration, obtain a job card, and then to seek employment through a written application for the time and duration chosen by her. The legal guarantee has to be fulfilled within the time limit prescribed and this mandate is underpinned by the provision of unemployment allowance. The Act is thus designed to offer an incentive structure to the States for providing employment as 90% of the cost for employment provided is borne by the Centre, and there is a concomitant disincentive for not providing employment, if demanded, as the States then bear the double indemnity of unemployment and the cost of unemployment allowance. Earlier wage employment programmes were allocation based.

However, NREGA is not supply driven but demand driven. Resource transfer under NREGA is based on the demand for employment and this provides another critical incentive to States to leverage the Act to meet the employment needs of the poor. The delivery system has been made accountable, as it envisages an Annual Report on the outcomes of NREGA to be presented by the Central Government to the Parliament and to the State Legislature by the State Government.

Funding

4.39 The Central Government bears the costs on the following items:

- The entire cost of wages of unskilled manual workers.
- 75% of the cost of material, wages of skilled and semi skilled workers.
- Administrative expenses as may be determined by the Central Government, which will include, inter alia, the salary and the allowances of the Programme Officer and his supporting staff and work site facilities.
- Expenses of the National Employment Guarantee Council.

4.40 The State Government bears the costs on the following items:

- 25% of the cost of material, wages of skilled and semi skilled workers (as a ratio of 60:40 is to be maintained for wages of the unskilled manual workers and the material, skilled/semi-skilled workers' wages, the State Government has to bear only 25% of the 40% component, which means a contribution of 10% of the expenditure).
- Unemployment allowance payable in case the State Government cannot provide wage employment on time.
- Administrative expenses of the State Employment Guarantee Council.

Key Issues

4.41 The key issues that require focus in the Eleventh Plan so that NREGA can be optimally realized for supplementing wage employment opportunities are briefly highlighted here.

(i) Articulation of Demand for Employment

4.42 Since NREGA is a right-based programme, articulation of demand by the rural poor is the basic premise of its operation, especially if wage seekers are not literate and not organized. Generating awareness among local rural communities through Information, Education, and Communication becomes critical for enabling the rural poor to articulate demand. States have forged a variety of methods for communication and social mobilization that include preparation of communication material on NREGA processes in simple local language, one day orientations of sarpanches/ward members, convening gram sabhas, using district teams for village level interactions, local vernacular newspapers, TV and radio spots, pamphlets and brochures, local cultural forums, information counters on local market days, village information wall, fixing a Rozgar Day in a week, and establishing a helpline. Full knowledge of the rights that NREGA confers to the rural poor is the most important prerequisite to enable them to seek employment as per their choice of time and duration.

(ii) Preparing a Labour Budget, Annual Shelf of Projects, and Perspective Plan

4.43 The Act guarantees providing employment within 15 days of demand and the instrument for providing employment is unskilled manual work selected from the list of permissible works. This legal guarantee has implications for the way in which works have to be planned. A Labour Budget as stipulated under the Act is required to be prepared to facilitate advance planning, whereby districts estimate their labour demand for the ensuing financial year by December-end. The National Guidelines indicate the way in which the annual shelf of projects may be prepared to meet the estimated labour demand. Districts have attempted to prepare shelves of projects to keep a list of works ready to meet employment demand. Greater precision in planning works has been suggested through assigning a unique location code to each work and mentioning the plot numbers of the sites where works are to be executed. Estimated benefits in terms of person days need to be assessed, so that the employment expected to be generated through the works planned may be clearly matched with the estimated employment demand. Physical improvement envisaged (land/water

conservation etc.) has to be quantified so that the focus remains on creating durable and productive assets that support further self sustaining employment. Displaying the list of approved works at the GP Office and the details of works taken up on the work site has been stipulated so that the workers know the work opportunities locally available.

4.44 National Guidelines lay down the broad principles of preparing a Five Year District Perspective Pan that must have the following components viz., village mapping of natural resources and social infrastructure, identification of gaps and works that can be taken up as per NREGA permissible list, assessment of works that respond to what local people want, what will build a livelihood base to enable them to move out of NREGA to sustainable employment, and assessment of labour demand.

4.45 The planning capacity of the PRIs and district level functionaries needs to be strengthened to infuse the Plans with a long term vision of sustainable livelihoods.

(iii) Record of Work Done and Payment of Wages

4.46 The legal guarantee of the Act mandates that wages due to workers be paid within 15 days of work completion. This requires that a fair record be maintained for the work done. To ensure that authentic muster rolls are used, numbered muster rolls are to be issued for each sanctioned work by Programme Officer and maintained on the work site by the executing agency. Muster rolls must mention Job Card numbers of workers, days worked, quantum of work done, amount paid and must have space for recording inspections. Muster rolls should be read out on the work site during measurement and wage payment to prevent bogus records. Entries of the muster roll should be correspondingly recorded in the job cards of the workers. Updating of muster roll data at the Block level computers in a 15-day cycle needs to be ensured. Regular measurement and supervision of works should be done by qualified technical personnel on time. There is a need for stricter compliance of all the provisions of the Act so that payment to the labourers can be made in time.

(iv) Vigilance and Transparency

4.47 NREGA places a strong emphasis on vigilance and transparency. A web enabled management information systems (MIS) *www.nrega.nic.in* has been developed that seeks to place all information in public domain. It is a household level database and has internal checks for ensuring consistency and conformity to normative processes. All critical parameters get monitored in the public domain.

4.48 The field verification of NREGA processes is through external and internal agencies and the feedback is shared with the States for follow up. Independent concurrent studies have also been taken up. Monitoring at the State level needs to be strengthened and States are expected to ensure 100% verification at block, 10% at district, and 2% at the State level especially of works muster rolls, and records. Guidelines for muster roll verification have been evolved and need to be rigorously followed. The setting up and training local vigilance and monitoring committees is also required for bringing in lateral transparency.

(v) Public Accountability

4.49 The Act contains specific provisions for public accountability. This has to be accomplished through the provisions made in the Act and guidelines regarding Right to Information, proactive disclosure of information, and a transparent social audit process.

4.50 The Right to Information should be followed in both letter and spirit in all matters relating to NREGA as stipulated in Section 4 and Schedule I, Para 17 of the Act.

4.51 The Section 17 of NREGA provides for social audit of all works in a GP by the Gram Sabha and the GP has to provide records for social audit. This necessitates a need for creating capacity for social audit among officials, GP members, and the Gram Sabha. A significant feature here is the active role played by civil society organizations in facilitating social audit processes in partnership with State Government as well as independently.

(vi) Grievance Redressal

4.52 Enforcement of the right to employment requires

setting up an effective grievance redressal system. The Act vests the responsibility for grievance redressal with the Programme Officer. To ensure prompt grievance redressal certain basic arrangements must be ensured, such as setting up a grievance redressal cell at the Programme Officer/District Programme Co-ordinator (DPC) offices, preferably with a toll free helpline. The Programme Officer and DPC must review the disposal of complaints on a monthly basis and the persons concerned must be informed.

(vii) Strengthening Administrative Systems

4.53 Technical Resource Support Groups are required to bring in multidisciplinary professional expertise in MoRD, to provide resource support in critical areas, inter alia, assisting the Ministry in formulating and codifying standard operating procedures for setting measurable outcomes, for laying down standards of programme delivery, for designing appropriate management information systems (MIS) for monitoring programme outcomes. They would also carry out training needs assessment for capacity building at the State, district, and sub-district level and formulate the framework for training and capacity building at various levels.

4.54 Another issue critical to strengthening administrative systems pertains to training of different stakeholders. The requirements of training are considerable at all levels and include functionaries, PRIs and the local vigilance committees. The challenge is to design training programmes calibrated in content and process according to different target groups and to manage large scale training needs without compromise on quality.

(viii) Financial Management

4.55 A non-lapsable Central Employment Guarantee Fund has been set up to ensure that availability of funds match working season demands. Districts have dedicated accounts for NREGA funds and submit their proposals based on clearly delineated guidelines so that funds may be devolved efficiently at each level, and adequate funds may be available to respond to demand.

4.56 The funds are released on the basis of demand for employment received in a district and are based on an appraisal of both financial and physical indicators of outcomes. To meet the norms for fund release, districts need to strengthen their capacity for both preparing a Labour Budget to project an annual requirement of funds based on an estimation of labour demand, and undertake rigorous monitoring of funds spent and the physical outcomes to track current trends of employment generation, so that adequate funds can be demanded and deployed efficiently.

Road Ahead

(i) Empowering Workers

4.57 NREGA is a right-based statute and its effectiveness lies eventually in the extent to which wage seekers can exercise their choice and assert their rights to claim entitlements under the Act. The issues involved in empowering workers are in the range of enhancement of knowledge levels, development of literacy skills, organizing workers, and enhancing social security levels of workers. Opening savings accounts of workers' in banks and post offices that has been initiated needs to be supported on a larger scale so that thrift and small savings can be encouraged among workers. The inclusion of NREGA workers under the cover of various life and health insurance schemes will also raise their security thresholds.

(ii) Linkages with Other Development Programmes

4.58 Empowerment of workers and creation of durable assets depend to a great extent on the linkages between NREGA and other development programmes. Linkages with human development programmes such as National Rural Health Mission (NRHM), National Mission for Literacy and Elementary Education, and other livelihood and infrastructure initiatives are needed to ensure basic human entitlements to the workers and to strengthen the natural resource base of livelihoods. The full potential of the kind of works permissible under NREGA can be tapped if planning for these works is coordinated with other development projects, for example watershed management, agricultural pro-grammes, horticultural projects, etc. Initiatives for NRM also need to be dovetailed with income generation projects to enable workers to move from wage employment to self-sustaining employment.

(iii) Exploring the Possibility of Other Works

4.59 The list of permissible works under NREGA recognizes the possibility of a need arising for works other than those specifically indicated in Schedule I which may be notified by the Central Ministry in consultation with the States. The Ministry may consider formulating guidelines for the States that may enable them to identify other works in conformity with the general principles of the Act and the rationale for them.

4.60 The allocation for the Eleventh Plan (at current price) is tentatively provided at Rs 100000 crore. However, since NREGA is a demand driven programme and the government is legally bound to provide employment mandated under the act, this figure is only indicative.

Self-employment—Swarnjayanti Gram Swarozgar Yojana (SGSY)

Rationale

4.61 Persistent efforts made by the government to fine-tune the self employment programmes during various Plan periods, especially oriented towards improving the implementation quality, yielded some new concepts that emerged at various times and got consolidated. The need to integrate the cluster approach, capacity building, skill upgradation, infrastructure including marketing development and technology penetration were felt more acutely with every passing year. Emphasis also was necessary to be laid on micro enterprise development with effective forward and backward linkages, so as to ensure best returns on the investment. Therefore, the SGSY was launched with effect from 1 April 1999 to bring the assisted poor families above the poverty line by ensuring appreciable sustained level of income over a period of time. This objective was to be achieved by organizing the rural poor into SHGs through the process of social mobilization, their training and capacity building and provision of income generating assets. The SHG approach helps the poor to build their self-confidence through community action. Group processes and collective decision were to enable them in the identification and prioritization of their needs and resources. This process would ultimately lead to the strengthening and socio-economic empowerment of the rural poor as well as improve their collective bargaining power.

4.62 The SGSY is, by design, meant to create widespread income generating activities, through the empowering mechanism of SHGs, where group dynamics are expected to compensate for the basic weaknesses of the individual rural poor and present them as credit worthy and financially accountable units. The system of grading the SHGs through a rigorous process is expected to separate the more vibrant of the SHGs and eventually give them a capital subsidy assistance so that they undertake self-employment oriented livelihood opportunities.

4.63 The SGSY scheme has been successful in delivering the outcomes in terms of poverty alleviation wherever capacity building and beneficiary mobilization have been carried out. Thrift, multiple lending, participatory process of identification, and pursuit of economic activities have succeeded in States like Andhra Pradesh, Tamil Nadu, and Kerala substantially because the basic processes had been grounded.

4.64 The higher performance parameter of multiple lending and increased quantum of lending have been achieved in States like Andhra Pradesh due to the SHGs having been federated at different levels from the village to the district. With the emergence of a well federated organizational base, the SHG network has been observed to acquire dynamism and versatility in activities in States like Kerala and Andhra Pradesh. There have been diverse models of Self Help in various parts of the country, most important among them being the Kudumbashree in Kerala with active linkages with the PRIs, and the AP model that relies on the fulcrum of federations of SHGs that have grown into organizations of the poor. The NABARD also sponsors SHGs.

Key Issues

4.65 The SGSY is being implemented since 1999. Close to 2.6 million SHGs have been formed under the SGSY since its inception. Of these SHGs 16 lakh have already crossed the Grade-I stage. About 8 lakh SHGs have passed the Grade-II stage and of them, slightly less than

five lakh SHGs have taken up economic activities. About 60% of the Grade-II SHGs have taken up economic activities, the balance number waiting for financial assistance. Of the nearly Rs 25000 crore credit flow targeted under the programme, less than 50% has been achieved. SHGs have several in-built strengths, most of which are intangible, such as group cohesion, enhanced ability for articulation of common demands, better and efficient use of available local resources, etc. While it would be necessary to work on the strengths of the SHGs, it is equally necessary to learn the lessons from the experience of implementing the SGSY over the past eight years. There are several issues—some conceptual ones pertaining to larger aspects of the programme, such as the role and utility of the subsidy component, and some programme specific second generation issues such as forming federations, provision of interest subsidy, social mobilization issues, etc. Some such issues are highlighted below:

- Diverse views are being expressed in various quarters about the relevance or otherwise of subsidy-driven programmes. A rational response would have to be found for such positions. Subsidy is a form of support to the poor and stopping it entirely would be unwarranted. However, the idea of directing the subsidy flows properly and to examine if there was any case for putting conditionalities to the system of subsidy flow so that the targeted populations are better served, merits examination.
- The number of SHGs formed under the SGSY is very large, but there is a feeling about whether such large numbers mean anything from the point of view of poverty alleviation. Agencies such as NABARD, Small Industries Development Bank of India (SIDBI), and Rashtriya Mahila Kosh (RMK), and Ministries such as Women and Child Development have their own models of SHG formation and their sustenance. Some State Governments such as Andhra Pradesh and Kerala have their own models. There is therefore, a need for placing the SGSY programme on this large canvas and fitting it in the broader context of the SHG movement of the country.
- There is tremendous shortage of manpower in the area of technical support for rural development. Andhra Pradesh continually engages about 6.00 lakh SHGs through a separate structure, Society for the Elimination of Rural Poverty that has independent units that deal with Risk Mitigation, Food Security, Micro Finance, Institution Building, Marketing, and Livelihood Promotion. At the district level too they have equivalent units that go upto the Mandal level. The dedicated institutional machinery seems to have made a difference. There is a case for similar efforts from other States as well.
- Going by the experience of the States like Andhra Pradesh, Kerala, and Tamil Nadu, federating the SHGs appears essential for improving the bargaining power of the SHGs and better sustainability of the SHG movement. Encouraging the inter-state, inter-district networking of the SHGs/SHG Federations for marketing of the SHG products would be the next step. Current institutional arrangements for social mobilization and livelihood generation are somewhat limited in scope. Therefore, a mission mode approach to enhance facilitation, institutional building, and hand holding support to SHG movement is required over a long period of time to secure sustainability of SHGs and their apex organizations. The social mobilization aspect of the SGSY programme has hitherto not been given due attention. Social mobilization is both a means and an end in itself. Expansion of political rights of the mobilized poor will have tremendous intrinsic value, not always measurable. A few of the SHGs that acquire the characteristics of good entrepreneurs may be encouraged to become entrepreneurs. SGSY is actually lagging behind in keeping pace with the SHG movement sweeping the country.
- Credit is a very important issue. It would be necessary to enhance the credit flow to the SHGs in a more creative manner than what has been possible so far. The credit achievement, in terms of the total volume as well as the rate of flow, in Andhra Pradesh model seems to be much higher than the national achievement. An issue that requires to be looked into is also the possibility of introducing interest subsidy as an alternative to the capital subsidy. There are no two opinions about the utility of financial intermediation for making the lending under the programme cost effective for the banks. Federations of SHGs having their own corpus can work as intermediaries. An investment on making the SHGs credit-worthy cannot be wished away. In terms of

priority, saving followed by risk mitigation and then credit would be the natural sequence for financial intervention. Federations acting as financial intermediaries is a high skill activity and it is essential that investments are made on enhancing the skill base of the Federations. There is a need to promote institutional partnerships between the SHGs/Federations with the bankers. Enhancing the credit flow to the poor may call for grounding several strategies and partnerships and not just one. The country is also on the threshold of a major initiative for micro finance. Again, there are diverse views on the role, utility, and relevance of micro finance in poverty alleviation. The issue of harmonizing the SGSY and the micro finance models also requires to be looked at.

- New areas are emerging in view of the changes in the economy due to liberalization, privatization, and globalization. It may not be possible for the SGSY, a pure self-employment programme to capture all the aspects of poverty. Purely from a family's economic security point of view, BPL families might want to have at least one wage earner among them, so as to provide the requisite certainty to their family incomes. In such a situation there may be a case for introducing a placement-oriented skill enhancement model for youth as a sub-set of the SGSY. This programme will be a hybrid of the wage-employment and self-employment programmes.
- Special projects of the SGSY, that were expected to ground innovative and alternative ways of reducing poverty do not seem to have actually made much difference. The higher quantum of subsidy available through special projects appeared to have driven large number of projects. Often activities proposed are eligible to be funded by different schemes of the line departments of the concerned sectors. Even then funds are sought in the project proposals through special projects. States and other agencies follow up proposals vigorously till the sanction of the project and thereafter virtually no monitoring of projects seemed to have been undertaken. Of the 231 special projects that have already been sanctioned, only about 29 have been completed. Due to the indifferent performance it does not appear that there is a case for continuing with the special project component under the SGSY. There have been very wide inequities in the sanction of special projects among the States so far.

The Way Forward—Strategy for the Eleventh Plan

4.66 Eleventh Plan strategy for SGSY would have to necessarily take the best out of what has evolved in the Self Help movement across the country over the last few years and integrate it with the programme. Likewise a few aspects of the SGSY programme that have failed to give the desired results require a fresh look and if necessary, dropped.

4.67 One of the most important aspects that requires examination is the institutional mechanism that had been erected to undertake the poverty alleviation programmes. The District Rural Development Agency (DRDAs) in their current form and content do not appear to have the requisite wherewithal to handle a complex issue such as poverty. The current administrative setup at the national level is unequal to a large task such as poverty elimination across the geographical and social complexity and it requires a different order of involvement of the MoRD. It is therefore, necessary to set up a National Agency outside the ministry to manage the National Rural Poverty Elimination Programme to achieve the objectives of the programme meaningfully and comprehensively. The need for setting up a national level agency with a flexible administrative structure, for better planning, organizing, and coordinating the poverty elimination effort cannot be overstated. The national level organization will be the intellectual backbone and provide requisite technical expertise and capacities, while the ones at the level of the State Governments will be the functional bodies. These organizations would have to be manned by people with an active commitment to poverty alleviation as well as an undertaking from the States to assure minimum tenures to the officials prior to making any funding arrangements, if necessary, through a MoU. The administrative set-up could essentially be a society attached to the MoRD. The national organization will co-ordinate with the poverty elimination agencies established by the State Governments for implementing the SGSY in its revised form. It will also be the agency to document and be the clearing house for the best practices with respect

to the poverty elimination programmes and strategies of the country. It should devolve funds to the State Governments based on rational formulae, evolving and working out the MoUs with the State Governments for the implementation of the poverty elimination programmes. The national and State level organizations so created will systematically address the key subjects of poverty alleviation like livelihood generation, capacity building, skill upgradation, credit, and international assistance .

4.68 Considering the experiences and lessons learnt from various development projects, the revised SGSY programme should aim at promoting and strengthening member-owned, member-controlled, and member-managed institutions of the poor that enable them to secure sustainable livelihoods and better quality of life. These institutions should provide a wide range of services to their members as per their demand. The revised SGSY should promote and nurture a large cadre of activists and leaders from the poor for providing support services to the institutions of the poor on a sustainable basis. The approach for organizing the poor stems from the conviction that there is an immense desire and latent capability among the poor to come out of poverty. They have a tremendous potential to help themselves and the potential of each member can be harnessed by organizing them. Social mobilization enables the poor to build their own organizations in which they participate fully and directly and take decisions on all issues concerning poverty elimination.

4.69 The current mechanism of fund flow to the SHGs through a graded system requires a comprehensive review. The current scheme allows a Revolving Fund entitlement of upto Rs 10000 for the Grade-I SHGs, that will also entitle them to draw cash credit from a financial institution. The rate of attrition between the Grade-I and II indicates that a large number of SHGs fizzle out mid-way after availing the Revolving Fund. Further, the SHGs that have cleared the Grade-II stage seem to wait for long periods before getting an opportunity to avail the subsidy assistance. Close to 3 lakh such SHGs are waiting in the wings for such assistance. The overall credit achievement under the programme is abysmally low. The overall credit targets are achieved only by about 50%. More importantly in a capital subsidy mechanism there is little scope to leverage higher credit flow because of the subsidy entitlements. The volume of credit extended to SHGs in one State, Andhra Pradesh, alone is higher than the national credit achievement under the SGSY. This calls for serious scrutiny.

4.70 The SHGs can be further strengthened and stabilized by federating them at, say village or cluster of villages or block level depending upon the number of SHGs and their spatial distribution. The federations shall be formal organizations registered under the most appropriate Acts (Societies Registration Act, State Cooperative Act, Trust, Mutually Aided Cooperative Societies Act, or Mutual Benefit Trust) that exist in the State. The second tier of Institution Building phase is the federation of SHGs either at village or at cluster of villages' level. The Village Level Federations (VLFs) are vital for demonstrating solidarity, initiating collective action on various poverty related issues and reducing dependency on the external agency for information, technical support and resolving conflicts. The VLFs provide a forum to voice the problems of the poor in the village, exchange of experiences including flow of information from various government departments, and raises resources required to take up the appropriate development interventions in poverty reduction. It generates income by collecting share capital, membership fee, savings, interest margins and penalties, and become financially sustainable in a period of 3–4 years. Based on the proposals of the VLFs, the district level agency sanctions fund for on-lending to SHGs. Once the VLFs attain a certain level of maturity, the Block Level Federation is promoted. The Block Level Federation provides solidarity to all the VLFs and SHGs. It plays a vital role in bringing all the BPL families into the SHG fold, building the capacities of the SHGs and VLFs, framing required policies and ensuring the quality of institutions, etc.

4.71 However, in order to strengthen the existing programme an effort should be made to graduate the allocations in such a manner that all further increases in the allocations to the SGSY should be based on demand-driven model, with attendant commitments of the State with respect to erecting institutions of the poor, dedicated implementation machinery and

adhering to the framework provided by the national level agency. The current allocations to the SGSY can taper off over the balance Plan period so that at the end of the Plan period the new model will be firmly in place.

4.72 To capture the opportunities that are emerging in the economy due to the processes of globalization and liberalization, it will be necessary to launch a new sub-set of the SGSY—that can be known as the placement-linked skill enhancement programme. The Ministry's experience of the Reddy's Labs initiative of the SGSY and more recently with the Infrastructure Leasing and Financial Services (IL&FS), are worthy models for institutionalization and systemic action. The sectors that can be looked at are Textiles, Leather, Gems and Jewellery, Retail Chains, etc., where there is a shortage of supply of trained labour. Skill formation, by use of in-house programmes, evolving specific curriculum, independent accreditation, and placement are the essential components of this process. It is suggested that a definite component of the skills programme be included in the revised SGSY programme.

Rural Housing for the Houseless

4.73 Housing is a basic human need. A roof over her head endows a shelterless person with an essential asset and improves her physical and mental well-being.

4.74 The importance of housing has been acknowledged and housing as a human right was recognized way back by the Universal Declaration of Human Rights adopted by the General Assembly of the United Nations on 10 December 1948. Article 25 of this declaration states: 'Everyone has the right to standard of living adequate for the health and well being of himself, and his family, including food, clothing, housing….'

4.75 Article 11 of the International Covenant on Economic, Social and Cultural Rights, 1966 also required the States Parties to the Covenant to recognize the right of everyone to an adequate standard of living for herself and her family, including adequate food, clothing, and housing and to the continuous improvement of living conditions. It further asked the States Parties to take appropriate steps to ensure the realization of this right.

4.76 India also embarked on the path of making 'housing for all' a reality. The conference of Chief Ministers, 1996 recommended the Basic Minimum Services (BMS) Programme. One of the seven BMS requiring priority attention was 'Provision of Public Housing Assistance to all shelterless poor families'. Consequently, the BMS programme became part of Ninth Five Year Plan and concerted efforts in a focused manner were initiated to make these basic services accessible to every one. Later, the National Housing and Habitat Policy, 1998 stated that the ultimate goal of the policy was to ensure 'Shelter to all' and better quality of life for all citizens.

Indira Awaas Yojana (IAY)

4.77 Though the earliest housing programme taken up by the GoI was for rehabilitation of refugees immediately after the partition of the country, the government started implementing its major housing scheme of IAY as an independent scheme only from 1 January 1996.

4.78 In the present form, IAY is one of the very popular schemes of the MoRD and has caught the imagination of the rural people. The popularity can be attributed to the fact that the scheme enables beneficiaries to participate and involve themselves in construction of their home. The role of the State Government is confined to mere facilitating use of local, low cost, environment-friendly, and disaster-resistant technology and also in encouraging construction of sanitary latrine and smokeless *chulha*. There is no prescribed design or technology and no contractors are involved. Funds are released in installments directly to the beneficiaries and there is no credit portion as part of the assistance which enable timely release of funds. The beneficiaries construct the houses as per their own choice of design, technology, and requirement. Not surprisingly, evaluation studies reveal high levels of occupancy and satisfaction.

4.79 In spite of criticism from certain quarters about IAY being a full subsidy scheme, experience reveals that houses get completed more or less on time which may

not have been the case if credit was part of the assistance. Moreover the unit assistance of Rs 25000 per dwelling in the plain areas and Rs 27500 in the tribal and hilly areas is not adequate and beneficiaries have to contribute at least by way of their own labour for completion of the house. This participation makes the scheme even more meaningful.

4.80 The funds for the IAY scheme are shared between the Central and the State Government in the ratio of 75:25. The Central budget is allocated to the States based on a 75% weightage to housing shortage and 25% weightage to poverty ratio. Similarly the district allocation is based on a 75% weightage to housing shortage and 25% to the share of SC/ST population. To introduce transparency, the selection of beneficiaries which was being done through the gram sabhas is now expected to be from the permanent IAY waitlists. These lists are prepared based on the ranking given to families as part of the BPL Census 2002. Further, 60% of the IAY funds are earmarked for SC/STs, 3% for persons with disability, and 15% for minorities. It is expected that all houses will be sanctioned in the name of women or jointly with the husband. These provisions have enabled effective targeting of the weaker sections and the scheme has succeeded in empowering the poorest.

Adequacy of Houses and Tackling Shelterlessness

4.81 Based on building materials used for construction of structure, houses have been classified as per Census 2001 as *pucca* houses (the walls and roof of which are made of permanent materials), semi-*pucca* houses (either the wall or the roof is made of permanent material and the other is made of temporary material), temporary house (both walls and roof are made of materials which have to be replaced frequently), serviceable temporary houses (wall is made of mud, unburnt bricks, or wood), and non-serviceable temporary houses (wall is made of grass, thatch, bamboo, plastic etc).

4.82 Trends indicate that share of pucca houses has increased. However, *kutcha* houses account for 26.5 million, and the next important cause of shortage is congestion (10.18 million houses).

4.83 For the Eleventh Plan, however, focus could be on targeting the poorest of the poor as far as IAY is concerned while targeting the remaining shortage with other interventions. Hence for the purpose of IAY the shortage emerging due to factors of (i) houseless, and (ii) unserviceable kutcha house could be tackled. With these factors, the estimate of housing shortage for 2001 stands at 148.6 lakh houses and for 2007 at 159.5 lakh houses. Hence a target of constructing about 150 lakh houses under IAY needs to be fixed for the Eleventh Plan.

KEY ISSUES AND STRATEGIC INTERVENTIONS

IAY

(i) Selection of Beneficiaries

4.84 Though selection had to be done by the gram sabhas, studies have revealed that 25% to 50% of the beneficiaries are not being selected through the gram sabhas. Further, the selection as well as allocation among Panchayats has been influenced by the PRIs/MLAs. The vocal and active segments of beneficiaries influence the selection process because of the limited allotment under IAY. In the process, the poorest among BPL households are left out, and non-BPL families also get selected for the IAY houses. Besides, collection of illegal gratification of selection by PRIs is a common complaint often heard at the field level, as brought to light by the several studies. Moreover, only beneficiaries who have house-sites are selected and thus, the very poor who do not have a plot of land get out from the purview of the scheme. This is a serious problem, since these are the people who are the most vulnerable. Some 8 million of the 14 million houseless are actually those who have no land, or live on homes located on land belonging to others (e.g., landlords, public land, etc.). The focus of the IAY programme must be on the houseless (e.g., such communities as the Saharyas, Musahars, the so called de-notified tribes, those living on canal bunds or roads, and other such who are seen to be at the bottom of the social ladder.

4.85 A more accurate targeting may result by the preparation of permanent IAY waitlists. These waitlists have to be based on scores given to families as part of

BPL Census 2002. This can bring about more transparency and tackle the problem of illegal gratification. Regarding provision of plots and homesteads for the landless both State Government and Panchayats have to be encouraged to play a major role. State government need to be incentivized and Panchayats have to be appropriately empowered.

(ii) Adequacy of Unit Cost

4.86 Inadequacy of cash assistance for construction has resulted in poor quality of house, non-fulfillment of requirements of the disaster-prone areas, and debt trap on account of the beneficiaries having to borrow funds to complete the construction of a pucca house. Several examples have been reported of poor quality of construction, sagging foundation, use of temporary materials for roofing or leaving the construction incomplete because of inadequate finance. Even after contributing their labour and borrowing from local sources, a significant number of families are not able to complete the house in all respects, and most houses remain without plastering or flooring.

4.87 There is an urgent need to increase the unit cost from the present level of Rs 25000 for plain areas and Rs 27500 for hilly areas.

(iii) Structural Facilities and Provision of Infrastructure

4.88 Studies have revealed that only about 50% of IAY houses have sanitary latrines and even a lesser percentage have installed smokeless chullas. This is a serious problem. Over a million women and children not only suffer from upper respiratory tract infections due to inhaling of indoor smoke but many die as a result. In addition, India is one of the countries in the world with much of its population not having access to sanitary means of excreta disposal (despite the existence of TSC, another CSS, which is part of the Bharat Nirman set of pro-grammes). Houses built as part of the Central Government's own programmes, like IAY, need to succeed in building of smokeless chulhas and of sanitary latrines.

4.89 The quality of life may not improve despite the construction of new houses unless there is provision for infrastructure. There is a need to provide a minimum level of infrastructure such as internal road, drainage, water supply stand post, along with the provision of houses by way of convergence of schemes.

(iv) Ownership Issues

4.90 It is found that the title of the house site tends to be in the name of the male member of the household. Hence the benefit to accrue to women by allotment of the scheme is restricted only for the purpose of the scheme sanction. Some effort to ensure clear cut ownership in the name of women needs to be made.

Other Strategic Interventions

4.91 Other than the IAY, the States have rural house construction programmes usually targeting the poor. While IAY can focus on eliminating the backlog of houselessness and temporary and unserviceable houses in rural India, the States should take responsibility for addressing any emerging needs. It is necessary to have the right kind of interventions so that the programme objective of tackling shelterlessness is achieved within the target time. Hence, the following strategic interventions are suggested:

- Encourage primary lending institutions to enhance their credit flow to the rural population and actively involve the existing institutional mechanisms of SHGs and micro finance institutions to extend loans to the rural population.
- Encourage new, flexible financial products through commercial banks geared to payback cycles of rural families to bring about a higher degree of inclusivity in institutional lending for rural housing.
- Encourage small and medium developers to take up housing in rural areas through a mix of fiscal incentives and business volumes after necessary environment and social impact assessments and clearances from the PRIs.
- Create institutional mechanisms to address the higher risk perception in rural areas.
- Consider housing at par with rural infrastructure as far as funding and concessions are concerned, in order to encourage investments in the sector.

4.92 Based on the aforementioned multidimensional approach and strategic interventions, specific initiatives can be taken up, as listed below.

- The IAY funds are being released directly to DRDAs for further disbursement. But it has been observed that there is no uniformity in disbursing the amount to the beneficiaries. To streamline the process as well as also speedy disbursement to the beneficiaries which may also speed up physical progress, implementing agencies of IAY at district level may be advised to disburse the amount directly to beneficiaries by depositing in bank accounts as far as possible.
- To ensure transparency and fair selection of beneficiaries, all State Governments have either finalized or are in the process of finalizing permanent IAY waitlist in such a manner that the poorest of the poor get the top slot. Further, implementing agencies should introduce the system of social audit to ensure proper utilization of funds and to make the system leakage proof. In addition to this the database of the IAY beneficiaries may also be prepared by the States and put on the website for information of IAY beneficiaries.
- It is gratifying to note that many State Governments are already implementing State-run schemes to supplement the efforts of the Central Government to provide houses to the poor. Still the gap between the demand and supply is huge. Hence to cover up the shortage of houses for the rural poor, the States which do not have State-run schemes may be incentivized to have their own State-run schemes.
- Even though 164.00 lakh houses have been constructed under IAY till date to provide shelter to the poor, still the poorest of the poor may fail to take benefit under the scheme because of their being landless people in the rural areas. To ensure social and economic equity, it is necessary to reach out to these people. State should acquire land and distribute homestead plots. Funds for this may be provided by the government.

National Rural Housing Consortium

4.93 A consortium could be created comprising nodal organizations such as National Housing Bank (NHB), NABARD, nationalized and premier commercial banks and apex microfinance institutions to provide equity and debt for rural housing for small and marginal farmers, small village artisans, self employed, etc. MoRD could play the role of a Key Facilitator.

Incentivizing Lending Institutions

4.94 Presently, Housing Finance Companies (HFCs) registered with NHB are allowed to create a Special Reserve to the extent of 40% income earned through long term mortgage financing (mortgage loans for more than 5 years) under Section 36(1) (vii) of the IT Act. This fiscal incentive is, however, not available to banks, who are presently the leaders in the housing finance market. At present, the rural housing loan portfolios of banks and HFCs, comprise only 10–12% of their total housing loans. There is need to incentivize these institutions to increase their lending in rural areas. It is, therefore, proposed that the limit under this provision should be increased from the present level of 40% to 60% for HFCs, banks, and NHB. The additional 20% provisions will exclusively be for lending in rural areas. It is proposed that banks may also be allowed to create the Special Reserves on the lines of HFCs for long term mortgage financing in rural areas. This will encourage banks and HFCs to aggressively lend for housing in rural areas. SHGs and micro finance institutions (MFIs)could also be encouraged to be actively involved in extending housing loans.

Role of HUDCO

4.95 Housing Urban Development Corporation (HUDCO) started its rural housing activity from 1977–78 by extending assistance for construction/ upgradation of rural houses. As part of its commitment to rural housing, HUDCO makes available financial assistance to State Governments and their agencies like Housing Boards, District Taluka, and Panchayat Development Boards nominated by the State Government for undertaking housing schemes with its assistance.

4.96 HUDCO's normal rural housing programme by and large caters to Economically Weaker Sections (EWS) (with a monthly household income less than Rs 2500). In rural areas, the three types of schemes financed by HUDCO include:

(i) EWS rural housing schemes for landless persons,
(ii) EWS rural housing schemes for land owning persons and,
(iii) The village abadi scheme including house repair.

4.97 Under the first two schemes, the cost ceiling per dwelling unit is Rs 60000. The maximum extent of finance is 90% of the project cost or Rs 40000, whichever is less. Under the first scheme HUDCO supplements effort of State Governments to provide free house sites by extending loans at low interest rates. The third scheme envisages improvement of existing houses as well as environmental improvement of surrounding areas by providing for sanitation, drainage, water supply, link roads, etc. Most of the HUDCO's sanctions pertain to the second scheme.

4.98 Over the last 28 years, HUDCO has sanctioned 2472 schemes with a loan amount of Rs 5807 crore for construction of 86.11 lakh dwelling units in various States in the country (as on 31 March 2006). There is an urgent need to strengthen the role of HUDCO and provision of its services to enhance construction activity in rural areas, especially to cater to EWS.

4.99 The allocation for the Eleventh Five Year Plan (at current price) is tentatively provided at Rs 26882 crore.

Social Protection—National Social Assistance Programme (NSAP) and Associated Programmes

4.100 The Constitution of India (Article 41) states: 'The State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want'. Social protection refers to public assistance in all cases of underserved want. It provides human security to the poor and the destitute.

4.101 For the first time in India, the NSAP was launched on 15 August 1995. The basic aim of this programme was to provide social assistance benefit to the rural poor in case of old age, death of primary breadwinner, and for poor women during maternity. It aims at providing them with a modicum of dignity and support, thereby ensuring a minimum quality of care and attention from the community. It provides an opportunity for linking the social assistance package to schemes for poverty alleviation and provision of basic needs. It was a CSS with 100% Central assistance provided to States/UTs. This programme is implemented through a synergistic partnership with State Governments and under the direct supervision of DRDAs in close collaboration with the various PRIs. This programme included three schemes viz., National Old Age Pension Scheme (NOAPS), National Family Benefit Scheme (NFBS), and National Maternity Benefit Scheme (NMBS).

- Under NOAPS, old age pension of Rs 75 per month was provided to persons of 65 years and above who are destitute. This amount has since been enhanced to Rs 200 per month from the year 2006–07. The response for this scheme has been overwhelming from the poor as well as the State Governments. Many States are matching these pension amounts equally and many more are extending the coverage of this scheme to all those identified from among BPL families.
- The NFBS provides a lump sum family benefit of Rs 10000 to the bereaved household in case of the death (natural or accidental) of the primary breadwinner (male or female) whose earnings contribute substantially to the total household income. This scheme is applicable to all the eligible persons in the age group 18 to 64. The bereaved household should belong to BPL families to qualify for this benefit.
- Under the NMBS there is a provision for payment of Rs 500 per pregnancy to women belonging to poor households for pre-natal and post-natal maternity care upto the first two live births. This benefit is provided to eligible women of 19 years and above. The objective of the scheme is to extend financial assistance to pregnant women from BPL households, for the first two live births. To ensure better linkage with nutrition and national population control program-mes, NMBS was transferred to Department of Family Welfare and is renamed as Janani Suraksha Yojana in 2001–02. It is now part of the NRHM.

4.102 On the recommendations of the Group of Ministers (GoM) a new scheme called Annapurna was launched on 1 April 2000 as a CSS. It aims to providing food security to meet the requirement of those

senior citizens who though eligible, have remained uncovered under the NOAPS. Under the Annapurna scheme the beneficiaries should be 65 years or above and must be destitute. The beneficiaries are entitled to 10 kg of food grains per month free of cost. The ceiling on the total number of Annapurna beneficiaries will be at least 20% of the persons eligible to receive pension under NOAPS.

4.103 These schemes continued to be administered by the MoRD upto 2001–02 as CSS, and during 2002–03 these schemes were transferred to Central Assistance for State Plans on the recommendation of the National Development Council (NDC) with the requisite flexibility in the choice of implementation.

Key Issues

4.104 Various studies conducted in respect of the NOAPS indicate that the criteria of destitution are difficult to apply. Many States have adopted the poverty line itself to define destitution. This is, in fact, reasonable since a BPL family can hardly support itself and would not be in a position to support the aged. Therefore, the NOAPS has now been extended to all old persons above 65 years of age in BPL families with effect from 2007–08. Consequently the Annapurna Scheme which provides 10 kg of foodgrains to senior citizens uncovered under NOAPS would be discontinued soon after these beneficiaries are covered under NOAPS.

4.105 The National Policy for Older Persons, 1999 recognizes that a person becomes a senior citizen at the age of 60 and would be eligible for the facilities and concessions available to senior citizens. Indeed, the aged over 60 years, from among the poor families, can hardly participate in the workforce and support given to them will be more useful when above 60 years, than if given only after 65 years. Therefore, the scheme of NOAPS needs to be made applicable to persons of the age of 60 years or more.

4.106 The rate of pension under NOAPS has recently been enhanced to Rs 200 per month. The State Governments have been urged to top it up with another Rs 200 so that every pensioner would get a minimum of Rs 400 per month. Currently, ten States/UTs are already providing an additionality of Rs 200 per month or even more. Other States need to be encouraged to supplement the Central Government's Old Age Pension, so that a minimum of Rs 400 per month is provided to the deserving aged.

4.107 NSAP requires to be extended to two more categories of deserving poor in dire need of this assistance viz., persons with severe/multiple disabilities and widowed women. Similarly, national schemes for maintenance of orphans, street children, and other sections of the poor in distress are needed.

4.108 The scope of the NFBS needs to be extended to cover instances of death of any adult member of the family without limiting to the death of breadwinner.

4.109 At present, there are two life insurance schemes operated by Life Insurance Corporation (LIC) that are making headway among the people below and marginally above the poverty line viz., 'Janashree Bima Yojana' for the rural poor and the 'Aam Aadmi Insurance Scheme' for the landless agricultural labour. These two schemes under which the premium is contributed by the Centre and the State Governments in equal proportions provide significant supplementation to the Family Benefit Scheme with enhanced benefits on death, accidental death, and disability for the persons insured in the BPL families.

4.110 The poor require comprehensive access to strengthened public health system and facilities. In addition, they need suitable instruments in the form of health insurance in cases involving serious illness requiring hospitalization, which are not provided in institutions of public health.

4.111 In the execution of NSAP, greater professional support is needed for ensuring quality, delivery and for suitable monitoring and evaluation purposes, both at the Centre and State levels. Advisory Committees comprising of professionals and voluntary organizations should be set up at Central, State, and district levels for continuous review of policy and performance of NSAP. Technical support groups should also be established at all level to ensure smooth implementation and closer monitoring of NSAP.

ANNEXURE 4.1
Headcount Ratio and Number of Poor Persons Below Poverty Line in India (Combined)

States/UTs	Headcount Ratio				Number of Poor Persons (in Lakh)			
	1973–74	1983	1993–94	2004–05	1973–74	1983	1993–94	2004–05
Andhra Pradesh	48.9	28.9	22.2	15.8	225.7	164.6	154.0	126.1
Assam	51.2	40.5	40.9	19.7	81.8	77.7	96.4	55.8
Bihar	61.9	62.2	55.0	41.4	370.6	462.1	493.4	369.2
Delhi	49.6	26.2	14.7	14.7	22.8	18.4	15.5	22.9
Goa	44.3	18.9	14.9	13.8	4.2	2.2	1.9	2.0
Gujarat	48.2	32.8	24.2	16.8	138.4	117.9	105.2	90.7
Haryana	35.4	21.4	25.1	14.0	38.3	29.6	43.9	32.1
Himachal Pradesh	26.4	16.4	28.4	10.0	9.7	7.4	15.9	6.4
Karnataka	54.5	38.2	33.2	25.0	170.7	149.8	156.5	138.9
Kerala	59.8	40.4	25.4	15.0	135.5	106.8	76.4	49.6
Madhya Pradesh	61.8	49.8	42.5	38.3	276.3	278.0	298.5	249.7
Maharashtra	53.2	43.4	36.9	30.7	287.4	290.9	305.2	317.4
Orissa	66.2	65.3	48.6	46.4	154.5	181.3	160.6	178.5
Punjab	28.2	16.2	11.8	8.4	40.5	28.6	25.1	21.6
Rajasthan	46.1	34.5	27.4	22.1	128.5	126.8	128.5	134.9
Tamil Nadu	54.9	51.7	35.0	22.5	239.5	260.1	202.1	145.6
Uttar Pradesh	57.1	47.1	40.9	32.8	535.7	556.7	604.5	590.0
West Bengal	63.4	54.9	35.7	24.7	299.3	318.7	254.6	208.4
Chhattisgarh	–	–	–	40.9	–	–	–	91.0
Jharkhand	–	–	–	40.3	–	–	–	116.4
Uttarakhand	–	–	–	39.6	–	–	–	36.0
Chandigarh	28.0	23.8	11.4	7.1	0.8	1.2	0.8	0.7
Dandra & Nagar Haveli	46.6	15.7	50.8	33.2	0.4	0.2	0.8	0.8
J&K	40.8	24.2	25.2	5.4	20.5	15.6	20.9	5.9
All India	54.9	44.5	36.0	27.5	3213.4	3229.0	3203.7	3017.2

Note: 1. Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.
2. Poverty Ratio of Tamil Nadu is used for Pondicherry and Andaman and Nicobar Islands (A&N Islands).
3. Poverty Ratio of Kerala is used for Lakshadweep.
4. Urban Poverty Ratio of Punjab is used for both rural and urban poverty of Chandigarh.
5. Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate poverty ratio of Goa.
6. Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate poverty ratio of Dadra & Nagar Haveli.

Source: Planning Commission.

ANNEXURE 4.2
Headcount Ratio and Number of Poor Persons Below Poverty Line in India (Rural)

States/UTs	Headcount Ratio				Number of Poor Persons (in Lakh)			
	1973–74	1983	1993–94	2004–05	1973–74	1983	1993–94	2004–05
Andhra Pradesh	48.4	26.5	15.9	11.2	178.2	114.3	79.5	64.7
Assam	52.7	42.6	45.0	22.3	76.4	73.4	94.3	54.5
Bihar	63.0	64.4	58.2	42.1	336.5	417.7	450.9	336.7
Delhi	24.4	7.7	1.9	6.9	1.1	0.4	0.2	0.6
Goa	46.9	14.8	5.3	5.4	3.2	1.2	0.4	0.4
Gujarat	46.4	29.8	22.2	19.1	94.6	72.9	62.2	63.5
Haryana	34.2	20.6	28.0	13.6	30.1	22.0	36.6	21.5
Himachal Pradesh	27.4	17.0	30.3	10.7	9.4	7.1	15.4	6.1
Karnataka	55.1	36.3	29.9	20.8	128.4	100.5	96.0	75.1
Kerala	59.2	39.0	25.8	13.2	111.4	81.6	56.0	32.4
Madhya Pradesh	62.7	48.9	40.6	36.9	231.2	215.5	216.2	175.7
Maharashtra	57.7	45.2	37.9	29.6	210.8	193.8	193.3	171.1
Orissa	67.3	67.5	49.7	46.8	142.2	164.7	140.9	151.8
Punjab	28.2	13.2	12.0	9.2	30.5	16.8	17.8	15.1
Rajasthan	44.8	33.5	26.5	18.7	101.4	96.8	94.7	87.4
Tamil Nadu	57.4	54.0	32.5	22.9	172.6	181.6	121.7	76.5
Uttar Pradesh	56.5	46.5	42.3	33.4	450.0	448.0	496.2	473.0
West Bengal	73.2	63.1	40.8	28.6	258.0	268.6	209.9	173.2
Chhattisgarh	–	–	–	40.8	–	–	–	71.5
Jharkhand	–	–	–	46.3	–	–	–	103.2
Uttarakhand	–	–	–	40.8	–	–	–	27.1
Chandigarh	28.0	23.8	11.4	7.1	0.1	0.1	0.1	0.1
Dadra & Nagar Haveli	46.9	14.8	52.0	39.8	0.4	0.2	0.7	0.7
J&K	45.5	26.0	30.3	4.6	18.4	13.1	19.1	3.7
All India	56.4	45.7	37.3	28.3	2612.9	2519.6	2440.3	2209.2

Note: 1. Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.
2. Poverty Ratio of Tamil Nadu is used for Pondicherry and A&N Islands.
3. Poverty Ratio of Kerala is used for Lakshadweep.
4. Urban Poverty Ratio of Punjab is used for both rural and urban poverty of Chandigarh.
5. Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate poverty ratio of Goa.
6. Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate poverty ratio of Dadra & Nagar Haveli.

Source: Planning Commission.

ANNEXURE 4.3
Headcount Ratio and Number of Poor Persons Below Poverty Line in India (Urban)

States/UTs	Headcount Ratio				Number of Poor Persons (in Lakh)			
	1973–74	1983	1993–94	2004–05	1973–74	1983	1993–94	2004–05
Andhra Pradesh	50.6	36.3	38.3	28.0	47.5	50.2	74.5	61.4
Assam	36.9	21.7	7.7	3.3	5.5	4.3	2.0	1.3
Bihar	53.0	47.3	34.5	34.6	34.1	44.4	42.5	32.4
Delhi	52.2	27.9	16.0	15.2	21.8	18.0	15.3	22.3
Goa	37.7	27.0	27.0	21.3	1.0	1.1	1.5	1.6
Gujarat	52.6	39.1	27.9	13.0	43.8	45.0	43.0	27.2
Haryana	40.2	24.2	16.4	15.1	8.2	7.6	7.3	10.6
Himachal Pradesh	13.2	9.4	9.2	3.4	0.4	0.3	0.5	0.2
Karnataka	52.5	42.8	40.1	32.6	42.3	49.3	60.5	63.8
Kerala	62.7	45.7	24.6	20.2	24.2	25.2	20.5	17.2
Madhya Pradesh	57.7	53.1	48.4	42.1	45.1	62.5	82.3	74.0
Maharashtra	43.9	40.3	35.2	32.2	76.6	97.1	111.9	146.3
Orissa	55.6	49.2	41.6	44.3	12.2	16.7	19.7	26.7
Punjab	28.0	23.8	11.4	7.1	10.0	11.9	7.4	6.5
Rajasthan	52.1	37.9	30.5	32.9	27.1	30.1	33.8	47.5
Tamil Nadu	49.4	47.0	39.8	22.2	66.9	78.5	80.4	69.1
Uttar Pradesh	60.1	49.8	35.4	30.6	85.7	108.7	108.3	117.0
West Bengal	34.7	32.3	22.4	14.8	41.3	50.1	44.7	35.1
Chhattisgarh	–	–	–	41.2	–	–	–	19.5
Jharkhand	–	–	–	20.2	–	–	–	13.2
Uttarakhand	–	–	–	36.5	–	–	–	8.9
Chandigarh	28.0	23.8	11.4	7.1	0.8	1.1	0.7	0.7
Dadra & Nagar Haveli	37.7	27.0	39.9	19.1	0.0	0.0	0.1	0.2
J&K	21.3	17.8	9.2	7.9	2.1	2.5	1.9	2.2
All India	49.0	40.8	32.4	25.7	600.5	709.4	763.4	808.0

Note: 1. Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.
2. Poverty Ratio of Tamil Nadu is used for Pondicherry and A&N Islands.
3. Poverty Ratio of Kerala is used for Lakshadweep.
4. Urban Poverty Ratio of Punjab is used for both rural and urban poverty of Chandigarh.
5. Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate poverty ratio of Goa.
6. Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate poverty ratio of Dadra & Nagar Haveli.

Source: Planning Commission.

ANNEXURE 4.4
Percentage of Population Below Poverty Line by Social Groups—2004–05

States	Rural			Urban		
	SC	ST	OBC	SC	ST	OBC
Andhra Pradesh	15.4	30.5	9.5	39.9	50.0	28.9
Assam	27.7	14.1	18.8	8.6	4.8	8.6
Bihar	64.0	53.3	37.8	67.2	57.2	41.4
Chhattisgarh	32.7	54.7	33.9	52.0	41.0	52.7
Delhi	0.0	0.0	0.0	35.8	9.4	18.3
Gujarat	21.8	34.7	19.1	16.0	21.4	22.9
Haryana	26.8	0.0	13.9	33.4	4.6	22.5
Himachal Pradesh	19.6	14.9	9.1	5.6	2.4	10.1
J&K	5.2	8.8	10.0	13.7	0.0	4.8
Jharkhand	57.9	54.2	40.2	47.2	45.1	19.1
Karnataka	31.8	23.5	20.9	50.6	58.3	39.1
Kerala	21.6	44.3	13.7	32.5	19.2	24.3
Madhya Pradesh	42.8	58.6	29.6	67.3	44.7	55.5
Maharashtra	44.8	56.6	23.9	43.2	40.4	35.6
Orissa	50.2	75.6	36.9	72.6	61.8	50.2
Punjab	14.6	30.7	10.6	16.1	2.1	8.4
Rajasthan	28.7	32.6	13.1	52.1	24.1	35.6
Tamil Nadu	31.2	32.1	19.8	40.2	32.5	20.9
Uttar Pradesh	44.8	32.4	32.9	44.9	37.4	36.6
Uttarakhand	54.2	43.2	44.8	65.7	64.4	46.5
West Bengal	29.5	42.4	18.3	28.5	25.7	10.4
All-India	36.8	47.3	26.7	39.9	33.3	31.4

Note: 1. Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.
2. Poverty Ratio of Tamil Nadu is used for Pondicherry and A&N Islands.
3. Poverty Ratio of Kerala is used for Lakshadweep.
4. Poverty Ratio of Goa is used for Dadra & Nagar Haveli and Daman & Diu.
5. Urban Poverty Ratio of Punjab is used for both rural and urban poverty of Chandigarh.
6. Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate poverty ratio of Goa.
7. Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate poverty ratio of Dadra & Nagar Haveli.
8. The poverty ratio among the ST population in some States may be treated with caution due to the smallness of the sample household based on which the class distribution of persons have been obtained in the NSS. These States are: in the rural areas Haryana and Punjab, where the number of sample households among the STs is 10 or less. Similarly, in the urban areas, the States are: Bihar, Haryana, Himachal Pradesh, J&K, Kerala, and Punjab, where the number of sample households among the STs is 10 or less, and Delhi, Tamil Nadu and Uttarakhand, where the number of sample households is 20 or less.

Source: Planning Commission.

5

Ensuring Rural and Urban Livelihoods

INTRODUCTION

5.1 The dispersed, unorganized and often household-based micro and small enterprises are capital-saving, labour-intensive, and environment-friendly tools of inclusion. In India, they are the largest source of employment after agriculture and are found in both rural as well as urban areas.

5.2 In nearly three decades, the structure of rural employment has not changed much.[1] According to the latest NSS figures (61st Round), agriculture continues to employ 70% of our rural workforce, industry (14.4%), and services (14.8%) make up for the rest. However, in view of the decline in agriculture's contribution to GDP and the near constant proportion of workers dependent on it, there is need for rapid generation of off-farm employment. The chapter on Agriculture deals with diversification within agriculture (to sericulture, horticulture, pisciculture) to expand the scope of off-farm rural livelihoods. The real potential for employment generation, however, rests with the micro and small enterprises (MSEs) sector which comprises weavers, artisans, people engaged in food processing, hawkers, vendors, and carpenters.

5.3 In developing countries across Asia, small and medium enterprises (SMEs)[2] (i) make up 80%–90% of all enterprises, (ii) provide over 60% of the private sector jobs, (iii) generate over 30%–40% of total employment, and (iv) contribute about 50% of sales or value added. In India, they constitute[3] 95% of all enterprises. Labour productivity[4] of small-scale industries (SSIs) in India during 1990–98 at the compound growth rate was 8.5% whereas labour productivity of large-scale industries (LSIs) was 7.54%. However, recently in a study of 53 countries done by Fortune Small Business Survey, June 2007 on 'Most and Least Friendly Countries to Small Businesses', India ranked 46th, well behind the other neighbouring Asian countries such as Singapore (5th), Hong Kong (6th), Thailand (15th), Malaysia (28th), etc.

5.4 Inadequate working capital, lack of information to access markets and foreign business opportunities, lack of trained personnel, and obsolete technology are

[1] Male and female employment in industry in rural areas has risen from 8% and 6.7%, respectively, in 1977–78 to 15.5% and 10%, respectively, in 2004–05. Most of the employment in manufacturing is in textiles (4 million), wood products (3.7 million), non-metallic products (3.4 million), food products (3.1 million), tobacco (3.1 million), and wearing apparel 2.8 million) (NSS 2004–05, Report 515). In services, employment in rural areas has risen from 10.5% of male employment and 5.1% of female employment in 1977–78 to 18% and 6.6% respectively in 2004–05.

[2] Asian Association of Management Organization Report—SMEs in Asian Region: Harnessing the Growth Potential.

[3] UNCTAD-2003, OECD-2000, and Country reports.

[4] Asian Association of Management Organization Report—SMEs in Asian Region.

the major barriers to the growth of MSEs across the world in general and in India in particular.

5.5 Shortage of working capital is widely recognized as the biggest hurdle in the growth of unorganized and organized MSEs. Securing bank credits, difficulties in documentation for bank loans, and lack of collateral security are bigger problems in India than in majority of the other developing countries in Asia. It is estimated that less than 8% of the total bank credit finds its way to the MSE sector.

5.6 Unorganized sector enterprises generally suffer from weak marketing. They need better market infrastructure, professionally organized exhibition of products at the international level, efficient system of supply chain management, brand promotion, and standardization. Efforts are needed to establish better linkages with the industry.

5.7 In post-WTO agenda, domestic markets have been opened up for imports, creating severe competition for the local industries. At the same time, this has created opportunities for the small industries to export products to the developed countries. To gain from this opportunity, however, effort must be made in pushing for greater market access in the developed countries.

5.8 Technology is one of the most critical elements in the growth of the MSE sector. India is ranked at the top[5] in terms of availability of Science and Engineering personnel; however, MSEs in India are losing their competitive edge in the global markets due to lack of modern technology. Owing to obsolete technology, the cost of manufacturing is much higher in India compared to the other developing countries in Asia.

5.9 Addressing these problems to ensure a vibrant MSE sector is essential for sustained and inclusive growth.

Village and Cottage Industries, Handlooms, Handicrafts, and Food Processing and Agro Industries: Engines of Sustained and Inclusive Growth

5.10 The MSE sector provides livelihood, checks rural–urban migration, generates export earnings, and touches upon the lives of the remotest and most marginalized people. The needs, problems, and potential of this sector differ not just with the nature of activity (weaving, building components for big industries, etc.), but also with size, geographical location, and structure (organized/unorganized). The importance of this sector and the vision for it in the Eleventh Plan has been outlined in the chapter on Industries. The untapped domestic and international markets for traditional crafts has been indicated in Box 5.1.

5.11 This sector has been fragmented across various ministries and departments which have often been pitted against each other: powerloom versus handloom, anti-dumping duty on foreign silk yarn to protect interest of silk rearers versus removal of duty for handlooms and powerlooms, interest of petty traders versus greater control for home-based producers—these have been recurring debates. There is a need to move from competitive to complementary relationships by

Box 5.1
Untapped Domestic and International Markets for Traditional Crafts

In the small town of Chamba in Himachal Pradesh, over 500 artisans make sturdy and beautifully designed leather footwear. They sit inside homes or in tiny shops making one pair of *chappal*s in approximately two hours. They earn Rs 30 per pair; each pair retails for anything between Rs 100 and Rs 500. At one time, Chamba made footwear for the entire Punjab. Chamba chappals have long been known for their durability and exclusive designs, many of which are now being developed and sold by big footwear manufacturers at exorbitant prices. These chappals have tremendous export potential and can take the domestic market by storm. Yet, in the absence of proper advertising and market linkages, the Chamba artisans are finding it increasingly difficult to make ends meet. Similarly, the bamboo products developed in North East India—in Meghalaya, Tripura, Manipur, Mizoram, even Assam, and Siliguri and Jalpaiguri (both in West Bengal)—have tremendous export potential. The range of products vary from picnic baskets to furniture, dinner sets, and even furnishing material.

[5] Global Competitive Index—2005; World Economic Forum.

making each sector a resource for the other. Encouraging this symbiotic relationship between different segments of the MSE sector will be the key Eleventh Plan strategy.

5.12 The Eleventh Plan will also move away from looking at certain sub-sectors of MSE as purely rural or urban sectors. Handlooms and handicrafts are often found in towns and cities (Benaras, Murshidabad, Berhampur, Jodhpur, Delhi, Jaipur, etc); powerloom units tend to be concentrated in urban areas but are also found in villages; food processing units and small industries involved in manufacturing of components, dyes, etc., are found in both urban and rural settings. Yet often, the traditional sectors are looked upon as rural livelihoods and the modern enterprises as urban livelihoods. Thus, urban planning that involves demolition of slums and street (flea) markets, widening of streets, or construction of apartments and flyovers fails to take into account the impact on the small and tiny sectors, robbing vendors, petty traders, weavers, artisans, rickshaw pullers, and small entrepreneurs of their source of livelihood. Similarly, rural planning often fails to meet the needs of the non-traditional small industries. In the Eleventh Plan concerted efforts will be made to ensure that the perceived locational distinctions do not hinder the progress of this sector.

5.13 The Eleventh Plan will use a two-pronged approach, focusing on both the lives and livelihoods of the people engaged in the MSE sector. Thus far, we have mostly concentrated on production. In the Eleventh Plan, both production and producer will receive attention as each is dependent on the other. Higher productivity and earnings cannot be achieved if the weaver, artisan, entrepreneur, or worker is starving, diseased, uneducated, and untrained. Similarly, the quality of life of the producer cannot improve until his/her productivity increases.

MSMEs AS INSTRUMENTS OF INCLUSION

North East, J&K, and Other Difficult Terrains

5.14 Be it the desert sands of Rajasthan, the hills of Himachal Pradesh, North East, and Kashmir, or the islands of Lakshadweep and Andaman and Nicobar, the MSE sector is often the only source of livelihood in these ecologically fragile regions. According to a study sponsored by the North Eastern Development Finance Corporation Ltd (NEDFI, 2002), the North East accounts for 19.18% of the total number of handicrafts units in India and 21.71% of the artisans. The region also has a huge potential for the development of food processing and knowledge-based small industries. The situation in J&K, Himachal Pradesh, Rajasthan, and Kutch is similar. These areas are, however, also places[6] where infrastructure facilities are minimal, banking facilities are limited, and connectivity is poor, making access to markets difficult. The flow of credit to the NER is hampered due to adverse topography, problem of land collateralization (traditionally, in many parts of NER, land is owned by the community), lack of awareness about schemes, and poor recovery of loans.

Women

5.15 While a gender-disaggregated, comprehensive database on the sector is not available, there is ample evidence to prove that a majority of women are engaged in the MSEs. In sectors such as handloom, over 60% of the workforce comprises women. Chemical and plastics, food processing, and village industries also employ a large number of women. The proportion of women entrepreneurs is, however, quite low. As per the Third All-India Census (2001–02), only 995141 (9.46%) MSEs are actually managed by women. As against this, in the US, women own 38% of the small enterprises,[7] which employ more than 50% of the private sector workforce. In countries such as Brazil, Ireland, Spain, and the US, women are creating new enterprises at a faster rate than men (OECD, 2001). The absence of property rights and the concomitant difficulty in accessing credit may be responsible for the low proportion of women entrepreneurs in India. Most women either do job work, assist their family members, or are employed as workers in small-scale units. They face widespread discrimination and exploitation. *Zari* workers, *agarbatti* and *bidi* rollers, embroidery workers make as little as Rs 10 for an eight-hour day. During the Eleventh Plan period, it is essential to

[6] Scheme for North East Handlooms and Handicrafts.
[7] Milken Institute, 2000.

provide a social security cover that is sensitive to women's special needs. Equal wages, adequate protection, provision of drinking water, toilets, crèche, and feeding facilities will be ensured in all small units and for every cluster. Women entrepreneurs will be provided easy access to credit and appropriate advisory and mentoring services.

Marginalized Groups—SC/ST/Minorities

5.16 The MSE sector, especially traditional enterprises, provides livelihood to many marginalized groups. While the sector in general lacks access to marketing and credit, the problem is even more pronounced for people belonging to SC/ST and minorities. The Eleventh Plan, therefore, will introduce social security, training, and health insurance schemes for these vulnerable groups. Efforts will also be made to collect disaggregated data, set targets for credit availability, and ensure access to schemes for the people belonging to these communities.

DIFFERENT SEGMENTS, DIFFERENTIAL NEEDS

Handlooms

5.17 As a metaphor for Indian culture and heritage, handlooms enable 65 lakh persons to earn a living by skilfully blending myths, faiths, symbols, and imagery. Today, the handloom industry directly and indirectly provides livelihood to 124 lakh people,[8] of which 60% are women, 12% SC, and 20% ST (Ministry of Textiles, 2001). While the exact numbers are not available, a chunk of the handloom weavers belong to minorities.

5.18 Indian handloom products range from coarse cloth to very fine fabrics from a variety of fibres such as cotton, silk, tasar, jute, wool, and synthetic blends. Each region has handcrafted textiles that are unique in design and style. What is woven is, however, inseparable from where and how it is woven, that is from the structure of production. There are independent weavers, weavers organized into co-operatives, and there are those working under master weavers. Often a combination of production types exists at one time in one area, even within a single household. Yet there is no data reflecting this diverse nature. We do not have updated figures on the number of looms or people. The last Census was carried out in 1995–96.

Current Situation

5.19 With the largest number of handlooms in the world, India produces approximately 6541 million sq m of handloom cloth annually. While the total production of cloth has increased by about 30% between 1996–97 and 2004–05, the production of handloom sector has declined by about 23%. Between 2000 and 2005, the average annual growth rate of handloom production has been 6.99%. This has hit the livelihoods of the handloom weavers. West Bengal, Tamil Nadu, Uttar Pradesh, Andhra Pradesh, Assam, and Manipur are the major handloom States accounting for 75% of handloom weaving in the country. As per the Second Handloom Census, Assam (10.97 lakh), West Bengal (2.22 lakh), and Manipur (2.15 lakh) together accounted for 64% of the handloom units. Almost all handloom production in India is for domestic markets. According to the Directorate General of Handlooms, though handlooms account for 10% of our textile exports, only 1.3% of working looms produce fabric[9] for export markets. Europe is the largest destination, accounting for nearly half of the total exports in 1999–2000.

5.20 In the terminal year of the Tenth Plan, handloom cloth production was 6541 million sq m with exports at Rs 4605 crore. The Tenth Plan performance is indicated in Table 5.1.

5.21 With the phasing out of quota and the opening up of markets, 'Handloom' cloth and designs are being produced cheaply by mills and powerlooms both in India and in China. As the market is shrinking, weavers are becoming manual labourers or in extreme cases committing suicide. This has led many to label this industry as a sunset sector. This, however, is far from

[8] India's Handloom Sector—K. Rajendran Nair (Former Development Commissioner for Handlooms).
[9] Handloom Mark Scheme—A Report on Diagnostic Survey and Business Plan for Handloom Sector in Bihar, submitted to Department of Industries, Government of Bihar by IL&FS.

TABLE 5.1
Performance of Handloom Sector during the Tenth Plan Period

Item	2002–03	2003–04	2004–05	2005–06	2006–07
Cloth production (million sq m)	5980	5493	5722	6108	6541
Employment(lakh persons)	65	65	65	65	65
Export (Rs crore)	na	na	na	na	4605

Source: Office of Development Commissioner (Handlooms), Ministry of Textiles.

the truth. Health- and environment-friendly hand-woven fabrics have a huge international demand and have the potential to generate domestic demand as well. In the post-Multi-Fibre Agreement era, weavers can capture new markets. Box 5.2 highlights the potential for this sector.

Box 5.2
Hope Looms

Though handloom is regarded by many as a sunset industry, there are enough success stories across the country—Self Employed Women's Association (SEWA) in Lucknow, Kutch Mahila Samiti in Gujarat, and Dastkar in Andhra which expose this myth and show the way forward for this sector. Maheshwar, a small town of Madhya Pradesh has been weaving for the last 250 years, ever since Rani Ahilyabai Holkar brought the profession to this town and etched a beautiful design palette in stones along the banks of the Narmada. Three decades ago the market for Maheshwari sarees started shrinking and there were less than 25 looms left in the town. Once again the Holkars intervened—this time in the form of REHWA society. Rehwa is another name for the Narmada. Through this society they carried out design interventions, moved from the '*nauwari*' to '*chhewari*' sarees, and organized exhibitions. They provided weavers with work, looms, health facilities, crèches and schools for their children, and even homes. Today, there are about 2500 looms creating poetry with silk and cotton yarn in Maheshwar and they have the potential to install more. The wages have gone up from Rs 9 per saree to Rs 150 per saree. Phalodi, in district Jaisalmer of Rajasthan, traditionally produced *Pattu*—two pieces of cloth woven in local wool, stitched together laterally, and enhanced by an extra weft ornamentation known as *Kashida*. Pattu weavers were disorganized and were dependent for sale on the intermediaries and fairs/exhibitions. In 1991, with the help of Urmul Trust, they organized themselves into a registered NGO, the Urmul Marusthali Bunkar Vikas Samiti (UMBVS). Today more than half of the weavers in Phalodi are its members. At the time of registration, a compulsory three-month training is imparted. For every group of 8–15 weavers, a commission-based *Vyavasthapak* (manager) delivers raw materials and designs; monitors quality during weaving; weighs, checks, and delivers products; and makes payments. UMBVS provides raw materials and markets products through fairs and exhibitions, websites, and its own showroom. It has managed to get financial support from banks and new designs from NIFT, NID, etc. Pochampally, a small town in Nalgonda district of Andhra Pradesh, is known for its unique *Ikat* design. About 50% of the population here depends on handlooms. In December 2003, Pochampally became the first traditional Indian craft to get a Geographical Indication (GI) registered. Less than two years later, the proprietors of the GI found that a retailer in Hyderabad was selling sarees produced by a Mumbai-based manufacturer under the false GI of 'Pochampally'. They immediately filed a case. Both the retailer and the manufacturer accepted the case of infringement and agreed to an out of court settlement. They also gave an undertaking not to sell any products in the name of Pochampally. 13 SHGs of weavers from Chanderi, Madhya Pradesh, have come together to form Chanderi Bunkar Vikas Samiti (CBVS). Quality control is emphasized and a mechanism has been devised to reject products that do not conform to specifications. The groups affiliated to the Samiti are heavily represented by women. The unique selling point (USP) of CBVS is its market linkage to Fab India. The weavers have regular work and they can sell their products to the Samiti and get timely payments. The Samiti has tried to become self-reliant by developing a common facility centre (CFC) for dyeing and a raw-material depot. This raw-material depot takes advantage of the Mill Gate Price Scheme and sells yarn with a 3% mark-up on the procurement price to Samiti members and with a 5% mark-up to non-members. For almost 80 years now, Nalli has monopolized the silk industry in India. From one loom in Kancheepuram and one shop in Chennai's T-Nagar set up in 1928, the Nallis today have 50 looms under their direct control and another 10000 looms working for them in Kancheepuram, Salem, and Kumbakonam. They have 14 shops including one each in Singapore, San Jose (California), and Toronto (Canada). Nalli manages over 5000 dedicated suppliers and has an annual turnover of Rs 325 crore. It has a range of products from Rs 80 to Rs 50000.

Challenges For the Eleventh Plan

5.22 Many challenges for the handloom sector have already been discussed in the chapter on Industry (see paragraphs 7.1.356 to 370, Chapter 7.1, Volume III). This section looks at some specific issues which will be tackled during the Eleventh Plan to ensure the vibrancy of this sector.

AVAILABILITY OF WORKING CAPITAL

5.23 Though NABARD provides refinance facilities to the State co-operative banks and RRBs for financing requirements of primary and apex weavers' co-operative societies, the service charges levied by these institutions result in the doubling of interest rates for the artisans and societies. Further, most State handloom co-operative societies lift stock and reimburse weavers only on sale of products. This blocks the working capital for the weavers.

AVAILABILITY OF QUALITY RAW MATERIALS:[10]

5.24 Despite the setting up of co-operative spinning mills and the hank yarn obligation, yarn shortages and steep prices are continuing problems. As early as in 1995, the gap between the supply and the demand for hank yarn used by the handloom sector was 150 million kg. The use of hank yarn by mills and powerlooms also diverts yarn meant for handlooms. The schemes ensuring availability of hank yarn at reasonable prices, usually only benefit the big weavers or the co-operative sector which covers 20.3% weavers.

TRAINING AND TECHNOLOGY

5.25 The Janata Cloth Scheme de-skilled weavers and we now have two categories of weavers—skilled and semi-skilled. The products manufactured by the latter are easily produced by mills and powerlooms at much cheaper rates. Their market is shrinking and there is little hope for its revival. Reskilling of semi-skilled weavers in handlooms or in any other field and skill upgradation for the skilled weavers are necessary. Currently, weaving has become a profession for the uneducated. People need to take up this profession out of choice, not necessity. Encouraging educated individuals to provide design inputs, marketing, etc., to this sector is a challenge.

MARKETING AND PUBLICITY

5.26 Primary producers have no direct access to either markets or market information. As a result, there is a mismatch between production and market demand. Markets today are created and captured through aggressive publicity campaigns using icons. The challenge in the Eleventh Plan is to create a demand for handloom products by flaunting their unique selling point (USP). Unfortunately, marketing efforts thus far have been limited to organizing buyer–seller meets and holding a few exhibitions where space is often provided to master weavers and *gaddidar*s, not poor weavers. The challenge is to encourage market research and product diversification. The latter does not imply a rejection of the traditional designs. It means development of new products using the traditional designs adapted to modern tastes.

INFRASTRUCTURE DEVELOPMENT

5.27 Few clusters have organized dyeing centres with modern facilities such as water softening plants or dyeing chambers. Dyeing is unorganized and marked with low end applications. All this has a significant bearing on the quality of final products and the resultant poor earnings of weavers. It also harms the environment. Electricity, space to keep the looms, yarn banks, dyeing units, roads connecting weavers to markets, water supply, processing and packaging facilities are needed.

ENCOURAGING ORGANIZATION OF WEAVERS

5.28 Organizing weavers into SHGs or cluster committees to increase their bargaining power, enable them to access credit, design and common facilities centres, and undertake collective marketing is an important challenge.

SOCIAL SECURITY

5.29 Provision of a social security net that includes education, skill training, access to health facilities, and insurance is essential. Occupational health centres are needed to treat tuberculosis (TB) and silicosis. Moreover, in places like Varanasi, weavers have incurred huge electricity arrears; paying them off frees the weavers from the cycle of debt.

[10] *The Hindu*, 2005.

BETTER GOVERNANCE

5.30 Major institutions for providing inputs are centralized and hence are unable to reach the dispersed and largely home-based industry. Schemes run by the various Central and State bodies currently operate as silos with little convergence.

OTHER MEASURES

5.31 There are various other challenges during the Eleventh Plan: branding of handloom products, mapping of handloom clusters, development of design banks, and handloom research centres. The priority areas for research in the industry are energy conservation measures, improvement in the quality to boost exports, and providing cheaper and more durable fabrics for internal consumption.

The Way Forward

5.32 Government interventions for revival of handlooms during the Eleventh Plan will focus on two kinds of interventions: policy and programmatic. Policy interventions will include taking decisions on issues such as removal of anti-dumping duty on Chinese silk, specifying the policy on export of cotton yarn, availability of yarn, marketing as a value-added niche product, and preferential procurement by the government institutions. These will be backed by suitable programmatic interventions. For this, many of the existing Tenth Plan schemes such as workshed scheme, health insurance scheme, and *Deen Dayal Hathkargha Protsahan Yojana* (DDHPY) have been suitably restructured. To streamline the operations, various handloom schemes have been clubbed together under four major schemes—Integrated Handloom Cluster Development Scheme, Weavers Welfare Scheme, Marketing and Export Promotion, and Diversified Handloom Development Scheme. In the Eleventh Plan, schemes for the well being of weavers will include (i) Health Insurance Scheme, (ii) Mahatma Gandhi Bunkar Bima Yojana, (iii) Thrift Fund Scheme, (iv) Pension Scheme, and (v) Distress Relief Fund. The insurance schemes not only offer social security but also have a component for education of weavers' children. Under the new pension scheme, weavers aged 60 years or above will be provided Rs 200 every month. The Distress Relief Fund will provide immediate relief to weavers in distress situations and those affected by natural calamities, riots, floods, etc.

5.33 The Integrated Handloom Development Scheme is based on a cluster approach where basic inputs and worksheds are provided, training is imparted, and formation of SHGs is encouraged. In fact, a cluster-based approach would be a major thrust of Eleventh Plan in the case of all the sectors covered and discussed in this chapter. Annexure 5.1 provides a detailed note. Under this scheme, the committees of weavers, supported by an external cluster development agency, will be empowered to decide which interventions need to be carried out. Branding of cluster products, GI registration, and construction of CFC will be carried out. This will not only give greater power to weavers, but will also help in marketing products, quality control, and processing of bigger orders. Under DDHPY, financial assistance for design development, product diversification, publicity, CFCs, market survey, and market incentives will be encouraged. The workshed cum housing scheme will be extended to weavers outside the co-operative fold as well.

5.34 The Marketing Promotion Programme (MPP) will be restructured to focus on brand equity, providing market consultants, doubling market events—expos, melas, etc.—and building promotional websites. Urban *Haat*s and market complexes will be set up at important places of tourism and business. Space on rent will be taken up at upcoming malls, marketing complexes, large retailing stores, etc. Private business houses will be requested to earmark outlets for handlooms. Fabric tourism, on the lines of vineyard tourism in France and glass tourism in Italy (Murano glass factories), will be promoted. Special expos will be organized to encourage big retail chains and hotels to use handloom furnishings. Exclusive fashion shows with the participation of National Institute of Fashion Technology (NIFT) and SHGs/co-operatives will be organized to reach the youth in schools and in college festivals. A huge publicity campaign backed by icons will be initiated. At the same time, measures will be taken for protection of traditional designs and patterns under the GI Act. Handloom Mark will be used to popularize handwoven products and guarantee to the buyer that the product being purchased is genuinely handwoven. To attract entrepreneurs and investors into the

Handloom Export Sector, Handloom Export Scheme will be subsumed under MPP. It is expected that exports will grow at 15% per annum and reach Rs 10000 crore by the end of the Eleventh Plan.

5.35 Under the Diversified Design Development Scheme, 20 design studios will be set up in handloom clusters for creating designs based on the client needs. The design studios may be a joint collaboration between the GoI and the industry/Handloom Export Promotion Council (75:25 ratio). A heritage library housing all the traditional designs will also be created. Inputs such as hank yarn will be provided at mill gate price.

5.36 A committee with Managing Director, NABARD as Convenor has suggested (i) cleansing of balance sheets of apex societies and primary societies, (ii) waiver of overdue loans and interest of primary weavers co-operative societies and apex societies, (iii) interest subvention—working capital, and (iv) contribution to Handloom Development and Equity Fund and Credit Guarantee Fund Scheme for handloom weavers. On the basis of this report and the Vaidyanathan Committee report, a Rs 1200 crore package for handlooms has been formulated.

5.37 For schemes to be effective, strengthening of the delivery mechanism with the help of an NGO/voluntary sector is essential. All the schemes will be widely publicized in local and regional languages. A convergence between various schemes for health, nutrition, education, etc., will be ensured. A necessary step in this direction would be a mapping of weavers and artisans. The preservation of the rich handloom heritage can be achieved only through the socio-economic upliftment of the individuals who create the heritage.

HANDICRAFTS

5.38 Like handlooms, this sector also touches upon the lives of the most marginalized and has the potential to transform the economy of difficult areas such as the North East, border States, J&K, desert habitations, etc. It produces a range of items from utility goods to clothing and variety of lifestyle items.

Current Situation

5.39 The performance of handicrafts sub-sector during the Tenth Plan period is given in Table 5.2.

5.40 The current global handicraft market is valued at more than US$ 400 billion. China accounts for 30% of this and India's share is less than 2%. Over the last 10 years, the average annual rate of growth of our handicraft exports market has been 15%. During the next five years, it is projected to increase by 42% and generate an impressive US$ 9100 million. The US is the preferred destination for Indian handicrafts, accounting for 29.59% of our total exports. Europe accounted for 33.86% in 2004–05.[11]

5.41 Despite this, while some crafts such as woodwork, metal work, and carpets are flourishing, others are floundering. Even for the handicrafts that are doing well, increase in exports and demand has not led to a concomitant rise in the income. In places such as Rajsamund (silver *minakari*), Bhopal (zari work), Bhadohi (carpets), and Indore (sequins and embroidery), wages have not changed in the last two decades. In zari, gems, and jewellery units, often women and children are employed due to their deft fingers. The conditions of work are oppressive and workers earn wages as little as Rs 10–15 per day. The profit is taken over by the middlemen and the export houses. As in the case of handlooms, there is no database or mapping of crafts across the country.

TABLE 5.2
Performance of Handicraft Sector during the Tenth Plan Period

Item	2002–03	2003–04	2004–05	2005–06	2006–07	CAGR (%)
Production (Rs crore)	19565	24019	28936	29804	38660	14.5
Employment (lakh persons)	60.16	61.96	63.81	65.72	67.69	2.3
Export (Rs crore)	10934	12768	15616	17277	20963	14.0

Source: Office of Development Commissioner (Handicrafts), Ministry of Textiles.

[11] Confederation of Indian Industries (CII).

Challenges

5.42 The distinction between handlooms and handicrafts is often artificial and difficult to understand. For instance carpets, though hand-woven, are counted as handicrafts. This distinction limits the workers' access to schemes and in many cases results in a duplication of efforts. Resolving this will be a principal challenge for the Eleventh Plan. Apart from usual challenges mentioned in paragraphs 5.22 to 5.31, the specific challenges faced by the handicrafts sector are:

TECHNOLOGY UPGRADATION

- Use of old and obsolete technology increases drudgery, impacts on the health of the worker, reduces productivity, and in many cases even affects quality.

IMPACT ON ENVIRONMENT AND HEALTH

- Activities such as printing, metal works, use of dyes, and woodwork seriously impact the environment and the health of the workers. As most units are home-based or small-scale units, they do not have adequate safety arrangements or sewage treatment facilities. Thus, they get caught in non-tariff barriers. The challenge is to ensure occupational health for artisans and to develop simple, cheap technology for treatment of waste and pollution control.

SAFEGUARDING THE INTERESTS OF ARTISANS

- An ongoing debate in the handicrafts sector (particularly in areas such as carpet weaving) is about greater flexibility in labour laws to permit export houses to expand. The challenge in the Eleventh Plan is to balance productivity gains with the interests of the actual producers, the artisans. A recurring suggestion has been to allow firms some flexibility if the State Governments are willing to provide social security.

QUALITY CONTROL AND STANDARDIZATION

- Lack of standardization procedures and inadequate facilities for testing and certification of raw materials and products impacts the export potential.

The Way Forward

5.43 During the Eleventh Plan, it is proposed to more than double the production of handicrafts (from Rs 43600 crore in 2007–08 to Rs 90412 crore in 2011–12), double the exports (from Rs 23400 crore in 2007–08 to Rs 48522 crore in 2011–12), and create almost 11 lakh additional jobs. Special targets which include export turnover of Rs 500 crore and credit flow of Rs 150 crore have been set for the NER. For this, infrastructure is vital. In order to augment the government resources, schemes will be adopted in the PPP mode. The government will partner with good NGOs to ensure an effective implementation of the schemes and policies and to compile an accurate database of the artisans. In the Eleventh Plan, the existing Tenth Plan schemes have been modified and clubbed into seven schemes to improve the delivery of services and ensure effective and focused implementation. Eleventh Plan Schemes for handicrafts are indicated in Box 5.3.

Box 5.3
Eleventh Plan Schemes—Handicrafts

- Baba Saheb Ambedkar Hastshilp Yojana: Revised to a demand driven, needs-based scheme for integrated development of handicraft clusters. Setting up of CFCs and e-Kiosks, publicity, toolkits distribution will be included. Target: 375 new clusters in 322 districts covering four lakh artisans.
- Design and Technology Upgradation: Thrust on skill upgradation, new designs, technologies, innovative products, revival of languishing crafts, setting up of Design Bank. Target: 1000 Design Workshops and 400 Integrated Design Projects to benefit 38600 artisans.
- Marketing Support, Services, and Export Promotion: This scheme will continue. Target: 1.2 lakh artisans.
- R&D Scheme: The scheme includes conducting research studies, all-India census for handicrafts, setting up of six labs, technology development, transfer/adoption of technology.
- Handicraft Artisans Comprehensive Welfare Scheme: The scheme includes Bima Yojana and Rajiv Gandhi Shilpi Swasthya Bima Yojana. Target: Two lakh artisans per year for each scheme.
- Human Resource Development: Special Handicraft Training Programme (SHTP) implemented during Tenth Plan has been modified. Target: Capacity building of two lakh artisans and stakeholders.
- Infrastructure Projects for development of specific need-based infrastructure, building, haats, expo marts, etc.

5.44 To fulfil the commitment towards inclusive growth, at least 10% of all the schemes in the Eleventh Plan will be earmarked for the NER. In addition to this, special schemes will be introduced for women and for people belonging to SC/ST and minority groups. These include: (i) Scheme for skill upgradation under the Guru Shishya Pattern of the Special Handicrafts Training Project (SHTP) for women and artisans belonging to SC/ST community, and (ii) special components will be introduced in all the existing schemes of Office of Development Commissioner (Handicrafts), in association with the Ministry of Minorities Affairs to fulfil specific needs of minority artisans.

POWERLOOMS

5.45 Today, the decentralized powerlooms sector provides employment to 48.60 lakh persons and contributes 62% to the total cloth production in the country.

Current Situation

5.46 As on 31 March 2006, there were approximately 4.30 lakh powerloom units with 19.44 lakh looms. Of this, nearly 3.66 lakh looms employing 9.14 lakh people were in Tamil Nadu alone. The technology level of the powerloom sector varies from obsolete plain looms to high-tech shuttle-less looms. Most looms are old and archaic.

5.47 Not only do powerlooms meet most of the cloth requirement of the country, they also contribute more than 60% of the fabric meant for export. The US, France, Germany, Hong Kong, Italy, etc., are the major markets. Even within the country, the readymade garments and home textiles sectors are heavily dependent on the powerloom sector to meet their fabric requirements. The performance of the powerloom sector during the Tenth Plan are given in Table 5.3.

Challenges

5.48 The major challenge is to look at the powerloom sector as an important segment of the textile industry that can engage in bulk production, especially of everyday necessities. While selling of powerloom cloth as handloom and copying handloom designs on powerlooms will be checked, the poor powerloom weavers will not be penalized for the problems of the handloom industry. In fact, like handloom weavers, many powerloom weavers also suffer from lack of credit, absence of quality raw materials, poor quality dyes, absence of proper market linkages, and exploitation at the hands of the middlemen. Several powerloom weavers come from economically and socially marginalized groups. Fluctuation in yarn prices impacts them equally. The tax on cone yarn affects their profits. The challenges in the Eleventh Plan are:

- Ensuring uninterrupted power supply to powerloom centres and units is a big challenge. Without this, the looms fall silent and the weavers suffer from heavy losses.
- Powerloom weavers suffer from many health problems such as TB, silicosis, hearing impairment. The challenge is to provide occupational health facilities to the weavers and their families. Given the incessant din of the looms, it is essential to eventually move the looms out of homes and into common worksheds.
- Most powerlooms in the country are obsolete and need to be replaced immediately to increase productivity and profits. However, powerloom weavers in places such as Bhiwandi and Malegaon are too poor to benefit from Technology Upgradation Fund Scheme (TUFS) or to finance the upgradation. The challenge is to come up with schemes that enable poor powerloom weavers to upgrade their looms.

TABLE 5.3
Performance of Powerloom Sector during the Tenth Plan Period

Item	2002–03	2003–04	2004–05	2005–06	2006–07	CAGR (%)
Cloth production (million sq m)	25954	26947	28325	30626	33159	5.0
Employment (lakh persons)	42.32	45.92	47.57	48.60	49.76	3.2
Export (Rs crore)	6007.17	6201.72	6302.43	7562.08	na	6.0

Note: Export figures are for textile export including powerloom cloth and cloth used for readymade garments exported.
Source: Ministry of Textiles.

The Way Forward

5.49 It is proposed to increase production of powerloom cloth from 38138 million sq m in 2007–08 to 58437 million sq m and to raise exports to US$ 56.05 billion by the terminal year of the Eleventh Plan.

5.50 Like in the case of handlooms and handicrafts, two kinds of measures are essential for the powerloom sector. Policy interventions need to deal with issues such as yarn availability and pricing and to resolve the perceived 'conflict' between handlooms and powerlooms. Programmatic interventions will focus on research and technology upgradation, promotion of value-added textiles, strengthening of existing infrastructure facilities, creation of design banks and Computer Aided Design (CAD) centres, and easy access to credit and modernized workshed scheme. Here again, the cluster approach will be adopted and common facilities such as yarn depots, dyeing houses, quality testing labs, etc., will be provided. Weavers will be organized into SHGs and will be encouraged to move their looms into common worksheds. Clusters will be supported in setting up mini-power generation plants to ensure uninterrupted power supply. During the Eleventh Plan, cluster development activities will be undertaken in 50 powerloom clusters. Product innovation and diversification will be encouraged and weavers will be included in cluster development committees.

5.51 The TUFS will be modified and continued in the Eleventh Plan. Currently, powerloom units in places such as Sholapur, Surat, and Ichalkaranji are able to draw benefits from TUFS; however, small and weak units in backward clusters such as Malegaon, Burhanpur, and Mau are unable to do so due to their inability to provide collateral guarantees. For them, the National Climatic Data Centre co-operative funding route may be more useful. During the Eleventh Plan period, TUFS will be modified to enable the weak and small powerloom units to take the advantage of this scheme.

5.52 Besides this, a survey of the powerloom sector will be carried out to find out the profile of the people engaged in the sector, as well as the number and the type of looms. New CAD centres will be set up and existing powerloom service centres (PSCs) will be upgraded. Health insurance schemes that have been announced for BPL workers would be made available to the powerloom workers and their families.

5.53 Presently, there is only one State in the NER where powerlooms exist. In Guwahati (Assam), there are about 2700 conventional looms providing employment to approximately 7000 workers. Most of the looms are engaged in job work, producing acrylic shawls. The feasibility of setting up a new CAD centre in the Guwahati PSC will be examined.

Silk And Sericulture

5.54 India is the only country producing all the four known commercial silks, namely, mulberry, tasar, eri, and muga. It is the second largest producer of raw silk in the world. At present, over 60 lakh families—mostly in the States of Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal, Jammu and Kashmir, and Assam—are involved in this labour-intensive agro-based industry in activities such as food plant cultivation, silkworm rearing, silk reeling, twisting, de-gumming, weaving, dyeing, printing and finishing, and garment manufacturing. Sericulture is at various stages of development in Uttarakhand, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Orissa, Bihar, and the North East.

5.55 Sericulture in India is a sustainable farm-based economic enterprise that generates a steady stream of income (on average, a net income of up to Rs 45000 annually in about four to five splits, from one acre of irrigated mulberry). A large number of people in sericulture, especially in production of tasar, belong to tribal groups. It is estimated that every hectare of mulberry provides employment to about 16 persons. Besides the weaving industry, sericulture is beneficial to farmers as well. Today, of the 60 lakh people dependent on this industry, 47 lakh are agriculturists.

Current Situation

5.56 China, producing 102560 metric tonnes (81.65%) of raw silk is the largest exporter, whereas India, contributing about 13% of the world's raw silk production, is the largest consumer. According to the Mysore-based Central Sericulture Research and Training Institute, against an annual requirement of about 25000 metric tonnes of silk, India produces only about

15000 metric tonnes. The rest of the demand is met through imports. In 2006–07, around 9258 tonnes of silk, worth over Rs 600 crore, was imported from China. As a result, cocoon prices crashed and nearly 49000 ha of mulberry crop was uprooted in Karnataka causing a loss of 3000 tonnes to the country's overall silk production.[12] Thus, while productivity of silk has gone up from 16 kg to 85 kg raw silk per ha per year from the Ninth to the Tenth Plan, raw silk production has remained almost static. Against the total production target of 26450 metric tonnes of raw silk per year, achievement was just 15445 metric tonnes by 2005–06 and 16805 metric tonnes by the end of the Tenth Plan period (Table 5.4). This was due to shortfall in mulberry bivoltine raw silk production despite the addition of 17 new components targeting bivoltine production in the Catalytic Development Scheme. The physical achievements during the Tenth Plan are given in Table 5.4.

5.57 Indian silk exports are primarily in the form of finished goods and not silk yarn. Thus Indian exports are largely dependent on the import of quality silk from China. US, United Kingdom (UK), Italy, Germany, and Hong Kong together account for over 55% of India's total export earnings from silk. Estimates say that India requires 120000 metric tonnes of silk to meet the demand in world market. With better infrastructure facilities, the sericulture industry can improve its productivity to 15% as against the current 9%.

Challenges

5.58 The Indian sericulture industry, which provides livelihoods to not just farmers and reelers but also dyers and silk weavers, is currently grappling with many problems similar to those faced by other sectors. However, it faces some specific challenges such as

IMPROVING QUALITY OF SILK

- Indian silk yarn is of poor quality, especially in comparison to that of China. This not only affects our competitiveness in the world market, it also results in a preference for imported yarn in the domestic sector. Though Indian breeds have the potential to produce the same quality of bivoltine silk as China, there has been lack of sufficient thrust on the adoption of improved technologies, strict disease control measures, lack of quality leaf due to insufficient inputs to mulberry garden, use of young age silkworms, appropriate mountages, lack of grading system for cocoons, and quality-based pricing system.

ARRESTING FALL IN PRODUCTION

- The challenge is to initiate area-specific research to improve fertility of the soils, which will ultimately enhance soil productivity, mulberry and non-mulberry host plant leaf and silkworm cocoon production, and arrest decline in area under silk food plants.

MULTIVOLTINE VERSUS BIVOLTINE

- Bivoltine yarn is sturdier and is used by the powerloom industry. Yet only 5% of the silk produced in India is bivoltine because its production requires much more attention and resources. It also yields just two crops in a year, as against the yield of four to six crops by multi-voltine. Since the difference in the selling price of bivoltine and multivoltine silk is not much, farmers do not have any incentive to switch to bivoltine silk yarn production. Insufficient adoption and proliferation of technology packages developed through R&D efforts; no effort to increase the area under mulberry; fragmented and ad hoc approach; non-involvement of private partners in a big way in seed production;

TABLE 5.4
Performance of Sericulture Sector during the Tenth Plan

Item	2002–03	2003–04	2004–05	2005–06	2006–07
Raw silk production (metric tonnes)	14617	13970	14620	15445	16805
Employment (lakh persons)	56.00	56.50	58.00	59.50	60.03
Export (Rs crore)	2294.05	2779.19	2879.56	3194.20	3200.00

Source: Central Silk Board (CSB), Ministry of Textiles.

[12] Indian Silk Industry—Gaurav Doshi.

farming and reeling; non-penetration of the schemes; improper forward and backward linkages; and dumping of cheap Chinese raw silk and fabric are the other factors. The challenge in the Eleventh Plan period is to encourage farmers to move from production of multivoltine silk to bivoltine silk through proper incentives. Yet, care should be taken to ensure that adequate amount of multivoltine is available for the handloom sector to continue production.

ANTI-DUMPING DUTY ON SILK

- There has been a decline in the cultivated area and the raw silk production during 2002–04 due to drought and dumping of Chinese silk at cheap prices. The sericulturists want imports of raw silk to be restricted and the anti-dumping duty on yarn to remain in place. Exporters and weavers, on the other hand, want the anti- dumping duty to be withdrawn so that they get an assured supply of yarn and are able to export more silk products at competitive rates. The challenge is to balance the aspirations of farmers and weavers.

NON-MULBERRY SILK PRODUCTION

- Non-mulberry silk production in the country continues to be unsteady and fluctuates from year to year. With its uniqueness, non-mulberry silk production in India has a great potential for value-added exports.

NEED FOR QUALITY-BASED PRICING

- Reeling sector is an input-dependent activity and its operations are influenced heavily by three factors—cocoon quality, cocoon price, and cocoon supply. However, due to the absence of quality-based price fixation, there has been very little quality control.

The Way Forward

5.59 The CSB has set a target of 26000 tonnes of raw silk production by the year 2011–12 and it has also proposed to:

- Enlarge area under mulberry silkworm food plants to 2.5 lakh ha by adding 0.50 lakh ha. This will produce an additional 6400 metric tonnes of mulberry raw silk.
- Raise national mulberry silk productivity from 85 kg per ha to 100 kg per ha per year.
- To increase production of non-mulberry silks from 125 gm per person per day to 150 gm per person per day.
- Increase employment to 77.04 lakh and exports to Rs 4500 crores.

5.60 To achieve these targets, association of private sector and especially the major agro-based industries in both pre-cocoon and post-cocoon segments, will be encouraged. Medium and small corporate sectors will be supported for the production of cocoons by contract farming through a participatory (not subsidy oriented) approach. R&D in the areas of reeling, twisting, spinning, and blending for all varieties of silk will be carried out and exotic fabrics, which may be used for furnishing, carpets, and other dress material, will be created.

5.61 The reeling sector has seen poor growth during the Tenth Plan. There are around 182000 handlooms and 30000 powerlooms with an average age of 15–20 years. About 20% improvement in productivity in addition to yarn quality can be achieved by upgrading the old machines. Additional production of raw silk to the tune of 7000 metric tonne will feed 80000 handlooms and 20000 powerlooms/shuttle looms. Therefore there is a need to upgrade the handlooms, powerlooms, and wet processing sectors to support non-mulberry reeling/spinning activity to improve the productivity and reduce drudgery.

5.62 Recently, an amendment to the CSB Act by the Parliament was made providing a regulatory mechanism for production and sale of silkworm seed. It ensures: (i) production and sale of seed of authorized races only, (ii) control on unauthorized production and trade, (iii) control and prevention of entry of untried and untested hybrids from other countries likely to be carrying diseases and other unknown risks.

5.63 During the Eleventh Plan period, CSB will implement all schemes of pre- and post-cocoon sectors in the form of clusters. Village Panchayats, reputed voluntary service organizations, rural development

agencies, and financing institutions will be involved in planning from the project formulation stage onwards to facilitate integration of producer groups into the production chain and develop a marketable product within the geographical niche. Large-scale bivoltine seed production; supply of *chawki* worms to all bivoltine farmers; setting up of infrastructure such as rearing house, grainages, and chawki rearing centres (CRCs), and improved rearing appliances will be adopted under the existing Catalytic Development Programme schemes. Extensive training and demonstrations with the active participation of SHGs and expert farmers will be undertaken; linkages between the grainages and CRCs, the farmers, and the reelers will be established. Important policy interventions providing incentives to farmers who undertake bivoltine production will be carried out, but without hurting the handloom sector. The import policy for raw silk will be reviewed periodically, balancing interests of the sericulturists as well as export manufacturers and weavers.

5.64 To meet international standards in quality, large investments in seed production, farming, reeling, and processing are needed. The Eleventh Plan proposes to link large number of small farmers to few large entrepreneurs capable of making huge investments as in the case of castor cultivation, sugarcane cultivation, etc. The Plan also proposes to launch a new scheme for establishment of large bivoltine grainages and to open it to State departments.

5.65 During the Eleventh Plan, efforts will be made to enable networking of various cocoon and silk markets to facilitate availability of real time information on the availability of raw materials and market trends on the Internet. Existing National Informatics Centre (NIC) infrastructure will be utilized and an NIC Cell will be started in CSB on the pattern of other government institutions. Pest and disease forecasting and forewarning system for mulberry and silkworms will be introduced to provide sericulture farmers and the State departments enough time to organize effective management of pests and diseases and minimize the crop losses. This programme will be linked to NRSA, Hyderabad and Indian Meteorological Departments in various States.

5.66 The existing Tenth Plan schemes that are doing well such as the Silk Mark will be continued in the Eleventh Plan.

5.67 The Eleventh Plan interventions will promote inclusive growth for regions and social groups. At least 30% of beneficiaries in all schemes will be women. A women's credit fund will be set up, women-friendly technologies will be developed, and appropriate training will be provided. For other marginalized groups such as SC/ST and minorities, concessions like reducing beneficiary share by 10% of the envisaged contribution will be provided. Special programmes will be taken up in areas dominated by the marginalized groups.

Unorganized Wool Sector

5.68 The wool sector plays an important role in linking the rural economy and shepherds with the small, medium, and large-scale manufacturing units. This sector also has a diverse product portfolio: from textile intermediates to finished textiles, garments, knitwear, blankets, carpets, and a nominal presence in technical textiles. India is the seventh largest producer of raw wool accounting for 1.8% of the world production. In 2003, it had 615 lakh sheep, that is about 4.2% of the world's total sheep population.

5.69 The wool industry is broadly divided between the organized and decentralized sectors. The organized industry comprises: (i) composite mills, (ii) combing units, (iii) worsted and non-worsted spinning units, (iv) knitwear and woven garment units, and (v) machine-made carpet manufacturing units. The decentralized industry is engaged in (i) hosiery and knitting, (ii) powerlooms, (iii) hand-knotted carpets, druggets, and namadahs, and (iv) independent dyeing and processing houses.

Current Situation

5.70 The wool industry currently employs 27.2 lakh people—12 lakh in the organized sector, 12 lakh in sheep rearing and farming, and 3.2 lakh weavers in the carpet sector. The productivity of this sector is low. The world average for wool productivity has been about 3.5 kg per sheep per year, while in India the average is 0.8 kg per sheep per year. The quality of

domestic wool is also coarse and brittle. It is basically carpet grade wool and has an important role in the national economy: it is rural-based (sheep breeding), defence-oriented (blankets and made-ups), and contributes significantly to exports (carpets). About 80% of good quality Indian wool goes into the manufacturing of carpets. Of the remaining, 15% is very coarse grade and 5% is apparel grade but of shorter average fibre length. Rajasthan (44%), J&K (13%), Karnataka (12%) along with Gujarat, Uttar Pradesh, Andhra Pradesh, and Haryana (23%) are the major wool-producing States in the country.

5.71 As the production of fine apparel grade wool is not adequate in the country, a large quantity of wool is imported from Australia, New Zealand, China, Middle East, and other countries. In 2004–05, the total wool consumption at industry level in the country was 135 million kg. Of this, just 55 million kg was domestic wool; rest was imported. Of the total imported 80 million kg of wool, 47 million kg is apparel grade and the rest carpet grade. There has been a consistent increase in the quantity of imported raw wool in the Tenth Plan. But export of woollen items has also shown an increase from Rs 3597.31 crore in 2002–03 to Rs 4969.02 crore in 2005–06. This is mainly on account of the carpet industry which exports 95% of its output. There are 718 woollen units in the organized sector and many more in the small-scale sector. The wool-combing capacity of the sector is around 30 million kg and synthetic fibre combing is 3.57 million kg. Approximately 7228 powerlooms operate in this industry.

5.72 During the Tenth Plan, the Central Wool Development Board (CWDB), Jodhpur, implemented Integrated Wool Improvement Programme for the unorganized wool sector. The various components of the scheme were improvement of wool fibre and breed; product development; provision of quality-testing centres, provision of CFCs for scouring, drying, carding, design development, product diversification, training, improvement, and development of speciality fibre such as Angora and Pashmina. The CWDB programmes have covered 25.5 lakh sheep and benefited 55091 families upto the end of the Tenth Plan period.

5.73 The CWDB installed wool-testing centres at Bikaner and Beawar in Rajasthan to test the fibre supplied by growers, merchants, and industries. The Board has also implemented two R&D projects, and set up one CFC and two common facility-cum-training centres.

5.74 The growth of the production of woollen items displayed mixed trends during the Tenth Plan. Handmade carpets recorded the highest growth, but there was nominal annual increase in the production of woollen yarn and worsted yarn production. Despite this, the woollen industry could not achieve the overall targets of wool production due to the fluctuations in the prices of Australian raw wool, lack of promotion, unfavourable climate, change in fashion trends in favour of cotton, lifestyle changes, weak participation by the State Governments, and inadequate infrastructure.

The Way Forward

5.75 The Tenth Plan achievements and targets for the terminal year of the Eleventh Plan are given in Table 5.5. Eleventh Plan Schemes for unorganized wool sector are indicated in Box 5.4.

5.76 During the Eleventh Plan period, the productivity per sheep will be increased from present 0.8 kg per sheep per year to 1.5 kg per sheep per year. During this Plan period, the effort will be to produce good

TABLE 5.5
Tenth Plan Achievements and Eleventh Plan Targets for Wool Sector

Item	Tenth Plan Achievements	Assumed Growth Rate during Eleventh Plan (%)	Terminal Year of Eleventh Plan
Wool production (million kg)	55.00	10	88.50
Employment (lakh persons)	27.00	17	60.00
Export (Rs crore)	5600	13	10000

Source: Central Wool Development Board, Ministry of Textiles.

Box 5.4
Eleventh Plan Schemes

- Integrated Wool Improvement and Development Programme: To increase production, ensure breed improvement, health care, marketing of wool, survey and study, training, processing, and strengthening of indigenous varieties of wool, establishing multi-purpose extension centre, etc. Target: 26 lakh new sheep, 26000 rams, and 15 farms, 400 families under Angora and 2400 families under Pashmina Wool Development.
- Quality Processing of Wool and Woollen Products: To help in provision of processing facilities with latest technology for improving the quality of yarn and its end products. Target: 14 CRCs and 4 finishing centres.

New Initiatives

- Social Security Scheme for Insurance of Sheep Breeders in case of natural as well as accidental death. Target: 93500 shepherds.
- Sheep Insurance to cover accidents including fire, flood, famine, storm, etc., and diseases. Target: 24 lakh sheep.

quality carpet wool. The Tenth Plan schemes will be continued after suitable modifications. Two new schemes will also be started—insurance for shepherds as well as insurance for sheep. A revolving fund for procurement of raw wool from shepherds to help them in getting remunerative prices will be set up as a pilot project. The State Governments of Rajasthan and Uttarakhand have already demonstrated good results with similar initiatives. The wool sector needs convergence between various departments such as animal husbandry and rural development. In the Eleventh Plan, a comprehensive policy for pasturelands and commons will be developed.

5.77 One of the major problems with the wool industry has been the virtual absence of a system of grading. This will be taken up on a priority basis in the Eleventh Plan.

5.78 Marketing of wool is critical; it is also a weak link in the sector. There should be project-based assistance with clear identifiable objectives. Processing and finishing of wool products requires huge capital investment for which common infrastructure facilities will be developed with assistance from the government. To improve the breed, there has to be import of high breed germ plasms. Legislative measures would need to be taken up for issues of grazing, routes through forests for migratory sheep. CFCs for finishing carpets and shawls are being set up in the PPP mode. Involvement of industry associations is being obtained with the government support and assistance.

Khadi And Village Industries (KVI)

5.79 The KVI sector comprises khadi manufacturing and production from village/rural industries spread all over the country. The KVI programmes have now reached over 2.61 lakh villages providing employment opportunities to the rural poor in remote and hilly areas, border, and tribal areas. SCs/STs artisans account for 32% and women for 46% of the total artisans.

Current Situation

5.80 A large part of the employment in the khadi segment is part-time (4.05 lakh part-time and 4.65 lakh full-time). Spinning activity is carried out almost entirely by women, mostly belonging to the disadvantaged sections of the society. KVI institutions provide '*charkhas*' to the spinners, usually at their homes and occasionally in common worksheds. These institutions are run by the office bearers of the societies. The wage payments are irregular and generally made only after the permanent employees of the society receive their salaries. The sale of khadi products is only through the 'departmental outlets' of either the institutions or those of the Khadi and Village Industries Commission (KVIC) or State KVI boards. The focus is on charity and appealing to the 'goodness of people's hearts', not on the value of the product itself.

5.81 Currently, more than 60 lakh artisans/entrepreneurs in villages are engaged in production/services such as of minerals, leather, bee-keeping, honey, polyvastra, shoe repairing and manufacturing, papad making, food processing, and repairing agricultural implements.

5.82 The NCMP declared that the KVIC (and the programmes implemented through the KVIC) would be 'revamped'. The Expert Committee (EC) set up for this purpose in its report recommended to: (i) make the Commission more professional, like a modern corporate body, (ii) introduce a permanent consultative mechanism at the zonal level, and (iii) include enabling provisions in the law to get the programmes and activities implemented through selected non-governmental professional agencies.

5.83 The performance of KVI sector during the Tenth Plan period is given in Table 5.6.

Challenges

5.84 There is an urgent need to change the mindset towards khadi products; to move away from the welfare approach and publicize their USP—hand-crafted, hand-spun, energy saving, and healthy products. People should buy khadi not as a 'national duty' or 'act of charity' but because it is fashionable, admired the world over, and intrinsically of high value.

5.85 There is a need to rejuvenate the khadi programme and to enlist new khadi institutions by relaxing the restrictions on registration, particularly in general areas. Attempt should be made to revive the defunct/dormant societies under 'D' category. Raw material supply has to be strengthened and the existing infrastructure of six sliver plants expanded to meet raw material requirements. Old charkhas and looms require attention during the Eleventh Plan period. The shortage of working capital needs to be addressed by undertaking credit rating system for khadi institutions. A new scheme for khadi could be devised on the lines of handloom mark/silk mark for promotion and for establishing authenticity of products.

5.86 At the same time, it is necessary to assist traditional village industries by providing necessary loans to adopt modern manufacturing techniques. Village industries have an important role in generating employment at comparatively low cost, especially for socio-economically weaker sections and backward areas. The fund flow to KVI sector from budgetary resources is declining from one plan period to another in terms of percentage. After introduction of the value-added tax (VAT) system, the sales tax exemption enjoyed by village industries has been taken away, thereby affecting their competitiveness. Low quality standards and use of obsolete technology and tools are the most restricting problems for village industries.

The Way Forward

5.87 KVIC recently introduced the 'Product Development, Design Intervention, and Packaging (PRODIP)' scheme to provide incentives for development of new products, designs, and better packaging of both khadi and village industry products. Some designs developed under the scheme are already a big hit and have recorded big sales. The Rural Industries Service Centres (RISC) scheme was started in 2004–05 for establishing CFCs by providing grant up to Rs 5 lakh per RISC. Both these schemes have proved successful and will be carried forward into the Eleventh Plan.

5.88 Similarly, the Scheme of Fund for Regeneration of Traditional Industries (SFURTI) such as khadi, village, and coir industries approved in October 2005 will be continued in the Eleventh Plan. On the basis of the strategy for cluster development, this scheme ensures that the regeneration of employment-intensive industries is made sustainable through empowerment of the enterprises.

5.89 During the Eleventh Plan, 'Khadi' will be registered as a brand name as well as a domain name. New

TABLE 5.6
Performance of the KVI Sector during the Tenth Five Year Plan

Item	2002–03	2003–04	2004–05	2005–06	2006–07
Production (Rs crore)	8569.37	9681.77	10920.43	12383.84	14531.69
Employment (lakh persons)	66.45	71.19	76.78	82.77	88.52
Export (Rs crore)	45.94	52.00	39.08	40.41	52.90

Source: Khadi and Village Industries Commission, Ministry of MSME.

products and new designs will be developed with the help of National Institute of Design (NID) and NIFT. Packaging of khadi products will be improved. A mechanism to ensure the quality of khadi products will be evolved. Advertising campaigns in India and abroad will be carried out to make people aware of khadi and to project it as a fashion statement for the youth. Shops will be opened at all international airports in India and the possibility of marketing KVI products through e-commerce will be explored.

Coir Industry

5.90 The 150-year old coir industry is mostly concentrated in Kerala, Tamil Nadu, Andhra Pradesh, and Karnataka due to availability of coir husk, a by-product of coconut plantation. It has an annual turnover of Rs 1300 crore with a steady growth rate of 10%. India accounts for 90% of the world's coir production and our coir products are exported to approximately 90 countries across the world. The industry provides livelihood and/or additional income to more than 31.25 lakh people, mostly the disadvantaged sections of the population—SC, ST, and minorities. Women constitute 80% of its workforce.

Current Situation

5.91 The coir industry is highly decentralized, seasonal, and labour intensive. In 2006–07, coir exports amounted to Rs 605.17 crore, well above the Plan target. SFURTI has been taken up in 25 clusters selected in consultation with the principal coir-growing States such as Kerala, Andhra Pradesh, Tamil Nadu, Karnataka, etc.

5.92 The performance of the coir industry during the Tenth Plan period is given in Table 5.7.

Challenges

5.93 Though coir is found in many coastal areas, for historical reasons, coir products are primarily made in Kerala. There is an urgent need to promote and encourage healthy competition among the coconut-growing States to catalyse State/region—specific innovations for tapping the immense growth and employment potential of this versatile fibre. The challenge in the Eleventh Plan is to develop new market driven products, to explore new markets—both in India and abroad—and, most importantly, to ensure a rational growth of coir industry on the basis of mutual co-operation.

5.94 There has been no comprehensive study to assess the actual global demand for coir products and the demand–supply gap, if any. Though coir industry is capable of producing a range of products, the use of coir products has remained confined to floor-covering material. Apart from this, the sector also faces some specific challenges such as

TARIFF AND NON-TARIFF BARRIERS

- In the international market, the duty applicable on import of coir and coir products ranges between 4% and 35%.

DISEASE

- Production of coir fibre has been affected by disease, which reduces the size of the coconut husk, resulting in low yield and inferior quality fibre.

SCATTERED PRESENCE

- Barring a few natural clusters, the industry is dispersed. Even in these clusters, the industry is not well integrated to take advantage of the development and promotional efforts towards modernization.

TECHNOLOGICAL OBSOLESCENCE

- The method of production has not undergone any significant change. The cost of production has been progressively rising, rendering it non-competitive.

TABLE 5.7
Performance of Coir Industry during the Tenth Plan Period

Item	2002–03	2003–04	2004–05	2005–06	2006–07
Coir fibre production (metric tonnes)	353700	364000	385000	410000	430025
Employment (lakh persons)	5.79	5.86	6.06	6.22	6.40
Export (Rs crore)	352.71	407.50	473.40	508.44	605.17

Source: Coir Board, Ministry of MSME.

MARKETING NEW PRODUCTS

- There is a need to undertake product development in traditional and non-traditional applications. New products that have phenomenal applications, such as rubberized coir, needle felt, geo-textiles, and coir pith, could be promoted to increase the demand for coir.

The Way Forward

5.95 During the Eleventh Plan period, most of the Tenth Plan schemes will be continued to reduce drudgery and increase production and wage levels. A major cluster development project with an approved outlay of Rs 56.8 crore has been taken up, in association with the Department of Industrial Policy and Promotion (DIPP), for the development of coir industries in and around Alappuzha, Kerala, with a Central grant of Rs 42.6 crore.

5.96 It is proposed to increase the level of growth of the industry to 15% and achieve a turnover of Rs 2100 crore by the terminal year of the Plan. Approximately 176250 new jobs will be created in the coir sector during the Eleventh Plan. Of this, 1.41 lakh jobs will be for women.

5.97 In the Eleventh Plan there is a need to focus upon R&D for diversification and popularizing new coir products in the market. Rejuvenation, modernization, and technology upgradation schemes will be introduced in the Eleventh Plan period. Better conversion rate of husk-to-coir products as a result of this scheme will require 50000 additional coir workers. Five mega clusters, one each in Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, and Orissa, with thrust on technology upgradation will be promoted.

FOOD PROCESSING INDUSTRIES

5.98 Traditionally, food processing has been an important part of the rural and semi-urban economy, with pickles, jams, chutneys, and papads being made by women at the household level. As an industry, however, the food processing sector is yet to realize its potential. India currently produces about 50 million tonnes of fruits, about 9% of the world's fruit production, and 90 million tonnes of vegetables, accounting for 11% of the world's vegetable production. Yet, only about 2% of these fruits and vegetables are processed as against 23% in China, 78% in Philippines, 83% in Malaysia, and 80% in South Africa. Within the country, share of fruits and vegetables processing is less than other products such as milk (35%) and marine products (26%). Lack of processing and storage capacities for fruits and vegetables results in about 35% waste in the annual production, the value being approximately Rs 54000 crore. A progressive and vibrant food processing industry (FPI) fetches more remunerative price for farmers and reduces waste.

Current Situation

5.99 There are three segments in the Indian food-processing industry—household, small, and large. Together they contribute 14% to the manufacturing GDP and employ about 130 lakh people directly and 350 lakh people indirectly. Of this 45.34 lakh people are employed in the MSME segment as indicated in Table 5.8. Then there are vendors, hawkers, people employed by large food processing industries, etc. For an investment of Rs 1 crore in organized and unorganized food processing sector, 140 and 1050 jobs are created, respectively. The multiplier effect of investment in food processing is 2.5 times in comparison to other industrial sectors.

5.100 In sectors such as marine products, cashew processing, and pickle manufacturing, the involvement of women is as high as 90%. Evaluation of schemes implemented by Ministry of Food Processing Industries (MFPI) in NER during the Tenth Plan show that 30% of permanent employment generated due to assistance provided under the programmes/schemes of MFPI was availed by women.

5.101 During the Tenth Plan, the schemes run by the MFPI were primarily for the small and large sectors of the industry. Little was done for the household sector, especially street food vendors who are present in large numbers in various cities (1 lakh in Ahmedabad, 2 lakh in Mumbai, and 1.5 lakh in Kolkata). While physical targets were met in some schemes, others such as food parks faced problems of gross underutilization. Most of the 54 food parks sanctioned since the Eighth Five Year Plan are yet to become operational. Currently only

28 units are running in eight parks. Similarly, though 18 projects were sanctioned under cold chain facilities and five under value-added centres, only four cold storages and two value added centres are currently operational.

5.102 The performance of FPI sector during the Tenth Plan period is given in Table 5.8.

5.103 To provide an impetus to food processing industries (FPIs), a number of policy measures were initiated during the Tenth Plan. Excise duty on fruit and vegetable processing was waived, Income tax holiday was provided, and customs duty reduced on freezer van from 20% to 10%.

5.104 Availability of raw materials for FPIs is a major strength of India. The growing middle-income and upper middle-income groups, increasing health consciousness, growing number of working women, time constraint, convenience, and need for hygienic food have also increased the demand for processed foods. Malls and departmental stores in metros, medium and small towns are providing better forward linkages.

Challenges

5.105 All three segments of the food processing sector face specific challenges. This section deals with the challenges faced by the dispersed small and household sector.

- Infrastructure Development: Since deterioration of agricultural produce starts within five hours of harvesting, much higher investments are required in pre-cooling and controlled atmosphere components at the farm level. Cold chain facilities also help in the decentralized distribution of processed food in small and medium-sized towns. Non-availability of adequate power of appropriate voltage is, however, a major hurdle.
- Investment and Credit Availability: Estimates indicate that more than 40% of the credit needs of small and marginal farmers are met by the traditional *arhtia*s at very high interest rates. Similarly, more than 75% processors rely on informal credit. Development of a secondary market on the basis of financial instruments and negotiable warehouse receipt system is necessary for providing liquidity. The use of warehouse receipts as a financial instrument has not picked up. The Eleventh Plan will see a more secure system of accrediting warehouses so that they can provide certification about quality and quantity of the goods plus credits and standards of the goods stored. The Amendment to the Warehousing Act, pending in the Parliament will be expedited.
- Year Round Availability of Raw Materials: Non-availability of agriculture and horticulture surpluses in the required quantity and quality at the appropriate time is a major concern. To ensure the availability of varieties suitable for processing, a

TABLE 5.8
Performance of FPI Sector during the Tenth Plan Period

Item	2002–03	2003–04	2004–05	2005–06	2006–07	CAGR (%)
Production at current price#—(Rs crore) MSME sector CSO data	66472.05	76264.13	86128.19	94127.99	104758.54	9.5
FPI component of GDP*	45146.00	51846.00	55772.00	59281.00 (Prov.)	na	
Employment (lakh persons)**	38.30	39.97	41.74	43.51	45.34	3.4
Export***(Rs crore)	4727.57	5467.06	6154.77	8634.49	8493.40 (Prov.)	12.4

Note: # Data compiled on the basis of the Third Census results of MSME sector and growth rate estimated using Index of Industrial Production (MSME sector).

*Provided by Central Statistical Organization (CSO). These figures would be revised by the MFPI after compiling the data for FPI sector, which includes MSMEs and large industries.

**Estimated on the basis of the Third Census results of MSME sector.

***Agricultural and Processed Food Products Export Development Authority (APEDA) data.

Source: MFPI.

co-ordinated network of research and extension services is required.

- A significant challenge is the limited period of availability of products. Mango is available for three to four months; lychees for fifteen days in a year. Thus, units have to procure maximum crop during harvest time and process it throughout the year. Many units argue for flexibility in hiring, but workers' interests need to be ensured.
- Creating Markets: The high cost of transporting agricultural commodities and processed food affects efficiency. The challenge is to establish an integrated, comprehensive but simple system for the movement of commercial transport vehicles to increase efficiency, reduce delays, and make produce available on a timely basis. With rural connectivity, the country should become a single market.
- The complex tax structure and multiplicity of state-level taxes need to be rationalized. VAT should become uniform in all States/UTs. Abolition of all indirect taxes on agricultural/horticulture products could resolve the problem of border taxes.
- Farmers' associations, SHGs, and co-operatives as well as private companies need to be promoted so that they can bargain with the processors and retailers for better price. Realization of the economies of scale in procurement, technology, and market are also better ensured by producer's groups.
- The food supply chain is complex with perishable goods and numerous small stakeholders. Each stakeholder works in a silo. Demand forecasting is totally absent and the farmers try to push what they produce into the market. There is need for data integration, financial flow management, supply–demand matching, collaborative forecasting, information-sharing, and goods movement synchronization through efficient transport scheduling.
- Packaging has become the competitive tool to reach the consumer. Cost of packaging ranges from 10% to 64% of the production costs, and efforts are needed to reduce this.
- The expenditure on R&D is less than 1%. This needs to be enhanced for finding effective technologies for household and small units.
- Standardization is a powerful tool for improving the supply chain efficiency. There are two standards. The first is about content, manufacturing process, and packaging. The second one deals with logistics and IT systems such as standardization of cartons, pallets, and IT software so that seamless transfer of goods and information is possible. Both these standards need to be enforced so that the demand is not affected by the issue of quality control.
- The increase in world food trade and the advent of the SPS Agreement under the WTO have led to increasing recognition and adoption of food safety measures. Our ability to compete in world markets depends on our compliance with the increasingly stringent food safety standards, especially in view of the breakout of diseases such as Avian Influenza and Bird Flu.

5.106 The household sector of food processing faces another problem. Street vendors are increasingly being removed for urban planning and development. This not only robs many of their livelihoods, but also reduces the access of low-income groups to street food.

The Way Forward

5.107 Integration of the food processing infrastructure from farm to market, providing choice to consumers, assurance about safety and quality of food, setting up a transparent and industry-friendly food authority, and putting in place a transparent system of standards will be the thrust areas during the Eleventh Plan. For this purpose, certain targets have been set, for example: (i) increase the level of processing of perishables such as fruits and vegetables from 6% to 20%, (ii) enhance the value addition in food processing from the present 20% to 35%, and (iii) increase share in global food trade from 1.5% to 3% by 2015. The year-wise physical targets for the Eleventh Plan is given in Table 5.9.

5.108 A paradigm shift is required for the implementation of the various schemes. Management and implementation arrangements in the PPP mode and strong project implementation capabilities will be developed. The scheme for technology upgradation and modernization would be decentralized and operated through nodal banks in place of State nodal agencies to provide back-ended credit-linked subsidy. A new integrated approach would be adopted based on the strategy of (i) better project selection, development,

TABLE 5.9
Year-wise Physical Targets for the Eleventh Plan for FPI
(MSME Manufacturing Units)

Item	2007–08	2008–09	2009–10	2010–11	2011–12	CAGR (%)
Production at current prices (Rs crore)	120472.33	138543.18	159324.65	183223.35	210706.85	12
Employment (lakh persons)	47.61	49.99	52.49	55.11	57.87	4
Export (Rs crore)	11630.00	13185.00	14955.00	16970.00	19270.00	10.7

Source: MFPI.

Box 5.5
From Poverty to Prosperity

Shri Mahila Griha Udyog, the makers of the popular Lijjat Papad, started with a modest loan of Rs 80 and an annual turnover of Rs 6196. This triumphant journey began on 15 March 1959, when seven women inhabitants of South Bombay, without any seed money, gathered on the terrace of a building to prepare papad. Today, Lijjat Papad involves a workforce of more than 40000 women, has an annual turnover of Rs 300 crore, and an annual export of Rs 10 crore. Though Lijjat has achieved huge success, its annual expense on advertisements and promotions is Rs 60 lakh, a mere 0.2% of the total turnover. The co-operative believes in promotion by word of mouth and thus concentrate on cost effectiveness and quality rather than promotion through advertisements. Lijjat has now diversified into other products such as grounded spices, *khakhra*, black pepper powder, detergent powder, and cake, *vadi*, bakery products, etc. Kanjikuzhy GP in Allepuzha district of Kerala was one of the poorest and least-developed Panchayats of the State. Under the leadership of a dynamic woman *pradhan*, the village started vegetable gardens. They began making coir products and processing different varieties of food that they cultivated—*amla*, lime, garlic, ginger, bittergourd, and mango. Today the Panchayat has a turnover of over Rs 2 crore per month by selling its coir products, pickles, jams, squashes, etc. under its own brand. There are over 2000 women SHGs in five villages with a population of 1.6 lakh. Women earn Rs 60 per day as wage and get a share in profits.

and implementation, (ii) decentralized cluster-based development, particularly for creation of infrastructure and fostering linkages with the retail outlets, (iii) industry-led capacity building and upgradation of standards, (iv) an integrated food law and scientific food standards, and (v) strategic intervention with redesigned schemes and strong implementation arrangements.

5.109 The Eleventh Plan will see the development of carefully planned, cluster-based, privately driven food parks; publicly owned and privately managed abattoirs; integrated cold chain facilities and strategic distribution centres (SDCs); cluster-based preservation infrastructure (cold storages, reefer vans, etc.) and irradiation centres; public and private testing and certification labs; and a liberalized wine policy leveraging the agri/horticultural surpluses. Emphasis will be laid on upgrading the quality and hygiene of the street food. National Meat Board, Wine Board, and National Institute of Food Technology and Management will be set up and the Paddy Processing Research Centre, Thanjavur will be modernized. New markets will be tapped by creating the 'Halal Food Hub', the 'Organic Food Hub', the 'Vegetarian Food Hub', the 'Sea Food Hub' among others.

ELEVENTH PLAN SCHEMES

5.110 The scheme for infrastructure development aims to establish 30 mega food parks (new scheme), 50 abattoirs for modernization, and 30 cold chain infrastructure and value-added centres. The mega food parks would be set up with the objective of: (i) state-of-the-art infrastructure for food processing, (ii) ensuring value addition, (iii) inducting latest technology, (iv) fostering of inter-agency linkages for pooling of resources, and (v) quality assurance through better process control and capacity building. Integrated cold chain and SDCs would be set up in a network of towns in associations with private infrastructure companies. Local bodies would be encouraged to participate in setting up of modern abattoirs with a focus on capacity building and training for hygienic and scientific slaughtering.

5.111 The scheme for technology upgradation, establishment, and modernization of FPI will be decentralized and operated through nodal banks/financial institutions directly in place of State nodal agencies. The target under this scheme is 300–350 food processing units. With effect from 1 April 2007, the Ministry has decentralized the disbursement of grants to the applicants directly from the banks which have appraised their projects and provide term loan/working capital. This has resulted in increasing the outreach of the scheme. The new demand coupled with the outstanding applications implies that there will be greater allocation for this scheme during the Eleventh Plan.

5.112 The scheme for quality assurance, codex standards, and R&D and promotional activities provides financial assistance for total quality management, International Organization for Standardization (ISO) standards, bar coding, quality control labs, strengthening of codex cell, and R&D. The scheme also encourages promotional activities. The existing scheme is proposed to be modified for making it more attractive. Private parties will be encouraged to set up quality control/food testing laboratories. FPI units will be provided inputs for adopting modern practices such as HACCP, good manufacturing practice (GMP), good handling practice, ISO 9000, etc.

5.113 Four thousand programmes will be taken up under the scheme for HRD to provide assistance for skill development, strengthening of technical courses in food processing in universities, Entrepreneurship Development Programmes (EDPs), training centres, etc. Follow-up support would be provided to the trainees of EDPs as well as linkages for availing loans from banks/financial institutions would be provided.

5.114 A new scheme for upgradation of quality of street food will be introduced to provide assistance for upgrading and establishing safe food town/food street in 25 cities. This would play a major role in making available hygienically prepared food to *aam admi* (common man). Industry associations, NGOs, PRIs, municipal bodies, etc., would be involved to ensure safety and good quality of street food with the focus on value addition to augment the income levels of the food vendors.

5.115 The total projected GBS for the Eleventh Plan for the MFPI is Rs 3564 crore (2006–07 price) and Rs 4031 crore (current price). A matching private sector investment and a leveraging ratio of 2.5 would result in an investment of about Rs 20000 crore in the processing units. This will lead to creation of 28 lakh additional jobs in the organized sector during the Plan period. Further, assuming a reasonable investment turnover ratio of 2, a total investment of Rs 20000 crore would lead to an aggregate turnover of Rs 40000 crore over the Plan period. The income levels of the farmers are also expected to go up by 20% due to better realization, value addition, and integration of the supply chain. During the Plan period, supportive steps will be taken in a number of other sectors which have a direct or indirect impact on the agricultural/horticultural surpluses available for processing. These will include quality of the inputs, research, and institutional support to enable the farmer to generate surpluses, facilitating transportation of produce across State borders, formation of a national market, etc.

5.116 During the Eleventh Plan period, special programmes for capacity building of SCs, STs, minorities, and women will be formulated. Potential entrepreneurs belonging to these groups will be identified, and tailor-made EDPs, skill development programmes, study tours, etc., will be organized. Gender sensitization programmes for stakeholders including extension functionaries and other implementing agencies will be carried out. Training programmes for women will be redesigned to include technology, management, and micro credit and to promote rise of women entrepreneurs. R&D institutions will be encouraged to develop women-friendly technologies for post-harvest handling and processing, especially for drudgery reduction and providing ease of operation. Most importantly, provision of utilities, basic amenities, and crèches for women staff workers will be made mandatory in the infrastructure projects. An increased scale of assistance will be given for all the infrastructure projects to attract investment in the North East.

ANNEXURE 5.1

CLUSTER DEVELOPMENT IN INDIA—TOWARDS A REINVIGORATED CLUSTER APPROACH

Clusters are defined as a sectoral and geographical concentration of enterprises, institutions, service providers, and related regulatory bodies, engaged in the production of homogeneous or inter-related products and faced with common opportunities and threats.

TYPOLOGY OF CLUSTERS IN INDIA FROM A POLICY PERSPECTIVE

In India, as per the current estimates, there are over 6600 clusters. Agencies have come up with a range of definitions of clusters by specifying a minimum number of units in a given measured location. However, from a policy perspective, it makes sense to typify cluster by their broad challenges relevant for policy intervention. Accordingly, clusters in India can be classified into three broad categories, namely, (i) high-tech clusters (very few at present) targeting innovation for existence, (ii) traditional manufacturing clusters (around 400 plus) targeting competitiveness and consequent employment, and (iii) low-tech micro enterprise 'poverty-intensive' clusters (around 6000) that have both employment as well as poverty implications. Industry/region-wise overview of Indian clusters is indicated in Table A5.1.

A POLICY FRAMEWORK

Activation should be Preferred over Cluster Creation

Cluster-level support is required for both 'soft' [e.g., marketing, training, network creation, Business Development Service provision, benchmarking, productivity improvement areas] as well as 'hard' (cluster-specific infrastructure) interventions. Besides, support is also required for programme management for implementing agencies, resource organization, and cluster development executives.

Capacity Building for Creation of Cluster-related Institutional Infrastructure

Develop a cadre of human resources to initiate cluster development. Develop at least 8–10 national and 25–30 regional institutions to support the implementation of cluster-based development initiatives.

Policy institutions should set up cluster cells and either deploy adequately trained personnel or hire expert institutions for continuous monitoring and evaluation.

ACTIONS BY CENTRAL GOVERNMENT

- The National Commission for Enterprises in the Unorganized Sector (NCEUS) has recommended creation of a National Fund for the Unorganized Sector (NAFUS). NAFUS should be a statutory body funded by the Central Government, public sector banks, financial sector institutions, and other government agencies. The functions of the Fund would not be merely to enable better access of credit to farm and non-farm enterprises alone but to enable the unorganized sector to benefit in areas of marketing, technology, skill and entrepreneurship, guidance and counselling, and capacity

TABLE A5.1
Indian Clusters—An Overview

Region	Traditional Manufacturing		Micro Enterprise					
			Handicraft		Handloom		Others	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
North	123	31.7	716	25.75	140	23.56	698	24.11
East	36	9.28	645	23.19	43	7.24	464	16.02
West	140	36.09	764	27.47	134	22.57	787	27.17
South	89	22.95	502	18.05	214	36.02	858	29.62
North East	0	0	153	5.51	63	10.61	89	3.08
Total	388	100	2780	100	594	100	2896	100

Source: Compiled from DC (Handicrafts), DC (Handlooms), UNIDO, and the Third Census of SSI units, 2001–02.

building. The target group of the Fund should be the micro enterprises, with focus on those below an investment of Rs 0.5 million. These constitute 94% of the small enterprises in the country but receive about 2% of the net bank credit (NBC), despite providing employment to 70 million people and contributing 30% of industrial production. The Fund could ensure convergence among the various institutions and programmes, through refinancing and confidence schemes for the banks.

- The NCEUS has also piloted Growth Poles for the unorganized sector, based on a concept of developing a cluster of clusters in project mode with PPP. The Commission recommends that 25 Growth Poles (one in each State) be supported during the Eleventh Plan with incentives similar to those offered to SEZs.

Actions By State Governments

- State governments and institutions with specific areas of focus may draw up their own criteria to define clusters. In view of the huge employment potential of the services clusters, there is need for identifying such clusters and subsequent interventions in urban, semi-urban, and rural hubs.
- Although the international experience (especially in Italy and China) has been that local governments are the key players in promoting clusters, in India local governments currently lack this capacity. There is need to shift to a pattern of funding and support driven by State Governments.
- Targeting poverty reduction through cluster development calls for addressing the needs of an estimated 6000 clusters. While the handloom and handicrafts clusters are well-defined, micro clusters need to be further documented with respect to their products, marketability, and dispersion. Within those clusters, highest importance needs to be given to the presence of certain social groups such as higher presence of SCs, STs, and minority communities and those having higher involvement of women as entrepreneurs/workers.

Actions By Private Actors And Industry Associations

The international experience is that for co-operative action to take place within clusters, the enterprises within clusters should have an association. There are about 3000 associations in existence; however, nearly all these associations are for industrial clusters and not for artisanal clusters. In other words, the 400–500 odd industrial clusters are serviced by some 3000 associations, while the artisanal clusters have no more than 100 associations between them. Without such associations, the articulation of the demands and needs of such artisanal clusters is likely to remain inadequate, and the government programmes or cluster development agency efforts may be supply driven, as opposed to being demand driven and responding to the real felt needs of players involved.

6

Bharat Nirman and Flagship Programmes

INTRODUCTION

6.1 The development of rural India is an imperative for inclusive and equitable growth and to unlock the huge potential of the population that is presently trapped in poverty with its associated deprivations. The analysis of incidence of poverty across Indian States indicates that poverty is very closely linked to the absence of social infrastructure. The Eleventh Finance Commission had constructed an index of infrastructure which included economic, social, and administrative infrastructure indicators. These were (i) agriculture, (ii) banking, (iii) electricity, (iv) transport, (v) communication, (vi) health, and (vii) civil administration. If we juxtapose the index of infrastructure with incidence of poverty, we find that generally States with high infrastructure index have low incidence of poverty. This is reflected in Table 6.1.

6.2 Creation of infrastructure, both physical and social, has been given a greater thrust in the Tenth Five Year Plan. The Eleventh Plan would build on the foundations laid by the Bharat Nirman Programme and other flagship programmes to provide opportunities for improved living conditions as well as livelihoods.

6.3 This chapter, organized in two sections, provides a brief write-up on the Bharat Nirman Programme and on flagship programmes for rural areas. The detailed discussion on the schemes/programmes is contained in different chapters of the Plan document.

TABLE 6.1
Index of Social and Economic Infrastructure

State	Index of Infrastructure	HCR (2004)
Andhra Pradesh	103.30	11.17
Assam	77.72	22.33
Bihar	81.33	42.14
Gujarat	124.31(5)	19.08
Haryana	137.54(4)	13.57
Karnataka	104.88	20.85
Kerala	178.68(2)	13.25
Madhya Pradesh	76.79	36.87
Maharashtra	112.80	29.58
Orissa	81.00	46.76
Punjab	187.51(1)	9.15
Rajasthan	75.86	18.71
Tamil Nadu	149.10(3)	22.85
Uttar Pradesh	101.23	33.40
West Bengal	111.25	28.62

Source: Eleventh Finance Commission Report and Poverty Estimates by Planning Commission.

BHARAT NIRMAN

6.4 The GoI in recognition of the role played by infrastructure in poverty removal has taken up massive programmes for construction of rural infrastructure under different programmes in the past. The government launched a time-bound plan under Bharat Nirman in 2005 for implementation during the four-year period, 2005–09. The first half of the programme was in the Tenth Plan period and the second half coincides with the first two years of the Eleventh Plan period (2007–12). The six

components included under the programme are irrigation, drinking water, electrification, roads, housing, and rural telephony.

6.5 Certain physical targets have been set under each of the components. These are indicated in Table 6.2.

6.6 The investment proposed to be made is of the order of Rs 174000 crore during the four-year period. The objective of the Bharat Nirman Programme is to impart a sense of urgency to create rural infrastructure by setting time-bound goals under various schemes which form a part of the Bharat Nirman Programme. The Programme imposes a responsibility on the State to create these facilities in a transparent and accountable manner.

IRRIGATION

6.7 Under the Bharat Nirman Programme, creation of average rate of irrigation potential creation is to be increased from 1.4 MH per annum (i.e., the average rate of creation from 1951–2002) to 2.5 MH per annum. With this objective, it is targeted to create 10 MH of irrigation potential through a combination of major and medium projects, minor irrigation, and restoration of water bodies. The year-wise physical details are given in Table 6.3.

6.8 The creation of additional irrigation potential of 4.30 MH was targeted in the first two years of the Bharat Nirman Programme against which the achievement reported up to March 2007 is 2.587 MH which is about half of the target. Clearly the acceleration of potential creation has not been as targeted.

TABLE 6.2
Targets under Bharat Nirman

Component	Targets to be Achieved by Year 2009
Irrigation	To create 10 million ha of additional irrigation capacity.
Roads	To provide all-weather roads to every habitation over a 1000 population and above (500 in hilly and tribal areas); remaining 66802 habitations to be covered.
Electricity	To provide electricity to remaining 125000 villages and to 23 million households.
Housing	To construct 60 lakh houses.
Drinking water	To provide drinking water to 55067 uncovered habitations by 2009. All habitations with failed sources and water quality problems will be addressed.
Telephone connectivity	To connect remaining 66822 villages with telephone by 2007.

Source: Booklet on Bharat Nirman.

TABLE 6.3
Irrigation Targets under Bharat Nirman

(Unit in Million Ha)

	Components	2005–06	2006–07	2007–08	2008–09	Total
I	Major and Medium Irrigation					
	Completion of ongoing projects	0.90	1.10	1.10	1.10	4.20
	Extension, renovation, modernization of MMI projects	0.25	0.25	0.25	0.25	1.00
	Major and medium irrigation total	1.15	1.35	1.35	1.35	5.20
II	MI					
	Surface water	0.25	0.25	0.25	0.25	1.00
	Ground water	0.45	0.75	0.80	0.80	2.80
	Repair, renovation, and restoration of water bodies/ERM of MI schemes	0.05	0.05	0.45	0.45	1.00
	MI total	0.75	1.05	1.50	1.50	4.80
	Grand total	1.90	2.40	2.85	2.85	10.00

Source: MoWR.

6.9 The Eleventh Five Year Plan would target to create 16 MH potential. During the first two years of the Eleventh Plan, it was proposed to create 5.7 MH irrigation potential through the Bharat Nirman Programme. This would call for higher outlays for irrigation from the States and liberal assistance under AIBP (which is now only a grant and available for surface MI schemes also) for completion of ongoing projects. External assistance for restoration of lost potential by restoring tank irrigation would be utilized. Groundwater potential would be utilized in the States where there is still scope for development. Close monitoring of the projects with remote sensing and completing the projects on a fixed cost turn key mode are required to achieve the targets of the Bharat Nirman Programme. (Details on the irrigation sector are given in Chapter 2, Volume III.)

Roads

6.10 Rural connectivity is the key component of rural development and poverty alleviation in India. Rural roads (RRs) provide accessibility for the rural habitations to market and other facility centres. In order to give a boost to rural connectivity, a rural roads programme, Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched as a 100% CSS in December 2000.

6.11 The Bharat Nirman Programme envisages a massive scaling up in terms of habitation connectivity coverage, construction targets, and financial investment. To achieve the targets of the Programme, 146185 km of RRs are proposed to be constructed to benefit 66802 unconnected eligible habitations in the country. It is also proposed to upgrade nearly 1.94 lakh km of the existing RRs which are identified through routes of the core network. The physical progress under the Bharat Nirman Program-me during its first two years, that is 2005–07 is given in Table 6.4.

6.12 The targets for new connectivity and upgradation for the remaining two years, that is 2007–09 are as under:

- New Connectivity:
  - Number of habitations to be covered under the Bharat Nirman Programme upto 2009: 43638 km.
  - Length of the road: 95510 km.
- Upgradation:
  - Length of upgradation: 128067 km.

6.13 The main objective of the Eleventh Five Year Plan is achieving the targets of the Bharat Nirman Programme by 2009. However, the physical targets set under the Bharat Nirman Programme till the end of 2008–09 are found to be beyond the capacity of the States. Therefore, the leftover targets of the Programme for 2007–09 will be completed only by the end of the financial year 2009–10. In order to augment funding for meeting the targets of rural connectivity under the Bharat Nirman Programme, it is proposed to borrow Rs 16500 crore from NABARD by leveraging the cess accruals. This would, however, entail setting aside substantial amounts that would accrue from cess from 2009–10 onwards for repayment of the NABARD loan. The outlay for Central sector RRs for the Eleventh Plan is Rs 43251.07 crore at current price, excluding the borrowing from NABARD. (For a detailed write-up see Chapter 9, Volume III.)

Drinking Water

6.14 The Bharat Nirman Programme envisages covering the 55067 habitations not covered, covering the slipped back habitations from not covered to partially

TABLE 6.4
Physical Progress of Bharat Nirman during 2005–07

Status		2005–06		2006–07		2005–07		Percentage
		Target	Achieved	Target	Achieved	Target	Achieved	Achieved
New connectivity	Length (in km)	15492.4	18053.7	35182.15	21422.85	50674.55	39476.55	77.90
	No. of habitations	7034	5552	16130	8279	23164	13831	59.71
Upgradation	Length (in km)	11394.4	3925.6	54669.26	46129.90	66063.66	50055.50	75.77

Source: MoRD.

covered status, and providing safe drinking water to water-quality-affected habitations. During the first two and half years there was an impressive achievement (63%) in covering the slipped back habitations as they are relatively easier (involves restoring the defunct bore pumps, carrying out repairs to water supply pipelines, augmentation wherever required, etc.) to execute. The coverage of not covered habitations has also progressed well with 48% of the targeted habitations being covered. However, there is a huge shortfall in covering the water-quality-affected habitations in which only 5% coverage is achieved.

6.15 Sustainability of water supply has become the focal point to avoid slipped back habitations. Convergence of various rural development programmes of the government (such as NREGP, BRGF, watershed development, restoration of water bodies, etc.) need to be vigorously pursued, supported by village-level planning. The issue of water quality has assumed serious proportions. While providing water supply from surface water sources and the conjunctive use of ground water, surface water, and rooftop rainwater harvesting would be ideal, in situ methods such as dilution of chemical contaminants through augmented groundwater recharge (aided through convergence of programmes), adopting cost-effective scientific water quality treatments on an individual village basis would go a long way to improve coverage of water in the water-quality-affected areas. (For a detailed discussion see Chapter 5, Volume II.)

Rural Electrification

6.16 The rural electrification targets are set to be achieved under RGGVY. The twin objectives of electrification of 125000 villages and electrifying the 2.3 crore BPL households are proposed to be achieved under the Bharat Nirman Programme. During the first two years, the progress under both the objectives has registered an achievement of 34% and 6%, respectively. There are major shortfalls in this sector. Clearly there is a need for acceleration to achieve the target during the Eleventh Plan. Non-availability of electrification materials due to sudden demand is also a contributing factor for under achievement. Rural electrification assumes additional significance since enormous groundwater potential in eastern and north eastern parts of the country could be tapped for MI development. Electrification should trigger economic activity for rural development. Fully operationalizing the franchisee system for revenue collection and viable tariff are key to sustaining the power supply in rural areas. (For a detailed write-up see Chapter 10, Volume III.)

Housing

6.17 The Bharat Nirman Programme has recognized and accorded due priority to the need to end shelterlessness. The programme has set a target to construct 60 lakh houses from 2005 to 2009. In the first two years of the Bharat Nirman Programme, 28.69 lakh houses have been constructed. The housing component under the Programme is being implemented in parallel with IAY scheme. This scheme was launched as an independent and major housing scheme from 1 January 1996 to provide assistance for construction upgradation of dwelling units to the BPL rural households.

6.18 For the Eleventh Plan, the focus should be on targeting the poorest of the poor while targeting the remaining housing shortage with other interventions. Housing shortage for 2001 stands at 148.6 lakh houses and for 2007 at 159.5 lakh houses. Hence a target of constructing about 150 lakh houses under IAY needs to be fixed for the Eleventh Plan. This translates into an annual target of 30 lakh houses as against 15 lakh houses being constructed under IAY presently. The per unit cost is also proposed to be revised from the present level of Rs 25000 in the plain areas and Rs 27500 in the hilly and difficult areas. For more accurate targeting of beneficiaries, permanent IAY waitlists should be prepared on the basis of the scores given to families, as part of BPL Census 2002. For this, the State Governments need to be incentivized and Panchayats have to be appropriately empowered. Houses built as part of IAY should be with smokeless chulhas and sanitary latrines. The title of the house site/ownership should be in the name of female member of the household. While IAY can focus on eliminating the backlog of houselessness and temporary and unserviceable houses in rural India, the States should take responsibility for addressing any emerging needs. With the help of certain feasible interventions, the prime objective of tackling shelterlessness can be achieved within the stipulated time. (For details see Chapter 4, Volume III.)

Rural Telephony

6.19 Under the Bharat Nirman Programme, 66822 revenue villages not having telephone connectivity are to be provided with Village Public Telephone (VPT) facility. Out of these, 14183 remotely located villages are to be provided VPTs through digital satellite phone terminals, while the remaining 52639 villages are to be provided any other technology. An estimated sum of Rs 451 crore is likely to be disbursed as subsidy support towards these VPTs. The entire funding is to be met out of the Universal Service Obligation Fund (USOF). A total number of 48704 VPTs have been provided telephone connectivity and 18118 VPTs are likely to be provided by June 2008. It is important to improve the tele-density in rural areas and move to the next step of making every village a knowledge centre with telecommunication. For this high-speed Internet connection providing the necessary knowledge content relevant to the villages for the benefit of all sections of the society is required. (For details see Chapter 12, Volume III).

FLAGSHIP PROGRAMMES

6.20 The thrust of the Eleventh Five Year Plan is social inclusion coupled with provision of improved livelihood opportunities. This approach calls for renewed emphasis on education, health, and other basic public facilities. Inadequate access to these essential services directly limits the welfare of large sections of our population, and also denies them the opportunity to share fully in the growth process. Indeed, inadequate attention to human resource development limits the growth process itself. In the Tenth Plan, many schemes were either launched or revamped and strengthened to provide education, health care, nutrition, sanitation, and social security. Many of these programmes are implemented on an all-India basis, while some are implemented only in rural areas. Even the programmes that are implemented across the country tend to favour rural and backward areas in terms of resource allocation. These programmes, called flagship programmes, form the second strand for development of rural areas, the first being the Bharat Nirman Programme. The following flagship programmes are discussed in the ensuing paragraphs:

- NREGP.
- NRHM.
- Integrated Child Development Services (ICDS).
- Sarva Shiksha Abhiyan (SSA).
- MDM.
- TSC.
- NSAP.
- BRGF.

National Rural Employment Guarantee Programme (NREGP)

6.21 The NREGA has been enacted to reinforce the commitment towards livelihood security in rural areas. The Act was notified on 7 September 2005. The significance of NREGP lies in the fact that it creates a right-based framework for wage employment programmes and makes the government legally bound to provide employment to those who seek it. The NREGP marks a paradigm shift from the previous wage employment programmes by providing a statutory guarantee of wage employment and not being just a scheme. The objective of the NREGP is to enhance the livelihood security of the people in the rural areas by guaranteeing 100 days of wage employment in a financial year to a rural household whose members volunteer to do unskilled manual work. The Act further aims at creating durable assets and strengthening the livelihood resource base of the rural poor. The choice of works suggested in the Act address causes of chronic poverty such as drought, deforestation, soil erosion, etc., so that the process of employment generation is on a sustainable basis. The experience with NREGP so far suggests that it is one of the main planks of rapid poverty reduction in the Eleventh Five Year Plan.

6.22 Starting with 200 districts across the country in Phase-I during 2005–06, NREGA was extended to additional 130 districts in Phase-II during 2007–08. From 1 April 2008 onwards, the Act will cover the whole of rural area in the country. (For a detailed discussion see Chapter 4, Volume III.)

National Rural Health Mission (NRHM)

6.23 The main aim of NRHM is to provide accessible, affordable, accountable, effective, and reliable primary health care, especially to poor and vulnerable sections of the population. It also aims at bridging the gap in rural health care through creation of a cadre of

accredited social health activists and improves hospital care, decentralization of programme to district level to improve intra- and inter-sectoral convergence, and effective utilization of resources. The programme sets standards for rural health care and provides financial resources to meet these standards. The programme is under implementation in 18 States which have poor health infrastructure.

6.24 As per Rural Health Bulletin (2006), it is noted that the number of sub-centres without regular water supply, electric supply, and all-weather motorable approach roads is very large in Bihar, Chhattisgarh, Maharashtra, Orissa, Uttar Pradesh, West Bengal, and other States. Similar position is noted regarding facilities at primary health centres also. Out of the six tasks to be completed under the Bharat Nirman Programme in a time-bound manner, five (namely electricity, all-weather roads, safe drinking water, telephone, and rural housing) have direct impact on the NRHM. (For details see Chapter 2, Volume II.)

Integrated Child Development Services (ICDS)

6.25 The ICDS scheme is a child-focused intervention to address the inter-related needs of young children and pregnant and lactating mothers. The ultimate objective of the scheme is to reduce incidence of mortality, morbidity, malnutrition, and school dropouts and enhance the capability of the mother and family to look after the health, nutritional, and development needs of the child. It is now a nation-wide programme, which aims at promoting health and nutritional requirements of children up to six years and expectant and nursing mothers. As on 31 March 2007, there are 6284 sanctioned projects and 10.53 lakh *anganwadi* centres in the country. Out of these, 5672 projects are operational through 7.8 lakh anganwadi centres servicing 7.05 crore beneficiaries comprising 5.81 crore children below six years and 1.23 crore pregnant and lactating mothers. The ICDS would be one of the major programmes for achieving the following goals:

- Raising the sex ratio of the girl child in the age group of 0–6 years from 927 in 2001 to 935 by 2011–12 and to 950 by 2016.
- Reducing IMR to 28 and maternal mortality ratio to 1 per 1000 live births.
- Reducing malnutrition among children of age group of 0–3 years to half its present level and anemia among women and girls by 50% by the end of the Eleventh Plan.

  (For a detailed discussion see Chapter 6, Volume II.)

Sarva Shiksha Abhiyan (SSA)

6.26 SSA is the principal programme for universalization of elementary education. SSA aims to provide useful and relevant elementary education for all children in the age group of 6–14 years by 2010. The other significant objective is to bridge social, regional, and gender gaps with the active participation of the community in the management of schools, besides focusing on elementary education of satisfactory quality with emphasis on education for life. SSA addresses the needs of about 20 crore children in more than 12.37 lakh habitations covering 10.42 lakh existing primary and upper primary schools (SES, 2004–05; MHRD, 2007). SSA successfully ensured universal access to primary education. About 94% of Indian villages/habitations have access to schools within a distance of 1 km. In the remaining villages/habitations, alternative schooling arrangements have been made through Education Guarantee Scheme (EGS) and Alternative and Innovative Education (AIE) centres.

6.27 As a result of SSA interventions, between 2001–02 and 2004–05, total enrolment in primary classes has increased from 11.39 crore to 13.08 crore (14.84%) and in upper primary classes from 4.48 crore to 5.12 crore (14.29%). A remarkable feature has been the spurt in girls' enrolment in the corresponding period, from 5.03 crore to 6.11 crore in primary classes (21.47%) and from 1.87 crore to 2.27 crore (21.39%) in upper primary classes. (For details see Chapter 1, Volume II.)

Mid-day Meal (MDM)

6.28 The MDM Scheme launched in 1995 aims to give a boost to universalization of primary education by increasing enrolment, retention, and attendance and simultaneously impacting upon nutritional status of students in primary classes. The Scheme was revised

in June 2006, provides for 450 calories, 12 gm of protein, and adequate quantities of micronutrients such as iron, folic acid, and vitamin A to the children. The cooking cost has been enhanced to Rs 2.00 per child per school day. All the States and UTs are providing cooked meal to the children in primary classes. The coverage of school children under the programme has risen to 12 crore in 9.5 lakh primary schools/EGS centres during 2006–07. With a proposed investment of Rs 48000 crore in the Eleventh Plan period, MDM is to be expanded in the Eleventh Plan to upper primary classes (VI–VIII) in 3479 educationally backward blocks in 2007–08 and universalized at elementary level by 2008–09. MDM will thus reach out to an additional 3 crore children at upper primary stage reaching out to a total of about 15 crore children at primary and upper primary level in 2007–08 and about 18.0 crore children by 2008–09.

- The nutrition value of the MDM for upper primary children has been fixed as 700 calories, derived from at least 150 gm of cereals and 20 gm of protein, with Central assistance for cooking cost going up to Rs 2.00 per child per school day (Re 0.50 from the States).
- Kitchen sheds to be built in 3.13 lakh primary and 3.0 lakh upper primary schools at a rate of Rs 60000 per unit, and kitchen devices to be provided at a rate of Rs 5000 per school.
- The programme is to be managed and implemented by the local community and PRIs and would not be contractor-driven.
- School health programme to be revived and best practices replicated.
  (For details see Chapter 1, Volume II.)

National Social Assistance Programme (NSAP)

6.29 The NSAP is a flagship programme of the government which aims to provide human security to the poor and the destitute. The programme was launched on 15 August 1995 as a wholly Centrally funded program to give financial assistance to families with little or no regular means of subsistence, living below the poverty line. NSAP presently consists of three components, namely, NOAPS, NFBS, and Annapurna Scheme. These schemes continued to be administered by the MoRD upto 2001–02 as CSS, until these schemes were transferred to Central assistance for State plans in 2002–03. The details of each component have been explained in Chapter 4, Volume III on Rural Poverty Reduction. Government of India has recently modified the criteria for grant of pension under NOAPS to all persons of 65 years or above and belonging to a household below the poverty line. With this modification, the pension under NOAPS which was restricted to only destitutes will now be universalized and approximately 1.57 crore beneficiaries will be covered against the present coverage of around 87 lakh.

6.30 During the Eleventh Plan it is proposed to extend the NOAPS to all old people above the age of 60 years (from the present 65 years) from among the BPL families with a minimum pension of Rs 400 per month funded by the Centre and the States. The Annapurna Scheme, targeted at senior citizens who remained uncovered under NOAPS, can be discontinued soon after these beneficiaries are covered under the NOAPS. The Scheme will include persons with severe/multiple disabilities from BPL families and widows. The NFBS would continue during the Eleventh Five Year Plan with the support enhanced from Rs 10000 to Rs 25000. This amount will be sufficient for meeting the funeral charges and other incidental expenditure. To ensure smooth implementation and closer monitoring of the Scheme, advisory committees comprising professionals and voluntary organizations along with technical support groups should be set up at Central, State, and district levels. (For details see Chapter 4, Volume III.)

Total Sanitation Campaign (TSC)

6.31 Provision of sanitation facilities in rural areas has been highly inadequate. Many programmes were initiated in the past to expand coverage but with little success. In 1999, the DoDWS launched 'Total Sanitation Campaign' (TSC) which is a demand-responsive, community-oriented, low-subsidy programme in a project mode. The performance of project mode TSC was very satisfactory and, therefore, from 2002–03, the entire Central Rural Sanitation Programme has been converted into TSC. The objective of TSC was attaining 100% sanitation coverage in terms of household,

schools, and anganwadi toilets and also providing hygiene education to the people.

6.32 The target of the Millennium Development Goal is to cover 50% rural sanitation by 2015. Under TSC, the target is to achieve 100% coverage by the end of the Eleventh Plan (2012). This programme also includes funds for Nirmal Gram Puraskar which has helped in accelerating the pace of implementation of TSC since its inception in 2005. The approach of the Nirmal Gram Puraskar also helps in sustainability and maintenance of the sanitation programme. The outlay proposed for the Eleventh Plan is Rs 7816 crore (Rs 6910 crore at 2006–07 price). The allocation for AP 2007–08 is Rs 1060 crore. The physical target for the Eleventh Plan is to cover 69 million households, 25769 sanitary complexes, 133114 aganwadis, all the remaining schools (new schools will be covered under SSA) and Rural Sanitation Marts/Production Centres (figures will be finalized after the receipt of revised proposals from the districts). (For details see Chapter 5, Volume II.)

Backward Regions Grant Fund (BRGF)

6.33 The BRGF has replaced the Rashtriya Sam Vikas Yojana (RSVY) in order to provide a more participative approach through the involvement of PRIs. The spatial coverage was also expanded and it now covers 250 districts (RSVY covered 147 districts). The scheme aims to help converge and add value to other programmes such as the Bharat Nirman Programme, the NREGP, and other flagship programmes that are explicitly designed to meet rural infrastructural needs but that need supplementation to address critical gaps. It aims at catalysing development in backward areas by: (i) filling infrastructure gaps; (ii) promoting good governance and agrarian reforms; (iii) converging, through supplementary infrastructure and capacity building, the substantial existing development inflows into these districts.

6.34 The scheme has two components, namely, (i) the districts' component covering 250 districts which will be anchored on a well conceived, participatory district plan with schemes selected through peoples' participation for which PRIs from the village upto the district level will be the authorities for planning and implementation; and (ii) special plans for Bihar and the KBK districts of Orissa. The special plan for Bihar had been formulated, in consultation with the State Government of Bihar, to bring about improvement in sectors such as power, road connectivity, irrigation, forestry, and watershed development. The special plan for the KBK districts focuses on tackling the main problems of drought proofing, livelihood support, connectivity, health, education, etc., as per local priorities. (For details see Chapter 7, Volume II.)

III
Industry

7

Industry

7.1 INDUSTRY INCLUDING SMALL AND MEDIUM ENTERPRISES (SMEs)

INTRODUCTION

7.1.1 The Tenth Plan target of 10% industrial growth has not been met, but there was an acceleration in the industrial growth rate during the Plan period and the target was exceeded in the terminal year. The CAGR rose from 4.5% in the Ninth Five Year Plan to 8% in the Tenth Five Year Plan. Manufacturing showed particular dynamism, the CAGR rising from 3.8% in the Ninth Five Year Plan to 8.7% in the Tenth Five Year Plan. The annual growth rate of manufacturing rose consistently during the period, registering 12.3% in 2006–07. For the first time in many years, industrial growth at 11% equalled the growth rate in services, with manufacturing outstripping both (Table 7.1.1).

7.1.2 The rising demand in both domestic and external markets was a major contributory factor but the impressive performance of manufacturing was due in no small measure to the cumulative effect of industrial and fiscal policy changes carried out since the economic reforms of 1991–92. The competitive environment created by the reduction of external barriers to trade finally started to bear fruit. Against a CAGR of 6.3% in the Ninth Five Year Plan, exports of manufactures registered a CAGR of more than 19% during the Tenth Five Year Plan.

7.1.3 Going by the marked improvement in the GCF in manufacturing and the quantum jump in the values shown in the Industrial Entrepreneurs' Memoranda (IEM) filed with the DIPP, a continuation of the high growth rates of manufacturing is highly likely during the Eleventh Five Year Plan (Annexure 7.1.1).

TABLE 7.1.1
Growth Rates

	CAGR in Ninth Plan	2002–03	2003–04	2004–05	2005–06 (QE)	2006–07 (RE)	CAGR in Tenth Plan
GDP	5.5	3.8	8.5	7.5	9.0	9.4	7.6
Agriculture, forestry, and fishing	2.0	–7.2	10.0	0.0	6.0	2.7	2.1
Industry (manufacturing)	4.5	6.8	6.0	8.4	8.0	11.0	8.0
	(3.8)	(6.8)	(6.6)	(8.7)	(9.1)	(12.3)	(8.7)
Services[#]	8.1	7.4	8.9	10.0	10.3	11.0	9.5

Note: [#] Construction is included in Services; QE = Quarterly Estimates. Figures in parentheses relate to manufacturing.
Source: Central Statistical Organization.

Review of the Tenth Plan

7.1.4 During the Tenth Five Year Plan the sectoral share of industry in the GDP started rising after several years of decline. The share of manufacturing also maintained a rising trend after falling in the first year of the Tenth Plan (Table 7.1.2).

TABLE 7.1.2
Sectoral Share in GDP

(in %)

	Agriculture, Forestry, and Fishing	Industry (Manufacturing)	Services
2001–02	24.0	25.0 (14.8)	51.0
2002–03	21.5	25.8 (15.2)	52.7
2003–04	21.7	25.6 (15.0)	52.7
2004–05	20.2	26.1 (15.1)	53.7
2005–06 (QE)	19.7	26.2 (15.1)	54.1
2006–07 (RE)	18.5	26.6 (15.5)	54.9

Note: The data given here are not comparable with the data used in the Ninth Five Year Plan and MTA Documents as the base year has been changed by CSO from 1993–94 to 1999–2000.
Source: Press Note, 31 May 2007, National Accounts Statistics 2007, CSO.

Output of the Manufacturing Sector

7.1.5 The Annual Survey of Industries (ASI) is the basic source of data for the registered units and no reliable data are available for the unregistered ones. In this situation, the Central Statistics Organization (CSO) has been using the somewhat limited Index of Industrial Production (IIP) to project growth of both the registered and the unregistered units at a two-digit level for manufacturing. The data from the IIP shows that manufacturing posted a CAGR of 8.82% during the Tenth Five Year Plan in terms of the output (Table 7.1.3).

7.1.6 Cotton textiles, textile products, paper and paper products, basic metals and alloys, machinery and equipment, transport equipment, and other manufacturing industries scored substantial increases in the rate of growth, while beverages and tobacco as well as chemicals and chemical products maintained impressive rates of growth. After recording negative growth in the first two years of the Plan period, cotton textiles made remarkable progress in the last three years following the fiscal policy reforms in the 2004–05 Budget, which created a level playing field between the small-scale and other industries. The performance of the textile industries other than cotton was even more striking. The performance of the capital goods industry was another positive feature in view of the implication it has about the increasing investment in manufacturing. The production of metals surged ahead, with both steel and non-ferrous metals showing a good response to the worldwide buoyancy. Although paper and paper products showed good overall growth, the performance was uneven. Chemical products were lifted by the accelerating growth in the export of pharmaceutical products. Another major industry that seems to be on a high growth path is automobiles and auto products, in which both do mestic and export demand have been picking up. The three areas that showed negative growth are jute textiles, wood and wood products, and leather and leather products. In leather the negative growth in 2002–03, 2003–04, and 2005–06 is not consistent with the export data which show substantial increases in those years. The anomaly in data is due to fact that there is less than full coverage of the enterprises engaged in manufacturing in this sector in the collection of production data by the DIPP.

Capital Formation

7.1.7 After having reached a high of 13.53% in 1995–96, the rate of GCF in manufacturing as a percentage of GDP at market price showed a declining trend, bottoming out in the terminal year of the Ninth Plan. The Tenth Five Year Plan period saw a striking reversal of trend from the outset and in 2005–06 it had increased to 13.6%. Registered manufacturing showed a higher level of GCF rising from 3.8% in 2001–02 to 10.4% in 2005–06 (Table 7.1.4).

Industrial Investment Intentions

7.1.8 The optimistic outlook about future investment in manufacturing also emerges from the industrial investment intentions, as reflected in IEM, Letters of Intent (LOI), and Direct Industrial Licenses (DIL). There was a significant increase particularly between 2005 and 2006 in the value of proposed investment (Annexure 7.1.1).

TABLE 7.1.3
Trends in the Performance of Industrial Sub-Sectors— Annual Growth Rate

(in %)

Industry Code	Industry Name	Weight in IIP	CAGR 1997–2002	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	CAGR 2002–07
20–21	Food products	9.08	2.49	–1.68	11.0	–0.5	–0.4	2.0	8.7	4.05
22	Beverages and tobacco	2.38	11.17	12.18	27.9	8.5	10.8	15.7	11.3	14.67
23	Cotton textiles	5.52	0.29	–2.20	–2.7	–3.1	7.6	8.5	14.8	4.79
24	Wool, silk, and man-made fibre textiles (except cotton)	2.26	8.53	4.40	3.0	6.8	3.5	0.0	8.1	4.25
25	Jute textiles	0.59	0.37	–5.86	8.3	–4.2	3.7	0.5	–15.8	–1.85
26	Textile products	2.54	2.60	2.40	14.4	–3.2	19.2	16.3	11.5	11.38
27	Wood and wood products	2.70	–6.79	–11.03	–17.6	6.8	–8.4	–5.7	29.1	–0.39
28	Paper and paper products	2.65	4.29	2.99	6.8	15.6	10.5	–0.9	8.4	7.95
29	Leather and fur products	1.14	8.07	5.93	–3.2	–3.9	6.7	–4.8	0.4	–1.05
30	Chemical and chemical products	14.00	8.56	4.76	3.7	8.7	14.5	8.3	9.4	8.86
31	Rubber, plastic, petroleum	5.73	7.55	11.08	5.5	4.5	2.4	4.3	12.7	5.81
32	Non-metallic mineral products	4.39	8.89	1.37	5.1	3.7	1.5	11.0	12.9	6.75
33	Basic metals and alloys	7.45	2.16	4.01	9.2	9.2	5.4	15.8	22.9	12.32
34	Metal products and parts	2.81	5.34	–9.59	6.4	3.7	5.7	–1.1	11.4	5.14
35–36	Machinery and equipment	9.57	6.51	1.02	1.6	15.8	19.8	12.0	14.2	12.48
37	Transport equipment	3.98	6.40	6.83	14.6	17.0	4.1	12.7	15.0	12.58
38	Other manufacturing industries	2.56	0.35	8.86	0.1	7.7	18.5	25.2	7.7	11.49
	Manufacturing	79.36	5.27	2.86	6.0	7.4	9.2	9.1	12.5	8.82

Source: Central Statistical Organization.

TABLE 7.1.4
Gross Capital Formation and Capital Formation in Manufacturing

Year	Capital Formation as % of GDP (at Market Price)				Capital Formation in Registered and Unregistered Manufacturing as % of Respective GVA@	
	GDCF# at Current Price	Manufacturing GCF&	Registered Manufacturing	Unregistered Manufacturing	Registered	Unregistered
1999–2000	25.9	8.9	7.0	2.0	78.5	42.0
2000–01	24.3	6.9	4.6	2.4	48.0	49.5
2001–02	22.9	5.0	3.8	1.2	40.5	27.9
2002–03	25.2	7.1	4.9	2.3	51.0	50.2
2003–04	28.0	8.4	5.4	3.0	56.6	67.1
2004–05	31.5	11.6	8.1	3.4	81.4	76.2
2005–06 (P)	33.8	13.6	10.4	3.2	102.5	72.2

Note: @ Gross Value Added (GVA), #Gross Domestic Capital Formation (GDCF), & Gross Capital Formation (GCF).
Source: Central Statistical Organization.

7.1.9 The data on capital investments compiled by the RBI on the basis of the envisaged capital expenditure of companies that have been sanctioned assistance by the banks and the financial institutions during 2004–05, 2005–06, and 2006–07 reinforce the picture of increasing investment in the pipeline in the industry and some other sectors (Annexure 7.1.2).

7.1.10 In the last three years of the Tenth Five Year Plan, the investment in projects in the pipeline rose rapidly, not only in power, petroleum products, metal and metal products, textiles and cement but also in sugar, chemical and petrochemical products, electrical and non-electrical machinery, transport equipment, and construction.

Exports of Manufactured Products

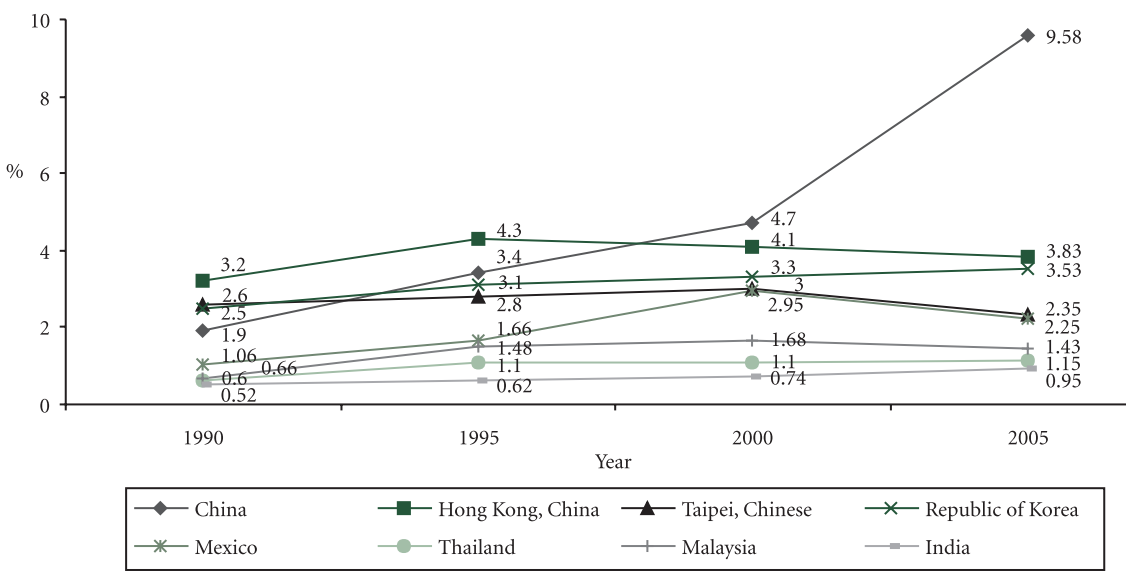
7.1.11 A major feature of the performance of industry was the remarkable increase in the export share of manufacturing sustained during the entire Plan period. Against a CAGR of 6.3% achieved during the Ninth Plan, exports of manufactured products had a CAGR of 19.9% during the Tenth Five Year Plan (Annexure 7.1.3).

7.1.12 The export of engineering goods recorded the highest CAGR of 33.1% mainly on the basis of the increase in auto and auto components; the export of basic chemicals was not very far behind, with CAGR of 23.1% due to the growth recorded in pharmaceuticals. Among traditional products, textiles and readymade garments responded well to the dismantling of quotas that had restricted imports to the major developed economies until 1 January 2005, and gems and jewellery bettered the performance during the Tenth Plan. The share of manufactures in world exports also inched up.

Share in World Trade

7.1.13 Despite the recent impressive growth in exports, textiles and clothing, iron and steel, and chemical products are the only products in which India's share was 1% or more of the world exports in 2005. Taking manufactures as a whole, India's share in the world trade of manufactures is close to 1%. Apart from China, which has become the manufacturing powerhouse of the world, six developing countries and customs territories have a larger share in world exports of manufactured products (Figure 7.1.1).

7.1.14 The comparatively low share of India in the world export of manufacturers is reflected in its low share of manufacturing value added in GDP compared to countries in South East and East Asia [15.9% of



Source: International Trade Statistics, WTO.

FIGURE 7.1.1: Share in World Exports of Manufactured Goods

India against China (34.5%) in year 2000, Thailand (34.5%), and Malaysia (31.4%)].

Creation of Jobs in Manufacturing

7.1.15 The performance of the organized manufacturing sector continued to be a source of concern. There was a massive decline in employment in the public sector following the rationalization of staffing in some units and closure of the sick units. In the early post-reform years, the increase in private sector employment made good the decline in the public sector; however, the early years of the Tenth Five Year Plan saw a decline in the private sector employment as well, causing an absolute decline by as much as 5.40 lakh employees (Table 7.1.5).

7.1.16 The grim scenario reflected by the above data has, however, been considerably brightened by the release of findings of the Fifth Economic Census and the 61st Round of the NSS. Both the surveys found that accelerating output growth has been accompanied by the faster rate of job growth. The Fifth Economic Census has found that the employment in economic activities other than crop production and plantations increased by 2.49% annually between 1998 and 2005 (against the annual increase of 5% in workforce). Data from the latest NSS round for 2004–05 suggests that the non-agricultural employment expanded strongly at the annual rate of 4.7% during 1999–2005. Obviously this growth has come entirely from the unorganized sector in manufacturing and services, which accounts for about 71.6% of all non-agricultural workers in the unorganized sector. The slow growth of regular jobs and the intensification of duality in labour markets (formal versus informal) has become a serious issue.

Investment Climate

7.1.17 A number of favourable factors have helped to improve the investment climate for the industry and to create considerable optimism on the manufacturing front. India maintained an upward climb in the global competitiveness indices drawn up by reputed bodies and business confidence was high at the end of the Tenth Five Year Plan.

Elimination of Entry Barriers

7.1.18 Entry barriers adversely affect the investment climate of the State. One of the determinants of the investment climate for an industry is the ease with which the firms are able to enter into the business activities. *Doing Business 2007: How to Reform*—a co-publication of the World Bank and the International Finance Corporation (2007) shows that the average time spent in completing entry requirement in India is 35 days and the number of procedures is 11 compared to 35 days and 13 numbers of procedures in China. Figure 7.1.2 illustrates this point.

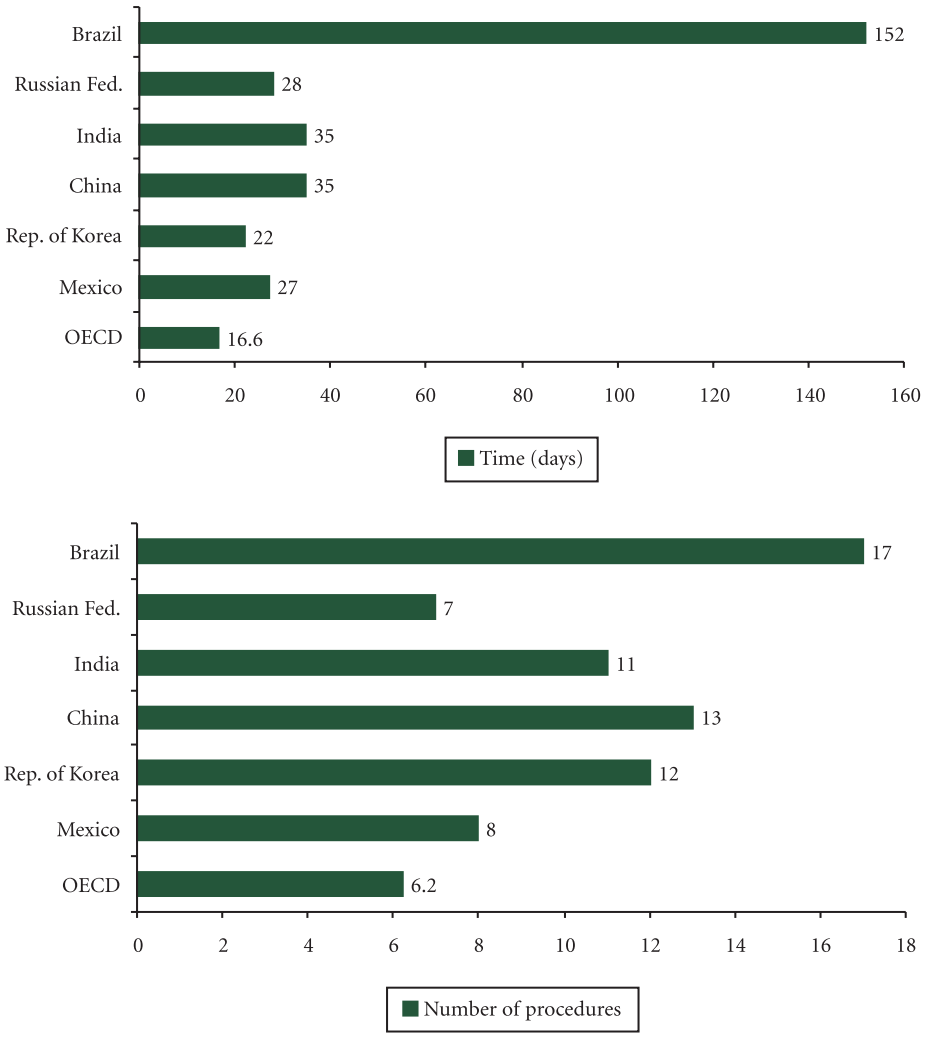
7.1.19 Industrial licensing had already been substantially dismantled and during the Tenth Five Year Plan period further measures were taken to pare it down. Drugs and pharmaceuticals including biotechnology were delicensed in 2005. At the end of the Tenth Five

TABLE 7.1.5
Employment in Organized Manufacturing

(in Lakh)

	Manufacturing (Private Sector)	Manufacturing (Public Sector)	Total Employment in Manufacturing	Employment (in Public Sector Industry)	Employment (in Private Sector Industry)	Total Employment Organized Sector
1991	44.81	18.52	63.33	190.57	76.77	267.34
1996	50.49	17.38	67.87	194.29	85.12	279.41
2000	50.85	15.31	66.16	193.14	86.46	279.60
2001	50.13	14.30	64.33	191.38	86.52	277.89
2002	48.68	13.50	62.18	187.73	84.32	272.06
2003	47.44	12.60	60.04	185.80	84.21	270.00
2004	44.89	11.89	56.78	181.97	82.46	264.43

Source: Economic Survey, 2006–07.



Source: Unleashing India's Innovation: Toward Sustainable and Inclusive Growth, Mark A. Dutz, World Bank Publication, 2007.

FIGURE 7.1.2: Starting a Business—Time, and Procedures

Year Plan period only the following manufacturing activities needed industrial license:

- distillation and brewing of alcoholic drinks;
- cigars and cigarettes of tobacco and manufactured tobacco substitutes;
- electronic aerospace and defence equipment;
- industrial explosives;
- specified hazardous chemicals.

7.1.20 Entrepreneurs are free to select the location for setting up industry. Approval is required from the government for locating an industrial unit within 25 km of the periphery of cities having a population of more than one million according to the 1991 census, provided that is not within an industrial area designated before 24 July 1991. However, these locational restrictions are not applicable for electronics, computer software, printing industries, and other non-polluting industries that may be designated from time to time.

7.1.21 Apart from the licensing restrictions, there are some restrictions arising from certain industries

reserved for the public sector and for the small-scale sector. Reservation for the public sector is now very limited, covering only manufacturing involving certain substances relevant for atomic energy (as well as production of atomic energy and provision of railway transport). The list of items reserved for SSIs has been reduced to 114. Larger units are allowed to manufacture items reserved for the small-scale sector only if they undertake an export obligation of 50% of their industrial production.

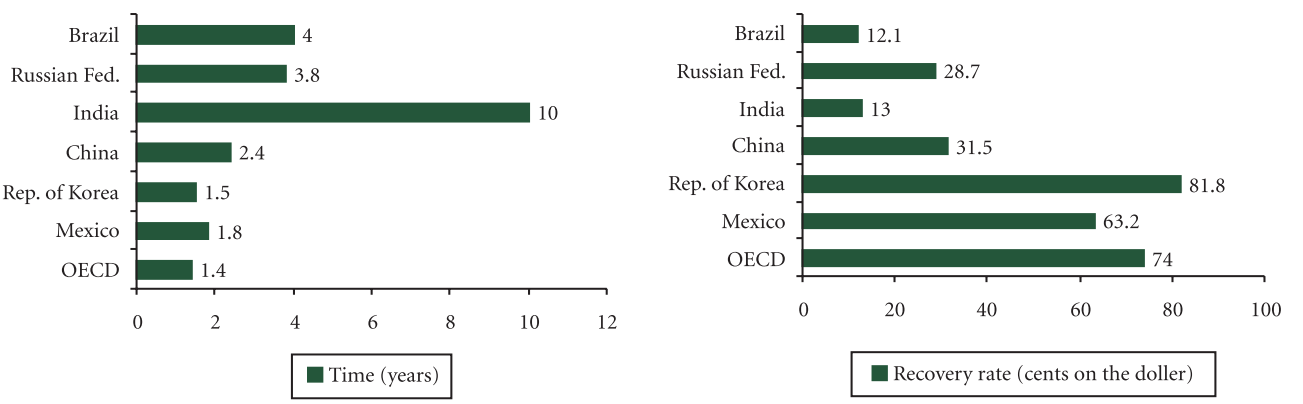
7.1.22 The Foreign Direct Investment (FDI) policy was also successively liberalized during the Tenth Five Year Plan. Following a comprehensive review in 2006 it was further liberalized, particularly by allowing FDI under the automatic route for manufacture of industrial explosives and hazardous chemicals and making it easier for new investments by foreign investors who had entered into joint ventures with Indian partners earlier. At the end of the Plan period, FDI upto 100% was permitted in all manufacturing activities except where the foreign investor had an existing joint venture/technical collaboration/trademark agreement in the same field of activity.

7.1.23 There are caps on the foreign equity in certain service sectors, viz., 20% on FM radio broadcasting; 26% on insurance, defence production, print and electronic media covering news and current affairs; 49% on air transport services, asset reconstruction companies, cable network, direct to home (DTH), hardware for uplinking, HUB, etc.; 51% on single brand retailing of products; and 74% on atomic minerals, private sector banking, telecom services, and the establishment and operation of satellites. FDI is even prohibited in a few other services, viz., retail trading (except single brand product retailing), gambling and betting, lottery, and atomic energy. However, there is no foreign equity cap on any manufacturing activity other than in public sector undertakings (PSUs) for petroleum refining.

Elimination of Exit Barriers

7.1.24 Investment climate in the country is also affected by the exit barriers. Perhaps the most important exit barrier relates to Chapter V-B of the Industrial Disputes Act 1947 under which units with more than 100 employees cannot exit an unprofitable enterprise without the consent of the concerned State Government. This consent is often difficult and time consuming to obtain.

7.1.25 The other important exit barrier to the industries in India is the legal provision relating to insolvency, rehabilitation, liquidation, and winding up proceedings, which need to be simplified and be made time bound. The co-publication of the World Bank and the International Finance Corporation (2007) reports that resolving the insolvency cases takes upto 10 years in India against 2.4 years in China, 1.5 years in South Korea, and 3 years in the US. Similarly, the recovery rate of closing business is 13% in India compared to 82% in South Korea. Figure 7.1.3 illustrates this point.



Source: Unleashing India's Innovation: Toward Sustainable and Inclusive Growth, Mark A. Dutz, World Bank Publication, 2007.

FIGURE 7.1.3: Closing a Business—Time, and Recovery Rate

7.1.26 A comprehensive draft of the new Companies Bill 2007 has been proposed by the Ministry of Corporate Affairs (MCA) to simplify the rules and procedures and to set up a quasi judicial fora such as the National Company Law Tribunal and the National Company Law Appellate Tribunal to deal with cases relating to insolvency, rehabilitation, liquidation, and winding up proceedings, taking over the related functions of Company Law Board, Bureau of Industrial and Financial Reconstruction (BIFR), and the judiciary in this respect. The actual setting up of such bodies can be done on the basis of the decision in a related matter pending before the Constitution Bench of the Supreme Court.

7.1.27 A major initiative taken during the Tenth Five Year Plan period, which would help to alleviate entry barriers, was the introduction of MCA 21 e-Governance Project' to computerize and speed up the process of registration of companies. The decision to introduce legislation for limited liability partnerships was another step forward.

Liberalization of Trade

7.1.28 Quantitative restrictions on trade had already been progressively eliminated before the Tenth Five Year Plan period and import tariffs on non-agricultural products drastically reduced after the introduction of economic reforms in 1991–92. The process was carried forward strongly and peak tariffs on non-agricultural products were brought down from 30% in 2002–03 to 10% in the Union Budget for 2007–08, although there are some exceptions. The liberalization of trade was one of the factors contributing to the impressive increase in manufacturing value added and increase in the GCF in manufacturing.

Rising Domestic Demand

7.1.29 India's growing competitiveness in skill-intensive segments such as auto components, fine chemicals, and pharmaceuticals is an important recent development. The sustained increase in merchandise exports at a rate above 20% over the last few years has established India's export competitiveness over a wide range of manufactured products. However, the future growth of India's manufacturing (as of services) will be stimulated increasingly by the domestic consumer demand. The research carried out by the National Council for Applied Economic Research (NCAER) (*The Great Indian Middle Class: Results from the NCAER Market Survey of Households*, NCAER in association with Business Standards, 2004) and McKinsey (*The 'Bird of Gold': the Rise of India's Consumer Market*, Mckinsey & Company, 2007) has brought out that the number of households with an income above Rs 2 lakh will rise from 14.4 million households in 2005 to 63.9 million in 2015 and 137.5 million in 2025. The aggregate disposable income in the hands of this class will rise by about four-fold by 2015 and more than 10-fold by 2025. Another factor influencing consumer demand will be the changing demographic profile of the country resulting in a drop in the dependency ratio from 60% in 2005 to 52% in 2015 and 48% in 2025. By 2025, India is expected to become the fifth largest market in the world, overtaking Germany's consumer market. 'Rising incomes will lift 291 million out of poverty and create a 583 million-strong middle class' (Mckinsey).

The Eleventh Plan Perspective on Industry

7.1.30 In order to achieve an average growth rate of 9% per annum in GDP during the Eleventh Plan, it has been projected that, individually, industry and manufacturing will have to grow at an average annual rate of 9.8%. However, if a number of issues are addressed as discussed below and particularly the plans for improvement of infrastructure (power and transport) fructify in full measure, and the recommended policies on mining (para 7.2.60) and construction (para 8.1.6) are implemented, a substantially higher industrial growth rate can be achieved. The National Manufacturing Competitiveness Council (NMCC) has, infact, suggested a growth rate of at least 12%–14% per annum for manufacturing. Various issues requiring urgent attention are discussed as under:

Issues in Industrial Growth

World-class Infrastructure

7.1.31 Investment in physical infrastructure was intensified during the Tenth Five Year Plan, and in other chapters we describe the investment plans and policies being adopted for the Eleventh Five Year Plan. However, despite substantial progress, the quality of

infrastructure remained many notches below world class at the end of the Tenth Five Year Plan. Problems related to the availability and quality of electric power as well as roads, railways, ports, and airports have been highlighted in Chapter 1 of Volume I along with the outline of the new strategies adopted in the Eleventh Plan to tackle these problems.

Taxation

7.1.32 Tax policy is a very important determinant of the investment climate. The rates of direct taxes determine the structure of incentives to work, save, and invest, while the level and structure of indirect taxes influences the aggregate demand and thus the scale of operations on the one hand and relative prices of different goods and services on the other. Concerted efforts to simplify the tax system, moderate the rates of tax, and avoid cascading of taxes, which intensified since the 1991–92 reforms and were continued during the Tenth Five Year Plan, have improved the investment climate. But more needs to done.

DIRECT TAXES

7.1.33 The rate of Corporate Tax has been brought down to a level of 30%, which with surcharge and cess amounts to a maximum marginal rate of 33.99%. However, analysis has brought out two features of the direct taxation in the country arising from the regime of exemptions. First, the average effective rate of Corporate Tax paid in 2005–06 was 17% or about half of the statutory rate. Second, the range of incidence varied from 11.7% to 32.5%.

7.1.34 Different effective rates of direct taxes can cause misallocation of resources. Capital investment should be driven by efficiency considerations rather than by tax advantage. Withdrawal of industry-specific concessions will make it possible to consider the introduction of a flat rate without any exemptions. The desirability of a flat rate stems from the fact that it promises to introduce transparency and equity in taxation of different economic activities, reduces the incentive to evade or avoid tax, and minimizes the use of discretion of tax authorities (regarding eligibility for concessions). The Kelkar Task Force on direct taxes had recommended a similar regime of Corporate Tax at 25%.

INDIRECT TAXES

7.1.35 In indirect taxes great progress was made during the Tenth Five Year Plan in reducing the cascading effect of indirect taxes by the adoption of State VAT by almost all the States and UTs. However, the rates of indirect taxes in India remain among the highest in the world. Most industrial products are subject to Central value-added tax (CENVAT) on the manufactured value, at an average of 16% and a State VAT at a modal rate of 12.5% of retail value (though there are a number of goods that are exempt from State VAT and some are subject to lower rates of tax). At present the incidence of CENVAT and State VAT together is about 23%. In addition, States and local levels of government levy such taxes as octroi or entry tax, etc. The overall rate of indirect taxes compare unfavourably with those prevailing in Association of South-East Asian Nations countries, which are closer to 10%–12%.

7.1.36 High taxes raise the final price of products, reducing demand for specific products and dampening aggregate demand. Lower taxes lead to an increase in the aggregate demand, providing long-lasting incentive to investment, simultaneously increasing employment and incomes. If the buoyancy in tax collection seen in the recent years continues, it will provide an opportunity for making a beginning toward the gradual reduction of the combined incidence of CENVAT and State VAT.

INVERTED DUTY STRUCTURE

7.1.37 The customs duty in India on non-agricultural products has come down drastically since 1991–92, and during the past five years the peak duties (except for a handful of products) have fallen from 30% to 10% ad valorem (as on 1 March 2007). The vast majority of manufacturing industries have withstood increased competition from imports arising from the lowering of customs duties. However, what is affecting them adversely is the inverted duty structure arising from elimination or reduction of duty on value-added products, while higher duties apply on the raw material and intermediate products. In some cases, inverted duties are embedded in the Most-Favoured-Nation duties, as in the cases of Information Technology (IT) products and books. Although under the obligations of the

Information Technology Agreement, basic customs duty has been eliminated from almost all IT products including intermediate products, some basic raw materials that go into the production of these products still attract varying levels of customs duty. Similarly, paper is subject to excise duty (and when imported it is subject also to import duty), but import of printed books does not attract any basic customs duty or additional customs duty imposed in lieu of excise. The incidence of inverted duty structure has been considerably increased by the Regional Trading Arrangements (RTAs) that India has entered into, and exacerbated by selective preferences implemented at the outset through Early Harvest Lists. While measures have been taken to alleviate the problem of inverted duty structure arising from RTAs through specific interventions, more needs to be done.

7.1.38 It is also important to safeguard the domestic industry from possible disruption as a result of implementation of several free trade agreements (FTAs), the negotiations for which are in an advanced State with some of world's leading trading countries. Efficiency in manufacturing, in particular, is a function of the quality of physical infrastructure and of skill development, and our infrastructure, both social and physical, is at present not of world class. It is necessary to raise the level of education and skills and to improve power and transport infrastructure in the country even as we enter into FTAs, as otherwise there would be flight of capital from the country to the trading partners with superior infrastructure and level of skills. Furthermore, a level playing field must be created on the fiscal side. In order to ensure that our industries do not suffer a disadvantage in an FTA, the introduction of Goods and Service Tax (GST) must be firmly on course. There must be an understanding also on the exchange rate policy as well before we can have a soundly functioning FTA, because a market driven exchange rate policy in one partner country cannot co-exist with a substantially controlled exchange rate policy in another. These fundamental aspects need to be attended to first before the major FTAs, which we are negotiating, enter into force.

GOODS AND SERVICES TAX

7.1.39 Non-discretionary application of uniform taxes to all economic activities is among the most important desiderata of a tax system. The introduction of an integrated GST would go a long way in meeting this objective. The Report of the (Kelkar) Task Force on Implementation of the Fiscal Responsibility and Budget Management Act 2003 recommended the introduction of the GST. The government has agreed to introduce the GST and has set 2010 as the target year for its introduction. To prepare for this, it has also begun a phased reduction of Central Sales Tax (CST) to zero by 2010. This is because CST, which is an origin-based tax, is inconsistent with VAT, which are destination based—the two should not co-exist. As revenue from CST was transferred to the states, they are to be compensated by being given the right to levy service tax on certain commodities. A Group of State Finance Ministers has been constituted to work on the modalities for the introduction of GST on lines similar to the group that had been set up for the introduction of State VAT.

7.1.40 Once the integrated GST across the country is introduced, it will simplify tax administration and eliminate cascading of taxes. It will lead to a reduction in the distortions in the structure of production, consumption, and exports and further to a more efficient allocation of the resources. The demand for manufactured goods can be expected to grow significantly.

Structural Change in Manufacturing Sector

7.1.41 Review of data from the ASI, which covers all factories registered under Factories Act 1948, reveals that by 2004–05 a substantial change in the shares of different sectors of manufacturing had occurred since 1990–91. After accounting for the change in classification from National Industrial Classification (NIC) 87 prevalent in 1990–91 to NIC 2004 based on which the index of industrial production is computed in 2004–05, the main changes seen are increases in the shares of chemical and chemical products from 8.42% to 16.4% and basic metals and alloys industry from 12.9% to 19%, and reductions in the shares of machinery, machine tool, and electrical machinery (NIC 35–36) from 16.14% to 10% and of textile and textile products including apparel from 14.37% to 7.3%. Transport equipment and parts registered a small increase from 8.3% to 9.5% while

food, beverages, and tobacco showed a decline from 11.9% to 8.8%.

7.1.42 The capital intensity of the manufacturing sector in terms of fixed capital per employee has increased at a CAGR of about 6.5% since 1990–91 at constant prices. Increase in outsourcing in manufacturing segment might have inflated the increase in capital intensity. The fixed capital to net value-added ratio decreased from 2.53 in 1980–81 to 1.85 in 1990–91 before rising marginally to 1.97 in 2004–05. The segments where capital intensity has increased are paper, basic metals, and non-metallic minerals and even large employment-generating sectors such as textile and food processing.

7.1.43 A recent study on India's pattern of development by Kalpana Kochhar et al.[1] has noted that 'The paradox of Indian manufacturing in the early 1980s is that a labor-rich, capital-poor economy using too little of the former, and using the latter very inefficiently'. It has further observed that little has changed since the economic reforms on account of the fact that the labour markets have not been touched and the education expenditure continues to be skewed toward tertiary education. If the structure of Indian industry is to be adapted to the factor endowments of the country, it is evident that the impediments in the way of labour-intensive industries must be removed and, while not relenting on the expenditure on higher education, emphasis must be also put on skill development for making the workforce employable in such industries.

Skill Development

7.1.44 A skill deficit in virtually all areas of manufacturing has emerged as one of the major impediments to growth in manufacturing. All areas of manufacturing are affected but the more dynamic areas such as pharmaceuticals, automobiles and auto parts, textiles and clothing, leather and leather manufactures are affected more severely. And the shortages are at all levels, from executives and designers at the top to the base level skilled workers such as tailors and machine operators. The shortage has led to a serious problem of poaching of skilled personnel being experienced by established industrial units.

7.1.45 Skills and knowledge are the driving force of the economic growth and social development of the country. Development of skills and knowledge is basic to enhancing employment opportunities and a comprehensive strategy to address this problem in the Eleventh Plan is outlined in Chapter 4 of Volume I.

Labour Flexibility

7.1.46 We need to recognize three influences that could work on firm behaviour in organized manufacturing in the future. First, in order to meet the pressures of increased competition resulting from global integration, firms have a need to build flexibility into their organizational structure, so that they can adjust to volatility in the international demand for their products. Enterprises are increasingly focusing on their core competence and outsourcing all other activities to specialist organizations, which can deliver better and at lower cost.

7.1.47 Second, the lack of flexibility in some of the labour laws, such as Chapter V-B of the Industrial Disputes Act 1947, and Contact Labour (Regulation and Abolition Act), which focus on job protection, inhibits employment. In the MTA it was recognized that these laws make it difficult for employers to flexibly respond to the changes in demand when necessary and have the net effect of discouraging the growth of strong labour absorbing sectors. It must be acknowledged here that the aforementioned provisions of the Industrial Dispute (ID) Act 1947 has not proved to be a major obstacle in downsizing by several manufacturing enterprises during the past few years with the aid of generous packages for voluntary retirement. Furthermore, in the context of severe shortages of skilled personnel being experienced by existing manufacturing enterprises, the need to reduce staff is not a current problem for many labour-intensive enterprises. Similarly, despite the provisions of the Contract Labour

[1] *India's Pattern of Development: What Happened, What Follows*, Kalpana Kochhar, Utsav Kumar, Raghuram Rajan, Arvind Subramanian, and Ioannis Tokatlidis, Working Paper 12023, National Bureau of Economic Research, Cambridge, February 2006.

(Regulation and Abolition) Act, the scope of prohibitions issued under Section 10 of the Act has not been very wide, being limited to specific processes, operation, or other work in particular establishments. However, Chapter V-B of the ID Act 1947 does create a psychological block in entrepreneurs against establishing new enterprises with a large workforce and impede attainment of economies of scale. As a result, firms prefer to set up enterprises with a smaller permanent workforce, and these enterprises are unable to cope with large size orders from retail market chains in garments and footwear for instance. Similarly the Contract (Regulation and Abolition) Act constrains seasonal employment because of the fear that work done by employees recruited to meet the temporary or seasonal demand would be declared to be work of perennial nature.

7.1.48 Third, while several fiscal incentives for corporate investment encourage capital, only one relates to labour use, and that too is of little practical value. This induces enterprises to give preference to capital-intensive over labour-intensive technology.

7.1.49 We have seen earlier that, according to the *Economic Survey*, employment in the organized manufacturing sector was on the decline up to 2004. The 61st Round (2004–05) NSS data has revealed that in manufacturing, employment growth was 3.9% per annum, raising the sectoral share of manufacturing in employment from 12.13% in 1999–2000 to 12.90% in 2004–05. The latest NSSO data implies that the increase in the manufacturing employment has come from the unorganized sector. The quality of employment in the unorganized sector is poor and the NSSO 61st Round shows that large numbers of such workers do not have written job contracts as well as are not eligible for paid leave and social security benefits. The need is to bring about an increase in quality employment, which only either the organized sector or the MSME's hiring workers on wage contract can provide. For this reason, it is necessary to consider during the Eleventh Five Year Plan practical ways of resolving the difficulties created by these laws. In addition, fiscal benefits related to employment objectives will have to be carefully designed and implemented.

Scarcity of Raw Materials

7.1.50 Scarcity of raw materials, feedstock, and fuels is another impediment limiting the growth of some industries. Coal, natural gas, and forestry resources are the main materials in short supply.

COAL

7.1.51 A number of industries, including steel and cement (which are essential inputs for building infrastructure) and electricity generation, use coal as the basic fuel in their production process. Adequate availability of the required grades of coal needs to be ensured for them if their supply is not to prove an obstacle to growth.

7.1.52 Since the nationalization of coal mines, the investment in coal mining for commercial sale has been determined by the availability of financial resources with Coal India Ltd. Only owners of captive coal mines could undertake production according to their demand perceptions. All other users have had to rely on the coal-linkage committee to allocate whatever coal was available in an equitable manner. The coal-linkage committee classified coal consumers as core and non-core. Initially the core sector included power utilities, independent power producers, cement, defence, railways, fertilizer, sponge iron, and steel plants. Subsequently, in 2004, aluminum, paper, Central public sector enterprises (CPSEs), and coal for export were also included in the core sector.

7.1.53 India has large reserves of coal, and there is a need to utilize coal in an optimal manner. As the public sector coal mining companies have, for various reasons, not increased their output to the desired level, there is a need to supplement their efforts by private participation in coal mining for merchant sale. The availability of adequate quantity of coal is as important as, and a pre-condition for, the availability of electric power, which is a basic requirement of growth.

7.1.54 Improvement in availability can come only when it is possible to increase production so that the need for coal linkages and allocation by government committees can be minimized. Until that becomes possible, merchant sales should be allowed not only to new players but also to captive mine owners.

FERTILIZER FEEDSTOCK/NATURAL GAS

7.1.55 The increased emphasis on the agriculture sector and agricultural productivity requires that all the inputs for agricultural production are made available in adequate measure and at affordable prices. One of the most important inputs for the agricultural production is fertilizer. The government recognizes this and has been providing fertilizer subsidy.

7.1.56 Urea is the most widely used fertilizer and the ideal feedstock for it is natural gas. Many urea units are producing urea using uneconomic feedstock such as naphtha and diesel oil. A decision has now been taken, in principle, to convert all these units into gas-based units. Assured supply of natural gas for the production of urea, the sources of supply, and the price at which such supplies would be made are unresolved issues. The most efficient use of gas is in the production of fertilizer (urea) that utilizes this as a feedstock using both its heat value and the chemical components. Therefore, the sectors where gas is utilized as feedstock should have priority in terms of allocation.

7.1.57 A lot of offshore gas has been discovered in the Krishna–Godavari (K–G) basin in fields allocated under the New Exploration Licensing Policy (NELP). There is a production sharing agreement in the NELP, according to which the government is entitled to an agreed share of the profit. One option that is often suggested is for the Central Government to provide gas from its share in the production sharing agreement to the urea-producing units. However, even when taken in kind it will be available in significant amount only after five to seven years of the start of production of gas. In any case, whether the government gives gas at a subsidized price or gives a subsidy for it makes no difference.

7.1.58 The pricing of gas is a contentious issue, as there is no properly functioning market for gas in India. Power plants and fertilizer units are entitled to a pass-through of the cost of gas and thus have no incentive to push for lower prices. Consequently, price bids by them cannot be accepted for price discovery of fair market value. As the government provides fertilizer subsidy, supplying gas at the cost of production could be considered until a fair market price has been determined. As in the case of gas produced by Oil and Natural Gas Corporation (ONGC) and by Oil India Ltd (OIL) the Tariff Commission could be asked to determine the cost of production/fair price for K–G basin gas as well.

RAW MATERIAL FOR PAPER

7.1.59 The growth of the paper industry has not been able to match the growth in the demand for paper as the industry has been acutely short of domestically available wood. The limitation on cutting trees and other forest produce has led it to depend on imported wood and wood-based materials. As there is a low import duty on paper, domestic production of paper is progressively becoming uncompetitive. For the industry to grow, it needs to have an assured source of supply of wood from domestic sources.

7.1.60 One way to achieve this and also improve the forest cover is to lease degraded forestland to the paper mills for development of captive plantations. They could thus grow trees to meet their raw material needs and in their self-interest they would need to do this on a sustainable basis.

7.1.61 The degraded forestland in the hands of the Forest Department has remained degraded owing to the other demands on the Department's resources and time. The land could benefit by grant of long-term lease to paper mills, which will devote the resources necessary to grow trees, as a matter of their own commercial viability. The lease agreement could have a condition that the lease is given on usufruct terms, that is, at the end of the lease period the lessee will return the land in a condition that is no worse than when the lease was awarded. Experience in some developed countries has shown that the generation of trees in captive plantations is more than the requirement of the paper mills and can provide additional forest cover.

7.1.62 In view of the accepted position that the first charge on natural resources should be of the local communities and the policy of JFM, an arrangement such has been advocated above has not been possible. This leaves the government with the possibility of allowing joint ventures with paper mills only on non-forest

wasteland. Consent of the local communities in public hearing would be required here too, but this could be obtained if the paper mills agree to spend a part of their turnover in social infrastructure for their benefit. The other alternative is for the State Governments to facilitate linkages between paper mills and farmers for growing tree crops as suggested in Chapter 3, Volume III.

Fostering Innovation

7.1.63 For the growth of the Indian economy, the key driver has to be innovation. Innovation[2] is broadly defined to include 'new to the world' knowledge creation and commercialization as well as 'new to the market' knowledge diffusion and absorption. Although both types of innovation activities are essential, India stands to gain more from catching up to the global frontier of knowledge through increased absorption than from trying to push out the frontier through creation. An enormous amount of global knowledge is not fully utilized in India. Given the overriding need to better address the needs of the poor in India, innovation could be 'inclusive' by addressing knowledge creation and absorption efforts most relevant to the poor. For fostering innovation, sharpening competition by reducing entry and exit barriers is essential so that innovation becomes a necessity. Similarly, innovation-friendly socio-cultural norms could be strengthened by dissemination of success stories and provide high profile awards and prizes. For diffusing and absorbing knowledge, technology-support programmes could be taken at cluster level for the MSMEs and world-class demand responsive metrology, standards, testing, and quality infrastructure closely linked to innovation created for fostering inclusive innovation. Financial support for grassroot innovators could be increased and Intellectual Property Rights for traditional knowledge strengthened.

7.1.64 Innovation whether in goods and services or processes can be instrumental in increasing profitability by increasing competitiveness and market share. The national investment on R&D activities during 2002–03 as per the Ministry of Science and Technology was Rs 18000.16 crore, of which only about one-fourth could be attributed to the private sector (20.3%) and public sector (4.5%) enterprises. The ratio of R&D expenditure to the gross national product was only 0.80% in 2002–03 compared to 5.11% in Israel, 4.27% in Sweden, 3.11% in Japan, and 1.23% in China. Obviously, there is scope for considerable improvement on the R&D front in India for fostering innovation.

7.1.65 The National Knowledge Commission, set up by the Planning Commission, has highlighted the following aspects in its national survey on innovation:

- Innovation intensity (i.e., the percentage of revenue from products/service less than three years old) has increased for large firms and SMEs, with the SMEs registering a greater increase in innovation than large firms.
- About 7.3% of the large firms have achieved breakthrough in innovation while 76.4% have introduced incremental innovation.
- Internal processes for innovation such as maintaining a specific innovation department, allocating funds, rewarding innovative employees, maintaining physical locations for innovations, and constituting cross functional teams are all important factors which encourage firms to become more innovative.
- Firms with more patent filings and use of IPR consultants are more innovative.
- Firms partnering with government agencies, collaborating with universities and R&D labs also tend to be innovative.

7.1.66 However, the most important barrier to innovation is skill shortage and a lack of effective collaboration with the R&D institutions. NDC has recommended that there is a need for systematic reforms of the higher education system, including skill-based marketable vocational education in India which would facilitate the development of the required intellectual capital as well as enable more effective collaboration between industry, educational institutions, and the government. Apart from this, it is necessary to

[2] *Unleashing India's Innovation: Toward Sustainable and Inclusive Growth*, Mark A. Dutz, World Bank Publication, 2007.

encourage innovation through fiscal incentives on a continuing basis.

7.1.67 The NMCC was set up in September 2004 by the government to provide a continuing forum for policy dialogue to energize and sustain the growth of manufacturing industries in India. The NMCC presented its report 'The National Strategy for Manufacturing' to the government in March 2006 which has identified challenges being faced by Indian manufacturing and has recommended measures in consultation with different departments and industries. A High-Level Committee on Manufacturing under the Chairmanship of the Prime Minister has been constituted to ensure implementation of the recommendations. The analysis and policy recommendations in the sections that follow reflect, inter alia, the strategy drawn up by the NMCC as well as suggestions made in the 11 Working Groups set up by the Planning Commission for the Eleventh Five Year Plan.

Public Sector Enterprises (PSEs)

7.1.68 PSEs have made a notable contribution to the economic growth of the country, particularly by creating a diversified industrial base. After the introduction of economic reforms in 1991–92, a policy of disinvestments and privatization was adopted and upto 2001–02 equity had been sold in 123 enterprises and receipt of Rs 26012 crore realized. During the first two years of the Tenth Five Year Plan, the process intensified and a sum of Rs 18895 crore was realized from disinvestments. In 2004–05, there was a policy shift and the United Progressive Alliance (UPA) government, while expressing a commitment toward a strong and effective public sector, decided that 'generally profit making companies will not be privatized'. Residual disinvestments made in the last three years of the Plan brought in receipts of Rs 4335 crore.

Performance of Central Public Sector Undertakings

7.1.69 Despite the privatization accomplished upto the middle of the Tenth Five Year Plan, when the policy changed, the role of PSEs and their contribution to the GDP has not diminished. In fact, the GDP from non-departmental enterprises (NDEs) registered an increase during the first two years of the Tenth Five Year Plan as shown in the Table 7.1.6.

TABLE 7.1.6
Contribution of Non-departmental Enterprises to GDP at Factor Cost (Current Price)

Year	GDP from NDEs (Rs Crore)	GDP at Factor Cost (Rs Crore)	Share (%)
1996–97	141710	1260710	11.24
2001–02	244345	2100187	11.63
2002–03	282518	2265304	12.47
2003–04	312364	2549418	12.25
2004–05	338352	2855933	11.85

Source: National Accounts Statistics 2007 for 2001–02 onwards; for 1996–97 based on 'Back Series' information provided by CSO.

7.1.70 In 2004–05, the share of CPSEs in the GDP was 6.82% out of 11.85% for NDEs. The number of operational CPSEs has decreased from 231 in 2001–02, the last year of the Ninth Five Year Plan, to 225 in 2005–06. What is significant is that the number of profit-making CPSEs has gone up from 120 to 157 and the number of loss-making CPSEs has decreased from 109 to 58. The profits of profit-making CPSEs have increased from Rs 36432 crore to Rs 76240 crore and the losses of loss-making ones has come down from Rs 10454 crore to Rs 5752 crore during the same period. Table 7.1.7 gives the macro picture of CPSEs.

7.1.71 The net profits made by the CPSEs has led to the accumulation of large reserves which totalled as much as Rs 353641.62 crore for 157 profit-making enterprises at the end of the financial year 2006–07. Between 2002–03 and 2005–06, the cash and bank balances of all CPSEs rose from Rs 53453 crore to Rs 150680 crore. Thus, CPSEs have accumulated large amounts of investible funds, which are not being put to productive use.

7.1.72 The top 10 profit-making CPSEs made a net profit of Rs 47371 crore in 2005–06. The ONGC (Rs 14431 crore), Bharat Sanchar Nigam Ltd. (BSNL) (Rs 8940 crore), National Thermal Power Corporation (NTPC) (Rs 5820 crore) were the top three profit-making CPSEs. The top 10 loss-making CPSEs accounted for a net loss of Rs 4552 crore, the top three loss-making units being the Fertilizer Corporation

TABLE 7.1.7
Macro View of Central Public Sector Enterprises

(Rs Crore)

	2001–02	2002–03	2003–04	2004–05	2005–06	April–September 2005	April–September 2006
Number of operating CPSEs	231	226	230	227	225		
Profit before interest, tax, and EP (PBITEP)	63190	72539	95039	108420	106533	64962	73169
Capital employed	289934	417160	452336	504407	581250		
Turnover	478731	572833	630704	744307	832584	377370	468221
Net profit	25978	32344	52985	64963	70288	27235	35465
Net profit as % of turnover	5.4	5.6	8.4	8.7	8.4	7.2	7.6
Profit of profit-making CPSEs	36432	43316	61606	74433	76240		
Loss of loss-incurring CPSEs	10454	10972	8522	9356	5952		
Profit-making CPSEs (nos.)	120	119	139	138	157		
Loss-incurring CPSEs (nos.)	109	105	89	79	58		

Source: Public Enterprise Survey 2005–06 and Mid-Year Review of CPSEs for 2006–07, Department of Public Enterprises (DPE).

of India, Food Craft Institute (FCI) (Rs 1294 crore), Hindustan Fertilizer Corporation Limited, HFC (Rs 965 crore), and Hindustan Photo Films Co. Ltd, (Rs 561 crore). While the top 10 profit-making enterprises are diversified, the top 10 loss-making enterprises are largely concentrated in manufacturing.

7.1.73 Mid-year review (April–September 2006 against April–September 2005) showed that the turnover of 202 CPSEs (out of 225) for which data was available increased by 24.07% and the net profit increased by 18.18%. The performance of CPSEs in different industry sectors during the Tenth Five Year Plan is presented in Annexure 7.1.4.

Policies toward CPSEs and their Implementation

7.1.74 In accordance with the mandate in the NCMP the two main elements of the GoI policy have been devolution of full managerial and commercial autonomy to successful, profit-making companies and modernization and restructuring of sick PSUs (as well as sell-off or closure of chronically sick CPSEs).

7.1.75 Pursuant to the recommendations of an ad hoc group of experts under the chairmanship of Arjun Sengupta, the government introduced a series of measures for enhancement of financial delegation to *Navratna*s, *Miniratna*s, and profit-making CPSEs. These include measures for creation of and disinvestment in subsidiaries, transfer of assets to such subsidiaries, and floating of fresh equity.

7.1.76 Under the provisions of Sick Industrial Companies (Special Provisions) Act 1985, 62 CPSEs had already been referred to the BIFR earlier and during the Tenth Five Year Plan 12 more were referred to them for considering revival/restructuring/closure. A total of 28 of these had been recommended for winding up. Because of the delays inherent in the process of BIFR, the government has already sought to replace it by the National Company Law Tribunal (NCLT) but the creation of NCLT has been under dispute in the Honourable Supreme Court. Hearing in the special leave petition is already over and the final judgment has been reserved.

7.1.77 The government constituted a Board for Reconstruction of Public Sector Enterprises (BRPSE) in December 2004, as a part time advisory body to address the task of strengthening, modernization, revival, and restructuring of CPSEs. Until February 2007, the BRPSE had considered cases of 46 CPSEs received from 14 administrative ministries/departments and made recommendations in respect of 40 CPSEs. On the basis of the recommendations of BRPSE, the government has also approved the winding up of one CPSE, namely, Bharat Opthalmic Glass Limited. It has

approved revival schemes in respect of 25 CPSEs, envisaging assistance of Rs 1951.30 crore in cash by way of equity/loan/grant and Rs 5709 crore by way of waiver of interest/loan/guarantee fees. Out of the 20 CPSEs for which the budgetary support has been sanctioned for revival, 13 had posted profits after tax in 2005–06 while the remaining have continued to incur losses. The data for 2006–07 that have been made available in respect of some CPSEs show that while some like the Cement Corporation of India, Heavy Engineering Corporation, Mineral Exploration Corporation Ltd (MECL), Bharat Compressors Ltd have shown better financial performance than projected in the revival proposal, others such as Hindustan Antibiotics Ltd and Andrew Yule & Company Ltd have been below the projected levels. Thus rehabilitation proposals have been effective in about 50% of the cases. However, it must be observed here that the improvement in market situation and hand-holding by the government in terms of price preference, placing of orders on nomination basis have also contributed to the success of the revival efforts of the government.

Performance of State-level Public Enterprises (SLPEs)

7.1.78 No regular survey is carried out for SLPEs. As on 31 March 2005, 1129 SLPEs were in operation (Table 7.1.8). The majority of SLPEs—about 50% in number—are in manufacturing followed by utilities, promotional, and welfare enterprises. The total investment in SLPEs increased every year in the post-economic reform period reaching a peak of Rs 285564 crore in 2002–03 before going into a declining trend ending up with Rs 259124 crore in 2004–05. The accumulated losses of SLPEs have been on the increase reaching a figure of Rs 60517 crore in 2004–05, with consequential adverse fiscal impact on the States. Table 7.1.8 gives the picture of the financial performance of SLPEs at the end of Seventh, Eighth, and Ninth Five Year Plan periods and in the first three years of the Tenth Five Year Plan. The overall financial health of SLPEs was very weak at the end of 2004–05.

7.1.79 A total of 579 manufacturing sector SLPEs constituted about 51% of the total number of 1129 SLPEs. Manufacturing SLPEs constituted a major share of the SLPEs portfolio in States such as Assam, Gujarat, Kerala, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal. It is also noteworthy that a considerable number of these enterprises are taken over sick units. The investment in manufacturing enterprises increased from Rs 17099 crore in 1997–98 to Rs 23912 crore in 2004–05. The CAGR of investment was 4.2%. These enterprises incurred losses during all the years excluding 2003–04 and 2004–05. As a result of that their net worth in 2004–05 was Rs 12951 crore.

RESTRUCTURING OF SLPEs

7.1.80 Some States have been active in restructuring sick PSEs. According to the information collected by Institute of Public Enterprises (IPE) Hyderabad upto 2004–05, 30 units including co-operatives had been privatized in Andhra, 3 in Gujarat, and 1 each in Haryana, Orissa, Punjab, and Rajasthan. West Bengal is another State which has shown substantial progress in the last two or three years. Out of 82 PSEs, 18 were profit making, and 63 loss making at the end of 2004–05. The Government of West Bengal has taken up restructuring of 34 units in the first phase, of which 4 have been successfully restructured under government ownership, 3 have been converted into joint ventures, and 21 units have been closed. The 34 units had about

TABLE 7.1.8
Performance Indicators of State-level Public Enterprises

(Rs Crore)

	1991–92	1996–97	2001–02	2002–03	2003–04	2004–05
Number of operating SLPEs						1129
Turnover	42986	86681	87375	86284	113208	127150
Total investment	90983	144471	280116	285564	247676	259184
Capital employed	83277	150291	179831	179627	232889	244770
Accumulated losses	8754	13122	22764	27353	64486	60517
Net worth	13248	35352	38429	44631		

Source: Study by IPE, Hyderabad.

11000 employees. With a view to reducing manpower these employees were offered compensation if they opted for early retirement. Insurance and retraining facilities were also given.

Future Strategies

7.1.81 In a globalized economy, cost-cutting strategic acquisitions and mergers are vital for facing international competition. CPSEs must have full autonomy and functional powers to take investment decisions to take advantage of the opportunities offered by the competitive international market. The informal levers of control from the ministries have no place in the competitive corporate world. Constitution of an independent Advisory Board to look after the government's interests in the CPSEs and leaving them to manage the corporation with the help of strong independent directors would be explored.

7.1.82 Substantial progress has been made in the revival of sick CPSEs, but close monitoring would be needed to ensure that the restructuring plans are successfully implemented. In considering the revival of the remaining sick CPSEs, greater caution is necessary as it has been seen that a few of the rehabilitated units are not performing in accordance with expectations.

7.1.83 The investment behaviour of the large profit-making CPSEs needs review. Many CPSEs appear to prefer investing in financial assets or reducing their debt burden in preference to investment which would contribute to capital formation. As on 31 March 2006, CPSEs have made financial investment to the tune of Rs 136558 crore. A substantial portion of this investment is by Navratna CPSEs. One reason for this phenomenon is the risk-averse nature of top management in CPSEs and the absence of institutional mechanisms which facilitate quick decision-making. The government has set up a special mechanism of an Empowered Committee of Secretaries in Ministries of Petroleum and Natural Gas, Ministry of Finance, and DPE for considering projects in the oil sector involving financial decisions above a certain threshold. The recommendations of this Empowered Committee are submitted to the CCEA directly for approval. Present mechanisms are inadequate to ensure optimum investment decisions. The supervisory body (that is, independent Advisory Board) suggested above could also be given the task of guiding and facilitating the investment decisions in all profit-making CPSEs.

7.1.84 The system of MoUs between CPSEs and the government has proved to be ineffective and dysfunctional. While the CPSEs are expected to perform in accordance with the norms, the government's commitments are marginal and not effectively monitored. There is a need to review and overhaul the system to ensure effective operational autonomy and functioning of the CPSEs. Financial delegations, particularly of the profit-making CPSEs, will have to be enhanced.

Autonomous Institutions in Industry Sector

7.1.85 Over the past Plans a number of autonomous institutions were set up to support the industry to meet various needs, such as technology transfer, skill development, and introduction of advanced technology. These institutions were designed to function in close coordination with industry and the governing bodies included all stakeholders. Some industry associations set up such institutes on their own initiative with initial government support. Some institutes such as the Central Pulp and Paper Research Institute (CPPRI) and Institute of Pesticides Formulation Technology (IPFT) were set up with assistance from international organizations such as United Nations Industrial Development Organization (UNIDO). Institutes such as the National Test House (NTH) have the backing of statutes for some of the activities although they work on a commercial basis also.

7.1.86 No systematic study has been carried out so far on a comprehensive basis on the functioning of these autonomous institutions. The Expenditure Reform Committee (ERC) in 2001 had recommended that budgetary support should be progressively reduced having regard to the scope for maximizing internal resources generation and restraining of expenditure growth. ERC also proposed greater autonomy to autonomous institutions whose performance had been outstanding and had received international acclaim and recommended that an MoU be entered into by autonomous institutions with the parent ministry/department, spelling out clearly not only the input but also more importantly the output targets.

7.1.87 There are about 24 institutions under the control of different ministries/departments concerning Industry Sector (see Box 7.1.1).

7.1.88 In the Tenth Plan, Budgetary support of about Rs 850 crore was provided to autonomous institutes for new infrastructure/modernization. Apart from institutes shown in the Box 7.1.1, there are a number of autonomous institutes providing services to small-scale industries, FPI, and handloom and handicraft industries. The emphasis in the Tenth Five Year Plan has been to enable the institutions to achieve higher levels of self-sufficiency and to provide only project-based support. An important new initiative during the Tenth Five Year Plan was to set up the National Automotive Testing and R&D Infrastructure Project (NATRIP) to meet the homologation and testing need of automotive industry. The seven centres of NATRIP in different locations in the country, mainly in the areas of concentration of manufacturing activity in automobiles and auto components, will be completed during the Eleventh Five Year Plan. Once completed, the individual centres will be managed by the industry with no recurring assistance from the government. During the Tenth Five Year Plan period new centres of NIFT, Central Institute of Plastics Engineering and Technology (CIPET), and NID were also set up.

7.1.89 The emphasis in the Eleventh Plan would continue to promote self-sufficiency in these institutions so that they can operate on a self-sustaining basis without the requirement of budgetary support. The government support will be limited to one time grants for the creation of new facilities, with recurring expenses being met from the revenues generated by them.

Area Development for Industry

7.1.90 Since the beginning of planned development, a policy has been followed for the development of industrial areas and industrial estates within such areas to facilitate the establishment of small and medium industrial units. Initiative has also been taken for improving the infrastructure of existing clusters outside of such areas. At the end of the Tenth Five Year Plan there were a multiplicity of schemes of cluster and area development established for the creation or upgradation of infrastructure as shown in Box 7.1.2.

Box 7.1.1
Autonomous Institutions in Industry Sector

- Quality Council of India (QCI).
- Central Manufacturing Technology Institute (CMTI), Bangalore.
- National Council for Cement and Building Materials.
- Indian Rubber Manufacturers Research Association (IRMRA).
- NID.
- National Productivity Council.
- Central Institute of Plastics Engineering and Technology (CIPET).
- National Institute of Pharmaceutical Education and Research (NIPER) and IPFT.
- Six Textiles Research Associations (TRAs).
- NIFT.
- Bureau of Indian Standards (BIS).
- NTH.
- Automotive Research Association of India (ARAI), Pune.
- NATRIP.
- Fluid Control Research Institute (FCRI).
- National Ship Design and Research Centre, Visakhapatnam.
- Biju Patnaik National Steel Institute.
- National Institute of Secondary Steel Technology.

Box 7.1.2
Industrial Area Development Schemes

- Growth Centre Scheme—announced in June 1988 and became operational from 1991—DIPP.
- Industrial Park Scheme 1999–2000, DIPP.
- IIUS 2003–04, DIPP.
- Apparel Parks for Exports 2001–02, Ministry of Textiles.
- Textile Centres Infrastructure Development Scheme (TCIDS) 2002–03, Ministry of Textiles.
- Scheme for Infrastructure Development 2002–03, MFPI.
- SEZs 2005–06, Department of Commerce.
- PURA—2004–05, Ministry of Rural Development.
- Scheme for Integrated Textile Parks (SITP) 2005–06, Ministry of Textiles.
- Petroleum, Chemicals, and Petrochemical Investment Regions (PCPIRs) 2006–07, Department of Chemicals and Petrochemicals.

7.1.91 Among the listed schemes the oldest is the Growth Centre Scheme of the DIPP, which was designed for promoting the development of manufacturing industries in industrially backward areas. Although as many as 52 growth centres were established, there was a weak response from the entrepreneurs to set up units within the centres, as a result of which large areas within the centres were lying vacant. The scheme was discontinued after the MTA of the Tenth Five Year Plan. The Industrial Parks Scheme, also of DIPP, envisaged the establishment of industrial parks for development of industrial infrastructure or built up space with common facilities in any area allotted or earmarked for the purposes of industrial development. Driven by the benefits available under Section 80 IA of the Income Tax Act 1961, as many as 270 industrial parks were set up. The objective of the Industrial Infrastructure Upgradation Scheme (IIUS) was to provide quality infrastructure facilities in existing functional clusters/industrial locations. Eligible activities included physical infrastructure such as water supply, effluent treatment, solid waste management, etc. A total of 26 industrial areas spread over 14 districts have been sanctioned assistance under the scheme. A feature of the IIUS is that it is based on PPP and the initiative has to come from the beneficiary units.

7.1.92 To improve the infrastructure facilities specifically for units in textiles and clothing, the Central Government initiated two CSS of the Ministry of Textiles in 2002, namely, (i) Textile Centres Infrastructure Development Scheme (TCIDS) with the objective of modernizing infrastructure facilities at major textiles centres in the country and (ii) Apparel Parks for Exports Scheme (APES) to promote setting up of modern apparel units at major growth centres. Although 19 TCIDS and 12 APES projects were taken up, the progress was slow and eventually none could be completed during the Tenth Five Year Plan. Consequently, the Scheme for Integrated Textile Parks (SITP) was introduced in 2005–06. As in the case of the IIUS, the SITP is based on PPP and is demand driven, and following a good response from the industry 30 SITP projects were taken up during the Tenth Five Year Plan.

7.1.93 The scheme for food parks was an element of the scheme for infrastructure development begun in 2002–03 by the MFPI. The scheme also envisaged the establishment of packaging centre, integrated cold chain facilities, value-added centre, and irradiation facilities. During the Tenth Five Year Plan, 18 food parks were approved, but progress was limited as only 8 were actually established with just 28 industrial units functioning within the parks. In 2004–05, the MoRD launched the scheme for Provision of Urban Amenities in Rural Areas (PURA) to encourage development of identified growth centres for the working population in the rural areas and prevent their migration to the urban areas. To start with, the development of clusters on a pilot basis has been envisaged at seven locations in the country.

7.1.94 A new scheme for SEZs has been launched by the Department of Commerce on the basis of the SEZ Act 2005. The objective of the scheme is to establish industrial townships divided into processing and non-processing areas. Apart from the existing export processing zones earlier set up by the Department of Commerce, which have been converted into SEZs, the establishment of new SEZs has been left to the initiative of private developers. The SEZs benefit from various tax incentives such as exemption from excise or customs duty, income tax exemption under Section 80-1AB of the Income Tax Act, exemption from minimum alternate tax, dividend distribution tax, CST, and Service Tax. Units in SEZs have access to the Domestic Tariff Area on payment of full customs duties on the finished product. The scheme has evoked a good response and up to the end of August 2007, 366 SEZs had been approved formally and 141 had been notified.

7.1.95 In 2006 another area development scheme known as the Petroleum, Chemicals, and Petrochemical Investment Regions (PCPIRs) was announced through a policy resolution of the Ministry of Chemicals and Petrochemicals. The PCPIR is a 'specifically delineated investment region/s with an area of around 250 sq km—including SEZ/s, Free Trade and Warehousing Zones, EOU units, and other existing industrial clusters—wherein is provided an internationally competitive and hassle-free environment with world-class infrastructure facilities to encourage global scale investments in petroleum, chemical, and petrochemical sectors to accelerate economic growth'. The policy provides for a duly notified SEZ to be set up within the PCPIR. Although a number of locations are under consideration, up to the end of August 2007, no State Government had initiated action for notifying a PCPIR.

7.1.96 Experience of establishing area development programmes up to the end of the Plan period seems to suggest that they can succeed only if they are demand driven and are so designed as to ensure that the initiative comes from entrepreneurs who are willing to commit not only to make a substantial initial capital investment on their part but also to run the programme on a self-sustaining basis.

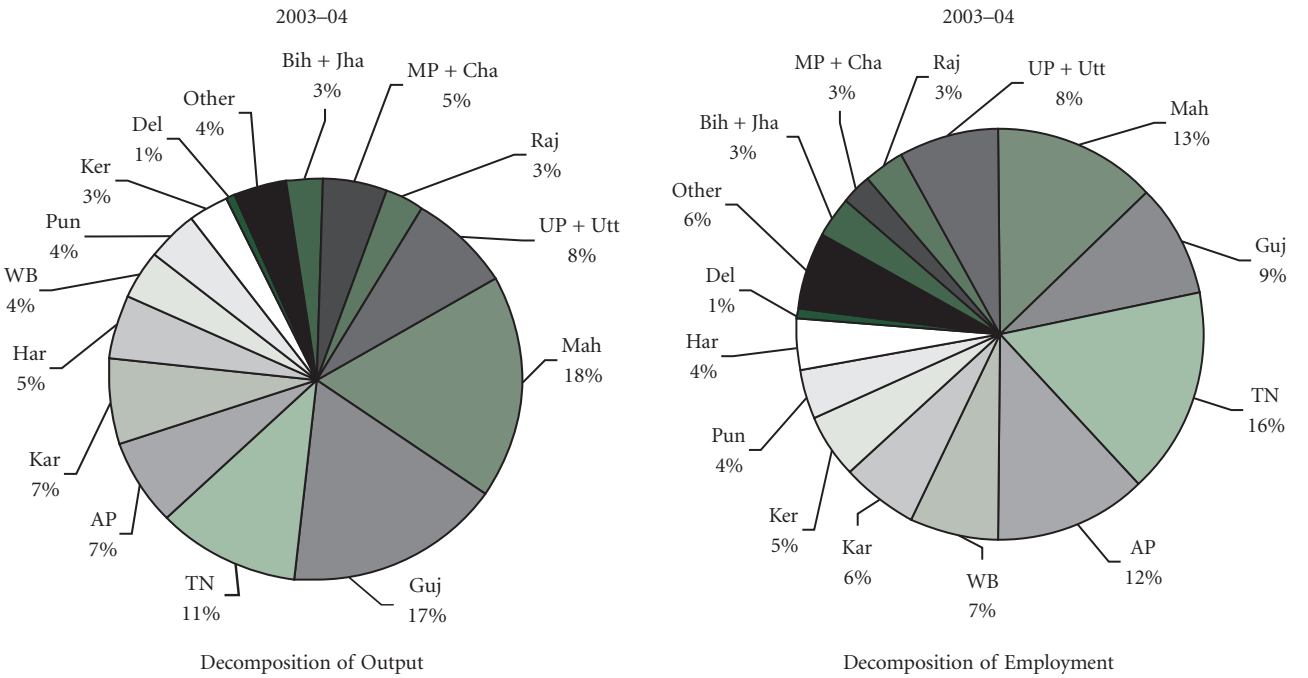
7.1.97 The newly conceptualized Delhi–Mumbai Industry Corridor (DMIC) project is in partnership with Japan. An approximately 150 km wide band on either side of the proposed 1483 km long dedicated rail freight route is to be developed into a planned industrial belt. Several large hubs/nodes have been identified for development as large industrial regions in consultation with the government of the six States through which the corridor would pass. In the first phase (2008–09 to 2012–13), it will have six investment regions (about 200 sq km each) and six industrial areas (about 100 sq km each). The implementation would adopt a PPP approach.

Regional Development of Industry

7.1.98 The disparities in the performance on manufacturing output and employment of the States are reflected in Figure 7.1.4, which depicts the position as it stood in 2003–04.

7.1.99 The State-wise data on investment intentions notified to the DIPP during the Tenth Five Year Plan bring out some new trends (Annexure 7.1.5). While Gujarat, Karnataka, and Maharashtra continue to be in the forefront, Chhattisgarh, Jharkhand, Orissa, and West Bengal are getting increasing attention. The data on capital investments compiled by the RBI on the basis of the envisaged capital expenditure of companies that have been sanctioned assistance by banks and financial institutions show a different picture (Annexure 7.1.6). In 2006–07, Gujarat has emerged as the leading investment destination in the country, while Andhra Pradesh, Karnataka, Maharashtra, and Tamil Nadu are also attracting very substantial investments. Orissa too has come up, registering a substantial increase in projects in the pipeline during 2006–07. Jharkhand, Himachal Pradesh, and Uttarakhand have shown large increases in investment projects during the last two years of the Tenth Five Year Plan.

7.1.100 The most important determinant of the investment climate in the States is the state of physical infrastructure, particularly power and transport connectivity with the rest of the country. Although skilled personnel can move from other parts of the country, local availability of such personnel is an advantage. A fundamental requirement, however, is



Source: 'Towards a Competitive Manufacturing Sector', ICRIER paper by Rajiv Kumar, Chief Executive and Director, ICRIER and Abhijit Sen Gupta, Fellow, ICRIER.

FIGURE 7.1.4: Contribution of States to Output and Employment in Manufacturing

social stability and the existence of the rule of law, giving confidence to the entrepreneurs that their life and property will be safeguarded. Efforts of the government have to address these prerequisites for fostering a more balanced industrial development of the country.

Central Government Initiatives for Balanced Industrial Development

7.1.101 On 24 December 1997, the Central Government notified the North East Industrial Policy (NEIP) providing a package of fiscal and other incentives aimed at facilitating the process of industrial development in the NER. During the Tenth Five Year Plan period, industrial incentives were extended to some other States. On 23 December 2002, similar incentives were extended to Sikkim, when it became a member of the North Eastern Council. A special package for J&K was announced on 14 June 2002. On 7 January 2003, the Central Government granted incentives for industrial investment to the States of Himachal Pradesh and Uttarakhand, which would remain for industries that are set up till 31 March 2010. The NEIP, which was originally valid until 31 March 2007, has been extended for another period of 10 years.

7.1.102 All the States covered by the incentive programmes benefit from full excise duty exemption on finished products as well as income tax exemption on profits as also from capital subsidy on investment in plant and machinery. The North Eastern States get additionally enhanced capital subsidy, interest subsidy on working capital loan, reimbursement of 100% premium under Comprehensive Insurance Schemes as well as transport subsidy of 50%–90% of the cost of transportation of raw materials and finished products to/from designated railheads. J&K also benefits from most of the additional incentives appli/cable to the North Eastern States. An evaluation report by a professional consultant in 2004 had brought that in the NER a total of 681 units had been set up from 1999 to September 2004, with an investment of Rs 1067.28 crore and employment generation of 20709. Assam accounted for about 49% of the investment and

Meghalaya for about 41%. The experience of other States is much better. According to the reports submitted by the State Governments concerned, the investment already made up to March 2007 was Rs 5902 crore in Uttarakhand, Rs 2884 crore in Himachal Pradesh, and Rs 3403 crore in J&K, the latter predominantly in the Jammu region. Data compilation from IEMs and RBI of the investment envisaged in projects receiving financial assistance from banks and financial institutions also suggest that the incentives have stimulated industrial activity in Himachal Pradesh and Uttarakhand significantly.

7.1.103 There have been complaints from not only the adjoining States but also from the States in the south of flight of capital induced by excise duty exemptions in Himachal Pradesh and Uttarakhand. Some other States with hilly regions such as West Bengal have raised questions of equity. During the Eleventh Five Year Plan, the industrial incentives would have to be closely monitored. Because of the distortions introduced by excise duty exemptions in particular, consideration would have to be given to replacing the incentives, fully or partly, by an accelerated programme for infrastructure improvement.

Intellectual Property Rights (IPRs)

7.1.104 Recognizing the importance of the IPRs as a means for fostering innovation and contributing to enhanced economic growth and competitiveness, India has adopted a four-pronged strategy to strengthen its IPR regime: (i) to meet international obligations, (ii) to safeguard national interests, (iii) to modernize the IPR administration, and (iv) to create awareness regarding IPRs.

Legislation

7.1.105 In keeping with the above strategy, India has updated its Intellectual Property related legislation, that is, patents, trade marks, geographical indications, industrial designs, copyrights, biodiversity, semiconductor integrated circuits layout design, etc., so as meet its international obligations. At the same time, necessary safeguards to protect public interest have also been suitably incorporated in the Patents Act to ensure availability of patented products, including pharmaceuticals, at reasonably affordable price. The law also contains provisions which ensure that grant of patents for frivolous innovations resulting in 'evergreening' of patents would not be possible. 'Evergreening' of patents could have adverse consequences on both the availability as well as the prices of essential medicines impacting the health and lives of millions of people. The law thus encourages substantive R&D.

7.1.106 The legislative modernization exercise has also been utilized to streamline and rationalize the procedural aspects so as to make the system more efficient and user-friendly. Definitive timeframes have been prescribed for various activities by the Patent Offices. At the same time, the time lines available for the applicants and the public have been extended. In addition, the maximum time period for grant of patent has been reduced from 104 months to 52 months. A patent can be obtained in a shorter period depending upon the initiatives taken by the applicant.

Modernization of Infrastructure

7.1.107 As a part of improving and strengthening the infrastructure, the government has implemented modernization of IP Offices at a cost of Rs 153 crore in the Ninth and the Tenth Five Year Plans. This included: new, integrated IP offices in the four metros; strengthening of library and novelty search facilities by acquiring books, journals, and CD-ROMs of patents, designs, trademarks, and geographical indications granted or registered; and making operations in the IP offices IT enabled.

Impact

7.1.108 The legislative and administrative initiatives taken during the last few years have had a very positive impact on the creation and securing of IP in India during the Tenth Five Year Plan period. Patent filing which was a mere 11466 in 2002–03 has gone up by two and a half times to 28882 in 2006–07. The patents granted also registered a five-fold growth from 1379 to 7559 during the same period. The number of trademarks registered increased phenomenally from 11190 in 2002–03 to 109361 in 2006–07.

7.1.109 The Geographical Indications of Goods (Registration and Protection) Act 1999 was an entirely new

legislation for India. This was brought into force on 15 September 2003 and with the initiatives taken by the government, it has been possible to generate 97 applications out of which 37 products have already been registered including Darjeeling tea, Chanderi saree, Pochampally ikat, etc.

7.1.110 A major initiative taken recently has been the announcement of a National Design Policy. This is expected to give a boost to the design sector in India where the country with its diversity and long cultural traditions has an edge over others.

7.1.111 The increase in the activities in the IP offices has also resulted in substantial growth in revenue generation. The income of the Patent and Trademark Offices, which was a mere Rs 17.06 crore in 2002–03 has gone up to Rs 163.67 crore in 2006–07. This has been possible because of the trust and confidence that the IP creators and owners developed in the services provided by these offices, particularly in clearing huge backlogs.

Second Phase of Modernization

7.1.112 Further modernization of IP offices has also been planned in the Eleventh Five Year Plan. This would address the needs of human resource development, training, and awareness and also infrastructure besides regular updating of the IT facilities.

7.1.113 The second phase of modernization would contribute toward making the Indian Intellectual Property Office (IPO) a front ranking IPO. The Indian IPO would be made an International Searching Authority (ISA) and an International Preliminary Examining Authority (IPEA) under the Patent Cooperation Treaty of World Intellectual Property Organization, placing it in an exclusive group of 12 countries currently recognized as ISA/IPEA. Accession to the Madrid Protocol, a facilitation system for international registration of trademarks, will also be considered. A National Institute for Intellectual Property Management will be established at Nagpur. The Institute will cater to the requirements of training and awareness and also act as a centre for policy, research, and IP think tank.

Plan Outlays and Expenditure in the Tenth Plan

7.1.114 The Industry and Mineral Sector spans 11 departments and ministries. The actual expenditure on the schemes in the industry sector was about Rs 25000 crore during the Tenth Five Year Plan period, which is 65% of the original outlay and 75% of the outlay as revised after the MTA. A summary of the Plan outlay and expenditure on major schemes in the industry sector during the Tenth Plan is given in Annexure 7.1.19. A review of the major schemes implemented during the Tenth Five Year Plan is given in the following paragraphs.

7.1.115 With a view to enhancing competitiveness by providing quality infrastructure in existing clusters, IIUS was launched in 2003 with an outlay of Rs 675 crore for assisting 20–25 clusters. The IIUS was envisaged as a user-driven scheme, based on PPP, implemented through a Special Purpose Vehicle (SPV) formed by the users, and administered by the Apex Committee in the DIPP. During the Tenth Five Year Plan, the Apex Committee sanctioned 26 projects with total cost of Rs 1766.18 crore and a GoI grant component of Rs 952.10 crore. A sum of Rs 437.38 crore was released up to the end of 2006–07. Evaluation has not been possible, as none of the schemes have been completed although several are in an advanced state of completion. However, since the design of the scheme ensures that the schemes are taken up only after the users have taken initiative and made investments, and several schemes are in an advanced state of completion, it will be useful to continue with the scheme in the Eleventh Five Year Plan. The scheme would need to undergo a mid-term review on the basis of the progress made.

7.1.116 A programme focused on tannery modernization in a small way was initiated in 1999 and during the Tenth Five Year Plan it was subsumed in an enlarged Indian Leather Development Programme (ILDP) with an approved outlay of Rs 400 crore, comprising two separate components, viz., Integrated Development of Leather Sector (IDLS) and Infrastructure Strengthening of Leather Sector with outlays of Rs 290 crore and Rs 110 crore, respectively. Owing to late sanction on the account of procedural delays in the GoI the scheme

could not take off during the Tenth Five Year Plan and will spill over into the Eleventh Five Year Plan.

7.1.117 The major schemes implemented by the Ministry of Textiles are the TUFS, Technology Mission on Cotton (TMC), APES, and TCIDS.

7.1.118 The TUFS was initially introduced in 1999 with the objective to provide adequate impetus to all the sub-sectors of textiles and jute industry by way of 5% interest reimbursement so as to reduce the cost of capital for modernization. Small-scale textile and jute industrial units were given an option either to avail Credit-linked Capital Subsidy (CLCS) or interest reimbursement. An additional option of credit linked 20% capital subsidy for small-scale powerloom and weaving preparatory machinery, with the option to obtain credit from an enlarged credit network, was also introduced. Besides, an additional capital subsidy of 10% for benchmarked processing machinery over and above the extant 5% interest reimbursement was started in April 2005. In the Tenth Plan, as against the loan disbursed by the banks and financial institutes of Rs 18506 crore, subsidy amount of Rs 2043.66 crore was granted under the scheme. In the Eleventh Plan period, there is a spillover liability of Rs 984 crore relating to the subsidy for the projects sanctioned during the Tenth Plan period. Preliminary findings of the evaluation of the scheme by a professional consultant reveal an improvement in profitability and productivity. However, substantial dependence on import of second-hand machinery and low share of powerloom and processing sector have emerged as areas of concern. In view of the continuing need to stimulate investment and the positive response of the industry to the scheme, the TUFS would need to be continued during the Eleventh Five Year Plan.

7.1.119 The SITP was launched in August 2005. The primary objective of the scheme is to provide the industry with world-class infrastructure facilities for setting up of textile units in clusters. As in the case of IIUS, the scheme is being implemented through SPVs with industry associations/groups of entrepreneurs as the main promoters of the integrated textile parks. GoI's support under the scheme by way of grant or equity is limited to 40% of the project cost, subject to a ceiling of Rs 40.00 crore. The SITP envisaged creation of 30 new textile parks of international standards in potential growth centres before 2007–08. An amount of Rs 625.00 crore was allocated for the development of these parks against which Rs 88.27 crore of GoI grant was released till the end of the Tenth Five Year Plan. In all the 30 schemes, the SPV has been formed and land has been acquired. Since 9 schemes were sanctioned late in 2005–06 and the remaining 21 in the period after July 2006, none of the projects has been completed. A major factor has been that the industry is awaiting the issuance of the guidelines for the revised TUFS before moving for bank loans for the units within the parks. During the Eleventh Five Year Plan the first priority will have to be completion of the 30 projects already taken in hand but provision will have to be made for additional projects within the available plan allocation.

7.1.120 In addition to the SITP there were two pre-existing schemes, the APES and the TCIDS, which were commenced in 2002. A total of 18 projects were sanctioned under TCIDS and 12 under APES, with a GoI assistance of Rs 271.06 crore and Rs 191.70 crore, respectively. An amount of Rs 172.50 crore is estimated to have been spent by the end of the Tenth Five Year Plan under APES and TCIDS. There was a design defect in these schemes in as much as the schemes were implemented on the initiative of the State Governments without the assurance of interest among the entrepreneurs. As a result, these schemes have been languishing. An assessment would need to be made on the sustainability of these schemes, and during the Eleventh Five Year Plan only those would need to be assisted in which there is an interest among the entrepreneurs.

7.1.121 The Technology Mission on Cotton (TMC) was launched in February 2000, with the objective of bringing tangible improvement in the productivity and quality of cotton. An evaluation of the scheme by a professional consultant has indicated marked improvement by way of reduced contamination levels in cotton processed by the modernized Ginning and Pressing (G&P) factories matching to international

levels. It is expected that 80% of the cotton produced in the country would be able to meet the higher standards of international markets on completion of modernization of 1000 G&P factories. This scheme too will need to be continued during the Eleventh Five Year Plan.

7.1.122 The Consumer Protection Act has been in operation for about 20 years. The objective of the Central Consumer Protection Council established under the Act is to promote and protect consumer rights that include the right to be informed and the right to consumer education. The consumer movement is still in infancy in the country. One of the reasons for the slow progress is lack of consumer awareness especially in the rural areas. The National Action Plan taken up by the Department of Consumer Affairs envisages a two-pronged approach, that is creating consumer awareness and strengthening grievance readressal machinery for consumer protection. A new service, National Consumer Helpline, was launched during 2004–05. From the expenditure level of Rs 9.12 crore in the first three years of the Tenth Five Year Plan, the allocation was stepped up significantly to Rs 67.49 crore and Rs 69.40 crore during 2005–06 and 2006–07, respectively. The multimedia campaign covered topics such as maximum retail price (MRP), gold hallmarking, ISI mark on products, expiry dates, and consumer rights. About Rs 70.00 crore was utilized on consumer awareness '*Jago Grahak Jago*' campaign during each of the years 2005–06 and 2006–07. An evaluation of the scheme carried out by the Indian Institute of Mass Communication (IIMC) in August 2006 has shown that the percentage of recall of the campaign among the consumers was 65% in the sample states.

7.1.123 The industry programmes run by the Department of Atomic Energy (DAE) provide inputs such as structural materials, fuels, heavy water, and electronics and instrumentation to the nuclear power plants. The Department is also engaged in activities pertaining to fuel reprocessing, waste management, and thermal and fast reactor technology. The industry programmes were allocated Rs 818.93 crore but the expenditure was higher at Rs 1280.88 crore. Some of the developments during the Tenth Plan were the following: augmentation of existing zirconium sponge plant and capacity expansion of zirconium oxide plant, modification of heavy water plant, tube bundle for condensers, heavy water clean up facility, boron exchange distillation facility, advanced vetrification system, large capacity spent fuel storage facilities, fabrication of fuel and structural materials, and Instrumentation packages for nuclear power plants.

7.1.124 The ship-building sector of the Department of Shipping was allocated Rs 1047.86 crore against which the actual expenditure has been Rs 282.45 crore. The shortfall in expenditure was on account of the fact that the expansion plans of Cochin Shipyard Ltd and the revival plan of Hindustan Shipyard Ltd (HSL) did not materialize.

7.1.125 The outlay of the Ministry of Steel was revised from Rs 11044 crore to Rs 8477 crore at MTA stage, mainly financed by Internal and Extra Budgetary Resources (IEBR), except for Rs 65 crore. The actual expenditure on steel sector schemes was Rs 4119 crore out of total expenditure of Rs 4825 crore in the Industry and Minerals (I&M) sector. Implementation of the modernization and expansion programmes of Steel Authority of India Ltd (SAIL) was sluggish in the first three years of the plan. The expansion plan of Rashtriya Ispat Nigam Ltd (RINL) from 3.5 million per year hot metal capacity to 6.3 million per year hot metal capacity, which was approved in 2005, also remained behind schedule.

7.1.126 The outlay of the Department of Heavy Industry was increased in the later half of the Tenth Five Year Plan with the new emphasis in the government policy on restructuring of sick PSEs. The overall expenditure was Rs 2606 crore. The expenditure on 'support to existing public sector undertakings' and 'restructuring of CPSEs' was increased considerably. The progress of expenditure in respect of the NATRIP scheme was satisfactory. Revival and restructuring of the Nagaland Pulp and Paper Company Ltd at Tuli, Nagaland and expansion of the Hindustan Newsprint Ltd, Kerala were taken up during the Tenth Plan in addition to restructuring of 14 sick CPSEs based on the recommendation of BRPSE.

7.1.127 The DBT took up a new scheme for setting up of biotechnology incubators, pilot-level facilities, and biotech parks. Subsequently, a new scheme under the PPP mode to promote Small Business Innovation Research Initiative (SBIRI) towards development of new technologies/products through industry academia interaction was also started. Under the Biotech Park Scheme two projects were taken up for implementation: setting up of the Biotechnology Park at Lucknow and establishment of Biotechnology Incubators Centre at Shapoorji Pallonji Biotech Park at Hyderabad. Financial support for another four incubation centres was also provided. The actual implementation of SIBRI scheme commenced in 2005–06 and some research projects have been supported. The schemes were initially allocated Rs 30 crore in the Tenth Five Year Plan but the expenditure was higher at Rs 102 crore.

Eleventh Plan Outlays and Major Schemes

7.1.128 Eleventh Plan outlays of various ministries/departments concerning the industry sector are indicated in Annexure 7.1.19. The scheme-wise break-up is indicated in the Appendix, Volume III. Major ongoing and new schemes are as follows.

Ongoing Schemes

- TUFS
- SITP
- TMC
- Second phase of NATRIP
- Modernization and strengthening of Intellectual Property offices
- IIUS
- Setting up of Biotechnology Incubators, Biotech parks and SBIRI
- Industry segment of DAE
- Strengthening, reviving, and restructuring of PSEs
- North East Industrial and Investment Promotion Policy, and package for special category states

New Schemes

- ILDP (modified and increased coverage)
- Scheme for enhancement of competitiveness in capital goods sector
- Setting up of National Institute of Pharmaceutical Education and Research (NIPER) like institutes for pharmaceutical sector
- Schedule M compliance by SMEs in Drugs and Pharmaceuticals
- Capital Subsidy for conversion of existing Furnace Oil (FO)/Low Sulphur Heavy Stock based fertilizer plants to NG/liquefied natural gas (LNG)
- DMIC
- R&D in ship-building sector

Sectoral Profiles

The Automotive Industry

7.1.129 If there is one manufacturing industry in India that has moved from strength to strength after the economic reforms of 1991–92, it is the automotive sector. It has grown at the spectacular rate of 17% over the last few years, with an investment of Rs 50000 crore in 2005–06 (and another Rs 30000 crore in the pipeline), attaining a turnover of Rs 165000 crore. In 2005–06, the passenger car segment crossed the one million mark.

7.1.130 At present the direct employment in the industry is 2 lakh in vehicle manufacturing and 2.8 lakh in component companies. With the additional investment and increase in production, it is expected that the direct employment in the sector will double in the next five years. In 2005–06, the component manufacturers added investment worth US$ 1 billion (Rs 4500 crore) in new capacity. In 2006–07, the automobile manufacturers have announced investment of Rs 60380 crore and the component manufacturers have announced investment of Rs 2523 crore so far.

Production and Exports of Vehicles

7.1.131 The production of various categories of automobiles in the Tenth Five Year Plan period grew at a CAGR of 16% crossing the 10 million mark in 2006–07, as shown in the Annexure 7.1.7.

7.1.132 The industry proved its international competitiveness in all categories of vehicles by achieving a CAGR of 35% in exports during the Tenth Five Year Plan period (Annexure 7.1.7). The segments that have shown particular buoyancy are passenger vehicles, two wheelers, and three wheelers, which have risen four-fold, six-fold, and ten-fold, respectively, during the Tenth Five Year Plan period as compared to the

last year of the Ninth Five Year Plan. About 2 lakh passenger vehicles and 6 lakh two wheelers were exported in 2006–07.

AUTO COMPONENTS

7.1.133 The performance of the Indian auto components industry has been even more impressive. Around 500 manufacturers in the organized sector and more than 10000 in the small-scale sector had a turnover of about Rs 54000 crore (US$ 12 billion) in 2005–06. The auto components industry now has holistic capability, manufacturing the entire range of components. The share of different segments in the industry are engine parts (31%), transmission parts (19%), suspension and braking parts (12%), electrical parts (9%), body and chassis parts (12%), equipment (10%), and others (7%). This has enabled the wholly Indian producers to achieve full indigenization in popular makes such as Tata Indica, Tata Indigo, Mahindra Scorpio, Bajaj Pulsar, TVS Victor, etc. The fact that nine manufacturers are Deming Prize winners, four are Japan Institute of Plant Maintenance award winners, and one is a Japan Quality Medal winner bear testimony to quality of the auto components produced in India.

7.1.134 One of the biggest auto ancillary industries in the country is the tyre industry. The total installed capacity is 850 lakh units against which 660 lakh units were produced and 620 lakh units were consumed within the country in 2005–06. All types of tyres barring some specialized ones such as aircraft tyres and snow tyres are now manufactured in the country.

7.1.135 India's exports of auto components have been growing even faster than of complete vehicles. During the last three years of the Tenth Five Year Plan period exports have grown by 40%, 50%, and 33%, respectively, and annual exports crossed Rs 11000 crore in 2006–07. A quantum forward leap in the quality of Indian auto components has brought about a major change in the customer base in global markets. In the 1990s, more than 80% of the exports were to the international after-market. In the year 2005–06, more than 70% of the exports were to the global original equipment manufacturers (OEMs) and Tier 1 companies.

PROJECTION OF GROWTH IN PRODUCTION AND EXPORTS OF VEHICLES AND COMPONENTS

7.1.136 The inherent strength of the Indian automotive industry has given it the confidence to make a bold projection of growth in production and exports of vehicles during the Eleventh Five Year Plan. Table 7.1.9 gives the projections for the last year of the Eleventh Five Year Plan as compared to the achievement in the last year of the Tenth Five Year Plan.

TABLE 7.1.9
Projection of Growth in Vehicle Production and Exports in the Eleventh Five Year Plan

(In Thousand)

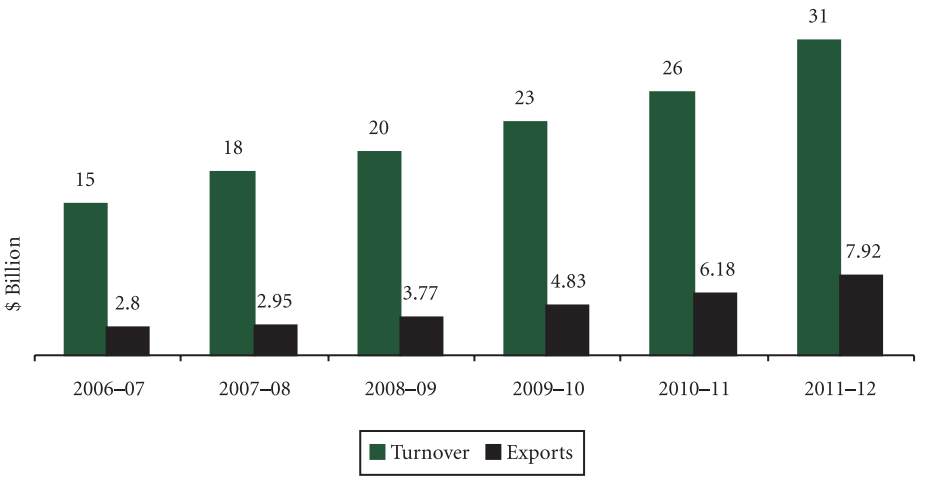
Category	Production		Export	
	2006–07	2011–12	2006–07	2011–12
Passenger Vehicles	1238	1850	192	462
Multi-utility Vehicles (MUVs)	306	321	6	12
Commercial Vehicles (CVs)	520	604	50	71
Two wheelers	8444	18934	619	1634
Three wheelers	556	903	144	229
Total	11065	22612	1011	2408

Source: Report of the Eleventh Five Year Plan Working Group on Automotive Industry.

7.1.137 The projections of auto component exports are even more ambitious. The projection made by the Eleventh Five Year Plan Working Group on Automotive Industry is given in Figure 7.1.5.

CHALLENGES

7.1.138 Improvement of infrastructure to lower logistical cost is the most critical requirement of the auto and auto components industry. The major clusters of the auto industry are in and around Gurgaon and Manesar in the north, Pune in the west, Chennai and Bangalore in the south, Jamshedpur and Kolkata in the east, and Indore in central India. However, industry depends upon movement of large volumes of raw materials and finished products by surface transport to and from every part of the country. Speedy transport of goods can contribute considerably to increasing its competitiveness. At present transport of auto components from Ludhiana to assembly plants in Kolkata takes as many as five days, thereby increasing



Source: Working Group on Automotive Industry for Eleventh Five Year Plan.

FIGURE 7.1.5: Auto Components—Projection of Turnover and Exports

the working capital requirement and making the adoption of just-in-time manufacturing impossible.

7.1.139 Since the industry will become increasingly export-oriented, the port infrastructure is also crucial for its development. Chennai and Mumbai ports, which handle the bulk of the exports of vehicles, lack space for parking and repair of vehicles damaged in transit. The longer turnaround time and poor port connectivity are also impediments that need to be addressed.

7.1.140 Adequate and supply of quality power is another infrastructure requirement. It is estimated that the industry will need an incremental supply of 12000 MW of power during the Eleventh Five Year Plan period.

7.1.141 Harmonization of emission norms as per Economic Commission for Europe (ECE) guidelines, measures to increase road safety, computerization and interconnection of Regional Transport Authorities (RTOs) to enable recall of vehicle in case of defects, mandatory inspection and certification of vehicles in use are other suggestions that have been made for the benefit of the vehicle users as well as the industry.

7.1.142 The industry needs to strive continuously for innovation and upgradation for increasing its productivity, and for this the industry has to carry out R&D activities. The government encourages research by giving weighted reduction in corporate tax for expenditure incurred on R&D, but the provision is renewed for short periods, discouraging long-term commitment to R&D. In addition to the fiscal benefits, the government's assistance is needed for setting up world-class automotive testing and R&D infrastructure.

STRATEGIES

7.1.143 The substantial programme for improvement of transport infrastructure and power being undertaken during the Eleventh Five Year Plan and described elsewhere in this document will go a long way toward alleviating the problems faced by the automotive industry. Of special relevance to the automotive industry will be the Dedicated Freight Corridor (DFC) of the railways, the expressways, and the port modernization programme. With the expected increase in exports of completed vehicles, it is necessary to consider dedicating existing or new berths for export of vehicles, at Mumbai, Chennai, and Kolkata, with provision for ample parking space.

7.1.144 An ambitious NATRIP has already been commenced in the Tenth Five Year Plan, for full-fledged testing and homologation centres in Manesar and Chennai, upgradation of existing testing and homologation centre at Pune and Ahmednagar, world-class testing tracks at Nagpur, facilities for testing of tractors

and off-road vehicles at Rae Bareilly, and hill area driving training centre at Silchar. Substantial work remains to be done to complete the initiative.

7.1.145 Concessions in corporate taxes for R&D expenditure must be made a permanent feature of our corporate tax laws.

7.1.146 A National Road Safety Board needs to be established at an early date as recommended by the Sunder Committee set up by the Ministry of Roads, Transport, and Highways. Mandatory inspection and certification of in-use vehicles is also a pre-requisite for improving road safety. Computerization of RTOs and their interconnection is also a desirable course of action from the point of view of effective regulation of transport services and also for facilitating recall if a manufacturing defect is detected.

7.1.147 It is necessary for the industry to achieve international safety and pollution standards by 2015 by aligning the domestic standards with the ECE regulations.

7.1.148 In order to meet the growing scarcity of trained human resources there is need to consider the setting up of a National Level Automotive Institute for running training courses in the automobile sector and formulating courses and modules for training in the automobile sector to be imparted by various Industrial Training Institutes (ITIs) and Automotive Training Institutes (ATIs). It is also necessary to create centres of automotive manufacturing excellence in four IITs and open an auto design centre at NID Ahmedabad. The OEMs and Tier 1 component manufacturers could be encouraged to adopt ITIs and ATIs.

7.1.149 Encouragement through suitable fiscal concessions should be provided for manufacture and assembly of fuel-efficient and hybrid vehicles and for use of alternative fuels for promoting energy conservation and environmental protection.

7.1.150 The main ongoing Plan scheme is setting-up of NATRIP. In the Eleventh Plan an outlay of Rs 1407 crore has been made to complete the second phase of the project.

Capital Goods and Engineering Industry

7.1.151 The Indian engineering industry has emerged as a dynamic sector in the country's industrial economy and has made the country self-reliant in key areas. The capital goods value addition contributes about 9%–12% to the total manufacturing. The annual production of the capital goods industry stood at Rs 50000 crore as of 2003–04. The capital investments made in this sector have registered a healthy CAGR of close to 10% during the period from 1995 to 2005, the investment picking up from 2001–02.

7.1.152 The five major sectors in the capital goods industry, viz., electrical machinery, process plant equipment, mining and construction machinery, machine tools, and textile machinery contribute nearly 57% of the total sector. The production, export, and import in these five sectors are presented in Annexure 7.1.8. Production of the five segments grew at rates ranging between 12% and 32%. Exports of machine tools, mining and construction machinery, and process plant equipment grew impressively and export of textile machinery grew modestly. Exports of electrical machinery fell during the Tenth Five Year Plan.

MACHINE TOOLS SECTOR

7.1.153 The industry constitutes 450 manufacturing units of which nearly 33% are in the organized sector. Top 10 companies in the sector contribute to almost 73% of the total production in the sector. Since 2002, the industry has shown a healthy growth and as in 2006, production in the sector has been growing at 12% and export at 17%. The industry's turnover in 2006–07 was Rs 2900 crore and it is estimated that the industry's turnover would be Rs 6000 crore by 2011–12.

7.1.154 During the Tenth Plan, the support measures by the government were in the form of machine tool cluster under IIUS Scheme, UNIDO-sponsored Bangalore Machine Tool Cluster and support for infrastructure and technology development to CMTI, Bangalore.

TEXTILE MACHINERY

7.1.155 The textile engineering industry currently has an annual installed capacity to the tune of Rs 3800 crore

per annum and the capacity utilization has gone up from 55% to 67% during 2005–06 over its preceding year. The size of the industry is likely to grow up to Rs 10000 crore by 2010. The industry is unable to cope with the demand of domestic textile and clothing units and at present it is estimated that 80% of the requirement is being imported. The liberal policy of import of second-hand textile machinery promoted in the sector has affected the prospect of fresh investment in the sector.

INDIAN HEAVY ELECTRICAL INDUSTRY

7.1.156 The Indian heavy electrical industry has registered a growth of almost 20% during 2004–05 over its preceding year. The fortune of the industry is closely linked to the development of power sector in the country. A capacity addition of 78000 MW is planned in the Eleventh Five Year Plan. There is a substantial order backlog in the industry that is to be completed over a span of two years. Capacity addition in the country, particularly for the manufacture of boilers, has become imperative. The sector is experiencing difficulties in technology transfer since foreign companies can now directly participate in the infrastructure projects. The level of R&D and technology innovation within the country is low by international standards.

MINING AND CONSTRUCTION EQUIPMENT SECTOR

7.1.157 The mining and construction equipment industry is dominated by a few large manufacturers in each product segment. Bharat Earth Movers Limited supplies to nearly half of the total market. The mining and construction equipment sector registered a healthy growth in its output and exports over the last two years. The domestic demand has increased from a level of Rs 6300 crore in 2004–05 to Rs 8400 crore in 2006–07.

PROCESS PLANT EQUIPMENT INDUSTRY

7.1.158 The process plant machinery and componenet industry in India is a very heterogeneous industry with a turnover of Rs 10000 crore per annum as of 2004–05. The growth projection for 2005–06 manufacturing total equipment in the process industry was Rs 6000 crore, a jump of 15% on an average. Owing to the fragmented nature of the industry and the small size of the players, most of them have not implemented any of the latest soft technologies.

CHALLENGES

7.1.159 The Indian Capital Goods Industry shares with other industries the major hindrances to growth in the country, which are low scale of operation, technological dependence, high input costs (raw materials, power, fuel, and high rates of interest on term loan and working capital), lack of world-class infrastructure, and stringent labour laws.

7.1.160 Some of the problems specific to the sector are purchase preference to CPSEs and unimpeded imports of second-hand machinery.

STRATEGIES

7.1.161 To encourage investment, assistance would need to be provided for setting up of sector-specific parks in machine tools, textiles machinery, and heavy electricals. Apart from general infrastructure, the parks could also have CFCs such as testing laboratories and R&D centres. But the process would have to be demand driven and the initiative would have to come from the industry.

7.1.162 On the same pattern as sector-specific parks, CFCs for existing clusters could be set up with facilities for testing, R&D, heat treatment, etc., on the model of the IIUS scheme of the DIPP.

7.1.163 To bring some level playing between private sector and CPSEs, the purchase preference policy for CPSEs would need to be discontinued.

7.1.164 The policy for import of second-hand capital goods in textiles and other areas should be reviewed and government assistance by way of interest subsidy on bank finance should not be provided for imports of such capital goods.

7.1.165 For attracting investors from abroad who have the necessary technology in textile machinery, it is necessary to mount a campaign. It is also necessary to induce foreign companies manufacturing electrical generation equipment to set up manufacturing facilities in the country by introducing an offset

clause in the procurement of generation units for PSUs.

Cement

7.1.166 Although India is the second largest cement producer in the world, it is way behind China, where the capacity is more than five times larger. The industry provides direct employment to 70000 people and has the capability to create huge indirect employment downstream. It has a high rate of excise duty and accounts for 5% of total excise collection.

CAPACITY, PRODUCTION, AND EXPORTS OF CEMENT

7.1.167 During the Tenth Plan, cement production grew at a healthy CAGR of 8.67% while the installed capacity showed modest CAGR of 3.69%. Exports too showed an upward trend. The growth in capacity, production, and export are given in Table 7.1.10.

TABLE 7.1.10
Capacity, Production, and Export of Cement

(Million mt)

Year	Capacity	Production	Exports
2002–03	151.17	116.35	6.92
2003–04	157.74	123.50	9.00
2004–05	165.39	133.57	10.06
2005–06	171.34	147.81	9.19
2006–07	174.99#	162.00*	10.00
CAGR%	3.69	8.67	14.24

Note: #Capacity: As in June 2006; *Estimated.
Source: Report of the Working Group on Cement Industry for the Eleventh Five Year Plan.

7.1.168 The industry has been modernizing and some units can now boast of having the state-of-the-art technology plants with energy consumption comparable with the best in the world. Till the late 1970s, a major share of production relied on the inefficient wet process technology. By 2006, 96% of the production had shifted to the dry process. The average consumption of energy in domestic industry hovers around 725 kcal per kg of clinker (thermal energy) and 82 kWh per tonne of cement (electrical energy). The best thermal and electrical energy consumption is as low as 667 kcal per kg of clinker and 68 kWh per mt of cement, which are comparable to the best global figures of 650 kcal per kg of clinker and 65 kWh per mt of cement.

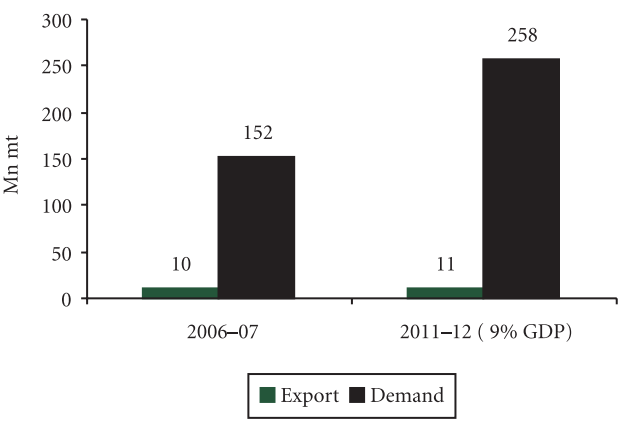
DEMAND FORECAST AND INVESTMENT REQUIREMENT FOR THE ELEVENTH PLAN

7.1.169 Cement consumption has generally grown at 2%–3% higher than growth of GDP. Keeping the past trends in view and taking into consideration the renewed emphasis on infrastructure, the cement industry can be expected to grow at about 11.5% corresponding to the GDP growth of 9%. The demand projections in 2011–12 are given in Figure 7.1.6.

7.1.170 Realization of capacity projection of 298 million tonnes would imply a capacity addition of 118 million mt during the Eleventh Plan period. Of the total capacity addition required for the Eleventh Plan, 86 million mt would come from new greenfield units requiring an investment of Rs 34400 crore and 32 million tonnes through brown field expansions/de-bottlenecking requiring investment of Rs 6400 crore. Thus the total investment requirement during the Eleventh Plan works out to Rs 52400 crore together with Rs 1100 crore and Rs 500 crore required for conversion of existing wet process plants to dry process technology and setting up of coal washeries.

ISSUES AND CHALLENGES

7.1.171 Achievement of growth and targets for the cement industry is crucially dependent on various inputs such as limestone, coal, power, and last but not the least, on transportation of limestone. Coal



Source: Report of the Working Group on Cement Industry for the Eleventh Five Year Plan.

FIGURE 7.1.6: Cement—Export, Project Demand and Capacity needed by 2011–12

continues to be the main fuel for the cement industry and will remain so in the near future. At present, 60% of coal requirement of the cement industry is met through linkages and fuel supply agreements, while the remaining requirement is met from open-market purchases, import, and use of petroleum coke. With the capacity addition projected for the Eleventh Plan, the annual requirement of coal would substantially go up from the current level of 28.68 million tonnes to 57.97 million tonnes by the end of the Eleventh Plan. Side-by-side depletion of higher quality of coal reserves and increasing open cast mine would call for increasing beneficiation of coal in the regional washeries.

7.1.172 The production of cement is a continuous process requiring uninterrupted power supply. Since the availability and quality of grid power supply continue to be a problem, the use of captive power has been increasing. Most of the cement units have installed captive power generation capacities to the extent of 60% to 100% of their requirement. The captive power generation capacity of cement industry is estimated to be 1825 MW at present, of which 61% is based on diesel and the rest 39% on coal. With growing uncertainties of grid power availability, it is estimated that 2000 MW captive power would be required during Eleventh Plan.

7.1.173 Cement is a low-value and high-volume commodity mainly concentrated near limestone deposits available in a few States. The main input coal is also available in a few States. In view of this, long leads of movement both for inputs and for outputs are required and the railways remain the only economical mode for such transportation. Against the envisaged level of 60% movement of cement production by rail on macro level, the current share of dispatches through rail accounts for 39%–45% after continuous decline during the past decade. With the intended capacity addition in the Eleventh Plan, requirement of rail facilities for movement of cement and clinker as well as other inputs such as coal, granulated slag, and fly ash would increase substantially.

7.1.174 The availability of cement grade limestone is essential for making technological and financial decisions of the entrepreneurs for capacity addition projected for the Eleventh Plan. The gross reserves of cement grade limestone stood at 97430 million tonnes as on 31 March 2006 as under.

7.1.175 Out of 97430 million tonnes of gross reserves as on 31 March 2006, proven reserves are only 22931 million tonnes. Since 50% of the proven reserves are located in inaccessible or ecologically sensitive areas, these would suffice only for the lifecycle of cement plant that would be existing at the end of the Eleventh Plan period.

7.1.176 Modernization of the construction industry is heavily dependent on the availability of cement in bulk and ready-mix concrete (RMC) usage. However, bulk transportation of cement in our country accounts for only 5% as against the global average of 70%. Likewise use of RMC in construction activity is only 10% in India. RMC usage and bulk transportation of cement complement each other with inherent advantages of lower pilferage, higher consistency, and environment-friendly application. A major limiting factor in bulk handling of cement is the small number of bulk cement terminals in the country. There are only two rail bulk cement terminals and three port-based bulk cement terminals in the country.

7.1.177 Ordinary Portland Cement is currently used in the government/public sector for most of the construction activities. However, the performance requirement of most constructions could be met by the use of Portland Pozzolana Cement/slag cement, and in fact these types should be preferred as they conserve non-renewable resources.

STRATEGIES

7.1.178 Additions to capacity to the tune of 118 million mt projected for the Eleventh Plan would be critically dependent on the measures adopted to mitigate logistics-related issues. Substantial augmentation of railway capacity being envisaged in the Eleventh Five Year Plan will help in meeting the requirements of the cement industry. However, to facilitate long-term planning and to ensure that adequate handling and storage facilities and wagon capacity are created, the railways should set up a consultative process with the industry.

7.1.179 Bulk cement transportation in specialized tankers, viz., railway wagons, trucks, or ships provide business opportunities to railways, truck, and cargo operators. Setting up bulk cement terminals would help in attracting huge investments. Wherever possible the railways could provide land on long-term lease for the purpose.

7.1.180 Concerted efforts would be required to identify new commercially exploitable limestone deposits. Joint exploration should be intensified by various State departments of mines and geology in association with the Indian Bureau of Mines (IBM), MECL, etc., for exploring and identification of new limestone deposit.

7.1.181 With a view to promoting the use of PPC and slag cement, construction codes of the Central and State Governments need to be appropriately modified to allow their use. Furthermore, in addition to standards for slag and fly ash based cement, Bureau of Industrial Standards should work for setting standards of cement using more than one waste material.

7.1.182 Installation of greenfield mini-cement plants should not be encouraged except in deficient far-flung areas, that is North Eastern States, J&K, etc. The ceiling on the capacity of a mini-cement plant should be removed and they should be set free to use the most economically viable technology.

Chemical Industry

7.1.183 The chemical industry is an important constituent of the Indian economy with an estimated turnover at around US$ 35 billion, constituting 1.5% of the global chemical industry estimated at US$ 2400 billion. The total investment in the sector is nearly US$ 60 billion and the employment is about one million. It accounts for 13%–14% of total exports and 8%–9% of total imports of the country. Gujarat dominates with 51% of the total share of major chemicals produced in the country. Various sub-sectors such as chloralkali, inorganic chemicals, organic chemicals, dyestuffs and dye intermediates, and agro-chemicals grew at varying rates during the Tenth Five Year Plan, with inorganic chemicals recording the highest CAGR at 10% and agro-chemicals the lowest CAGR at 0.7%. The chemicals industry as a whole grew at an average of 4.7% during the Tenth Five Year Plan. The industry expectation is that the sector may grow in the range of 5%–8% during the Eleventh Plan (Annexure 7.1.9).

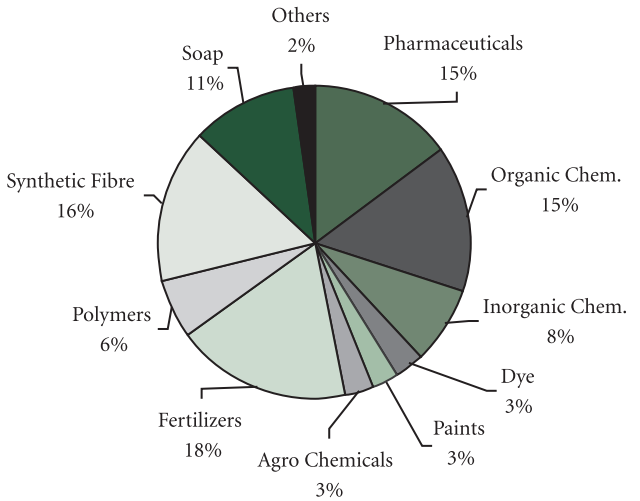
7.1.184 Increased competition resulting from globalization is driving the chemical industry towards consolidation, cost reduction, location of manufacturing bases close to raw materials, cheaper energy sources, lower tax regimes, increased use of information technology (IT), and intensification of R&D activities. At the same time the industry is responding to the increased environment consciousness worldwide. Consolidation has become imperative as the industry seeks economies of scale in manufacturing, logistics, and R&D. Cost reduction is being aggressively attempted through improved operating norms and financial restructuring. Enhanced worldwide concern for the protection of the environment has been forcing the industry to modernize and innovate.

7.1.185 Over the last decade, the Indian chemical industry has evolved from being a basic chemical producer to becoming an innovative industry. With increasing investments in R&D, the industry is registering significant growth in the knowledge sector comprising specialty chemicals, fine chemicals, and pharmaceuticals. Broadly, the share of basic, knowledge, and specialty chemicals is 57%, 18%, and 25%, respectively. Share of different segments of Chemical Industry in India is shown in Figure 7.1.7.

CHALLENGES

7.1.186 The major hindrances for a double-digit growth of the Indian chemical industry are sub-optimal size of plants, higher input costs (raw materials, power, fuel, etc.), lack of world-class infrastructure (roads, ports, and power supply), lack of competitiveness, and stringent labour laws. Without addressing these issues it would be very difficult for the industry to compete globally with rapidly declining duty differentials and appreciation in the value of rupee. Some of the sector-specific challenges are:

- While peak duties on non-agricultural products have been reduced from year to year, commensurate



Source: Report of the Task Force on Chemicals, 2002, Department of Chemicals and Petrochemicals.

FIGURE 7.1.7: Share (Value of Output) of Different Segments of Chemical Industry in India

reduction has not taken place on fuels, raw materials, building blocks, and feedstock, such as denatured ethyl alcohol, flourspar, carbon black feedstock, and molasses, that go into the production of various downstream value-added chemicals.

- Tank terminals for such chemicals as methanol, ammonia, benzene have not been provided at critical railway junctions.
- Although various laws have been enacted by the government relating to air and water pollution, environment protection in general, hazardous waste management, and product liability insurance, and the government is a signatory to international treaties, conventions, protocols, and codes of conduct, there is lack of awareness in the industry about these laws and international agreements.
- In 2007, the European Union had passed legislation on registration, evaluation, and authorization of chemicals (REACH). For compliance with the provisions of this legislation it would be necessary for exporters to submit test data from accredited laboratories following good laboratory practices (GLP). Until Indian laboratories are so accredited the exporters would have to get the test data generated in foreign laboratories, which will be costly.
- The levels of R&D expenditure by the chemical industry in India are very low by international standards.

STRATEGIES

7.1.187 Duty structure on building blocks for the chemical industries needs to be reviewed with a view to considering how far these can be brought on par with those prevailing in the other emerging economies.

7.1.188 Railways should consult with the chemicals industry with a view to determining the locations in which it would be in their mutual interest to establish infrastructure at ports to handle bulk chemicals and Petroleum, Oil, and Lubricants (POL) products.

7.1.189 Creation of R&D hubs with state-of-the-art testing needs to be initiated in the PPP mode in the line of NATRIP.

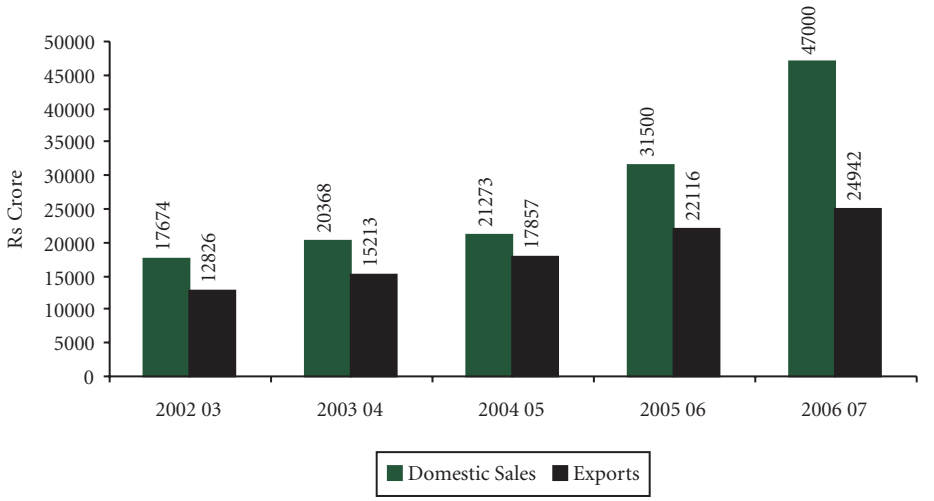
7.1.190 The government should consider upgrading the national laboratories such as the Indian Institute of Chemical Technology, Hyderabad and the Central Drug Research Institute, Lucknow to GLP standards so that they can obtain accreditation from the European Union (EU) bodies to enable them to generate test data for compliance with REACH.

7.1.191 The government should regularly hold workshops and seminars to disseminate knowledge relating to environmental laws and related international treaties and negotiations.

Drugs and Pharmaceuticals

OVERVIEW

7.1.192 The Indian pharmaceutical industry registered strong growth during the Ninth and Tenth Five Year Plan periods and has emerged as an area of strength especially in generics. The adoption of world-class patent laws for pharmaceutical products w.e.f. 1 January 2005, pursuant to obligations under the WTO Agreement, has not dampened the robust growth but has improved the overall IPR environment. The turnover of the industry was Rs 72000 crore during 2006–07, having risen by more than 12 times since 1990. India has become one of the leading global



Note: Estimated retail market in 2005–06 is based on ORG-IMS, for 2006–07 retail market includes institutional sales.

Sources: Export: actual—DGCI&S; estimate—Indian Pharmaceuticals Alliance; Domestic sales actual/estimated—ORG-IMS.

FIGURE 7.1.8: Domestic Sales and Exports of Pharmaceuticals (Rs Crore)

players, holding fourth position in terms of volume and thirteenth position in terms of value of production. Exports have also grown significantly to over Rs 24942 crore in 2006–07, accounting for as much as 34% of the turnover (Figure 7.1.8).

PRODUCTION AND EXPORTS OF PHARMACEUTICALS

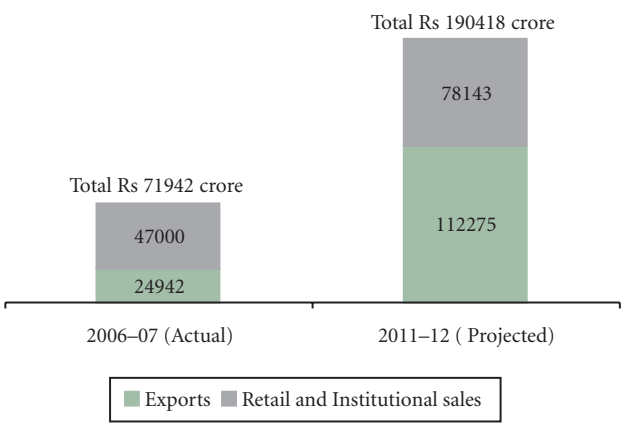
7.1.193 According to the report submitted in 2003 by the committee headed by R.A. Mashelkar, the number of drug manufacturing licenses issued was as follows: bulk drugs (1333), formulations (4534), large volume parenterals (134), and vaccines (56) making the total of 6057 manufacturing units. About 300 of these pharmaceutical units are large units.

7.1.194 India is one of the signatories of the World Health Organization (WHO) certification scheme on the quality of pharmaceutical products moving in international commerce. WHO GMP certificate is granted after inspection by the Central Drugs Standard Control Organization and the State Licensing Authorities. The GMP, which involve both the premises and the plants, are laid down in Schedule M of the Drugs and Cosmetics Rules 1945. The present Schedule 'M' provisions, which have become mandatory since 1 July 2005, conform to international standards and have a higher level of GMP that can lead to better quality of products destined for both domestic and international markets. Another important development is that the manufacturers and exporters are going beyond the WHO GMP and accepting regulatory approvals from national agencies of important foreign markets such as United States Food and Drug Administration (USFDA), UK Medicines and Healthcare Products Regulatory Agency, Australia Therapeutic Goods Administration, and South Africa Medicines Control Council. With about 100 USFDA approvals, India has the largest USFDA approved plants outside the US. As the US is the largest market for pharmaceuticals, accounting for half of the world's generics market, the focus of many Indian companies has remained on the US generics market, with India accounting for almost half of Drug Master File (DMF) filings and one-fourth of Abbreviated New Drug Application (ANDA) in the US in 2006. DMF is a document filed with the USFDA by a manufacturer of bulk drug (Active Pharmaceutical Ingredient, API) offering API in the US market. ANDA is a document filed by a manufacturer of generic formulations (finished dosage form). Regulatory approval of DMF takes two years and that of ANDA 30 months.

7.1.195 Production, domestic sales, and exports rose rapidly during the Tenth Five Year Plan period. During the Tenth Five Year Plan domestic sales grew generally at the rate of 11%–15% and exports at the

rate of 20%–26%. Industry estimates are that domestic sales will grow at the rate of 16% and exports at the rate of 30%–35% during the Eleventh Five Year Plan, so that by the terminal year exports will constitute close to 60% of the domestic production. The optimism about increase in the export growth rates is based on the fact that the sharp increase in DMF and ANDA filings by Indian manufacturers in the US during the years 2004–06 will begin showing its effect only from the year 2007–08, because of the time taken for regulatory approvals. Projections for 2011–12 are given shown in Figure 7.1.9.

7.1.196 India's rich human capital is its greatest asset for this knowledge-led industry. With US$ 60 billion worth of medicines coming off patents in the next few years, India is poised to emerge as one of the biggest player in the area of generics. The biopharmaceuticals market is also evolving very fast and India could emerge as the largest vaccine producer in the world. Other favourable factors are the growing dependence on generics across the world, wide acceptance of Indian generic products as safe and effective, aggressive thrust of Indian companies for building and acquiring sales, and marketing network abroad, entry of third and second tier Indian companies in the international market. The industry projection is that by the end of the Plan period the domestic sales will increase to Rs 78000 crore (about US$ 19.5 billion) and exports to Rs 112000 crore (US$ 28 billion).



Source: Report of the Working Group on Drugs and Pharmaceuticals for the Eleventh Five Year Plan (2007–12).

FIGURE 7.1.9: Pharmaceuticals—Exports, Retail Sale and Institutional Sale by 2011–12

RESEARCH AND DEVELOPMENT (R&D)

7.1.197 Internationally, pharmaceutical companies spend 15%–20% of their sales revenue on R&D, particularly for the discovery and development of new chemical entities. In the absence of the law for product patents before 2005, Indian pharmaceutical companies had traditionally confined their research activities to processes rather than to products. The law for grant of product patents on pharmaceutical products has now been enacted. But few Indian company has the resources to pursue the cutting edge research and take a new compound through all stages up to marketing. However, Indian companies are adopting one of the following options to lower costs and mitigate risks:

- Collaboration with large R&D based MNCs either for co-development or through the co-licensing route.
- Work on existing molecules with proven market by developing chiral molecules or race-mates currently marketed, or through new formulations of existing drugs with beneficial characteristics of increased efficacy and safety.
- Identify through clinical trials new indications for marketed drugs.
- Develop traditional medicines acceptable to global markets.

7.1.198 Apart from the Indian companies investing in R&D, MNCs are setting up research facilities in India or entering into tie-ups with Indian companies. Astra-Zeneca of the UK, Altan Pharma of Germany, Eisai of Japan, and Ethy Pharma of France have set up R&D centres and wholly owned sub-sidiaries and Eli Lily has entered into collaboration with Jubilant. More importantly, nine Indian companies (three in Hyderabad, two each in Mumbai and Chennai, and one each in Bangalore and Vadodra) have entered business to exploit the outsourcing opportunities in drug discovery services and their clients include MNCs. International drug discovery companies are also in the process of setting up their presence in India.

7.1.199 Cost advantage has also resulted in the country becoming a hub for clinical trials and MNCs such as Pfizer, Johnson & Johnson, GSK, Merck, Eli

Liliy, Novartis, and Novo Nordisk are using India as a base for running their Phase II and Phase III clinical trials. Quintiles, Icon Clinical, and Pharmaolam are some of the foreign clinical research organizations working in India.

7.1.200 The enactment by the Parliament of world-class IPR laws has created the environment conducive to the outsourcing of drug discovery and clinical research to India. Apart from this, the adoption of GLP and Good Clinical Practices by Indian companies has also induced the outsourcing of these services. By some estimates, the global R&D expenditure on pharmaceuticals may touch US$ 100 billion by 2011–12 and if outsourcing is done from Indian companies. India's share at the end of the current Plan could be in the range of US$ 1–3 billion. Estimate from industry puts the Indian Clinical Trial market at present at US$ 100 million, which may increase to US$ 300 million in two or three years.

PRODUCT PATENTS AND DRUG PRICES

7.1.201 At the time of India's decision to accept the WTO Agreement, there was a fear that the introduction of product patents in pharmaceuticals in the country would lead to the price of drugs becoming unaffordable for the poor people. This has not happened and is not likely to happen on account of several factors. First, all the drugs included in the list of essential drugs published by the Ministry of Health are already in the public domain. Second, most of the patented medicines introduced from time to time usually bring about some improvement over the previous generation and their price cannot be far out of line with that of the existing drugs. At any point of time there are more than half a dozen patent expired therapeutic equivalents available. Thus the price competition among drugs in the same therapeutic group will automatically keep the prices of new entities under control. The limited purchasing power of the Indian public will also act as a check on any dramatic rise in price. And ultimately recourse can be always had to the provisions on compulsory licensing and government use for non-voluntary licensing of patented drugs.

7.1.202 India has had price control on drugs for a long time but the span of control has been progressively reduced. If the promise shown by this dynamic industry is to be realized and the figures of production and export projected above are to be achieved, it would be important to maintain this trend even though the price control is consistent with WTO obligations. Concerns for making medicines available at affordable prices must be met through alternatives other than by means of control on the basis of cost plus pricing. The route to lower prices is greater competition and that will happen if new manufacturers find it attractive to enter the sector. Price control will diminish profits and turn entrepreneurs away from the sector and lower the competition. Furthermore, diminishing profits will limit the capacity of firms to invest in R&D, which is the soul of a vibrant pharmaceutical sector.

CHALLENGES

7.1.203 According to a survey of the small-scale pharmaceutical companies in 2001–02, as many as 327 units had been closed or had their licenses suspended or may have shifted to some other States and another 370 units were not in a position to comply with the GMP norms. Since the GMP norms have been made mandatory with effect from 1 July 2005, these units have been closed.

7.1.204 If the Indian pharmaceutical sector is to live up to the promise in both manufacturing and R&D services, the supply of science and pharmacy graduates with quality education has to be substantially raised. In order to double the exports, the pharmaceutical industry requires 1000 highly trained manpower every year for the next 10 years.

7.1.205 Since R&D in pharmaceuticals is a highly risky venture, there is need to incentivize it through tax concessions on a permanent basis.

INTERVENTIONS

7.1.206 In order to enable the small-scale sector to acquire GMP compliant facilities, it is necessary to provide financial assistance to them through interest subsidies.

7.1.207 The NIPER at Mohali has made a significant contribution in providing human resources of the right calibre needed by the industry, academia, and

regulatory bodies. To meet the future demand of the industry, it is necessary to replicate NIPER through five more institutes in different parts of the country.

7.1.208 The provision for weighted reduction of R&D expenses for corporate tax purposes should be made permanent after the current validity expires.

7.1.209 The main Eleventh Plan Scheme is setting-up of five new NIPER like institutes in the PPP mode. An allocation of Rs 514 crore has been made for these new institutes. The existing NIPER has been provided an allocation of Rs 164 crore for modernization and expansion. An allocation of Rs 340 crore has been made for a new scheme to support Schedule M compliance by SMEs in drugs and pharmaceutical sector by providing interest subsidy to these units in Eleventh Plan. A new scheme with an allocation of Rs 75 crore has been envisaged to assist the Pharma CPSEs to meet WHO pre-qualification.

Fertilizer Industry

7.1.210 India is the fourth largest producer of fertilizers in the world after China, the US, and Russia. It meets the bulk of its substantial needs for nitrogenous and phosphatic fertilizers from domestic production but potassic fertilizers' needs are met through imports. For the production of phosphatic fertilizers, the country relies on imports of raw materials.

7.1.211 During the Tenth Plan the increase in consumption outstripped the slow growth in production, with the result that in the later years of the Plan period, imports registered strong increases (Annexure 7.1.10).

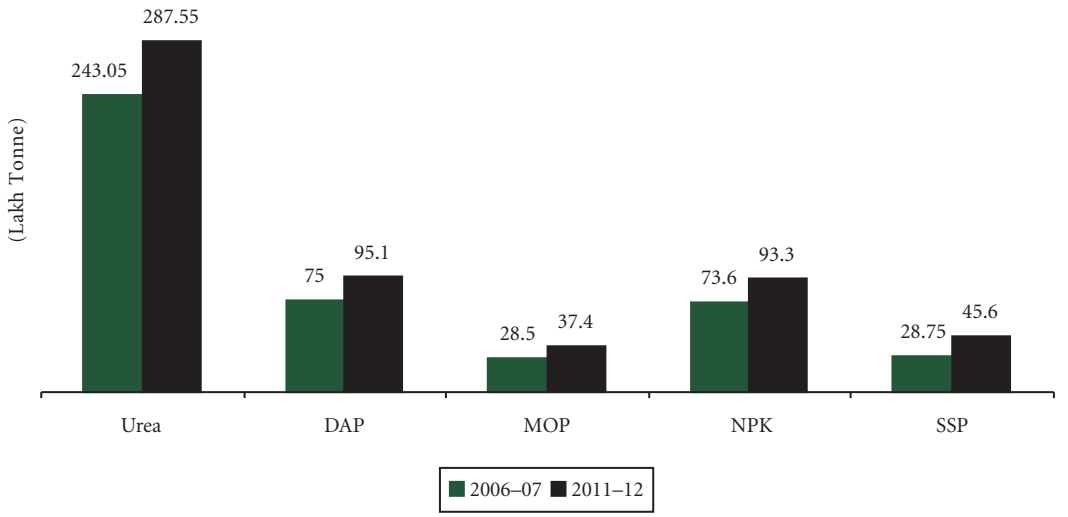
7.1.212 During the terminal year of the Ninth Five Year Plan (2001–02), the installed capacity of the domestic fertilizer industry was 120.58 lakh metric tonnes (LMT) of nitrogen and 53.87 LMT of P_2O_5 (phosphate) per annum. In the absence of fresh investment, the capacity of the fertilizer industry remained by and large stagnant during the Tenth Plan period. The actual domestic production of urea in 2005–06 was 200.98 LMT from 28 functional units and 13.25 LMT from the Joint Venture (JV) Oman India Fertilizer Company (OMIFCO) against the projected demand of 242.14 LMT per annum urea by the terminal year (2006–07). During the Tenth Five Year Plan various capacity additions such as Brahmaputra Valley Fertilizer Corporation Limited revamp project, OMIFCO materialized. Thal III expansion of Rashtriya Chemicals and Fertilizers Ltd (RCF) (11.55 LMT) and Krishak Bharati Co-operative Limited (KRIBHCO)-Hazira expansion Projects (10.56 LMT) could not be taken up due to lack of availability of natural gas/LNG.

7.1.213 There has been a significant growth in fertilizer consumption over the years. The per hectare consumption of NPK (nutrients) increased from less than 1 kg in 1951–52 to 106.7 kg in 2005–06. However, the consumption is still much lower than the levels achieved even in China and Pakistan. With a growth rate of 4.1 per annum on the estimated base level consumption of 220 LMT in 2006–07, the total nutrient consumption for 2011–12 is envisaged at 269 LMT. The demand forecasts for 'N', 'P', and 'K' are estimated at 163.10 LMT, 72.90 LMT, and 33 LMT, respectively, in the terminal year of the Eleventh Five Year Plan. This corresponds to a demand of 287.55 LMT for urea, 95.10 LMT for di-ammonium phosphate (DAP), 37.40 LMT for muriate of potash (MOP), 93.30 LMT for complex fertilizers, and 36.45 LMT for SSP (Figure 7.1.10).

7.1.214 The Working Group on Fertilizer for the Eleventh Plan has estimated that over and above the present installed capacity of 213.52 LMT of urea, a total of 128 LMT of additional urea capacity can come up through revamp of existing gas-based units; new Brownfield expansion of plants such as Indo Gulf, RCF, KRIBHCO, and Indian Farmers Fertilizer Co-operative Ltd (IFFCO); JV abroad on the basis of cheap gas/LNG and revival of seven FCI and HFC plants by joint venture or any other suitable model. Investment of Rs 36000 crore may be required to increase the capacity of urea by about 12 million mt by expanding domestic units and reviving sick ones.

CHALLENGES

7.1.215 The production of urea in the country is still saddled with the legacy of the era of import substitution policies, when pursuit of self-sufficiency led to the establishment of units based on inefficient feedstock/fuel such as naphtha and fuel oils. Since the



Source: Report of the Working Group on Fertilizers for the Eleventh Plan.

FIGURE 7.1.10: Demand of Fertilizer by 2011–12.

costs of production of these units were much higher than those of units based on natural gas, the GoI introduced the Retention Price Scheme (RPS). Each urea unit had a unique retention price depending upon the technology, feedstock used, capacity utilization, energy consumption, distance from the source of feedstock, etc., and the government paid to them the difference between the retention price and the MRP fixed by the government for sale of urea to farmers. As the RPS was cost plus in nature and encouraged gold plating, it was replaced by the New Pricing Scheme (NPS) on the recommendations of the Expenditure Reforms Commission in 2000, to be implemented in three stages: Stage I (1 April 2003 to 31 March 2004), Stage II (1 April 2004 to 31 March 2006), and Stage III. Under the NPS, the existing units have been divided into six groups on the basis of vintage and feedstock for determining the group-based concession. Stage III has commenced on 1 October 2006, with some policy changes to encourage additions to capacity. An important decision taken is that the non-natural-gas-based units would have three years to convert into NG/LNG units. But to make such conversion possible, issues have to be resolved relating to connectivity, supply, and price of gas.

7.1.216 While there is an increasing gap between supply and demand, a number of sick PSE units are lying closed. Most of these units have excellent infrastructure in the shape of residential colonies, coal and electricity tie-ups, railway sidings, etc., and revival of these units is a major issue that needs to be tackled.

7.1.217 Fertilizer use in India is inadequate, imbalanced, and skewed in favour of nitrogen, which has resulted in the emergence of nutrient deficiencies in Indian soils. As against the recommended N:P:K ratio of 4:2:1, the average for the country was 5.3:2.2:1 in 2005–06. However, the average conceals variation within the States and the actual ratio in Punjab in the same year was 20:6:1 and in Haryana 30:9:1. Balanced use of fertilizers will have implications for the demand for production and import of fertilizers.

7.1.218 India does not have sufficient quantities of known reserves of rock phosphates, and where available these are of low quality. As a result, India has to import large quantities of rock phosphates or phosphoric acid.

7.1.219 Large quantities of urea, DAP, rock phosphates, and MOP are being imported and the ports are not sufficiently equipped to deal with such large volumes of imports. Absence of railway wagons designed for the bulk movement of fertilizers is another impediment that the industry faces.

STRATEGIES

7.1.220 The most important element of future strategies relating to the urea industry is to establish a single producer price, and with this end in view, the GoI has already decided on a sunset for non-gas-based units. For implementation of the decision, the issues of connectivity, supply, and price has to be resolved. Pipeline connectivity already exists in respect of 22 units and it is likely to become available to others in the next few years. The units at Goa, Mangalore, and Tuticorin are expected to be serviced by the Reliance Gas Transportation Infrastructure Limited Chennai–Tuticorin pipeline and Chennai–Mangalore pipeline. Although in the past natural gas has been in short supply even for gas-based units, it is expected that the new discoveries will make it possible to supply gas not only to them but also to the newly converted units. As for price, a single producer price policy will necessitate that the government ensures gas supplies to all urea producers at the same price.

7.1.221 Although currently the import parity prices for urea are ruling high, the fact remains that natural gas is available in oil-rich countries at a much lower price than in India; an appropriate long-term policy should be announced so that more joint ventures are set up such as the one in Oman.

7.1.222 Effort should be made to revive those units that are revivable, including setting up of joint ventures with private sector participation.

7.1.223 Efficient use of fertilizers can be promoted by extension for adoption of better agronomic practices. However, the single most effective way for achieving efficient use of fertilizers will be to make subsidies for agriculture nutrient-based.

7.1.224 In order to ensure sufficient supplies of raw materials for phosphatic fertilizers, it is necessary to intensify exploration activities in India. Additionally, Indian companies must be encouraged to invest in mining and production of intermediates in resource-rich countries.

7.1.225 Port facilities need to be enhanced to enable efficient handling of imported fertilizers and fertilizer material. The railways should also introduce specially designed wagons for handling of fertilizers.

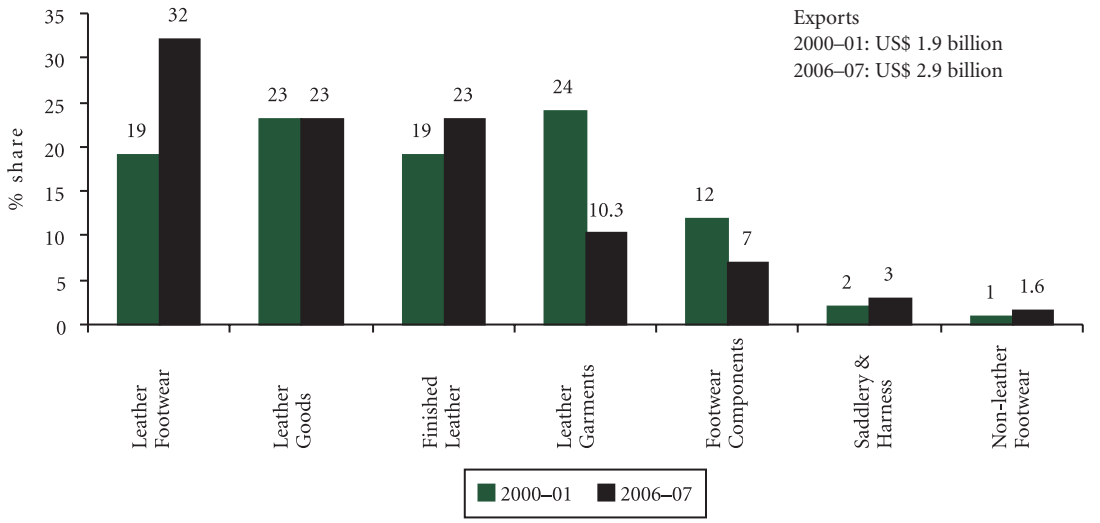
7.1.226 An outlay of Rs 20628 crore including a budgetary support of Rs 1492 crore has been made in the Eleventh Plan, mainly to support conversion of old fuel oil-based fertilizer units to gas-based ones and restructuring of the CPSEs.

Leather and Leather Goods

7.1.227 The importance of the Indian leather industry is derived from the fact that it is labour-intensive and contributes substantially to exports. Artisans, micro enterprises, and SSIs account for 60% to 65% of the total production. The manufacturing activity provides full-time employment to 1 million persons and activities connected with the recovery of hides from carcasses provides part-time employment to another 0.8 million. The turnover of the industry was Rs 25000 crore in 2004–05, out of which Rs 10800 crore (43%) was exported. Exports have risen in recent years from US$ 1.9 billion in 2000–01 to US$ 2.9 billion in 2006–07. The composition of exports of leather and leather goods has been moving increasingly toward leather footwear, but the share (32% in 2006–07) still falls far short of the 65% share of footwear in the world export of leather and leather products (Figure 7.1.11).

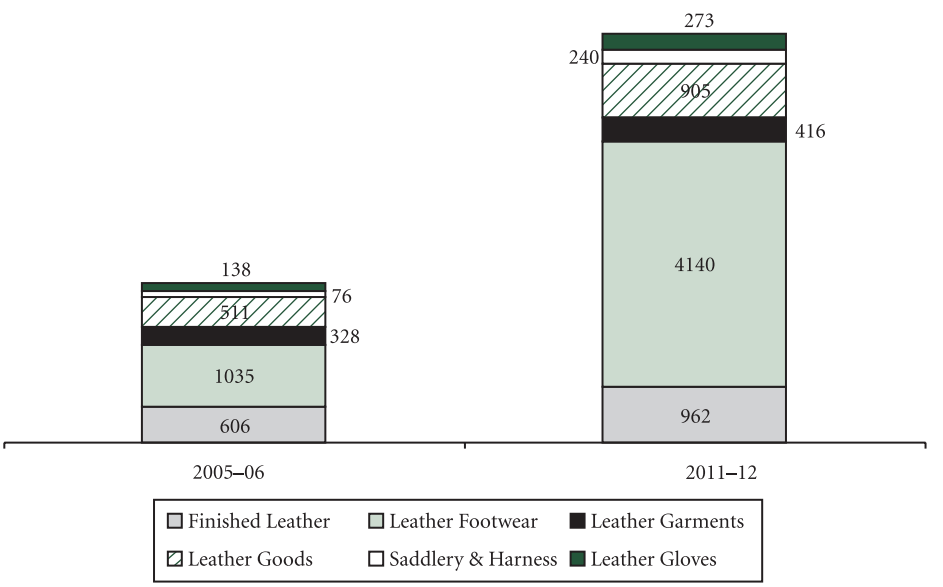
7.1.228 The Inter-Ministerial Group constituted to evolve a comprehensive strategy for the development of the leather sector has assessed that India has the potential to expand exports from the level of US$ 2.7 billion in 2005–06 to US$ 7 billion in 2011–12. The break-up of the projections is given in the Figure 7.1.12.

7.1.229 Footwear is the component accounting for the largest growth. In quantitative terms, the exports of footwear translate into 300 million pairs in the last year of the Eleventh Five Year Plan period against 92 million pairs in 2005–06. This would require the creation of capacity of 750000 pairs a day against the capacity of 250000 pairs a day in 2005–06. If non-leather footwear is added, the required capacity for exports alone will be 1 million pairs. Similarly the production of leather garments would need to grow from 24 million



Source: Council for Leather Exports, India.

FIGURE 7.1.11: Indian Leather Exports—Changing Structure



Source: Inter-Ministerial Committee on Enhancement of the Competitiveness of Leather Industry, 2008.

FIGURE 7.1.12: Projected Growth of India's Exports of Leather and Leather Products (in US$ Million)

pieces in 2005–06 to 72 million pieces in 2011–12, and of leather goods from 6 million pieces to 18 million pieces in the same period.

7.1.230 However, before the above potential can be realized a number of challenges would need to be addressed.

CHALLENGES

- The indigenous raw material base of the industry is deficient. As of now about 90% (1.8 billion sq ft) of leather is produced in the country from indigenous hides and skins. To achieve exports of US$ 7 billion, 4 billion sq ft will be needed in 2012.

- The tanneries in the country have low capacities and outdated technologies with a majority of tanneries still using manual systems. During the Tenth Five Year Plan, the scheme for IDLS under ILDP was launched for technology upgradation and modernization, but the funds could be utilized only to a small extent because of delay in the finalization of the scheme.
- Another problem faced by the existing tanning units (in Tamil Nadu) has been the imposition of rigorous environmental requirement (Zero Liquid Discharge) by the State Pollution Control Board under the directions of the Honourable High Court. While the large units have been able to make additional investment needed to comply with the requirement, the small-scale units do not have the financial strength to do so without the government assistance.
- There is acute shortage of skilled and semi-skilled workforce and it is estimated that if the full potential is to be realized 0.5 million workers would need to be trained.
- A large majority of the manufacturers produce small quantities and are unable to meet the large volume orders from the US, which accounts for a large share of world imports. Also much of the footwear production in India is of dress shoes for men, while there is increasing requirement for comfort shoes. Ladies shoes are also not being manufactured for exports. What is needed is to scale up the production and diversify the product mix.
- The competitiveness of Indian exporters of leather products suffers on account of bad roads, delays in Inland Container Depots, and the fact that a large part of Indian cargo from the eastern seaboard, where the production is concentrated, is transshipped at Colombo and Singapore. This is due mainly to the fact that the channels in the ports on the eastern coast lack the depth necessary to allow large ships to come to these ports.

STRATEGIES

7.1.231 In order to address the above challenges the following significant interventions are proposed.

7.1.232 For augmenting the raw material base, rearing of male buffalo calves would be encouraged as also scheme for modernization of slaughter launched under PPP. For the better utilization of the skins of fallen animals, a scheme will be launched in the Department of Animal Husbandry for establishing 50 carcass centres, 20 bone-crushing plants, and 5000 hide-flaying units.

7.1.233 In order to stimulate fresh investment in new tanning units as well as in leather products, it is proposed that at least 10 leather parks/complexes would be established on the pattern of the SITP scheme of the Ministry of Textiles.

7.1.234 The Tenth Five Year Plan schemes, Leather Tanning Complex at Nellore (which did not take off during the Plan period but in which the State Government has recently taken positive steps) and the Footwear Complex in Tamil Nadu (which has been substantially completed) need to be carried forward into the Eleventh Five Year Plan. It is also proposed to continue the Tenth Five Year Plan scheme for the IDLS but the expenditure would be limited to the extent that the allocations remained unutilized in the Tenth Five Year Plan.

7.1.235 The small and medium tanning units in Tamil Nadu and elsewhere would be assisted for making investment to enable them to comply with rigorous environment norms imposed by the Pollution Control Boards. The GoI will provide 60% assistance, the remaining amount coming from the State Government and the units themselves.

7.1.236 A large Human Resource Development Mission will be launched for onsite training of workers and artisans in the unorganized sector and also for entrepreneurship development. The Mission will also cover the development of skilled manpower by the existing institutions, which offer courses at the degree level. The Footwear Design and Development Institute (FDDI), Noida, will be provided with additional machinery, equipment, workshops, and laboratory facilities for running courses on design and technology with increased intake and a new branch of the FDDI will be set up at Fursatganj. Consideration will be given to setting up more branches of FDDI in other parts of the country with concentrations of leather manufacturing units.

7.1.237 In the Eleventh Plan an allocation of Rs 1300 crore has been made for the ILDP.

Paper Industry

OVERVIEW

7.1.238 Paper industry is one of the 35 high-priority industries in India and is presently growing at a rate of 6.3% per annum. The turnover is nearly Rs 17000 crore per annum and its contribution to the national exchequer is around Rs 2500 crore. The industry employs 0.3 million people directly and is estimated to employ 1 million people indirectly. The per capital consumption of paper in India is 7.2 kg, which is far lower than in other emerging economies, for example 45 kg in China, 15–20 kg in other East Asian countries, and much higher level that exists in the US and Europe. The consumption of paper is likely to increase manifold with the growth in the economy and the rise in literacy.

7.1.239 At the end of the Tenth Five Year Plan there were about 666 industrial units with the total installed capacity of 8.50 million mt for paper and paperboard. However, 98 units with a capacity of 1.1 million mt are closed due to environmental problems. The industry produces 5.80 million mt of paper and paperboard. It has made significant progress after independence with government support and fiscal incentives. The country is almost self-sufficient in most varieties of paper and paperboard, and imports are taking place only of certain specialty items such as coated paper, cheque paper, etc. However, the industry has failed to keep pace with the technological advances and is beset with major difficulties such as high production cost, pollution problems, and finished paper quality not conforming to international standards.

7.1.240 The Indian paper industry is highly fragmented and 458 mills are of capacities less than 60 tonnes per day (tpd), 48 are of capacities ranging from 60 tpd to 100 tpd, and 62 are of capacities above 100 tpd. A variety of fibrous raw materials, viz., bamboo, hardwoods, agricultural residues, and waste paper are being used for paper-making in the country.

7.1.241 From the raw material perspective, the industry can broadly be divided into three segments, namely, wood based, agro based, and recycled fibre based. The contribution of these towards production is 30%, 32%, and 38%, respectively. The industry lacks abundant raw material here in the country and increasing quantities of waste paper and wood pulp are being imported. The imports of waste paper increased from about 1.4 million mt in 2004–05 to about 1.8 million mt in 2005–06. During the same period, the import of wood pulp increased from 378432 mt to 472391 mt. The production, import, and export of paper and paperboard are given in Annexure 7.1.11. The production has shown a slow increase during the Tenth Five Year Plan.

NEWSPRINT INDUSTRY

7.1.242 The paper mills producing newsprint conforming to BIS and supplying to newspaper publishers are considered for inclusion in Schedule of Newsprint Control Order 2004, enabling them to avail exemption of the excise duty. There are at present 77 mills including 2 Central public sector units and 2 State public sector units which are manufacturing newsprint paper with a total installed capacity of 15.9 lakh mt. The domestic production was 9.1 lakh mt in the year 2005–06 and 10.3 lakh mt in 2006–07.

7.1.243 The production, import, and export of newsprint during the last four years are as given in Annexure 7.1.12.

ISSUES AND CHALLENGES

7.1.244 The paper industry uses wood, agri-residue, and waste paper as raw materials with all the three segments contributing equally to the production. The use of non-wood raw material and waste paper has increased over the years and accounted for about 70% of total production at the end of the Tenth Five Year Plan period. With the liberalization of trade, the domestic industry has been exposed to increasing competition, and both product quality and price have come under pressure. While production has been increasing gradually, growth of the industry is hamstrung by the non-availability of particularly forest-based raw material. From the angle of this important industry, it has

become imperative that there is a paradigm shift in the management of forest from a 'conservation-centred' to a 'production-centred' approach.

7.1.245 No major greenfield integrated pulp and paper mill has come up in a decade. Raw material shortage is undoubtedly a major factor contributing to the stagnation of production capacity. Low per capita consumption of paper in the country and rising literacy levels present opportunities for growth of this industry. Steps are required to improve competitiveness of the industry which should specifically focus on the problems of technological obsolescence and economic use of water and energy as well effluent treatment to mitigate environmental problems.

STRATEGIES

7.1.246 The foremost problem that needs to be addressed is increasing the raw material base of the industry. Vast opportunities exist on degraded forest land but the rights of local communities and the principle of JFM constitute an insurmountable obstacle in leasing out such land to paper mills. If these lands remain bereft of forests for prolonged periods, the issue would need to be revisited. In the meantime, wastelands should be considered for developing forests under appropriate PPP arrangements, with the participation of local communities. The State Governments also need to consider ways of stimulating agro-forestry.

7.1.247 A programme should be put in place for incentivizing the SMEs to adopt energy-reducing and less water-intensive technologies and to take adequate steps for effluent treatment.

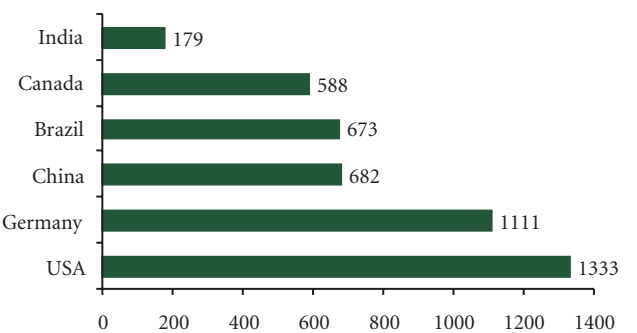
Petrochemical Industry

7.1.248 Internationally the petrochemical industry has been one of the drivers of industrial development, constituting 40% of the global chemical market. During 1950–90 countries West of Suez were dominating in the manufacture of petrochemicals but after that the global epicentre shifted to East of Suez, largely due to the availability of crude oil and natural gas in the Middle East and the growth of consumption centres in Asia, which has a large population base.

7.1.249 With 15 raw material producers and more than 50000 downstream processing units, the Indian petrochemical industry has a share of about 2.5% of the global petrochemicals production capacity. The Indian petrochemical industry consists of building blocks, commodity polymers, performance plastics, synthetic fibre, synthetic rubber, surfactants, and downstream plastic processing industry. Domestic demand growth for petrochemicals has slowed down during the Tenth Five Year Plan as compared to the previous Plan period. The production of commodity polymers and synthetic fibre which grew modestly during the Tenth Plan is presented in Annexure 7.1.13.

7.1.250 The downstream plastic processing sector is highly labour-intensive, currently providing employment to 3.3 million people but having the potential to generate 3.7 million new jobs by 2011–12. Domestic industry is extremely fragmented and operating with sub-optimal scale of operation, which is inhibiting its international competitiveness. This is mainly due to the government's past policy of reservation of various plastic products for exclusive manufacture in small-scale units and excise duty exemptions for them. The scale of operation in downstream plastic processing industry is sub-optimal in the country as can be seen from Figure 7.1.13.

7.1.251 Imports of plastic products from China and Thailand into India have increased rapidly in the recent years due to non-availability of quality plastic products in the country. Recognizing the economic



Source: Industry Association, Report of the Working Group on Petrochemicals Sector, Eleventh Five Year Plan.

FIGURE 7.1.13: Relative Scale of Operation of Plastic Processing Industry (unit size in tons per unit)

benefits and employment potential of the downstream sector, China had first developed the plastic processing sector and is the largest global exporter of plastic goods worth of US$ 18 billion compared to India's US$ 1 billion. After establishing globally competitive downstream processing industry, China started focusing on upstream cracker investments to increase their raw material and intermediate security.

7.1.252 India's competitiveness in the plastic processing industry is likely to improve in the future because in January 2007 and March 2007 the government has de-reserved 70 out of 84 items. Further the Micro, Small, and Medium Enterprises Act 2006 has raised the limit on investment in plant and machinery for SSIs from Rs 1 crore to Rs 5 crore.

7.1.253 According to the assessment of the Working Group on the Petrochemical Sector for the Eleventh Plan, the demand for polymers in the country has the potential to reach 12.5 million mt by the end of the Eleventh Five Year Plan growing at a CAGR of 18% necessitating commissioning of 5 additional crackers of 1 million mt average size with investments of US$ 8 billion and US$ 6 billion investments in the downstream plastic processing sector by 2011–12. The existing naphtha and gas cracker plants at Pata and Haldia are under expansion and new upcoming investments are in the Crackers at Panipat and Jamnagar and Assam with an investment of Rs 32000 crore.

CHALLENGES

7.1.254 The polymer industry has not grown because of stagnation in the processing industry on account of structural factors, viz., fragmentation of the industry on account of reservation of manufacturing for SSIs. Now that this problem has been resolved, modernization and achievement of scale economies need to be incentivized. The high level of 16% excise duties on polymers and articles of plastic dampens the demand. If the excise duty is lowered the demand will be stimulated.

7.1.255 At a time when growth in the processing industry is likely, it would be important to ensure that the industry adopts the highest quality standards. Although India is late in making its presence felt in the international markets in plastic products, high quality products can enable the industry to make up for the lost time.

7.1.256 To facilitate modernization, special effort will be needed for improvement of infrastructure in the vicinity of existing and proposed industrial units.

7.1.257 If expansion of the industry takes place at the scale that is envisaged, additional manpower requirement will be of 6 lakh including 1.4 lakh skilled workers. The training arrangements will have to be stepped up.

7.1.258 The use of plastic conserves natural reserves such as wood, metals, etc., for better productive use.Plastics can boost agricultural growth through plasticulture, better access to potable water, laying durable roads based on polymer-modified bitumen, and can save precious materials currently used in construction industry. The challenge is to persuade the users to use plastics in preference to more scarce alternatives derived from natural resources.

STRATEGIES

7.1.259 Consideration should be given to the reduction of excise duties on polymers and plastic products in order to stimulate demand.

7.1.260 The use of BIS specifications should be made mandatory for both domestically produced and imported articles of plastic for identified areas.

7.1.261 Since with enhanced demand both petrochemical producers and processing industry will be benefited, a joint effort of promoting polymer application in non-traditional areas should be initiated through their associations.

7.1.262 At present, CIPET is entrusted with providing the middle-level manpower requirement of the process industry. CIPET is creating technical manpower for the process industry in its 15 branches at different parts of the country and till date it has created 27000 professionals since its inception 40 years ago. In view of the projected demand of 1.4 lakh skilled

plastic professionals during the Eleventh Plan, the intake capacity of each centre may be enhanced.

7.1.263 PCPIRs should be established with dedicated plastic parks to stimulate new investment activity in the sector. Cluster development programmes such as in the IIUS of DIPP also need to be undertaken for the existing clusters.

7.1.264 The Eleventh Plan allocation for CIPET is Rs 136.50 crore including an Organization of the Petroleum Exporting Countries (OPEC) loan of Rs 55 crore. The Assam Gas Cracker Project has been approved by the government in 2006. The project is being implemented by a joint venture company, with Gas Authority of India Ltd (GAIL) having 70% equity participation. The joint venture company namely M/s Brahmaputra Cracker and Polymer Ltd (BCPL) was incorporated during January 2007 for implementation of this project.

Shipbuilding and Ship-repair Industry

SHIPBUILDING

Overview

7.1.265 The Indian shipbuilding is mainly centred around 27 shipyards comprising 8 public sector (6 yards under Central Government and 2 under State Governments) and 19 private sector shipyards. The shipyards between them have 20 dry docks and 40 slipways with an estimated capacity of 281200 Dead Weight Tonnage (DWT). A major share of this capacity is held by the 8 public sector yards and only Cochin Shipyard Limited (110000 DWT) and HSL (80000 DWT) have the required infrastructure and graving dock to build large vessels.

7.1.266 After a pronounced boom in the mid-1970s, the global shipbuilding industry experienced a prolonged depression for more than 20 years, which lasted until the end of the Tenth Five Year Plan. Since then another boom has set in and the outlook of the shipbuilding industry has been transformed. At the beginning of the Eleventh Five Year Plan, the order book position of Indian shipyards was very healthy. Private shipyards are severely limited by capacity and the size of ship they can build. However, five of them are in the process of expanding or setting up new capacities, including for building Very Large Crude Carrier (VLCC) size ships, with an investment in the region of Rs 4000 crore.

Production and Export

7.1.267 The growth of shipbuilding in India has gone up from 4.5% in the Ninth Five Year Plan period to 15% per year in the Tenth Five Year Plan period, and India's share in the world market from an insignificant 0.1% in the beginning of Tenth Plan to 1.3% in 2006. On the export front, one public sector shipyard, that is Cochin Shipyard Ltd (CSL), and three private sector shipyards, viz., ABG, Bharati, and Chowgule, performed remarkably well during the Tenth Five Year Plan period and were able to get export orders. The Indian ship-repair industry is having an average turnover of around US$ 76 million. The ship-repair market potential is much more than what is presently being undertaken.

7.1.268 A meagre six ships were exported in the Ninth Five Year Plan but orders for export of more than 50 ships have been taken by Indian yards in the Tenth Five Year Plan. Against 0.3 million DWT exported during the Ninth Five Year Plan, the order book for export is more than 1.0 million DWT and the projections for the Eleventh Five Year Plan are about 4.00 million DWT. The bulk of the export is in the small-ship segment where India has emerged as a major supplier, and for the construction of offshore and oil industry ships such as Offshore Supply Vessels (OSVs) and anchor handling tugs. From an inward-looking industry dependent on government orders, the Indian shipbuilding industry has emerged as a competitive export-led industry.

Market Potential

7.1.269 As per Indian National Shipowners Association (INSA), the total tonnage required to be added in the Eleventh Plan will be around 5.33 million GT involving about 455 vessels, and the investment required will be Rs 55000 crore.

7.1.270 The annual average global order book grew by 78.86 million DWT in the period 2001–05 and in

excess of 100 million DWT in the last two years. Of the Rs 14000 crore worth vessels on order in the Indian yards, nearly 68% are for foreign buyers. Clearly the outlook for the Indian shipbuilding industry is very bright and a faster growth of shipbuilding capacity is imperative for seizing the opportunity presented by the current boom. Projected shipbuilding order book turnover in Eleventh Five Year Plan is given in Table 7.1.11.

TABLE 7.1.11
Projected Shipbuilding Order Book Turnover

	2006–07	2007–12
Order book (Mn DWT)	1.3	5.00
Global order book (Mn DWT)	231.2	231.2
India's share of global order book	0.4%	2.2%
Delivery (Mn DWT)	0.65	2.50
Turnover (US$ Billion)	0.65	2.50
Shipbuilding industry % of GDP	0.04%	0.16%
Total employment	12000	78000

Source: DIPP.

Investment

7.1.271 The Indian Shipbuilders Association has estimated that the industry can grow at a rate of more than 30% and this momentum can be maintained for the next 10 years to reach a level of 5 million DWT order book for the Eleventh Five Year Plan as against 1.3 million for the Tenth Five Year Plan.

Challenges

7.1.272 Shipyards get orders only if they are credible (i.e., deliver quality ships on time) and it can be credible only after successfully executing consistently under international competition. During the Tenth Five Year Plan the industry has demonstrated its international competitiveness and the ability to respond to a buoyant market. The main challenges are removing the policy impediments, ensuring a stable environment, and encouraging R&D, design, and productivity improvement.

7.1.273 The Working Group has highlighted that cost competitiveness of Indian yards was affected on account of service tax, custom duty on ships manufactured in Indian yards, high excise duty on raw materials and capital goods required for manufacturing ships, etc. While foreign shipping companies are building their medium and small merchant ships in India, Indian shipping companies are purchasing their ships from abroad, both big and small but more big than small. The present fiscal and statutory rules on shipbuilding in the country are heavily loaded in favour of export and discourage construction of ships by Indian yards for the Indian flag.

7.1.274 The shipbuilding subsidy has been the main promotional instrument for the shipbuilding industry. The shipbuilding subsidy scheme has been operating since 1971 for Central public sector shipyards. The scheme was discontinued in 1975, was later re-introduced in 1977, and was modified in August 2000. The shipbuilding subsidy up to 2002 has been used as a measure for revival of public sector shipbuilding. Re-modified subsidy scheme introduced in 2002 discontinued Interest Differential Subsidy upto 5% and extended the benefits to 30% subsidy on the price of the ship to private sector yards also. The subsidy has clearly been a major contributing factor in enabling the industry to get a foothold in the international market. It is also a fact that the major shipbuilding nations of the world have been granting shipbuilding subsidies in the past.

7.1.275 In order to be able to join the league of major shipbuilding nations, the industry needs to undertake design development and R&D. With the changing technological environment, increasing application of information technology, and changes in safety norms, it is imperative for shipyards to keep pace with such developments to meet emerging classification standards.

Strategies

7.1.276 It is necessary to examine in depth the impact of the fiscal regime on the Indian shipbuilding industry to see if any corrective measures need to be taken. In particular, the reasons have to be ascertained for the preference of the Indian shipping industry to purchase from foreign sources and remedial measures taken.

7.1.277 It has become apparent that the existing shipbuilding subsidy scheme cannot be continued indefinitely when boom conditions are prevailing in the

international market. However, a gradual phase down rather than sudden termination may seem to be called for.

7.1.278 The R&D institutional set up serving the shipbuilding sector needs to be reviewed and strengthened. The R&D scheme in the shipbuilding sector will have to cover projects for industry-wide improvement in knowledge base, standardization, and skill development. The government should extend budgetary support for R&D in shipbuilding.

7.1.279 An allocation of Rs 170 crore has been made in the Eleventh Plan for R&D in the shipbuilding sector.

SHIP-REPAIR INDUSTRY

Overview

7.1.280 Unlike the shipbuilding industry, which experiences cyclical downturns and upturns, the ship-repair industry is evergreen. Ship-repair yards generally have a continuous and consistent flow of business and revenue generation is more predictable. Another attractive feature of the ship-repair industry from the Indian perspective is its job-creating potential on the one hand and the availability of skilled personnel on the other.

7.1.281 Unlike in some other countries where ship repairs are done mainly in dedicated units, in India there is only one dedicated unit and all the other yards carry out ship repairs and shipbuilding side by side. Ship repairs are also carried out in dry docks and floating docks. The Indian ship-repair industry is regulated through ship-repair units (SRUs), which are registered and licensed by the Director General of Shipping to enable them to avail customs duty and other concessions. There are 35 SRUs of which only 7 SRUs have been registered on a permanent basis.

PERFORMANCE AND MARKET POTENTIAL

7.1.282 During the Tenth Five Year Plan the industry achieved an annual turnover of about Rs 436 crore. The Tenth Five Year Plan had envisaged that India would emerge as a dominant ship-repair centre challenging Dubai, Singapore, and Bahrain. This did not happen because, inter alia, the industry turned its attention to shipbuilding in response to the prevailing boom conditions. The Working Group has assessed the annual market potential for ship repairs in India to be between Rs 2440 crore and Rs 2790 crore. Of this almost 50% will be accounted for by foreign ships on overseas trade visiting Indian ports, and the remaining by domestic ships engaged in overseas trade, coastal/service vessels, offshore rig repairs, navy and coast guard vessels, and other merchant vessels in the region.

Challenges

7.1.283 While the Indian shipbuilding industry is benefiting from an unprecedented boom, the ship-repair industry is in the doldrums. One of the reasons is poor productivity. The Yiu Lian Dockyard Ltd, the biggest shipyard in China, has steel renewal capacity of 250 mt per day as against 5 mt per day at best in India, and sand/grit blasting capacity of over 15000 sq m per day against around 1000 sq m per day in India. It takes 6 to 7 days in India to blast the outer hull of a 30000–40000 DWT ship and 50 days to replace 250 mt of steel in India against just one day in China for each of these operations. Since the time taken for ship repair of the essence for competitiveness, the longer time taken by the Indian ship-repair industry makes it less competitive.

7.1.284 The existing docking facilities in India have not grown to meet the requirements of the modern tonnage with only the two CPSEs, Cochin Shipyards Ltd and Hindustan Shipyards Ltd, able to provide dry dock and repair facilities for large size vessels. There is no dry dock facility for VLCC class of vessels, which are bound to increase in number on the west coast with the commencement of new refineries in Gujarat. Even Suezmax size vessels do not have dry docking facilities in the country. Further, the 13 dry docks and 1 floating dock in existence in the major port trusts are underutilized for the repair business.

7.1.285 While exemption is available to SRUs from both customs duty and excise duty, no such exemption is available in respect of service tax. The service tax of 12.24% has made the industry uncompetitive vis-à-vis ship repairers in Bahrain, Dubai, and Singapore.

Customs clearance procedures also are time consuming and impose costs on the industry.

Strategies

7.1.286 The CPSEs are the engines of growth in ship repairs. While the private sector units will no doubt respond to market demands by creating the capacity for repair of large size ships and to improve productivity, it is also necessary to make additional investments toward this end in the CPSEs, particularly the CSL and HSL. Further the reasons for underutilization of dry dock and floating dock facilities in major ports need to be examined and corrective measures taken.

7.1.287 The possibility of exemption of the ship-repair industry from service tax and improvement of customs procedures for speedy clearance of import consignments of spare parts needed for ship repairs need to be examined.

Steel Industry

OVERVIEW: PRODUCTION, IMPORT, AND EXPORT

7.1.288 The Tenth Five Year Plan has seen robust growth of the steel industry with significant increases in both production and consumption. Crude steel production grew at the rate of 9.8% annually from 34.83 million tonnes in 2002–03 to 50.88 million tonnes in 2006–07 (provisional). This growth was driven by both capacity expansion (from 40.41 million tonnes in 2002–03 to 56.84 million tonnes in 2006–07) and improved capacity utilization (from 86% in 2002–03 to 89% in 2006–07). The year-wise production, availability, consumption, export, and import of finished steel in the Tenth Plan are presented in Annexure 7.1.14.

7.1.289 The average increase in production during the Tenth Five Year Plan was 3.7 million tonnes per annum compared to just 1.1 million tonnes per annum in the Ninth Five Year Plan (1997–2002), and the annual growth rate of steel consumption doubled to 9.8% in the Tenth Five Year Plan compared to only 3.8% in the Ninth Five Year Plan. Capacity creation during the last decade after deregulation has taken place entirely in the private sector. As a result, there has been a noticeable shift towards the private sector both at the crude and finished steel stages. Private sector during 2006–07 accounted for 67% of the total crude steel output compared to 41% in 1992–93 and 74% of the total finished steel output compared to 54% in 1992–93.

7.1.290 The National Steel Policy 2005 has projected consumption to grow at 7% based on GDP growth of 7%–7.5% and production capacity of 110 million tonnes by 2019–20. The estimates have been revised upward by the Working Group. In the 'Most Likely' scenario of 9% GDP growth, demand for steel is projected to be 70 million tonnes by 2011–12. Therefore, it is envisaged that in the next five years, the demand will grow at a considerably higher annual average rate of 10.2% as compared to around 7% growth achieved between 1991–92 and 2005–06.

7.1.291 Several existing steel mills have planned expansion of capacity and there are new investments including foreign investment in the pipeline. The public sector units, namely, SAIL and RINL, are planning to increase production of crude steel from a level of 16 million tonnes per annum in 2006–07 to 30 million tonnes per annum by 2011–12. The Eleventh Five Year Plan Working Group on the steel industry has estimated that the capacity that will actually come up by the terminal year will be 80 million tonnes per annum of crude steel.

7.1.292 The world steel industry has been buoyed up by the frenetic pace of growth in the consumption and production of steel in China. The world crude steel production grew from 0.850 billion tonnes in 2001 to approximately 1.24 billion tonnes in 2006 recording a growth of 7.9% per annum compared to a mere 2% annual growth recorded between 1995 and 2001. China's steel production rose by more than 210 million tonnes since 2001 to reach a level of 423 million tonnes in 2006. Today more than 34% of the global steel production is attributed to the Chinese economy. The World Steel Dynamics in its latest forecast for next 15 years (June 2006) projects global steel demand at least at a rate of 3.1% per year till 2015. The impetus for expansion of steel capacity in India has come from the expected expansion of the domestic demand.

7.1.293 The Indian steel industry has withstood international competition despite the reduction of basic customs duty on steel from 25%–30% in 2002–03 to 5% in 2006–07. By the end of the Tenth Five Year Plan the industry was fully geared to operate in an open economy where exports and imports respond to increases or decreases in the domestic demand driven primarily by market signals. While exports of finished carbon steel were sustained at a level of 4–5 million mt per annum during the Tenth Five Year Plan imports increased sharply from about 1.5 million mt in 2002–03 to 4.10 million mt in 2006–07 (provisional), it was not because of fall in competitiveness but rather to fill up supply–demand gap in the domestic market.

CHALLENGES

7.1.294 If steel production is to increase to the projected levels by the end of the Eleventh Five Year Plan, there would be a large requirement of raw materials and other inputs. The indicative requirements that have been worked out by the Eleventh Five Year Plan Working Group are presented in Annexure 7.1.15.

7.1.295 The challenge arises from the fact that iron ore resources in the country are depleting, aided by the rapid growth of exports, and high grade coking coal needed by the industry which is in short supply, globally leading to hardening of prices from US$ 48 per mt FOB Australian ports in 2003 to US$ 115 per mt in 2006. Although non-coking coal reserves in the country are adequate, the production of the raw material is constrained by low investment by Coal India Ltd. An added problem of the Indian steel industry is that adequate sintering and pelletization capacities do not exist in the country as a result of which steel mills rely on lump ores and fines have to be necessarily exported.

7.1.296 A related problem is that of movement of raw materials such as iron ore, non-coking coal, and limestone from the mines to the plants. Large volumes of coking coal would have to be moved from the ports to the plants, which are mostly situated inland. The quality of transport infrastructure in the country imposes huge costs on the steel industry and with increased quantities needed to be moved the problem will increase.

STRATEGIES

7.1.297 It would be necessary to monitor the exports of iron ore from the country with a view to ensuring that supplies to the Indian steel plants are not affected. Export duty has already been imposed and it is expected that the exports would come down. At the same time, for assured metallurgical coke supplies, the possibility should be explored of an arrangement with China to swap iron ore for metallurgical coke. To incentivize the development of sintering and pelletization capacities consideration should be given for fiscal concessions to the industry.

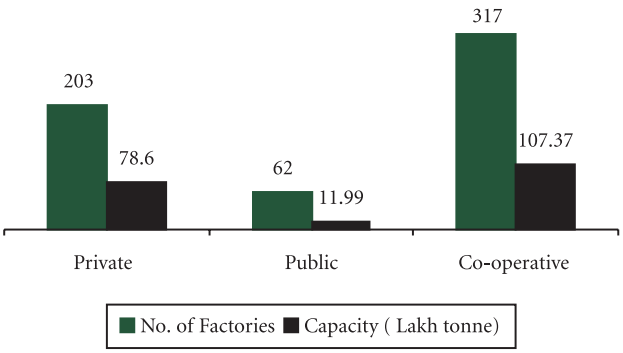
7.1.298 Increased movement of input and output from the steel industry will be considerably facilitated by the investment envisaged in the Eleventh Five Year Plan in road, rail, and ports. The financing plan of ports already takes into consideration the likely increase in imports of coking coal. Since the internal movement of bulk raw materials will be largely by rail, and projected increases of movement are very large, the railways should set up joint consultative machinery with the industry to ensure that the requirements of the industry are fully factored into the plans of the railways.

7.1.299 In steel sector, in the Eleventh Plan, the outlay of Rs 37318.18 crore includes the budgetary Rs 216 crore only. Out of total allocation of Rs 37318.18 crore, SAIL and RINL account for Rs 27409 crore and Rs 9569.18 crore, respectively. The budgetary support is for the restructuring of CPSEs in steel sector and for some of the ongoing and new R&D schemes.

Sugar Industry

7.1.300 India is the largest producer–consumer of sugar in the world. The sugar industry is the second largest agro-based industry, next to textiles in the country. About five lakh workers are directly employed in the sugar industry besides many more in industries, which utilize by-products of sugar industry as raw material. The country has 582 sugar factories with an aggregate capacity of 197.97 lakh tonnes. The ownership-wise break up is given in Figure 7.1.14.

7.1.301 As a result of a conducive policy environment resulting from progressive decontrol and favourable



Source: Annual Plan 2007–08, Department of Food and Public Distribution (DFPD).

FIGURE 7.1.14: Ownership-wise Distribution

monsoon, sugar production in the country experienced strong growth in the last four years of the Ninth Plan to reach an all time high level of 201.32 lakh tonnes in 2002–03. After a decline due to failure of monsoon in some States during 2003–04 and 2004–05 seasons, domestic production again picked up, achieving the estimated level of 283 lakh tonnes in 2006–07.

7.1.302 Out of 582 sugar-producing units in the country, 410 are in the small segment, with 228 having a capacity of 2500 Metric Tonnes Crushed per day (TCD) and 282 having a capacity of 2500 to 5000 TCD. Mid-size segment has 64 units with capacities higher than 5000 TCD but below 10000 TCD, while only 8 units are large, having capacities of 10000 TCD and above. The position regarding production, internal consumption, and export of sugar during 2002–03 to 2005–06 are given in the Annexure 7.1.16.

POLICY INTERVENTIONS

7.1.303 While the sugar industry has benefited from the withdrawal of industrial licensing under the Industries Development and Regulation Act 1951 and the abolition of stockholding and turnover limits on wholesalers/dealers, it is still subject to a number of policy interventions as described below:

- The industry is subject to statutory minimum price (SMP) for sugarcane fixed by the Central Government from year to year on the basis of the recommendations of the CACP taking into account cost of production of sugarcane, return to growers from alternative crops, fair consumer price of sugar, etc. SMP is fixed after consulting the State Governments and associations of sugar industry and cane growers.
- While the policy of blanket control on sugar under Essential Commodities Act 1955 has been discontinued, a policy of partial control and dual pricing is still in operation. Under this policy, a certain percentage of sugar production in factories is levied by the government on a pre-fixed price for distribution under PDS and the remaining production goes for free sale. The proportion of levy sugar has however been reduced from 40% to 10%. The Sugarcane Control Order stipulates that a new mill cannot be established within a distance of less than 1 km from an existing mill.
- While the erstwhile Sugar Export Promotion Act 1958 was repealed and export of sugar decanalized, the level of exports is regulated through several measures such as system of advance licensing, periodic ban, etc.

SUGAR DEVELOPMENT FUND (SDF)

7.1.304 Under the Sugar Cess Act 1982, a cess of Rs 14.00 per quintal is collected on all sugar produced in the country and an amount equivalent to the same is credited in the SDF created under the SDF Act 1982. The Fund has benefited the domestic industry by providing loans at concessional rates to sugar factories for modernization and expansion of capacities, rehabilitation, development of sugarcane, setting up facilities for internal transportation for export obligation, setting up of bagasse-based co-generation units, production of ethanol from molasses, and maintenance of buffer stock as well as providing grant for industrial research. Commensurate with the technology upgradation and price escalation, normative project costs of various components, especially, bagasse-based co-generation, etc., are being revised from time to time. In an amendment dated 15 September 2006 the normative project cost for bagasse-based co-generation unit has been revised upwards and the SDF loan component raised to 40% of the project cost from 30% earlier. The amendment also relaxed the earlier requirement of bank guarantee for SDF loans to set up ethanol units by sugar factories.

BUFFER STOCKS

7.1.305 In order to alleviate the difficulties of the mills in times of surplus production, the Central Government undertakes buffer stock operations from time to time. In August 2007 the government decided to create a buffer stock of 30 lakh mt for a period of one year.

CHALLENGES

7.1.306 While international prices have been fluctuating, the SMP fixed by the Central Government has been raised gradually from Rs 62.05 per quintal in 2001–002 to Rs 81.18 per quintal in 2007–08. Additionally some of the State Governments have been advising sugar factories to pay cane price at a higher level than the SMP. The sugar industry thus faces a predicament in which it is asked to pay more for the raw materials even as it gets less for its produce in the market.

7.1.307 Indian sugar exports experience wide fluctuations from year to year. While exports are restricted in the years when international prices are high, they need to be subsidized in years in which such prices are low. Export subsidies have become inconsistent with India's obligations under the WTO Agreement from 2004 after the expiry of the validity of the WTO provision which gave special dispensation to the developing countries in respect of subsidies on market promotion expenses including international freight as well as on concessions on internal freight on export shipments.

7.1.308 Indian sugar industry is amongst the most diversified industry in the world, with an installed capacity to produce 1000 MW co-generated power against a potential of 7500 MW. An addition of 1000 MW is under implementation. Despite emphasis laid by the GoI to harness the growth potential further, the progress as co-generation of power is sapped by problems with regard to tariff fixation, third-party sale, and timely payments by State Electricity Boards (SEBs).

7.1.309 The economics of sugar production are crucially dependent on the production of by-product ethanol. Recently, the 5% ethanol-doping programme has been extended to the country as a whole, with the annual doping requirement estimated at 550 million litres of ethanol. With further increase in the ethanol doping to 10% from June 2007, the annual demand would rise up to about 1100 million litres. Already a capacity of about 1550 million litres has been established in major sugarcane-producing States, which is sufficient to meet this scale of ethanol-doping requirement. However, the oil companies are going slow. Further, in as many as seven States, the EDP has not been implemented due to taxation problem by the State Governments. It may be noted that in Brazil, doping has been mandated by the government at 24%.

STRATEGIES

7.1.310 Since fluctuation in international prices is a feature of international commodity markets, it needs to be examined how the fall in sales realization in certain years can be taken into account in fixing the SMP for sugarcane or in considering additional payments sometimes mandated by the State Governments.

7.1.311 The evolution of the WTO rules has made export subsidies by India in sugar (or any agricultural products) arguably inconsistent with the WTO obligations. The developing countries are likely to get a time-limited window for such subsidies once the Doha Round concludes. In the meantime, it needs to be examined how the government can assist the industry in a WTO-consistent manner to deal with surplus production.

7.1.312 The difficulties of sugar mills in the sale of additional power from co-generation need to be resolved.

7.1.313 A long-term policy needs to be devised on the mixing requirements for petroleum fuel with ethanol.

Textiles and Jute

7.1.314 The strength of the Indian textiles and clothing industry is based on the long tradition of manufacturing, strong raw material base, indigenous design capabilities, presence in the entire value chain, large and growing domestic demand, and the availability of trained manpower at internationally competitive rates. The Indian textile and clothing industry consumes a diverse range of fibres and yarns but is predominantly cotton based. At current price, the total market size of

the Indian textiles industry is approximately US$ 47 billion. The industry contributes 14% to the total industrial production and directly employs 35 million people. It accounted for 17% of India's export earnings, 3.37% share in international merchandise, and 18% of industrial employment in 2006.

7.1.315 During the Tenth Five Year Plan period, the growth rate of the industry accelerated under the twin stimuli of domestic policy reforms and the end of the quota regime with effect from 1 January 2005 in major industrialized countries following agreement in the WTO. The excise duty structure was streamlined and rationalized, customs duty on machinery reduced, and the reservation for SSI units for garments eliminated. Removal of the policy tilt towards the SSI units had a significantly positive effect on the industry. The TUFS and the cotton technology mission also boosted the industry. The production of cloth increased strongly in the last three years of the Plan period after stagnating in the first two years. During the first two years of the Tenth Five Year Plan, the total production of cloth hovered around 42 million sq m but rose to 49.5 million sq m in 2005–06, and is estimated to have reached a figure of 53.7 million sq m in 2006–07 (Annexure 7.1.17).

7.1.316 Following the end of textile quotas, exports registered a strong increase in the year 2005–06 but there was a deceleration in the subsequent year. Export of textiles and clothing during the Tenth Five Year Plan is presented in Annexure 7.1.18.

7.1.317 The available export data (April 2006–February 2007) seem to suggest that the growth of exports decelerated sharply (to about 7.75%) as compared to 25.9% during April 2005–February 2006. Even in 2005–06, when exports had risen overall, man-made textiles had shown a decline, indicating lack of competitiveness in a quota-free regime. Clearly, despite the progress in the latter half of the Tenth Five Year Plan, the well-known constraints, which are indicated later, are still affecting competitiveness in man-made textiles. Overall, however, at the end of the Tenth Five Year Plan period there was considerable vibrancy in the textile industry and confidence that it was poised for significant growth during the Eleventh Five Year Plan. The vision projected by the industry envisages that cloth production would grow at 12% and the total turnover at 16% during the Eleventh Five Year Plan. The turnover will rise from US$ 47 billion to US$ 115 billion and the exports from US$ 17 billion to US$ 55 billion. The industry expectation is that the incremental investment of Rs 30000 crore would be replicated during each of the five years of the Eleventh Five Year Plan. The industry also projects an increase in employment by 6.5 million, of which almost 2 million will be in the skilled and managerial categories.

TEXTILES MACHINERY INDUSTRY

7.1.318 The fortunes of the textiles engineering industry are linked with textiles industry. The performance of textiles engineering industry has shown significant improvement during the last —two to three years in line with the textiles industry. The production of textiles machinery has been steadily increasing over the last five years and a significant increase of 28% has been recorded during the year 2005–06. The capacity utilization of the industry has also been gradually increasing. It has increased from 28% in 2001–02 to 57% in 2005–06. In terms of value, the production of textiles machinery has increased from Rs 1072.46 crore in 2001–02 to Rs 2151.10 crore during 2005–06.

JUTE INDUSTRY

7.1.319 The jute industry occupies an important place in the national economy. It is one of the major industries in the eastern region, particularly in West Bengal. It supports nearly four million farm families, besides providing direct employment to about 2.6 lakh industrial workers and livelihood to another 1.4 lakh people in the tertiary and allied sectors. The target for raw jute production in the Tenth Plan is likely to be achieved in 2006–07. Against the production target of 110 lakh bales for the terminal year 2006–07 of the Tenth Five Year Plan, the achievement in 2005–06 was 85 lakh bales and the expectation is that the target would have been achieved in 2006–07. The average of jute and mesta produced during 2002–03 to 2005–06 was 91.25 lakh bales. Jute goods production, however, will fall short of the Plan target by 18%: against the target of 19.50 lakh mt for terminal year 2006–07, the achievement during 2005–06 was 15.82 lakh mt and the average production of jute goods from 2002–03 to

2005–06 was 15.96 lakh mt. In contrast, export targets had been met and exceeded. Against the export target for jute goods of US$ 154.36 million for the terminal year 2006–07, the achievement in 2005–06 was US$ 276 million. The average exports of jute goods from 2002–03 to 2005–06 was US$ 240 million.

REVIEW OF MAJOR TENTH PLAN SCHEMES

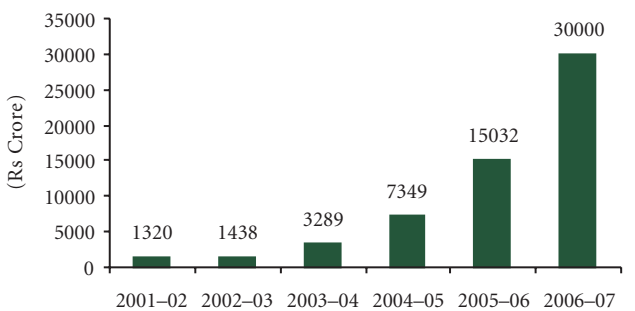
7.1.320 We review below the three major Plan schemes that were in operation during the Tenth Five Year Plan.

Technology Upgradation Fund Scheme (TUFS)

7.1.321 Investments in the textiles sector, which was being incentivized by the TUFS, picked up steam from 2004–05 after the major steps taken by the Central Government for rationalizing the excise duty structure in that year. Another reason for the spurt was the implementation of the WTO Agreement for the elimination of quotas. Figure 7.1.15 shows the growth of investment stimulated by the TUFS.

Technology Mission on Cotton (TMC)

7.1.322 TMC, which commenced during the Ninth Plan, had four mini-missions, the first two for increasing agricultural productivity, implemented by the Ministry of Agriculture, and the other two for the development of marketing yards and modernization of G&P units, implemented by the Ministry of Textiles. The missions implemented by the Ministry of Agriculture have contributed to an increase in the productivity from 308 kg per ha in 2002 to 467 kg per ha in 2005 (world average: 680 kg per ha; US: 830 kg per ha; Brazil: 1180 kg per ha; China: 1140 kg per ha).



Source: Report of the Working Group on Textiles and Jute Industry for Eleventh Plan.

FIGURE 7.1.15: Project Cost Sanctioned under TUFS

Under mini-mission III 250 marketing yards were sanctioned for development against which 225 are expected to have been sanctioned until the end of the Tenth Five Year Plan. Under mini-mission IV, modernization of about 900 Ginning and Pressing units is expected to have been sanctioned against a target of 1000. Some of the ginners have availed of the TUFS for modernization, making the total number 1500. With the completion of these programmes the industry will have the capability to process about 325000 bales of cotton, which is expected to be clean and contamination free.

Scheme for Integrated Textile Parks (SITP)

7.1.323 The SITP was launched in 2005 to neutralize the weakness of fragmentation in the various sub-sectors of textiles value chain and the non-availability of quality infrastructure. The aim was to consolidate individual units in a cluster, and also to provide the industry with world-class infrastructure facilities on a PPP model to set up their textile units. A total of 26 parks have already been approved and these are expected to be developed by March 2008. These parks would incorporate facilities for spinning, sizing, texturizing, weaving, processing, apparels, and embellishments. The estimated project cost (for common infrastructure and common facilities) is Rs 2428.33 crore of which the GoI assistance under the scheme would be Rs 866 crore. (The estimated investment in these parks would be Rs 13445 crore and the estimated annual production would be Rs 19200 crore.) A total of 2219 entrepreneurs will put up their units in these parks. The estimated employment generation would be around five lakh (direct/indirect).

CHALLENGES

7.1.324 The Indian textiles industry suffers from all the handicaps of the manufacturing sector mentioned earlier, viz., deficiencies in the transport infrastructure, shortcomings in the quantity and quality of supply of electricity, lack of adequate flexibility in the labour laws, high transaction cost, and direct and indirect taxes that are short of world standards. Although much has been done during the Tenth Five Year Plan in particular, the task remains formidable. We consider some of these problems in the context of the textiles industry.

7.1.325 The main reason for India to be well behind China in textiles and clothing is the absence of economies of scale in the manufacturing enterprises in the country. While many units in China have tens of thousands of workers, the industrial units in India are discouraged by the requirements of Chapter V-B of the Industrial Disputes Act 1956 from employing more than 100 workers. The result is that the industry is fragmented and is unable to respond to the large volumes of orders that are placed by the retail chains in the industrial economies. The Contract Labour (Regulation and Abolition) Act 1970 is another hurdle in these enterprises being able to respond to enquiries for supply of large volumes of goods unless they are assured of long-term demand, which is seldom the case. This is the main reason behind the fact that the share of textiles in the FDI flows into the country so far has been about 1% against 10% in China.

7.1.326 Technologically, our textiles industry is still backward and the modernization process that began during the Ninth Five Year Plan and accelerated midway through the Tenth Five Year Plan has not made enough progress. To give one example, only 2% shuttleless looms are in place as against the world average of 16%. Another segment that has not made progress is processing. A big handicap is that the order books of the textile machinery industry are full and the industry is not able to get delivery in quick time. As a result the enterprises are purchasing second-hand equipment, which costs a fraction of the new equipment. Large-scale purchase of the used machinery, with a limited life, cannot be really called modernization.

7.1.327 The technical textile is an upcoming area in the textile sector which is primarily textile materials and products with specific physical and functional properties, mostly used as component/part of another product to improve the performance of the product. These include spun-bonded geo-textiles, needle-punched geo-textiles, woven geo-textiles, geo-grids, woven narrow fabrics, and non-woven for disposables healthcare textiles, sanitary napkins, incontinence diapers, and diapers. The domestic market in 2005 was worth US$ 6.7 billion as against the size of US$ 107 billion. The global market is expected to grow to US$ 127 billion by 2010. The challenge for the Indian textile sector is to increase its share of the global market during the Eleventh Five Year Plan.

7.1.328 A related problem is that modernization is based on the government support through the TUFS, which was made operational in the Ninth Five Year Plan. The financial assistance being given by the Central Government under the programme is not inconsistent with WTO obligations, but the problem is that it renders our exports vulnerable to countervailing duties being imposed by importing countries if these exports are assessed by them to be causing material injury to their domestic industry. Since the subsidy is on capital goods, the vulnerability will remain for the entire period of the useful life of the machinery. If the SEZ benefit of income tax concession on profits from export income and/or the benefits of the SITP are added, the importing countries could impose high countervailing duties. Furthermore, the requirement of funds for continuing the TUFS is likely to be very high if the scheme is rolled over into the Eleventh Five Year Plan.

7.1.329 As mentioned earlier, it is expected that during the Eleventh Five Year Plan period there would be a large requirement of additional workforce in the industry. The Working Group for Textiles and Clothing for the Eleventh Five Year Plan has identified category-wise requirement (in lakh) of workforce as managerial, technical, and administration (6.5); skilled, ITIs and Certificate courses (13); semi-skilled machine operators (32.5); and unskilled (13). In the absence of organized effort the requirement is not likely to be met.

STRATEGIES

7.1.330 It has been difficult to achieve consensus on proposals for changes in labour laws, particularly Chapter V-B of the Industrial Disputes Act 1956 and the Contract Labour (Regulation and Abolition) Act 1970, but given the potential for unlocking substantial additional employment in the textile and clothing industry if these changes are carried out, consideration of such changes and consultations for the same would have to continue so that early action is taken during the Plan period. In the absence of any change, the ambitious programmes of the industry are likely to remain unrealized.

7.1.331 In order to continue the stimulus for investment for modernization, upgradation, and additional capacity creation, the TUFS, SITP and TMC would have to be continued during the Eleventh Five Year Plan. However, it would be necessary to limit the TUFS, either in time or scope, in order to ensure that the financial commitment of the Central Government does not cross the allocation available for the programme. Furthermore, in order to ensure that the industry modernizes, the assistance should be restricted only to the purchase of new machinery.

7.1.332 It has become apparent that substantial additional effort would be needed for skill upgradation and training of managerial, skilled, and semi-skilled manpower. In order to ensure that the effort is demand driven, the individual initiatives must come from the industry, which should be willing to take complete responsibility for running the additional programmes. The government's contribution could come as a one-time assistance for developing the needed infrastructure, by way of buildings and equipment needed for the creation of new facilities or expansion of existing ones.

7.1.333 The total outlay for the industry segment of the textile sector is Rs 11000 crore. In the Eleventh Plan the TUFS would continue for two years. Other main continuing schemes are SITP and TMC. Jute Technology Mission has already been revised by bringing all components together in Mission Mode in 2006. For skill upgradation, a 'Human Resource Development Scheme' is proposed in the Eleventh Plan.

Micro And Small Enterprises (MSEs)

Introduction

7.1.334 Worldwide, MSMEs[3] have been recognized as engines of economic growth. In India, MSEs (till recently, known as village and small enterprises) account for almost 40% of the total industrial production, 95% of the industrial units (along with medium industries), and 34% of the exports. They manufacture over 6000 products ranging from handloom sarees, carpets, and soaps to pickles, papads, and machine parts for large industries.

7.1.335 It is estimated that an investment of Rs 10 lakh in fixed assets in the small sector produces goods or services worth Rs 46.2 lakh with an approximate value addition of 10 percentage points. In 2003–04, the contribution of SSI sector alone to the GDP was 6.71%. In the last decade, the growth rate of MSEs has been consistently higher than the overall growth rate of the industrial sector, crossing the 12% mark in the terminal year of the Tenth Plan.

7.1.336 The MSEs are, however, more than just GDP earners; they are instruments of inclusive growth which touch upon the lives of the most vulnerable, the most marginalized—women, Muslims, SCs, and STs—and the most skilled. Being the largest source of employment after agriculture, the MSE sector in India enables 650 lakh men, women, and children living in urban slums, upcoming towns, remote villages and isolated hamlets to use indigenous knowledge, cultural wisdom, dextrous hands, and entrepreneurial skills for the sustenance of their lives and livelihoods. Yet, in successive Five Year Plans this sector has not received its due. A subset of the MSE sector is what can be termed as 'cultural and creative industries'. India's cultural diversity and heritage is capable of giving the country a strong presence in the global market for products from such industries. The Planning Commission had constituted a Task Force with a view to integrate production by cultural and creative industries with our development strategy. The recommendations of the Task Force will be examined for implementation in the Eleventh Plan.Table 7.1.12 indicates the allocation for Village and Small Enterprises (VSE) in the past three Plan periods.

TABLE 7.1.12
Plan Outlays for the Last Three Five Year Plans for VSE Sector

(Rs Crore)

Sector	Eighth Plan Period	Ninth Plan Period	Tenth Plan Period
MSME	1629.55	4303.85	5534.00
Textiles	1157.00	1270.00	1600.00
FPI	146.00	235.04	650.00

Source: Ninth and Tenth Plan, Planning Commission.

[3] In this chapter, MSME means micro, small, and medium enterprises; SME means small and medium enterprises; while MSE means micro and small enterprises.

7.1.337 TThe MSME sector has been artificially fragmented across various ministries, such as MSME, textiles, and FPI to name a few. As a result, sectors such as handloom, powerloom, handicrafts, khadi, and coir have suffered greater neglect than other manufacturing and service based MSEs.

7.1.338 In an attempt to correct these discrepancies and neglect, the Micro, Small and Medium Enterprises Development Act was enacted on 16 June 2006. This Act provides the first-ever legal framework recognizing the concept of 'enterprise' (comprising both manufacturing and service entities), defining medium enterprises and integrating the three tiers of these enterprises, namely, micro, small and medium. Carrying forward the vision behind this Act, the Eleventh Plan recognizes the MSE sector as an important component of the industry that needs infrastructure, credit, and policy support. During this Plan period, the endeavour would be to recognize the heterogeneity of the MSE sector and at the same time remove artificial distinctions within the sector to ensure that the unorganized, home-based industries such as handlooms and food processing are able to avail the benefits and schemes launched for the industry in general and the MSE in particular.

Role of SMEs in Global Economy: International Scenario

7.1.339 The overall contribution of small firms—formal and informal—to the GDP and employment remain about the same across low, middle, and high-income group countries. As income increases, the share of the informal sector decreases and that of the formal SME sector increases.[4]

7.1.340 In Brazil, MSEs represent 20% of the total GDP. Of the country's 4.7 million registered businesses, 96.8% are MSEs and–along with the other 9.5 million informal enterprises—they employ 59% of the economically active population.[5] Similarly, informal and micro enterprises account for 39% of labour force and contribute to 24% of the GDP in South Africa; SMEs employ 27% of the labour force and contribute 32% to the GDP; while large enterprises employ 34% people and account for 44% of GDP. (Stats SA 2000 and Abedian 2001).[6] SMEs comprise over 90% of all industrial units in Bangladesh contributing between 80% and 85% of the industrial employment and 23% of the total civilian employment (SEDF, 2003).[7] They contribute three-quarters of the household income in both the urban and the rural areas. In Japan, SMEs employ more than 70% of the wage earners, contributing over 55% of value added in the manufacturing sector.[8] In Thailand in 2003, there were 2006528 enterprises of which 99.5% were SMEs. These SMEs generated products worth 38.1% of GDP and in 2003 they employed 60.7% of Thailand's working population.[9]

7.1.341 The real importance of the SMEs, however, can be seen in China where over 68% of the exports come from the SMEs (Table 7.1.13). China has created more SMEs in the last 20 years than the total number of SMEs in Europe and the US combined. Their numbers have

TABLE 7.1.13
Chinese Town and Village Enterprises (TVEs) Exports
(in Billion US$)

	Total Exports	SME Exports	SME Exports as % of Total
2002	438.23	272.48	62.3
2003	593.32	390.44	65.8
2004	761.99	518.16	68.0

Source: SME Briefing, Vol. 91, by SME Division of National Development and Reform Commission on 28 November 2006.

[4] *http://www.worldbank.org/research/projects/sme/abd.pdf*
Small and Medium Enterprises across the Globe: A new Database, Meghana Ayyagari, Thorsten Beck, and Asli Demirgüç-Kunt, August 2003.

[5] *http://www.dai.com/pdf/developments/developments_ fall_2005.pdf*

[6] *http://www.ciionline.org/services/112/Images/defsme.pdf*

[7] SEDF: South Asia Enterprise Development Facility *http://www.bei-bd.org/beireport/sme/The%%20Small%% 20and%%% 20Medium% 20Enterprises %%20(SME) %%20in %%20Bangladesh.pdf*

[8] *http://www.mofa.go.jp/region/asia-paci/thailand/joint0312.pdf*

[9] *http://www.jetro.go.jp/thailand/e/data/smesupport.htm*

increased from about 1 million private sector SMEs in the 1990s to 40 million in 2004. In China, an industrial SME is defined as having up to 2000 employees, while a small business has less than 300 employees and a medium-size business has employees between 301 and 2000.

Defining MSEs—MSMED Act, 2006

7.1.342 There is no globally accepted definition of MSMEs. Different countries use different criterion; most of the definitions are based on investment ceiling and number of people employed.[10] In India, the Micro, Small, and Medium Enterprises Development (MSMED) Act 2006 defines MSMEs. It introduces the concept of 'enterprise' as opposed to the earlier concept of industry. According to the Act, MSMEs are classified into the following: (i) enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the Industries (Development and Regulation Act 1951) and (ii) enterprises engaged in providing or rendering services. Table 7.1.14 defines the MSMEs in both these sectors:

TABLE 7.1.14
Definition of MSMEs

Manufacturing Sector	
Enterprises	Investment in plant and machinery (original cost excluding land and building and the items specified by the then ministry of small scale industries, vide its notification No. S.O.1722(E) dated 5 October 2006)
Micro enterprises	Does not exceed Rs 25 lakh
Small enterprises	More than Rs 25 lakh and less than Rs 5 crore
Medium enterprises	More than Rs 5 crore and less than Rs 10 crore
Service Sector	
Enterprises	Investment in equipments
Micro enterprises	Does not exceed Rs 10 lakh
Small enterprises	More than Rs 10 lakh and less than Rs 2 crore
Medium enterprises	More than Rs 2 crore and less than Rs 5 crore

Source: Micro, Small, and Medium Enterprises Development Act, 2006.

7.1.343 The Act also provides for a statutory consultative mechanism at the national level with a balanced representation of all the sections of stakeholders and with a wide range of advisory functions. Establishment of specific funds for promotion, development, and enhancement of the competitiveness of these enterprises; notification of schemes/programmes, progressive credit policies and practices; preference to products and services of MSEs in the government procurement; more effective mechanisms for mitigating the problems of delayed payments; and a scheme for easing the closure of business by these enterprises are some features of the Act.

Need for Greater Engagement with MSEs

TO GENERATE LARGE-SCALE EMPLOYMENT

7.1.344 As countries develop, the share of agriculture in providing employment and in GDP decreases. According to the Australian Economist Chris Hall, the SMEs contribute about 70% of net new jobs across the globe, while larger firms tend to be job destroyers.[11]

7.1.345 The MSE sector in India has grown significantly since 1960, when there were only 12376 MSEs providing employment to 10 lakh people—of which, direct employment was 1.85 lakh; annual production level was Rs 875 crore. At the beginning of the Tenth Plan, 249 lakh people in the rural and urban areas were employed in 105.21 lakh MSEs. This has increased to 295 lakh people in 128 lakh units now; an average annual growth rate of 4.4% in the number of these units and 4.62% in employment. If the units in the khadi industries, village industries, and coir industries are taken into account, the employment is estimated to be over 332 lakh. With the inclusion of handlooms, handicrafts, wool, and sericulture, the total job in the MSE sector in India goes up to 650 lakh. The employment intensity of the registered units indicates that an investment of Rs 0.72 lakh is required for creating one employment in MSME sector as against Rs 5.56 lakh in the large organized sector.

[10] *http://www.worldbank.org/research/projects/sme/abd.pdf*. According to a World Bank research paper, 54 countries define SMEs as enterprises employing no more than 200–300 people. These include 13 low-income, 24 middle-income, and 17 high-income countries. Most African countries use a cut-off of 200 employees; Japan uses 300 employees.

[11] *http://www.cesifo-group.de/pls/guestci/download/CESifo%20Forum%202007/CESifo%20Forum%202/2007/forum 2-07-focus5.pdf*

7.1.346 Not only do MSEs generate the highest employment per capita investment, they also go a long way in checking rural–urban migration by providing villagers and people living in isolated areas with a sustainable source of employment. Among the MSEs in India, the dispersed food products sector generates maximum employment (13.7% of total employment in the MSE sector), followed by non-metallic mineral products (10.9%) and metal products (10.2%). In chemicals and chemical products, machinery parts except electrical parts, wood products, basic metal industries, paper products and printing, hosiery and garments, repair services, and rubber and plastic products, the contribution ranges from 9% to 5%. In all other industries the contribution is less than 5%.

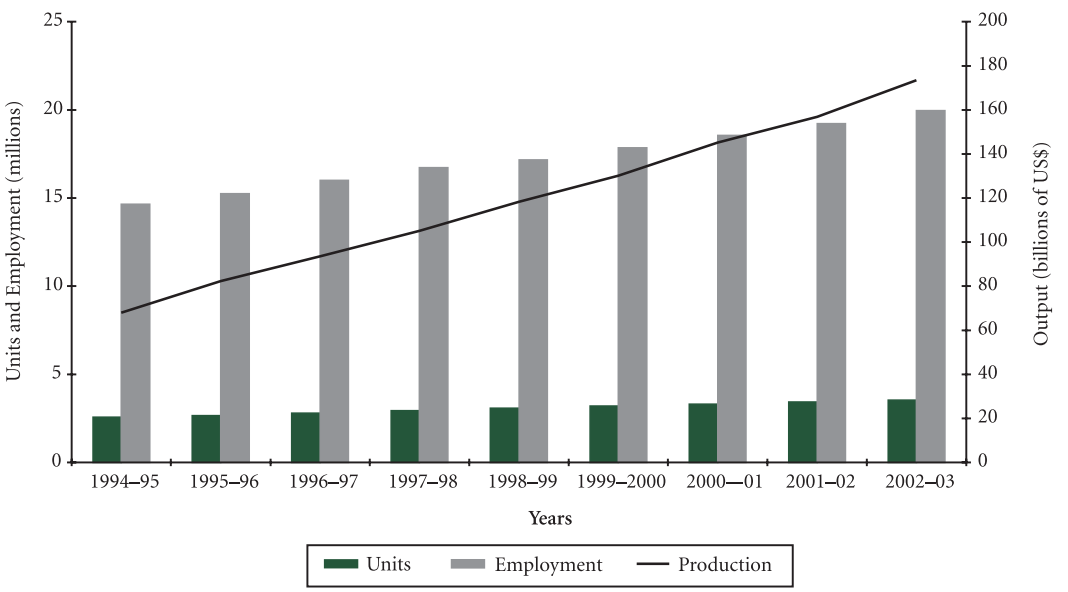
7.1.347 Per unit employment is highest (20) in units engaged in beverages, tobacco, and tobacco products. Next come cotton textile products (17), non-metallic mineral products (14.1), basic metal industries (13.6), and electrical machinery and parts (11.2). Per unit employment is highest (10) in the metropolitan areas and lowest (5) in the rural areas. Non-metallic products contribute 22.7% to the employment generated in the rural areas, followed by food products (21.1%), wood products, and chemicals and chemical products. As for the urban areas, food products and metal products almost equally share 22.8% employment. Machinery parts except electrical, non-metallic mineral products, and chemicals and chemical products between them account for another 26.2% employment. Metal products, machinery and parts except electrical, and paper products and printing (total share being 33.6%) are the leading industries in metropolitan areas.

7.1.348 The presence of MSEs across States is not uniform. Tamil Nadu (14.5%) makes the maximum contribution to employment followed by Maharashtra (9.7%), Uttar Pradesh (9.5%), and West Bengal (8.5%). Per unit employment is high—17, 16, and 14, respectively—in Nagaland, Sikkim, and Dadar & Nagar Haveli; Madhya Pradesh has the lowest figure of 2. In all other cases it is around 6.

TO SUSTAIN ECONOMIC GROWTH AND INCREASE EXPORTS

7.1.349 Estimates say that in order to achieve the target of 10% growth in the Eleventh Plan, the MSE sector needs to grow at 12%.

7.1.350 Figure 7.1.16 indicates the growth of the SME sector in terms of number of units, employment, and production.



Source: CII Website.

FIGURE 7.1.16: Growth of the SME Sector in India

7.1.351 Non-traditional products account for more than 95% of the SSI exports. The performance of garments, leather, and gems and jewellery units has been remarkable in the last decade. The SSI sector dominates in export of sports goods, readymade garments, woollen garments and knitwear, plastic products, processed food, and leather products. Annexure 7.1.20 indicates performance of SSIs from 2000–01 to 2006–07. The US, Europe, and West Asia are the major export destinations as indicated as Annexure 7.1.21.

7.1.352 There is tremendous potential to expand the quantum of exports from traditional MSEs because they are handcrafted and hence eco-friendly and exclusive. Further, while MSEs are unable to take advantage of economies of scale, they are ideal for meeting small order quantities—a bonus in industries such as readymade garments, home furnishings, etc.

7.1.353 MSEs often act as ancillary industries for LSIs providing them with raw materials, vital components, and backward linkages. For instance, large cycle manufacturers of Ludhiana rely heavily on the small MSEs of Maler Kotla which produce cycle parts. MSEs also promote eco-friendly growth, especially in difficult terrains and the ecologically sensitive areas. In large tracts of barren desert land in Barmer and Kutch, in the scattered *dhani*s of Udaipur, in the hilly hamlets of J&K, Ladakh, Himachal, and the North East, in the tribal hinterlands of central India, they are the only source of livelihood.

FOR MAKING GROWTH INCLUSIVE

7.1.354 The MSE sector is a microcosm of all vulnerabilities—it touches upon the lives of women, children, minorities, SCs, and STs in the villages, in the urban slums, and in the deprived pockets of flourishing towns and cities. For many families, it is the only source of livelihood. For others, it supplements the family income. Thus, instead of taking a welfare approach, this sector seeks to empower people to break the cycle of poverty and deprivation. It focuses on people's skills and agency.

7.1.355 Different segments of the MSE sector are dominated by different social groups. Women are mostly found in the unregistered sector—food processing enterprises, manufacturing enterprises, and weaving—and often work part time in the family enterprises. Women and small children roll bidis, make agarbattis, do zari and sequin work for meagre wages. Annexure 7.1.22 gives state-wise figures for women employed in MSMEs.

7.1.356 Large number of Muslims are found in the unorganized weaving sector and in powerlooms. STs produce wonderful handcrafted articles and are involved in sericulture. In the North East, most women weave. In States like Tripura, 50% of rural men and 35% rural women are engaged in MSEs. In Nagaland and Mizoram over 68% of urban men are with MSEs.

Challenges

AN OVERVIEW

7.1.357 The MSE sector in India is heterogeneous, dispersed, and mostly unorganized. It includes diverse types of production units ranging from traditional crafts to high-tech industries. Yet, it is often considered to be limited to large units among the SSIs which deal with high-tech industries or serve as ancillaries to large industries. Segments such as powerlooms, handlooms, handicrafts, food processing, coir, sericulture, khadi, village industries, and wool, which are mostly unorganized, are fragmented across various ministries and often seen only as rural livelihoods. This is, however, far from the truth. Towns and cities such as Benaras, Berhampur, etc., are big handloom centres; Lucknow, Bhopal, Delhi, and Jaipur are famous for their handicraft products while powerlooms are normally only found in urban areas. The artificial fragmentation of the sector often pits the traditional MSEs against each other and against non-traditional ventures. It also limits their access to capital, infrastructure, and support policies.

7.1.358 Due to the unorganized nature of the sector, entrepreneurs and artisans/workers face difficulties in accessing government schemes. Consequently, the workers engaged in the MSE sector—and these are often the most vulnerable and poor—have very little bargaining power and are exploited by the middlemen, unit owners, and big business houses. Unable

to take up aggressive marketing, like big industries, they cannot find markets despite good quality and competent prices (Box 7.1.3)

7.1.359 The dispersed, unorganized nature of the industry also raises issues of quality, bulk production, and inability of meeting big orders. Often individual units lack packaging facilities.[12] As a result, markets, especially for traditional MSEs, are shrinking and workers are experiencing a dip in wages. Moreover, as most non-traditional MSEs serve as 'captive units' for big industries, often workers, especially women do not get paid until the product is picked up. The situation is same for the traditional sector where payments are made by traders and even government corporations only after the stock is sold. Thus money is held up, further impoverishing the workers.

7.1.360 The MSEs engaged in manufacturing of products such as paints, dyes and chemicals, explosives, minerals, leather and leather goods, etc., pollute the environment. These units have to obtain non-pollution certification from the concerned pollution control agencies of the State.

INADEQUATE ACCESS TO CREDIT AND WORKING CAPITAL

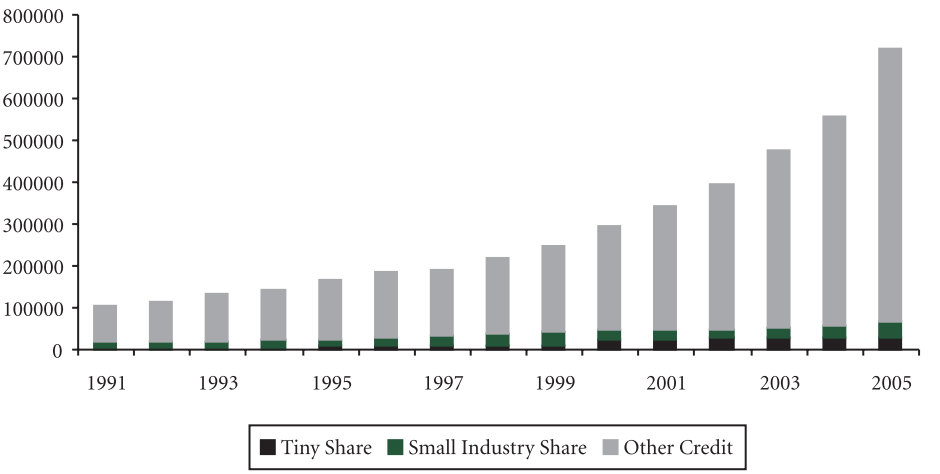
7.1.361 Though most sub-sectors of the MSE under different ministries have a scheme for credit availability, everywhere across the country—from the iron mongers of Jodhpur to powerloom units of Malegaon, from young entrepreneurs trying to set up food processing units in Kargil to handloom weavers of Kaithun, Berhampur, and Pochampally—artisans, weavers, and entrepreneurs rue the non-availability of the working capital. The percentage share of the MSEs (erstwhile SSI) in non-food Bank Credit declined from 15.1% in 1990–91 to 8.0% in March 2007. The fall in the percentage share of credit to MSEs under priority sector can, in part, be attributed to the expanding scope of the priority sector lending to accommodate fast-growing areas such as housing, exports, etc. As per the Third All-India SSI Census (2001–02), only 14.2% of the registered and 3.09% of the unregistered MSEs availed of bank finance. Though the Nayak Committee (set up by RBI in 1991–92) had recommended working capital to the SSEs at 20% of their annual turnover, SSI and KVI units together received only 13.3% of their production value from scheduled commercial banks (SCBs) in 2005–06.

7.1.362 Lending to micro enterprises, which is stipulated at 60% of the total credit to MSE sector, has fallen from 51.2% in 2002–03 to 45.1% at the end of 2005–06. Moreover, difficulty in arranging collaterals or third-party guarantees continues to be a problem. Though the RBI had issued instructions to advance collateral free loans up to Rs 5 lakh, at the end of 2005–06, only 24% of the total outstanding loans under Rs 5

Box 7.1.3
Dwindling of a Vibrant Sector

People working in MSEs, especially in the traditional sector, are being increasingly impoverished. In Tantol village (Rajsamand district, Rajasthan), the silver minakari workers have not received a hike in wages for the last 60 years. As the markets are flooded by cheap machine-made and Chinese goods, weavers of Barabanki, Uttar Pradesh, have experienced a fall in wages. So while the trendy stoles, shawls, and *duppatta*s they make are sold at upmarket stores for Rs 300 onwards, they get only Rs 5–10 a piece.The powerloom weavers of Bhiwandi and Malegaon and the handloom weavers of Benaras have no civic amenities. In Malegaon, powerloom weavers say that every day they suffer a loss of Rs 1 crore due to power cuts. Most of the looms in both Malegaon and Bhiwandi are old. Hence productivity is very low. The Bhairongarh print from district Ujjain, Madhya Pradesh is one of the many crafts which have become extinct. Handloom Himroo Shawl from Aurangabad is on the verge of exitinction. The Langas and Manganiyars of Rajasthan who have long entertained people with their music are now finding it difficult to survive. Leh and Kargil cannot sustain big industries but have a huge tourist market where their handlooms, handicrafts, processed apricots plus Leh berry juice can be sold. Yet in the absence of packaging facilities and credit, small entrepreneurs are unable to set up food processing units.

[12] Specific challenges faced by different segments of the MSE sector will be discussed separately in the chapter on MSEs and Rural Livelihoods (Chapter 5, Volume III).



Source: RBI and Ministry of SSI, GoI, Annual Report 2005–06.

FIGURE 7.1.17—Availability of Credit for SSI and Tiny Units

lakh were without collaterals. The high cost of credit to MSEs also impacts the competitiveness of their products. The Figure 7.1.17 indicates availability of credit for the SSI and tiny units.

7.1.363 Though the percentage of NBC available to MSEs has been declining, the absolute amount of credit to this sector has been increasing. Since the Union Budget 2003–04, Indian Banks' Association has advised banks to adopt the interest rate band of 2% above and below their prime lending rates (PLRs) for advances to SSI. In order to ensure that credit is available to all segments of SSI sector, RBI has issued instructions that 40% of funds available to MSE sector be given to units with investment in plant and machinery up to Rs 5 lakh, 20% for units with investment between Rs 5 lakh to Rs 25 lakh, and remaining 40% for other units. As on March 2002, 391 specialized SSI branches were working in the country. Laghu Udyami Credit Card Scheme was also launched by public sector banks for providing simplified and borrower-friendly credit facilities to SSI, tiny enterprises, retail traders, and artisans.

7.1.364 The Credit Guarantee Cover Fund Scheme for Small Industries was launched jointly by the GoI and SIDBI (on a 4:1 contribution basis) in August 2000, with a view to ensure greater flow of credit to the MSE sector without collateral security. It picked up during the last two years of the Tenth Plan and till the end of March 2007, 68062 proposals were approved and guarantee covers for Rs 1705 crore were issued.

NON-AVAILABILITY OF QUALITY RAW MATERIALS AND PACKAGING FACILITIES ON A TIMELY BASIS

7.1.365 Non-availability of quality raw materials such as dyes and yarn (especially for handlooms and powerlooms); vital inputs such as power (for powerlooms, handicrafts, other industrial MSEs); and proper packaging facilities continue to be a major bottleneck. Lack of credit combined with inadequate raw materials often forces weavers, artisans, and entrepreneurs into the clutches of loan sharks and middlemen. The modern manufacturing MSE units are also constrained due to non-availability of quality raw materials in adequate quantity. Though the National Small Industries Corporation (NSIC) and State Small Scale Industries Development Corporations are providing some raw materials, their efforts are not in consonance with the requirements.

INSUFFICIENT MARKET RESEARCH, LINKAGES, AND DESIGN INPUTS

7.1.366 Most MSEs do not have money to invest in market research and are unable to carry out design and technical improvements to keep up with market demands. Unlike big businesses, they cannot invest in

advertising and packaging. This limits their ability to tap markets and attract consumers. Most people are unaware of *Chamba Chugh*, natural fibre purses and cushion covers, passion fruit pickles, *Bhuvastra* (garment of the Earth—made in coir), *Chamba Chappal*s, Camel Hair Carpets (which do not burn) of Jodhpur, and the intricately carved tables of Ladakh. MSEs, especially those pertaining to traditional livelihoods, are therefore, increasingly being forced to rely on middlemen, petty traders, and big businesses to market their products. This has reduced many to the status of daily workers, earning less than the minimum wages.

REHABILITATION OF SICK SSI UNITS

7.1.367 The major causes of sickness in the SSI sector, as per the Third Census of SSI (2001–02), were lack of demand, shortage of working capital, non-availability of raw material, power shortage, marketing problems, etc. Combining the three yardsticks used to measure sickness, viz., (i) delay in repayment of loan over one year, (ii) decline in net worth by 50%, and (iii) decline in output in last three years, 13.98% of the units in the registered SSI sector and 6.89% in the unregistered sector were either sick or incipiently sick. In the total SSI sector, this percentage was 7.82%.[13] The five States of Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, and Maharashtra together accounted for 54.28% of the sick/incipiently sick SSI units in the country.

GLOBALIZATION

7.1.368 Many segments of MSE, especially the traditional sectors, find it difficult to compete against aggressive marketing by the big domestic and multinational players. Street vendors, petty traders, handloom and powerloom weavers, home-based food processing units, khadi institutions, *attar* (perfumers), zari workers, and rural artisans, many of whom have even lost livelihoods and places of work due to developmental works, are the worst affected. There is a need to evolve a constructive response to this situation. As these sectors employ the most marginalized, our indigenous/traditional industries should be given opportunities to tap both the domestic and international markets. Most important, however, is that the license raj and redtapism, which is being minimized in other sectors, needs to wither away from the micro sector as well.

7.1.369 As in other countries, globalization can also act as a tool for development of the MSE sector. MSEs engaged in the manufacturing of engineering and automobile products have shown excellent growth in the past decade due to their expertise in supplying OEM assemblies and sub-assemblies, components, etc. What is needed is a rational policy which offers adequate support and protection to this sector, enabling it to reach Indian markets. MSEs have many inherent advantages such as exclusivity, ability to produce small order quantities, etc. In a globalized world, they can tap new markets, especially in the West where there is a big demand for handcrafted products. Information technology can be used as a tool to provide online information on indigenous products and producers, while the GI Act and patents can be used to prevent cheap imitations of our designs and products by other countries.

TECHNOLOGY UPGRADATION AND ACHIEVING 'ECONOMIES OF SCALE'

7.1.370 The investment ceiling on plant and machinery used for defining the small-scale units create problems. Efforts such as raising investment ceiling to Rs 5 crore for micro and small-scale units will help these units to graduate to medium-scale enterprises. The Tenth Plan schemes such as TUFS and SITP, which have helped some units to modernize, will be continued in the Eleventh Plan as well. There is an urgent need to devise measures to tackle the problem of loss of fiscal benefits when the micro and small-scale units graduate into larger units. The general excise duty exemption, which was traditionally available to the SSIs, is now restricted to Rs 1.5 crore of the transactions, a figure which is largely insignificant for many of the larger SSEs. As has been demonstrated by units such as Hero Cycles, Nirma detergents, Videocon, and Onida electronics, and vertical expansion and upward movement of MSEs to the medium and large sector enables them to achieve economies of scale. But today MSEs are encouraged to go for horizontal expansion and deliberate fragmentation, mainly to stay within the

[13] *http://www.smallindustryindia.com/ssiindia/performance.htm*

limits of excise exemptions. During the Eleventh Plan it would be necessary to consider policy initiatives to incentivize MSEs to achieve economies of scale by expanding production. One possibility could be to allow them to retain the benefit of excise duty exemption up to the prescribed limit even after they graduate into medium-scale enterprises. Measures would also need to be taken to deal with the problems arising from Chapter V-B of the Industrial Dispute Act to facilitate the MSEs to overcome fragmentation and inefficiency. While doing all this, however, it is imperative to ensure that the small, household based units are not neglected.

7.1.371 Owing to liberalization and opening up of the economy, the MSEs are facing stiff competition from imports and need technological upgradation to produce better quality products at cheap rates. They should be able to access production supply units around the world through the Internet. Information dissemination about availability of recent technologies, literature on modern machinery, contact details of suppliers, etc., is essential. A Technology Bank could be set up for this purpose. There is a need to intensify implementation of the Credit Linked Capital Subsidy Scheme (CLCSS) along with ready availability of model modernization projects for manufacturing industries.

Potential of MSE Sector in Eleventh Plan: Monitorable Targets

7.1.372 Monitorable targets for the MSE sector (excluding khadi, village industries, handicrafts, handloom, and food processing) for the Eleventh Plan are given in the following Table 7.1.15.

ELEVENTH PLAN STRATEGIES FOR PROMOTION OF MSEs

7.1.373 The Eleventh Plan approach to the MSE sector marks a shift from the welfare approach to that of empowerment. The Plan looks at this sector as an engine for sustained and inclusive economic growth and employment. The strategy is two-pronged—it focuses on livelihood and social security. This is not just a rights issue but also makes economic common sense—artisans and entrepreneurs can be most productive only when they are physically and mentally fit.

7.1.374 The Eleventh Plan considers the MSE sector as an important segment of industry which is unorganized and hence needs support and access to all schemes of industry with special enabling provisions. As it is, Tribal Sub-Plan (TSP) and Special Component Plan (SCP) are constitutional requirements. Support for women's empowerment and minority development has been stressed upon in the Prime Minister's 15-point programme and in other flagship schemes of the government. We know that it is mostly the tribes, SCs, minorities, and women who are engaged in traditional livelihoods and in the small and micro sector. In the handloom sector alone, 60.6% weavers are women, 10.76% belong to SCs, 25.5% to STs, and 42.65% to OBCs.[14]

7.1.375 Thus providing enabling provisions for artisans, weavers, and small entrepreneurs within industrial policies and schemes will automatically fulfil the constitutional requirement and the commitments made by various Plans. While planning infrastructure development for industries, the needs of the micro and small sector would be kept in mind. There is need to move from adversarial to complementary relationships between various segments of industry and MSE. For instance, handlooms can target hi-end exclusive products—stoles, shawls, sarees, and furnishings—while powerloom mills do bulk production for *gamcha*s, *dhoti*s, towels, bed and table linen, etc. Big

TABLE 7.1.15
Year-wise Physical Targets for the Eleventh Plan

Item	2007–08	2008–09	2009–10	2010–11	2011–12	CAGR
Production at current price (Rs crore)	682613	816705	977144	1169112	1398803	15.4%
Employment (lakh persons)	322.28	338.39	355.31	373.08	391.73	4%

Source: Ministry of MSME.

[14] Joint handloom and powerloom census conducted in 1995–96.

brands can continue to develop products such as suitings, shirtings, t-shirts, etc.

7.1.376 The MSE sector, including handlooms and handicrafts, presents an opportunity for exports. Exclusivity, which stems from the dispersed nature of this sector, is its biggest strength (Box 7.1.4). And yet, the dispersed nature of the sector makes it difficult to meet bulk orders, raises quality control issues, robs the workers of bargaining power, limits access to credit and markets, results in absence of social security, and prevents enterprises from benefiting from economies of scale. The effort during the Plan period will therefore be to organize this sector, to create clusters and SHGs of weavers/artisans to improve their bargaining power and to enable them to pool resources. These groups, comprising weavers, artisans, and entrepreneurs, will be given full control over cluster decisions and will be provided support in the form of credit, inputs, expertise, and marketing links.

7.1.377 The Working Group on MSMEs for the Eleventh Plan had projected the need for Rs 296400 crore as the working capital and term loans for MSEs during the Eleventh Plan. At present, there is no sub-sector target for the MSE sector within the overall stipulated 40% ceiling for the priority sector lending. Since sub-targets have already been fixed at 18% for agriculture and at 10% for the weaker sectors, the MSE sector has to compete with real estate, housing, education, retail, etc. for the remaining 12%. Considering the vital role of the MSE sector in generation of large-scale employment opportunities, consideration should be given to whether a separate sub-target for the MSE sector can be effectively introduced in all SCBs. If this is not possible then other means must be found to incentivize lending to this sector.

7.1.378 For micro and small entrepreneurs who cannot bring in sufficient equity/promoter's contribution, a flexible debt–equity ratio may need to be adopted while sanctioning export credit. Banks will be encouraged to ensure that all loans upto Rs 5 lakh to MSEs (excluding credit from MFIs) are given free of collateral at the interest rate of 8%. Coverage under the Credit Guarantee Trust Fund will be increased. As international experience indicates cluster based financing is the most effective way of providing credit to MSEs, 100 MSE clusters based on the PPP model will be adopted on a pilot basis.

7.1.379 During the Eleventh Plan period, an aggressive marketing campaign using the media and icons will be launched. Handlooms, handicrafts, food

Box 7.1.4
Small Success

Individual success stories in various nooks and corners of the country have demonstrated the potential of MSEs. Kolkata-based Mallika's *Kantha* has rejuvenated the traditional Kantha weave. Today, hundreds of women sit at their village homes in West Bengal, making stoles, shawls, sarees, dupattas, table covers, cushion covers, etc., which sell for anything between Rs 5000 to Rs 50000. From the Pope to the Prime Minister, everyone appreciates the art of Kantha.Fab India has shown the tremendous appeal of Indian handlooms and handprints, especially for the young, college-going crowd. Even brands like Pantaloons are starting handloom ranges for both men and women. In Andhra, designer shirts and *kurta*s of khadi made under the PRODIP scheme are a big success. Hotels like the Jahanuma Palace in Bhopal use handlooms and other handcrafted products for interior decoration. This experience is cherished by tourists. Tourists pick up a large number of products, chappals, bags, masks, papier mâché etc., from small shops allotted to artisans inside the Mehrangarh Fort in Jodhpur. The artisans on their part get a steady source of income.Chizami is a small village in the Phek district of Nagaland. Here, an NGO, North East Network, has provided the local youth with a source of livelihood. They make passion fruit, guava, and ginger jams, pickles, and squashes. India has many natural fibres such as banana, *khus*, sisal, korai grass, talipot, palm leaf, coconut, pineapple, screwpine, golden grass, jute, sabai, etc. Not-for-profit organizations such as Industree Crafts are encouraging rural artisans to convert these fibres into value-added finished products such as bags, table mats, cushion covers, hats, floor coverings, curtains, office and home accessories, etc. These products are now being marketed in top stores across the country. Likewise, natural soaps, shampoos, and cosmetics produced by various small units under the brand name of Khadi are already catching on in the domestic market and have tremendous scope for exports.

processing, and other cultural industries will be linked to tourism; circuits for heritage and fabric tourism will be developed. In the West, the cultural industries have become the most rapidly growing sector in the world, contributing over 7% of the world's GDP. Giving an 'industry' status to craftspersons is important because it entitles them to tax benefits and export promotion schemes, makes them eligible for banking and credit support, and helps them lobby for protection of intellectual property.[15]

7.1.380 Mapping of the MSE sector will be carried out and registration of products under the GI Act will be encouraged and supported. Strict enforcement of laws relating to reservation will be carried out. Neglected areas such as occupational health, insurance, and so on will be taken up as an integral part of the MSE policy. Special emphasis will be laid on skill development and upgradation across all sectors.

7.1.381 An effective preference policy for procurement of goods and services produced by MSEs both at Central and State levels will be developed. A policy for women in the micro and small sector, particularly in the unorganized segments, will also be formulated to ensure that women get their rights and that their special needs are catered to.

ELEVENTH PLAN SCHEMES OF MINISTRY OF MSME

7.1.382 Most of the existing schemes for the MSME sector have been evaluated by independent organizations and suitably modified and reorganized. These will be continued during the Eleventh Plan period along with addition of some new schemes. The schemes which will be carried forward in the Eleventh Plan are given in Annexure 7.1.23.

NEW INITIATIVES

7.1.383 The Small Industries Development Organization (now called Micro, Small, and Medium Enterprises Development Organization) has a network of more than 3000 technically qualified personnel working through its Small Industries Service Institutes (and Branch SISIs), testing centres, and autonomous organizations such as the Tool Room, Product and Process Development Centres, etc. In the Eleventh Plan, the Ministry of MSME will establish a Technology Mission to promote new and emerging technologies, assess present levels of technology and their upgrdation, set up technology information centres/data banks and an IT portal for information dissemination to carry out detailed technology audits.

7.1.384 In 2006, the government launched the National Manufacturing Competitiveness Programme. The NMCC and the Ministry of MSME chalked out a five-year programme with a projected expenditure of Rs 850 crore. The programmes include: setting up of design clinics, application of lean manufacturing technologies for increasing competitiveness of firms by systematically identifying and eliminating waste throughout the business cycle. These programmes will be demand driven and will be implemented in the PPP mode in selected industrial clusters.

7.1.385 Infrastructural constraints, notably the power outages, affect the MSEs much more than the larger enterprises. Although some States do offer differential power tariffs in favour of the MSEs, the real deficiency is the quality and quantity of power supply. During the Eleventh Plan, group/associations of the MSEs will be incentivized to establish captive power plants as enjoined in the Electricity Act 2003 or to set up common large-scale generation facilities with dedicated feeder lines. Roads, transport, water, and other infrastructure problems, or their total absence, push up operating costs of MSEs as against goods produced in more favourable conditions in other countries and it is, therefore, imperative for the government to develop adequate infrastructure.

7.1.386 Labour Laws and Factory Laws have created problems for MSE units in terms of number of inspections. The committee set up under Member (Industry) Planning Commission recommended a system of third-party inspection to give enterprises an option to get their regulatory compliance certified by accredited agencies. Once such certification has been obtained the unit would be exempted from routine inspection. Special inspections would be

[15] InfoChange News and Features, September 2006.

authorized only on receipt of credible complaints. Early implementation of this recommendation during the Eleventh Plan will provide relief to the MSMEs.

7.1.387 A proper database is critical for formulation of appropriate schemes for the MSE sector. The recently announced 'Package for Promotion of Micro and Small Enterprises (SMEs)' contains a proposal for providing financial support to the MSE Associations for their capacity building and for strengthening the database and contacts with the grassroots. This initiative would be carried forward during the Eleventh Five Year Plan.

7.1.388 An outlay of Rs 11500 crore has been allocated to Ministry of MSME, out of which Rs 4000 crore is for DC (MSME) and Rs 7500 crore is for agro and rural industries.

7.2 MINERALS

Introduction

7.2.1 Accelerated growth rate of the Indian economy needs rapid development of the mining sector, on which most of the basic industries depend. The efforts for locating minerals over the last 55 years have enhanced reserves for various minerals such as mica, barites, chromite (metallurgical), coal (thermal), lignite, bauxite (metallurgical), manganese ore, and iron ore, and have placed the country among top 10 producers of these minerals. However, in respect of fertilizer minerals, diamond, gold, nickel, copper, lead, zinc, platinum group of metals, and rare metals, there has hardly been any discovery despite an extremely favourable geological environment.

7.2.2 With the surge in the demand for metals in response to strong economic growth, it has become necessary to mount a well-planned, comprehensive, and time-bound programme for regional and detailed exploration for locating and delineating the country's hidden mineral deposits, which are likely to be considerable.

7.2.3 The mining sector was opened to FDI in 1993 and 100% FDI has been allowed since 2000. However, the actual flows have been minimal in the absence of policies conducive to FDI for prospecting. Attracting the FDI into exploration and prospecting will require a revision of the current non-investor-friendly mining regime and adoption of a multi-disciplinary approach, embracing the legal framework, technology, sustainability, infrastructure, and procedural streamlining.

Review of the Tenth Plan

7.2.4 The Offshore Areas Mineral (Development and Regulation) Act 2002 providing for the development and regulation of mineral resources in the territorial waters, continental shelf, and the exclusive economic zone was notified on 31 January 2003. The legislation would enable the streamlining of mineral exploration and development in the offshore areas and ensure systematic and scientific exploitation of mineral reserves (except petroleum, natural gas, and hydrocarbon resources) for attracting private investment in the offshore mineral sector.

7.2.5 In 2000, the ceiling of 74% on FDI in exploration and mining of diamonds and precious stones was removed though it continued to require Foreign Investment Promotion Board approval. In 2006, this restriction too was removed and all FDI in the mining sector, including FDI above 74% in mining of diamonds and precious stones, is now on the automatic route.

7.2.6 For a comprehensive review of the National Mineral Policy and for suggesting possible amendments to the MMDR Act 1957, the Planning Commission constituted a high-level committee under the Chairmanship of Member (Industry), Planning Commission. The high-level committee submitted its report to the government on 19 July 2006. The committee recommended a number of changes in the National Mineral Policy and in the relevant laws and rules to stimulate mineral exploration activities and promote the development of a vibrant mining and mineral sector in the country. For augmenting state revenues from the mineral sector, the committee recommended that the method of fixation of royalty should move decisively toward ad valorem rates, away from the tonnage system currently prevailing for a number of

economically important minerals. Based on the recommendations of the high-level committee, the government approved the National Mineral Policy 2008, and the next task is to introduce a Bill in the Parliament for amendment to the MMDR Act 1957 and further appropriately amend Mineral concession Rules, 1960 and Mineral Conservation and Development Rules (MCDR), 1988.

7.2.7 The Ministry of Mines constituted a study group in August 2006 for revision of the rates of royalty and dead rent on major minerals (other than coal, lignite, and sand for stowing), and to make appropriate recommendations to the government. The terms of reference of the group are in line with the recommendations of the high-level committee on National Mineral Policy.

7.2.8 The concept of reconnaissance permit (RP) was introduced in 1999 and until 31 December 2006, 205 RPs covering an area of 282908.50 sq km were granted prior approval. However, during the Tenth Five Year Plan there was a declining trend in the number of RP approvals as shown in Figure 7.2.1.

7.2.9 The RP instrument resulted in the mining companies blocking up large areas while actually undertaking exploration over very small areas. It is in this context that the high-level committee has recommended the introduction of Large Area Prospecting License.

The Sub-sector Profile during the Tenth Plan

Iron Ore

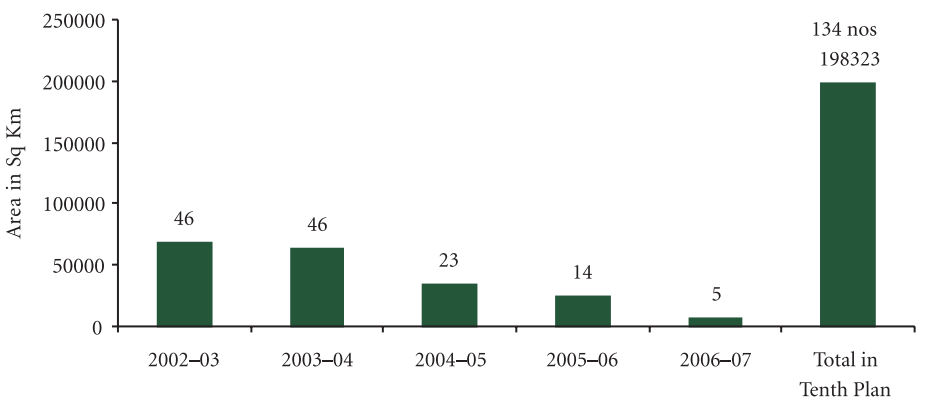
7.2.10 Owing to the increase in the demand and production of steel worldwide and particularly in China, there was considerable buoyancy in the production and exports of iron ore during the Tenth Five Year Plan period. The production of iron increased from 86.23 million mt in 2001–02 to 172.30 million mt in 2006–07 and the exports increased from 23.09 million mt in 2001–02 to 84.05 million mt in 2005–06.

Non-ferrous Metals

ALUMINUM

7.2.11 The production of bauxite increased from 8.60 million tonnes in 2001–02 to 13.075 (P) million tonnes in 2006–07. Panchpatmali bauxite mine of National Aluminium Company Ltd. (NALCO) in Orissa accounts for about 40% of the country's production. It is a world-class, fully mechanized mine with an existing capacity of 4.8 million tonnes per annum. There are six alumina refineries owned by five aluminium companies in the country, namely NALCO, HINDALCO, Indian Aluminium Company Limited (Indal), Bharat Aluminium Co. Ltd (BALCO), and Madras Aluminium Company Ltd.

7.2.12 The total alumina capacity increased from 2.72 million tonnes in 2001–02 to 4.24 million tonnes in 2006–07, which is very small considering the prospect



Source: Ministry of Mines.

FIGURE 7.2.1: Approvals of Reconnaissance Permit

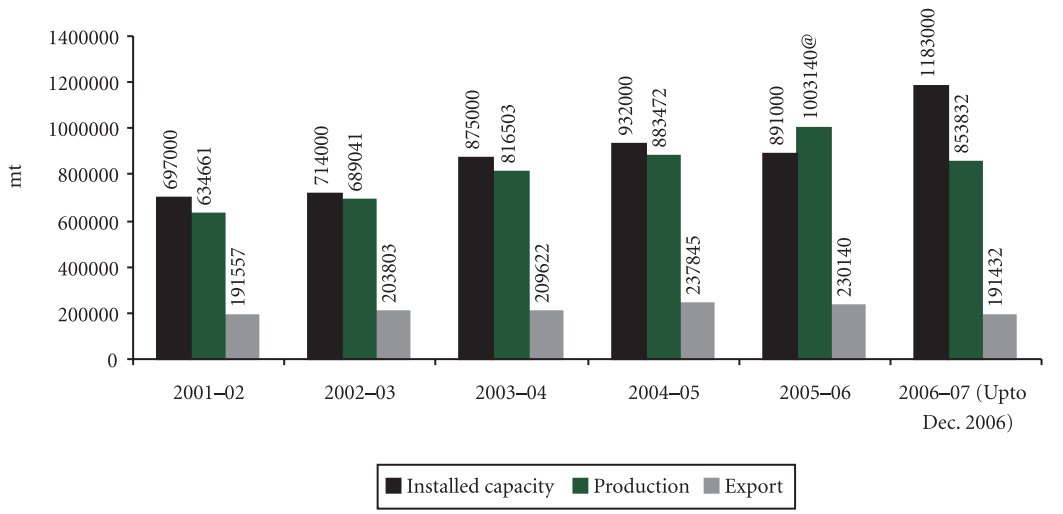
for producing and exporting this product in which India is internationally very competitive.

7.2.13 Despite the limitation imposed by the high energy cost, there was a substantial increase in the capacity, production, and export of aluminum in the country during the Tenth Five Year Plan as shown in Figure 7.2.2.

7.2.14 Production of aluminum is estimated to have increased by 65% during the Plan period, the bulk of the increase being absorbed domestically. NALCO, a CPSE, has about 35% share of production.

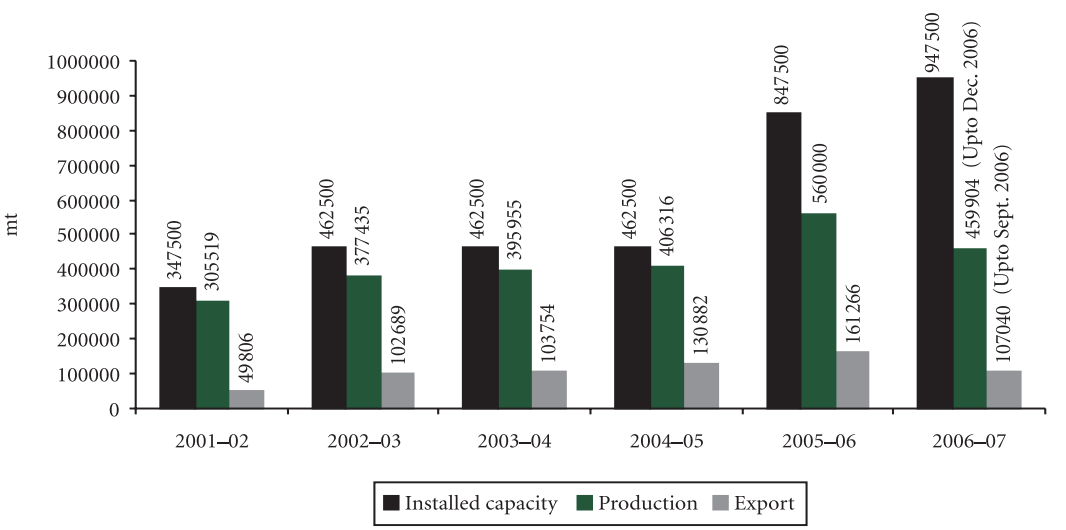
COPPER

7.2.15 India has a substantial capacity for the production of primary copper metal but is significantly



Note: @ In 2005–06, additional production of aluminum is due to capacity expansion in BALCO.
Source: Annual Reports, Ministry of Mines and Department of Commerce.

FIGURE 7.2.2: Production and Export of Aluminium



Source: Annual Reports, Ministry of Mines and Department of Commerce.

FIGURE 7.2.3: Capacity, Production and Export of Copper

dependent on the import of copper metal-in-concentrates. The production and import of copper concentrate in 2005–06 was 22984 mt and 1072905 mt, respectively. Figure 7.2.3 gives the figures of capacity, production, and export of primary copper during the Tenth Five Year Plan period.

7.2.16 Although India is dependent on imports of copper concentrate, its smelting capacity in the metal grew almost three-fold and the production by about 60% during the Tenth Five Year Plan period. The share of the public sector (HCL) in the production fell from about 13% in 2001–02 to about 6% in 2005–06.

ZINC AND LEAD

7.2.17 The capacity expansion and growth of production of zinc and lead were also impressive, almost doubling for both metals as shown in Figure 7.2.4.

7.2.18 After privatization, Hindustan Zinc Ltd (HZL) expanded its zinc mining and used the mineral from its captive Rampura Agucha mines to expand smelting. The capacity and production of lead during the Tenth Five Year Plan are shown in Figure 7.2.5.

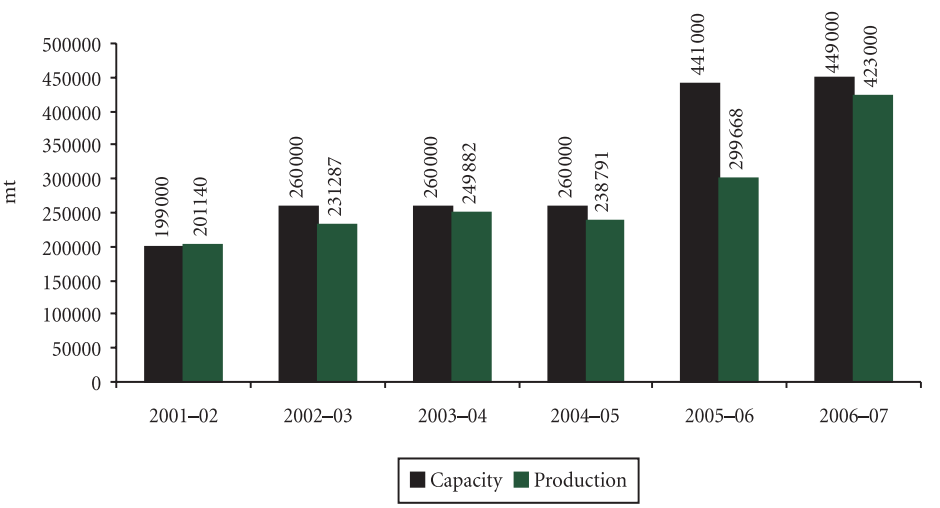
PLAN OUTLAY AND EXPENDITURE DURING THE TENTH PLAN

7.2.19 An outlay of Rs 8344.50 crore was approved for the Tenth Five Year Plan (2002–07) for the Ministry of Mines with gross budgetary support of Rs 1271.00 crore, net budgetary support of Rs 1021.00 crore, and (IEBR) of Rs 7073.50 crore. There was a provision of Rs 250 crore [Geological Survey of India (GSI) Rs 200.00 crore and IBM Rs 50.00 crore] for external aid through the Budget in the Tenth Plan. However, during the MTA of the plan, the outlay was reduced to Rs 4485.28 crore against which the expenditure was of the order of Rs 2856.29 crore. The shortfalls were mainly on account of delay in the approval of second phase expansion of NALCO and slow progress in the modernization and replacement scheme of the GSI. (The details are given in Annexure 7.2.1).

ELEVENTH PLAN OBJECTIVES

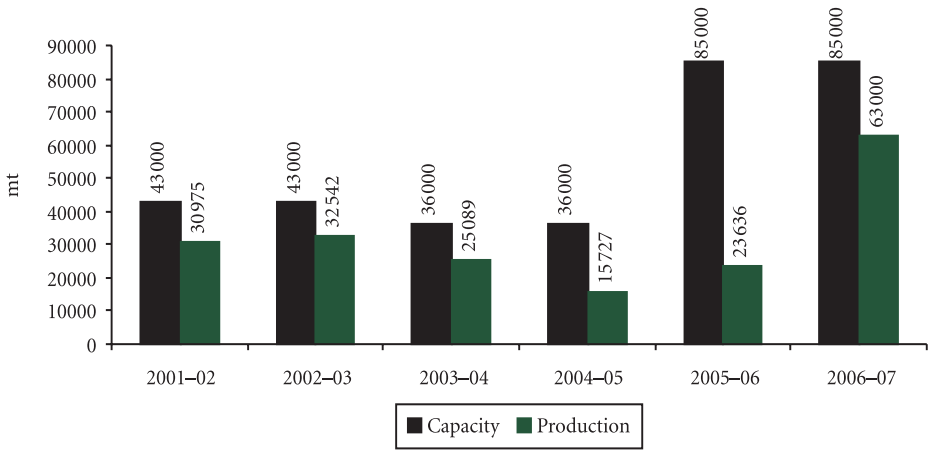
7.2.20 The following are the main objectives of the Eleventh Five Year Plan in the mining sector:

- Intensification of exploration for low-volume high-value minerals such as gold, diamond, base metals, and platinum group of minerals and efforts towards augmentation of the existing resources in respect of ferrous and non-ferrous minerals and industrial minerals.
- Improvement of the National Mineral Inventory, particularly for those minerals in which reserves are low such as base metals, nickel, tin, graphite, noble metals, precious stones, and rock phosphate.
- Restructuring and modernization of the GSI in the



Source: Working Group Report on Mineral Exploration and Development (Other than coal and lignite), Eleventh Five Year Plan, Volume III.

FIGURE 7.2.4: Capacity and Production of Zinc



Source: Working Group Report on Mineral Exploration and Development (Other than coal and lignite), Eleventh Five Year Plan, Volume III.

FIGURE 7.2.5: Capacity and Production of Lead

areas of instrumentation for both ground and airborne surveys, and acquisition of state-of-the-art laboratory facilities with high-precision capabilities. Establishment of a comprehensive portal giving meta-data in respect of regional exploration work done by GSI and the scope for investment based on such work.

- Modernization of the IBM and the State directorates for establishment of a national registry (Cadastre) and a mineral atlas. The database would comprise both physical and resource inventory and include a Tenement Registry with details of green field areas, brown field areas, and relinquished areas including areas identified by the GSI as not worth pursuing. The data would be maintained online giving instant information to prospective investors on what is available for reconnaissance, prospecting, and mining.
- Acceleration of the process of adoption of United Nations Framework Classification (UNFC) system of classification of mineral resources so as to present reserves/resources of minerals on an internationally uniform system and help in attracting more private investment into the sector.
- Development of minerals in the NER with the States of this region playing a major role and the Central Government agencies facilitating their initiatives with specific interventions.
- Strengthening R&D activities in all aspects of mining.

Eleventh Plan Strategy

7.2.21 Given the technology and resource limitations of GSI, it would be necessary to encourage private sector initiative as the main driver of investment in exploration even as the GSI is strengthened to access the latest technologies such as deep imaging and electromagnetic probing.

7.2.22 In line with the current economic policy, in future the core functions of the State in mining will be facilitation of the exploration and mining activities of investors and entrepreneurs, provision of infrastructure, regulation, and tax collection. Where it is deemed necessary for the State to continue the mining activities, there will be arm's length between State agencies that explore and mine and those that regulate. Transparency would be maintained in the allocation of ore bodies for mining.

7.2.23 An environment conducive for private sector investment will be promoted by streamlining the licensing procedures, granting security of tenure to the RP/prospecting license (PL)/ML holders, minimizing the procedural delays, and improving the transport infrastructure.

7.2.24 It would be ensured that mining is done in a sustainable manner, without any adverse effect on the environment, by effective enforcement of the laws and by developing a Sustainable Development Framework

(SDF), especially tailored to the context of India's mining environment, to be adhered to voluntarily by the mining firms.

7.2.25 New relief and rehabilitation norms (to be adhered to on a voluntary basis) will be developed building on the existing packages announced by the States for compensation to the PAPs as well as for the benefit that must accrue to the communities living in the villages around the mining area.

Structure of Output

7.2.26 In all, about 90 minerals are produced in the country, which include 4 fuel minerals, 10 metallic minerals, 50 non-metallic minerals, 3 atomic minerals, and 23 minor minerals. The total value of mineral production (excluding atomic minerals) during the year 2006–07 is estimated at Rs 87866.35 crore. During the year 2006–07, the provisional value of fuel minerals was put at Rs 63938.76 crore (73% of total value), metallic minerals at Rs 12858.71 crore (15% of the total value), and non-metallic minerals including minor minerals at Rs 11068.88 crore (12% of the total value).

Life Indices of Principal Minerals

7.2.27 The life indices as at the end of the Tenth Plan of important minerals such as bauxite, copper ore, chromite, lead–zinc ore, iron ore (haematite and magnetite) are given in Annexure 7.2.2. The life indices beyond 1 April 2007 estimated at the current level of production for important minerals are: bauxite (166 years); copper (200 years); chromite (33 years); lead–zinc ore (69 years); and iron ore (97 years).

7.2.28 The estimated apparent consumption, domestic production, resource situation, and life indices of some selected minerals in the terminal years of the Tenth and Eleventh Plans are given in Annexure 7.2.3. The life indices in years at the end of the Eleventh Five Year Plan of some of the important minerals are estimated as follows: bauxite—refractory grade (96 years); chromite (16 years); graphite (58 years); gypsum (125 years); and rock phosphate (68 years).

Material Balance of Principal Non-ferrous Metals

7.2.29 The projections of production, import, export, and domestic demand up to 2011–12 of principal non-ferrous metals—such as aluminum, copper, zinc, and lead—based on the Eleventh Five Year Plan Working Group Report on Mineral Exploration and Development are given in Annexure 7.2.4. Strong growth in domestic demand is expected in all non-ferrous metals, but the country will remain a net exporter of aluminum and copper (based largely on imported mineral concentrate). It will become self-sufficient in zinc but will be a net importer in lead.

Sectoral Profile

Iron Ore Resources

7.2.30 The iron ore resources identified so far and estimated on the UNFC basis as on 1 April 2005 are about 14630 million tonnes of haematite ore and about 10619 million tonnes of magnetite ores. Unlike haematite, almost the entire magnetite resource is still to be converted to reserves. Even the small proportion, which has been converted so far by the National Mineral Development Corporation Limited, is in the Western Ghats biodiversity area and is presently not available for extraction because of the ban imposed by the Supreme Court for reasons of environmental protection. Of the haematite resources, high-quality reserves above 65% Fe content constitute only about 1.3 billion tonnes. The details are given in Annexures 7.2.5 and 7.2.6.

Manganese Ore

7.2.31 The all-India total resources of manganese ore as on 1 April 2005 are 380 million tonnes. Out of these, 37.29% are in the reserve category and balance 62.71% in the remaining resource category. Of the total resources, the blast furnace grade constituted 130.2 million tonnes, medium grade 31.63 million tonnes, and ferro–manganese grade 25.3 million tonnes.

Chromite

7.2.32 The all-India total resources of chromite are 232.12 million tonnes as on 1 April 2005 (provisional). Out of these 28.48% are in the reserve category and 71.52% are in the remaining resource category. Grade wise, 18% are metallurgical, 1.79% are refractory, 23.69% are charge chrome, 18.28% are beneficiated, and the balance 38.24% are low-grade ferrochrome, other unclassified and undefined grades. The bulk of

the resources, that is 93.38%, is located in Orissa. Out of the 161 million tonnes of resources in leasehold, 33.67% are in the public sector and 66.33% in the private sector. Chromite deposits associated with Iron Ore Group are the most important. Among them, two belts, namely, Sukinda Ultramafic Belt and Nausahi Ultramafic Belt of Orissa, contain about 97% of the total Indian resources of chromite.

BAUXITE

7.2.33 The all-India total resources of bauxite as on 1 April 2005 (provisional) are 3306 million tonnes. Out of these, 915 million tonnes are under the reserve category and the balance 2392 million tonnes under the remaining resource category. Grade wise, 0.4% are chemical, 2.1% are refractory, 83.39% are metallurgical, and the balance 14.1% are unclassified and other mixed grades. Out of the leasehold resources of 1079 million tonnes, 41.94% are in the public sector and 49.06% in the private sector. Out of the total resources, 54.35% are in the captive sector and 45.65% are in the non-captive sector. Out of the public sector resources of 453 million tonnes, 300 million tonnes are in the captive area.

COPPER ORE

7.2.34 The all-India total resources of copper ore as on 1 April 2005 (provisional) are 1394 million tonnes, with a metal content of 11.41 million tonnes. Out of these, 369.5 million tonnes of ore with a metal content of 4.4 million tonnes is under the reserve category and the balance under the remaining resource category. Grade wise, 28.031 million tonnes are with +1.85% copper, 622 million tonnes are with 1.0%–1.85% copper; 604 million tonnes are with 0.5%–1.0% copper, and 140 million tonnes are with less than 0.5% copper.

7.2.35 HCL, a CPSE, is the only undertaking mining copper ore in the country. Most of the copper deposits under mining have been explored in detail. Exploration activities have also led to discovery of small deposits in the western, eastern, southern, and central Precambrian shield areas of the country. It is necessary to intensify exploration activities for copper and for this HCL could enter into joint ventures with specialized companies abroad that have the latest technologies to undertake the exploration activity.

LEAD–ZINC ORE

7.2.36 The all-India total resources of lead–zinc ore are 522 million tonnes with 7.2 million tonnes of lead metal and 24.25 million tonnes of zinc metal. Out of the total resources, 126 million tonnes with 2.6 million tonnes of lead metal and 11.0 million tonnes of zinc metal are under reserve category. Grade wise, 86.82 million tonnes are with +10% lead and zinc, 144.67 million tonnes are with 5%–10% lead and zinc, and 291 million tonnes are with less than 5% lead and zinc metal. Out of the total resources, 352.82 million tonnes with 3.7 million tonnes of lead metal and 8.99 million tonnes of zinc metal are in the freehold sector. In the leasehold, the total resources are 169.7 million tonnes with 3.5 million tonnes of lead metal and 15.26 million tonnes of zinc metal. Table 7.2.1 gives the production and import figures for lead–zinc ores.

TABLE 7.2.1
Production and Imports of Lead–Zinc Concentrate
(Million Tonnes)

Year	Production	Imports
2001–02	450438	68148
2002–03	544986	37550
2003–04	663234	103007
2004–05	750675	81547
2005–06	984745	40187

Source: Annual Reports—Ministry of Mines.

GLOBAL SCENARIO VIS-À-VIS INDIAN MINERAL SECTOR

7.2.37 Mineral exploration activities are risky ventures with long gestation period and requiring huge investment. During the first half of the last decade (1991–95), the global spending on mineral exploration was US$ 18500 million, which declined to US$ 14900 million in the second half (1996–2000). Indian spending on mineral exploration is hovering around 0.7%–0.8% of the total global expenditure. Low spending on the exploration activities has resulted in non-realization of the mineral potential in the country. The following data of some important minerals suggest that there is need for accelerating exploration activities for converting resources into reserves (Table 7.2.2). Reserve-to-resource ratio is lower in the case of India as compared with global reserve-to-resources ratio except for lead and zinc.

TABLE 7.2.2
Minerals—Unrealized Potential
(in Million Tonnes)

Commodity	Global		India	
	Resources	Reserves	Resources	Reserves
Copper	1600	940	11.4	4.4
Zinc	1900	460	24.2	11.0
Lead	1500	140	7.2	2.6
Nickel	140	140	1.9	0.0
Gold#	90000	90000	497	85.0
Diamonds*	1250	1250	4.6	1.2

Note: # in tonnes, * in million carats.
Source: Indian Mineral Year Book 2004, IBM.

MAIN ACITIVITIES OF GOVERNMENT AGENCIES AND CPSEs PROPOSED FOR THE ELEVENTH PLAN

Geological Survey of India (GSI)

7.2.38 During the Eleventh Five Year Plan, the GSI will be undertaking seven schemes namely, Survey and Mapping, Mineral Exploration, Specialized Investigation, R&D and other Exploration, Map and Publication and Information Dissemination, Human Resource Development, and Modernization and Replacement. Under the Mineral Exploration programme, the GSI would be undertaking activities for augmentation of resources of such minerals in which the country is deficient and also for high-value minerals such as gold, diamond, platinum group of elements (PGE); other minerals such as copper, lead, zinc, iron ore, manganese ore, chromite, bauxite, and limestone; and strategic minerals such as tungsten, nickel, fertilizers minerals, etc. The GSI will also undertake the procurement of laboratory equipments and replacement of blue water research vessel for the aging RV Samudra Manthan for carrying out sea-bed survey and exploration. It will also acquire a geo-technical vessel and a Heli-borne geophysical survey system. The process for procurement of these items was initiated in the Tenth Five Year Plan and is programmed to be completed in the Eleventh Five Year Plan. Details of physical programmes proposed for the Eleventh Five Year Plan by GSI are given in Annexure 7.2.7.

7.2.39 Two issues that need to be tackled quickly vis-à-vis the GSI are the separation of earth science activity from the mineral search activity and out-sourcing the search for coal and lignite to Coal India Limited which should undertake such search on a commercial basis.

Indian Bureau of Mines (IBM)

7.2.40 In accordance with its charter of function, the activities of IBM have been grouped into four broad schemes, namely, Inspection of Mines for Scientific and Systematic Mining; Mineral Conservation and Mines Environment, Mineral Beneficiation Studies—Utilization of low grade and sub-grade ores and analysis of environmental samples; Technological Upgradation and Modernization; and Collection, Processing, Dissemination of data on mines and minerals through various publications. It is imperative that the budgetary resources of IBM are augmented in order to strengthen it with manpower and equipment so that it can effectively tackle the problem of bad mining practices in the country. IBM will be taking two new projects, namely, (i) computerized online register of mining tenements system and (ii) management of solid waste from mining in India. The details of physical targets proposed for Eleventh Five Year Plan by the IBM are given in Annexure 7.2.8.

Mineral Exploration Corporation Ltd (MECL)

7.2.41 During the Eleventh Five Year Plan, MECL will undertake detailed exploration work under the promotional scheme and procurement of equipments under the capital scheme. MECL needs funds for undertaking development (promotional) and exploration in areas which the private sector finds unattractive. It also needs to enter into joint ventures with specialized exploration companies abroad for undertaking commercial exploration for RP and PL holders.

7.2.42 The company will make concerted efforts on improving the mineral inventory, particularly of ferrous and non-ferrous minerals, and will endeavour to improve its competitiveness so that it can secure work orders from mineral-rich States. Details of the physical targets proposed for the IBM and MECL for the Eleventh Five Year Plan are given in Annexure 7.2.8.

National Aluminium Company Ltd (NALCO)

7.2.43 NALCO is a profit-making CPSE with a share of 35% of the domestic production of the metal. Its second phase expansion scheme, which was approved

by the GoI in October 2004 at an estimated cost of Rs 4091.51 crore, is likely to be completed by December 2008. The capacity of various project segments being expanded is given in Annexure 7.2.9. NALCO will also initiate action for setting up green field projects and diversifying its activities.

Hindustan Copper Ltd (HCL)

7.2.44 HCL, which was earlier a sick CPSE, has been making profits over the past three years. During the Eleventh Five Year Plan, HCL will be undertaking replacement and renewal of equipments to be funded through their internal resources for maintaining the existing level of production and for planning enhanced production in the future.

Research and Development (R&D)

7.2.45 Research work is being undertaken by the National Institute of Rock Mechanics, Jawaharlal Nehru Aluminium Research, Development, and Design Centre, the National Institute of Miners' Health, and other educational institutions. The funds for research are being provided to these institutions by the Ministry of Mines on approval of research projects by the Standing Advisory Group in the Ministry.

7.2.46 The major thrust areas identified for R&D in the mineral sector include: exploration, mining technology, mineral processing and value addition, metal extraction, alloys and product development, and environment management for ensuring sustainable development of the sector.

7.2.47 There is need for a focused approach in the field of R&D in the mineral sector. Some of the specific projects identified for the Eleventh Plan are as follows:

- Study of greenstone belts and their associated minerals, especially gold (Au) and PGE mineralization.
- The by-products and wastes that are available are valuable products for the future. With metal prices for titanium (Ti), vanadium (V), and gallium (Ga) scaling new highs, an integrated approach to win many materials from the same source has become imperative. Red mud requires a serious second look as it is possible to recover the above-mentioned metals. Similarly, a re-look at various slags and anode slimes for high-value trace metals for PGE metals is needed and specific R&D programmes should be taken up for secondaries and wastes.
- Multi-material extraction technology for extraction of metals such as tungsten, molybdenum, vanadium, chromium, nickel, etc., on the one hand, and value-added trace elements such as gallium, indium, tellurium, etc., on the other hand, needs to be developed.

7.2.48 For strengthening R&D activities in mining, consideration needs to be given to the proposal to set up a centralized R&D institution for undertaking research on all aspects of mining.

Human Resource Development

7.2.49 GSI, IBM, State Directorates of Mines and Geology, State Mining Corporations, Central Public Sector Undertakings (CPSUs), private and joint venture exploration and mining companies, research institutions, and academic institutions are the key players which recruit competent and trained manpower in the mineral sector. Organizations such as GSI and IBM are facing problems of shortage of trained manpower. The best talents are being attracted by areas such as IT and business management and there is little demand among students for taking up mining engineering and geology as courses of study. Non-induction of officers at the entry level in the GSI and IBM has compounded the problem. In order to remedy the situation, it is necessary to make an assessment of the future requirement of geologists and mining engineers in the GSI and IBM and announce a long-term programme of recruitment.

Sustainability of Mineral Development

7.2.50 Mineral development faces opposition in the country on two accounts. First, there is scepticism about mining operations being done in a manner that does not have an adverse impact on the environment. Second, there is a feeling among PAPs that they have not received enough compensation. More importantly, there are unfulfilled expectations from mining companies for providing development services in return for the social license to operate the mines.

7.2.51 There are two statutes, viz., the Forest (Conservation) Act 1980 and the Environment (Protection)

Act 1986, which lay down the law that must be followed in the development of mines. A criticism that has been made is that the two statutes have a preoccupation with two concerns, namely, compensation for diversion of forest land to non-forest use in various forms (including compensatory afforestation) and the need for environment impact studies prior to the grant of environmental clearances. The best practice internationally goes much beyond these concerns. Worldwide, mining interventions are becoming increasingly sophisticated and the objective is 'to ensure that the critical natural capital is maintained, that ecosystems are enhanced where possible, and that mineral wealth contributes to net environmental continuity.' (National Mineral Policy: Report of the High Level Committee, 2006).

7.2.52 As for relief and rehabilitation, various mineral-rich States already have in position policies and executive orders that lay down the entitlements of the PAPs. But the practice in the country falls short of that prevailing internationally in mining sector interventions. The international best practices include 2%–3% of the turnover of mining companies being expended on social infrastructure in the region, a direct financial stake in the mining venture to indigenous communities (e.g., tribals) in the form of equity, and all this is in addition to fair compensation to PAPs by way of cash, housing, and jobs. Mining companies in India now under statutory obligations, routinely undertake welfare measures for the development of entire local communities. However, as observed by the high-level committee, 'these are unorganized ad hoc initiatives that are voluntary in nature and for which there is no accountability to outside agencies'. It is necessary to have a formalized framework so that standards are laid down and adherence to the standards is ensured.

7.2.53 In order to enhance the contribution of mining to the enrichment of the environment and improve the well being of the indigenous communities beyond what the current law and policy provides, the high-level committee on the Mineral Policy has recommended that a framework should be prepared and adapted to the Indian mining context on the basis of the SDF developed by the International Council of Mining and Metals and the International Union for the Conservation of Nature and Natural Resources. Once such a framework has been prepared, all mining leaseholders would be required to adhere to it as a condition of their lease. The government would establish a mechanism for monitoring such adherence in a participative mode along with the NGOs and PAPs.

Impediments to Investment in Mining

7.2.54 The main reason for the lack of private sector investment in exploration and mining activity is that there is no assurance that the RP holder will get the prospecting license and the PL holder will get the ML. Further, even after an entrepreneur gets the ML, several discretionary provisions in the statutes pose a threat to the ML holder's security of tenure.

7.2.55 At present, the system of exclusive RPs contains no incentive for the RP holder to expedite reconnaissance work. Furthermore, the lack of clarity on the right to transfer PLs limits the applications for RP only to large companies, which have the ability to take up reconnaissance, prospecting, as well as mining activity. Without a guaranteed and explicit right to transfer the PLs, standalone exploration companies, which have the ability to do reconnaissance and prospecting on the basis of state-of-the-art techniques, but do not undertake mining as this is a separate activity, are discouraged from making an application for RP. This is the single most vital issue for attracting investment in exploration and it lies at the core of the recommendation for 'unbundling' made by the high-level committee on the National Mineral Policy.

7.2.56 Even though the regulations contain time limits for the State Government in disposing of applications, they may defer indefinitely a decision on an application for RP/PL/ML in the hope that applications would come in future from value-adders.

7.2.57 Procedural delays in the disposal of applications occur for a number of reasons. One of them is that a great deal of time is taken for the verification of mineral titles. The availability of a spatially represented, easily accessible registry of all pending and granted exploration titles is a key part of a modern regulatory system.

7.2.58 Several State Government undertakings are involved in mining activity and since the State is also a regulator the State's involvement in mining, in competition with private mining companies it can become a disincentive for the private sector investment.

Mineral Development in the States

7.2.59 In line with the current economic and new mineral policy, the core functions of the State in mining will be facilitation of exploration and mining activities of investors and entrepreneurs, provision of infrastructure, and regulation and tax collection. The mineral-producing States need to update their mineral policy in line with the National Mineral Policy.

Infrastructure in Mining Areas

7.2.60 While deficiencies in arterial roadways, railways, and port infrastructure need to be addressed by the Central Government, equally crucial for the development of mining is the infrastructure that links mines to the arterial routes. While the Central Government is providing funds for arterial routes, there is a need for funds for linking infrastructure as well. This is particularly important in our country where non-captive mining is mainly an SME sector activity.

Strategies to meet the Challenges

7.2.61 At the end of the Tenth Five Year Plan, the potential of the mineral sector in the country remains largely unrealized in the absence of exploration activities on the scale needed. The public sector bodies are hamstrung by the lack of financial resources and the private sector does not find the legal framework and the procedures to be conducive for the enterprise. There are other challenges as well, particularly those relating to the transport infrastructure, the protection of the environment, rehabilitation of the people displaced by the mining activity, and increasing the revenue for the State Governments from mining activity. We give below the more important strategies for tackling them, based largely on the recommendations of the high-level committee on National Mineral Policy referred to earlier.

- It is necessary to effect changes in law so that the transition from RP to PL and further to ML is made seamless. Discretionary powers of the government, which affect the security of tenure of the holders of RP/PL/ML, should be eliminated or at least substantially curtailed.
- For maximizing the investment in exploration, RPs should be made non-exclusive and prospecting companies should be given explicitly a guaranteed right to transfer the PL with the accompanying right to be granted the ML.
- The present registry system should be modernized by creating a digitized online mineral atlas, which would show the mineral titles clearly. This will make it feasible for applicants to ascertain the availability of areas before applications and to apply online, which should be allowed.
- Co-ordination-cum-empowered committees need to be established in the Centre as well as in the States to monitor the clearances and to serve as a pressure point to ensure speedy clearance by different departments and agencies.
- In line with the current economic policy, the core functions of the State in mining should be facilitation of exploration and mining activities of private sector investors and entrepreneurs, provision of infrastructure, and regulation and tax collection.
- To facilitate the provision of infrastructure linking the mines to the arterial routes, each State Government with major mining activity should set up a mineral development fund (MDF) by earmarking 15% of the annual royalty collections for the fund. The GoI should also make matching contribution to the MDF of each State every year for the duration of the Eleventh Plan.

Plan Outlay in the Eleventh Plan

7.2.62 The scheme-wise break up of the Eleventh Plan outlay is given in Annexure 7.2.10. The total projected outlay for the Eleventh Five Year Plan for Ministry of Mines is Rs 7430 crore at 2006–07 price (Rs 8404 crore at current price) which includes Rs 1043 crore of GBS at 2006–07 price (Rs 1180 crore at current price) and Rs 6387 crore of IEBR at 2006–07price (Rs 7224 at current price).

ANNEXURE 7.1.1
Industrial Investment Proposals

Year	Industrial Entrepreneur Memoranda (IEM)		Letter of Intents (LOIs)		Direct Industrial Licenses (DILs)	
	No. of Proposals	Proposed Investment (Rs Crore)	No. of Proposals	Proposed Investment (Rs Crore)	No. of Proposals	Proposed Investment (Rs Crore)
2001	2981	91234	117	1318		
2002	3172	91291	89	649		
2003	3875	118612	116	1395	14	
2004	5118	267069	39	381	61	4884
2005	6203	353956	24	333	111	2657
2006	6260	588271	20	137	90	4693
2007 (up to March 2007)	1030	204517	1	37	6	886

Source: SIA Statistics, April 2007, DIPP.

ANNEXURE 7.1.2
Investment Projects Benefiting from Loans from Banks/FIs in 2004–05, 2005–06 and 2006–07

		2004–05			2005–06			2006–07		
		Number of Projects	Project Cost Amount (Rs Crore)	% Share	Number of Projects	Projects Cost Amount (Rs Crore)	% Share	Number of Projects	Project Cost Amount (Rs Crore)	% Share
1	Industry				2	3	4	5	6	7
1.	Infrastructure	75	31294	33.3	109	44541	33.9	125	101744	35.9
	(i) Power	60	12419	13.2	66	35358	26.9	64	51451	18.2
	(ii) Telecom	4	15832	16.9	5	2639	2.0	9	17950	6.3
	(iii) Ports and airports	11	3043	3.2	3	2295	1.8	7	10745	3.8
	(iv) Roads, storage, and water management				22	2386	1.8	8	13083	4.6
	(v) SEZ, industrial, biotech, and IT parks				13	1864	1.4	37	8515	3.0
2.	Sugar	14	763	0.8	20	2857	2.2	33	8867	3.1
3.	Textiles	126	7458	8.0	158	14128	10.8	258	25933	9.2
4.	Paper and paper products	17	2330	2.5	23	2397	1.8	24	2915	1.0
5.	Coke and petroleum products				2	1107	0.8	11	44083	15.5
6.	Chemicals and petrochemicals	38	2822	3.0	26	3021	2.3	35	4136	1.5
7.	Cement	14	3642	3.9	13	1945	1.5	27	10567	3.7
8.	Metal and metal products	141	27331	29.1	126	21799	16.6	130	39876	14.1
9.	Electrical and non-electrical machinery	23	671	0.7	22	384	0.3	20	4486	1.6
10.	Transport equipments	25	1289	1.4	13	988	0.8	29	5174	1.8
11.	Construction	8	275	0.3	33	4700	3.6	34	9277	3.3
12.	Hotels and restaurants	20	2254	2.4	37	4454	3.4	74	11122	3.9
13.	Transport services	45	4201	4.5	21	16947	12.9	17	1561	0.5
14.	Entertainment				9	1807	1.4	20	761	0.3
15.	IT	16	974	1.0	7	2683	2.0	8	228	0.1
16	Food products/processing	47	1754	1.9						
17.	Others*	81	3401	3.6	193	7540	5.7	209	12710	4.5
	Total	720	93859	100.00	812	131299	100.0	1054	283440	100.0

Note: *Comprise industries, each with a share of less than 1% in total cost of projects in 2005–06 and 2006–07.
Source: RBI, Bulletin, August 2006 and August 2007.

ANNEXURE 7.1.3
Composition of Exports and Growth Rates

Commodity	Exports 2006–07 P (US$ Million)	% Share of Exports		Compound Annual Growth Rate (CAGR) in Ninth Plan	Growth Rate over Previous Year					CAGR in Tenth Plan
		Ninth Plan	2006–07		2002–03	2003–04	2004–05	2005–06	2006–07	
I. Primary Products	19547.8	18.3	15.5	–2.3	21.5	13.7	36.9	20.9	19.4	22.2
A. Agriculture and allied products	12514.6	15.6	9.9	–3.0	13.7	12.3	12.5	20.3	22.5	16.2
B. Ores and minerals	7033.1	2.7	5.6	1.5	58.1	18.7	114.4	21.9	14.1	41.0
II. Manufactured Goods	82817.8	77.4	65.6	6.3	20.6	20.5	25.2	18.3	14.1	19.9
A. Leather and manufactures	2933.1	4.5	2.3	3.5	–3.2	17.0	12.0	8.4	8.7	9.0
B. Chemicals and related products	16727.1	12.9	13.2	9.1	23.2	26.7	31.7	16.6	13.3	22.5
1. Basic chemicals, pharmaceuticals, and cosmetics	10445.8	8.2	8.2	8.2	26.0	25.5	22.1	25.2	14.4	23.1
2. Others	6281.3	4.7	5.0	10.7	18.8	28.7	47.3	5.1	11.3	21.7
C. Engineering goods	29079.1	14.9	23.0	7.0	29.8	37.3	39.8	24.2	33.9	33.1
D. Textile and textile products	17009.7	25.5	13.5	3.4	13.8	10.1	6.0	18.3	3.7	10.8
1. Cotton yarn, fabrics, madeups, etc.	4136.6	8.1	3.3	–0.3	9.1	1.3	1.6	12.0	4.9	6.1
2. Readymade garments	8694.7	12.2	6.9	5.9	13.6	9.5	5.3	28.1	0.9	11.7
3. Man-made yarn, fabrics, madeups, etc.	2164.6	2.3	1.7	8.7	28.8	28.4	11.4	–2.2	10.6	15.2
4. Other (silk, jute, coir, woolen products, and carpets)	2013.8	2.9	1.6	0.1	13.4	16.6	12.6	17.2	7.0	13.7
E. Gems and jewellery	15585.7	17.3	12.3	9.0	23.6	17.1	30.2	13.0	0.4	16.4
F. Handicrafts (excluding hand-made carpets)	371.7	1.6	0.3	2.9	43.0	–36.4	–24.5	8.7	–19.5	–7.5
G. Other manufactured goods	1111.4	0.8	0.9	7.7	22.5	29.0	34.1	37.7	13.0	23.4
III. Petroleum Products	18551.9	2.3	14.7	34.5	21.6	38.5	95.9	64.7	59.4	54.3
IV. Others	5413.7	2.0	4.3	28.2	1.5	57.7	20.3	32.9	115.6	35.8
Total Exports	126331.1	100.0	100.0	5.5	20.3	21.1	30.8	23.0	22.5	23.6

Note: P = Provisional.
Source: Handbook of Statistics on Indian Economy, RBI, 2007.

ANNEXURE 7.1.4
Performance of CPSEs during the Tenth Five Year Plan

(Rs Crore)

	Turnover					Net Profit/Loss (–)				
Industry	2001–02	2002–03	2003–04	2004–05	2005–06	2001–02	2002–03	2003–04	2004–05	2005–06
Steel	20135	24885	31008	40820	41742	–1781	229	4091	8893	5307
Minerals and non-ferrous metals	5461	5846	7160	10153	12384	568	755	1467	2876	4039
Coal and lignite	22001	26920	29048	33698	34489	2158	3035	5238	4826	8216
Power	23977	25271	25321	30010	34306	5613	5219	8605	8730	9082
Petroleum	253012	305335	330074	406247	499555	12639	22322	23819	25959	26181
Fertilizers	7429	8280	8017	8999	9364	–1796	–2329	–2128	–2104	–1990
Chemicals and pharmaceuticals	810	981	1005	1298	976	–388	–253	–376	–557	–74
Heavy engineering	7892	7973	9041	10823	15042	144	–6	43	313	977
Medium and light engineering	7808	7946	7864	8443	9559	–191	–687	–977	–450	–25
Transportation equipment	6112	6505	6962	8198	9619	776	388	293	679	1045
Consumer goods	1241	1241	1311	1325	1606	–306	–721	–575	–848	225
Agro-based industries	129	142	158	150	173	–14	–14	–11	–26	–21
Textiles	753	940	825	875	856	–1032	–1961	425	–1479	1211
Total industry	356759	422264	457793	561039	669672	16390	25978	39914	46815	54172
Enterprises rendering services	107174	138930	160064	166302	162912	10003	6199	12576	17269	16117
Total CPSEs	463934	561194	617857	727341	832584	26393	32176	52490	64083	70288

Note: The data is in respect of 225 CPSEs in operation in 2005–06 for 2001–02 to 2004–05. In 2005–06, 10 CPSEs did not report the data to DPE and therefore data for 2005–06 pertains to 215 CPSEs.
Source: DPE, 2007, Public Enterprises Survey 2005-06, Volume–I.

ANNEXURE 7.1.5
State-wise and Year-wise Investment Intentions (IEMs + LOIs + DILs)

(in Rs Crore)

S. No.	Name of the State	2003–04	2004–05	2005–06	2006–07	2007–08 (April–May)
1.	Andhra Pradesh	16527	16596	19001	48660	2577
2.	Assam	163	430	809	2044	169
3.	Bihar	27	314	3913	4850	308
4.	Chhattisgarh	16155	47602	39914	118737	17559
5.	Dadra and Nagar Haveli	4137	834	2374	2794	431
6.	Gujarat	32341	29695	82901	72283	7946
7.	Haryana	8372	2737	5578	16095	769
8.	Himachal Pradesh	1126	3384	1774	1906	254
9.	Jammu and Kashmir	774	2719	2058	2306	400
10.	Jharkhand	1861	10539	54089	35257	17969
11.	Karnataka	14074	10969	15353	72250	7059
12.	Madhya Pradesh	1616	8538	18782	12537	1963
13.	Maharashtra	8878	13256	24694	62191	6907
14.	Orissa	17718	45565	38255	96869	5997
15.	Punjab	1844	4190	7127	10128	544
16.	Rajasthan	1096	2162	5077	10040	1768
17.	Tamil Nadu	2898	54481	11841	20377	5373
18.	Uttar Pradesh	2179	21633	31710	33745	1823
19.	Uttarakhand	1334	2441	5706	14887	968
20.	West Bengal	7637	14078	12047	51836	9410
21.	Others	17628	1931	3378	6574	1857
	Total	158385	294094	386381	696366	92051

Note: Investment in terms of IEMs filed, Letters of Intent (LOIs) issued, and DILs.
Source: SIA Statistics, June 2007.

ANNEXURE 7.1.6

State-wise Investment Projects Benefiting from Loans from Banks/FIs during 2004–05, 2005–06 and 2006–07

State	2004–05			2005–06			2006–07		
	Number of Projects	Project Cost		Number of Projects	Project Cost		Number of Projects	Project Cost	
		Amount (Rs Crore)	% Share		Amount (Rs Crore)	% Share		Amount (Rs Crore)	% Share
1	2	3	4	5	6	7	8	9	10
Andhra Pradesh	38	3330	3.6	76	11254	8.6	105	25173	8.9
Chhattisgarh	40	8620	9.2	19	5162	3.9	13	2365	0.8
Delhi	12	1471	1.6	24	2127	1.6	19	6359	2.2
Gujarat	81	10983	11.7	95	24531	18.7	86	73170	25.8
Haryana	21	1440	1.5	29	1805	1.4	42	3897	1.4
Himachal Pradesh	17	1358	1.4	19	9325	7.1	30	2644	0.9
Jharkhand	–	–	–	8	367	0.3	13	7174	2.5
Karnataka	50	6641	7.1	51	4537	3.5	91	19930	7.0
Madhya Pradesh	19	766	0.1	12	2514	1.9	23	4878	1.7
Maharashtra	102	9808	10.4	121	24828	18.9	142	24330	8.6
Orissa	30	9256	9.9	20	4525	3.5	23	14806	5.2
Punjab	32	2609	2.8	27	2041	1.5	48	5902	2.1
Rajasthan	26	1587	1.7	27	2466	1.9	38	9806	3.5
Sikkim	–	–	–	–	–	–	3	9418	3.3
Tamil Nadu	110	9929	10.6	124	12160	9.3	157	24299	8.6
Uttar Pradesh	23	1348	1.4	50	10415	7.9	60	9836	3.5
Uttarakhand	10	599	0.6	24	2959	2.2	31	5633	2.0
West Bengal	40	2324	2.5	27	2548	1.9	37	3404	1.2
Multi-State	33	18893	20.1	29	5730	4.4	46	25428	9.0
Others*	36	2898	3.1	30	2005	1.5	47	4988	1.8
Total	720	93859	100.0	812	131299	100.0	1054	283440	100.0

Note: *Comprise States/UTs, each with share of less than 1% in aggregate cost of projects in 2005–06 and 2006–07.
Source: RBI Bulletin August 2006 and August 2007.

ANNEXURE 7.1.7
Production and Export of Vehicles

Category	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
			Production of Vehicles (in thousands)			
PVs	564	609	842	960	1046	1238
MUVs	106	114	146	249	263	306
CVs	163	203	275	350	391	520
Two-wheelers	4271	5076	5625	6527	7600	8444
Three-wheelers	213	277	341	374	434	556
Total	5316	6280	7229	8461	9735	11065
			Exports of Vehicles (in thousands)			
PVs	50	71	126	161	170	192
MUVs	3	1	3	6	6	6
CVs	12	12	17	30	40	50
Two-wheelers	104	180	265	367	513	619
Three-wheelers	15	43	68	67	77	144
Total	183	307	479	630	806	1011

Note: PVs = Passenger Vehicles.
Source: Society of Indian Automobile Manufacturers.

ANNEXURE 7.1.8
Production and Export Performance in Capital Goods Sector

(Rs in Crore)

Category	2002	2003	2004	2005	2006	CAGR (%)
			Production Performance in Capital Goods Sector			
Machine tools	1835	2371	2457	2645	2899	12
Textile machinery	1073	1175	1256	1668	2151	19
Heavy electrical equipments			16500	21000		27
Mining and construction equipments		4150	4750	6300		23
Process plant equipments		2850	3560	5000		32
			Export Performance			
Machine tools	436	568	628	686	819	17
Textile machinery	427	406	535	457	516	5
Heavy electrical equipments			3075	2700		–12
Mining and construction equipments		216	280	330		24
Process plant equipments		630	860	1150		35

Source: Department of Heavy Industry.

ANNEXURE 7.1.9
Production of Chemicals

(Thousand Tonnes)

Category	Installed Capacity (as on March 2007)	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	CAGR
Alkali	7072	4342	4792	5070	5272	5475	5269	3.9
Inorganic chemicals	748	374	404	441	508	544	602	10
Dyestuffs and dye intermediates	52	24.8	26.2	25.9	28.5	29.5	32.5	5.6
Agro chemicals	145	81.8	69.56	85.12	93.97	82.24	84.7	0.7
Organic chemicals	1889	1166	1353	1473	1506	1545	1545	5.8
Total chemicals	9908	5990	6645	7096	7408	7676	7534	4.7

Source: Department of Chemicals and Petrochemicals.

Foreign Trade in Chemicals

(in Rs Crore)

	Inorganic Chemicals		Organic Chemicals		Pesticides		Dye and Dyestuff	
Year	Export	Import	Export	Import	Export	Import	Export	Import
2001–02	1259	5730	7624	8795	1356	362	2436	1138
2002–03	1946	5579	10190	10695	1487	287	2943	1344
2003–04	1949	5916	12975	14363	1746	501	3112	1617
2004–05	2872	8130	16269	18785	2096	712	3111	1878
2005–06	3431	10446	21504	22775	2791	754	3750	2245
2005–06 (April–December)	2638	8531	19080	20451	2001	656	3366	2072

Source: Department of Chemicals and Petrochemicals.

ANNEXURE 7.1.10
Production, Consumption and Import of Fertilizers

(Lakh Tonnes)

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07 (Est.)
Production						
Urea	190.03	186.21	190.38	202.39	200.85	203.08
DAP	50.91	52.36	47.09	51.84	46.28	48.51
MOP	0	0	0	0	0	0
NPK (Complex Fert.)	49.66	48.16	47.59	55.08	66.94	74.44
Consumption						
Urea	199.17	184.93	197.67	206.65	222.98	244.85
DAP	61.81	54.73	56.25	62.56	67.64	69.24
MOP	19.92	19.73	20.13	23.10	27.31	24.50
NPK	49.63	50.67	51.20	53.63	66.94	74.44
SSP	26.05	24.99	25.44	25.49	27.56	30.57
Import of Fertilizers						
Urea	2.20	1.19	1.43	6.41	20.57	47.18
DAP	9.33	3.83	7.34	6.44	24.36	28.41
MOP	28.3	25.33	25.83	34.09	45.78	–

Note: Est = Estimate.
Source: Department of Fertilizers.

ANNEXURE 7.1.11
Production, Import and Export of Paper and Paperboard

(Lakh Tonnes)

Year	Production	Imports	Exports
2003–04	55.57	3.15	2.32
2004–05	57.93	1.95	2.70
2005–06	58.70	2.85	2.29
2006–07	61.28	3.10 (April 2006–February 2007)	2.6 (April–Dec 2006)

Source: Annual Reports, DIPP.

ANNEXURE 7.1.12
Production, Import and Export of Newsprint

(Lakh Tonnes)

Year	Production	Imports	Exports
2003–04	6.8	7.5	0.03
2004–05	7.6	6.7	0.05
2005–06	9.1	6.8	0.10
2006–07	10.3	7.9	0.04

Source: Annual Reports, DIPP.

ANNEXURE 7.1.13
Performance of Commodity Polymers and Synthetic Fibres

(Kilo Tonnes)

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
			Performance of Commodity Polymers			
Capacity	4252	4316	4431	4614	4710	5187
Production	3974	4175	4499	4776	4768	5183
Consumption	3826	3795	4107	4177	4795	na
Imports	420	381	450	416	722	na
Exports	568	761	843	1015	695	na
Net trade	148	380	393	599	(–) 27	
			Performance of Synthetic Fibre			
Capacity	2071	2113	2204	2341	2413	3246
Production	1669	1755	1868	1875	1906	2244
Consumption	1718	1800	1882	1890	1893	na
Imports	147	189	155	193	162	na
Exports	98	144	141	178	175	na
Net trade	(–) 49	(–) 45	(–) 14	(–) 14	13	

Source: Department of Chemicals and Petrochemicals.

ANNEXURE 7.1.14
Production, Import and Export of Finished Steel

(Million Tonnes)

	2002–03	2003–04	2004–05	2005–06	2006–07(P)
Production for sale	35.41	38.58	41.32	44.39	49.58
Domestic availability	28.6	31.2	34.5	39.4	43.7
Consumption (apparent)	28.7	31.1	34.3	39.1	43.7
Import	1.51	1.54	2.11	3.85	4.10
Export	4.51	4.84	4.38	4.48	4.75

Source: Joint Plant Committee.

ANNEXURE 7.1.15
Estimated Requirement of Raw Material and Other Inputs in Steel Production by 2011–12

Input	Unit	Estimated Consumption 2005–06	Estimated Consumption 2011–12
Coking coal	Million mt	31.5	46.0
Non-coking coal	Million mt	15	24.5
Coal dust injection	Million mt	Negligible	3.00
Iron Ore	Million mt	66.9	130
Scrap Steel	Million mt	10.2	18.0
Limestone	Million mt	11	19.5
Dolomite	Million mt	4.0	7.4
Natural Gas	Mcal	10000	15000
Ferro Alloys	Million mt	0.85	1.5
Power	MW	4120	7700

Source: Report of the Working Group on Steel for the Eleventh Five Year Plan.

ANNEXURE 7.1.16
Production, Consumption and Export of Sugar during 2002–03 to 2006–07

(Lakh Tonnes)

S. No.	Particulars	2002–03	2003–04	2004–05	2005–06	2006–07
1.	Carryover stock	113.19	116.16	85.00	40.00#	
2.	Production	201.32	198.58	130.00	189.59	283.0
3.	Import	0.41	5.53	20.74	3.62	
4.	Internal consumption	183.76	175.00	171.44	183.21	
5.	Exports	15.00	2.94	0.98	13.68	
6.	Closing stock	116.16	85.00*	57.00*	36.32	

Note: #After excluding damaged sugar; * as indicated by Central Excise Authority.
Source: Annual Plan 2007–08 of DFPD, GoI, 2006–07 statistics from Indian Sugar, August 2007.

ANNEXURE 7.1.17
Production of Cloth—Year on Year Growth

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07#
Cotton	0.26	–2.37	–6.53	14.50	15.13	9.67
Blended	–1.01	–6.54	3.27	–0.59	3.48	8.34
100% non-cotton	12.70	5.22	9.16	2.19	4.16	7.07
Khadi, etc.	15.41	2.80	0.00	4.68	0.00	0.00
Total cloth	4.48	–0.15	0.98	7.07	9.00	8.37

Note: # Provisional, Confederation of Indian Textile Industry.
Source: Report of the Working Group on Textiles and Jute Industry for the Eleventh Five Year Plan.

ANNEXURE 7.1.18
Exports of Textiles and Clothing during the Tenth Five Year Plan

(US$ Million)

	2001–02	2002–03	2003–04	2004–05	2005–06	April 2005–February 2006#	April 2006–February 2007#	Y-o-Y Growth (%)
Cotton textiles	3092	3370	3609	3543	4493	4038.0	4781.90	18.40
Man-made textiles	1092	1421	1826	2050	2000	1813.70	2104.70	16.00
Silk textiles	287	315	381	405	430	631.50	634.30	0.50
Woolen textiles	52	51	58	70	84	418.10	412.50	–1.30
Clothing	5024	5705	6248	6559	8403	7051.40	7273.40	3.10
Total	9547	10862	12122	12627	15410	13952.70	15206.80	9.0
Jute, coir, and handicrafts	1254	1583	1409	1394	1668	1574.80	1524.70	–3.18
Grand Total	10801	12445	13531	14021	17078	15527.50	16731.50	7.75
Percentage growth		15.22	8.73	3.62	21.80			7.75

Note: # DGCI&S, Kolkata.
Source: Report of the Working Group on Textiles and Jute Industry for the Eleventh Plan.

ANNEXURE 7.1.19

The Tenth Plan Outlay and Anticipated Expenditure and the Eleventh Plan Outlay

(Rs Crore)

Ministry/Department	Tenth Plan						Eleventh Plan (at Current Price)		
	Outlays			Anticipated Expenditure					
	BS	IEBR	Outlay	BS	IEBR	Expenditure	BS	IEBR	Outlay
1. Steel	65	10979	11044	106	4708	4814	217.00	45390.08	45607.08
Iron and Steel	60	6039	6099	103	3994	4097	216.00	37102.18	37318.18
Minerals	5	4940	4945	3	714	717	1.00	8287.90	2288.90
2. Fertilizer	1050	4850	5900	657.36	1893.74	2551.10	1492.06	19135.87	20627.93
3. Chemicals and Petrochemicals	300	2744	3044	574.91	0	574.91	1960.00	296.36	2256.36
4. Industrial Policy and Promotion	2000	0	2000	1779	0	1779	4183.00	0.00	4183.00
5. Heavy Industry	700	1363	2063	1351	1255	2606	4093.00	7208.67	11301.67
6. Public Enterprises	50	0	50	94	0	94	54.00	0.00	54.00
7. Textiles	3500	80	3580	4504.48	0	4504.48	14000.00	0.00	14000.00
Industry segment	1900	80	1980	2686.63	0	2686.63	11000.00	0.00	11000.00
VSE segment	1600	0	1600	1817.85	0	1817.85	3000.00	0.00	3000.00
8. Consumer Affairs	55	0	55	280.24	0	280.24	1083.00	0.00	1083.00
9. Company Affairs (Corporate Affairs)	50	0	50	0	0	0	211.00	0.00	211.00
Industry Segment Outlay in other Ministries/Departments									
10. Petroleum (Petrochemicals and Engineering)	0	7614.81	7614.81	0	6824	6824	0.00	15557.00	15557.00
11. Ship Building	242.86	805	1047.86	156	127	282	170.00	550.00	720.00
12. Atomic Energy (I&M)	2270	1079.5	3349.5	1645.53	392.44	2037.97	8425	2554.12	10979.12
Industry	1811	90.0	1901.0	1241.23	39.65	1280.88	6975	160.00	7135.00
Minerals	459	989.5	1448.5	404.30	352.79	757.09	1450	2394.12	3844.12
13. Biotechnology	30	0	30	102	0	102	750.00	0.00	750.00
14. DSIR	25	0	25	25	0	25	150.00	0.00	150.00
15. Earth Sciences (Ocean Development)	100	0	100	93	0	93	319.00	0.00	319.00

Source: Planning Commission.

ANNEXURE 7.1.20
Performance of SSIs, Year 2000–01 to 2006–07

Year	Total SSI Units (Lakhs)	Fixed Investment (Rs Crore)	Production		Employment (In Lakh Persons)	Exports (Rs Crore)
			Current Price (Rs Crore)	Constant Price (1993–94 in Rs Crore)		
2000–01	101.1	151527	261297	184401.4	240.94	69797
	(4.07)	(8.25)	(11.78)	(8.23)	(5.17)	(28.78)
2001–02	105.21	160673	282270	195613	252.29	71244
	(4.07)	(6.04)	(8.03)	(8.00)	(4.71)	(2.07)
			At 2001–02 Price			
2002–03	109.49	169579	314850	306771	263.68	86013
	(4.07)	(5.54)	(11.54)	(8.68)	(4.51)	(20.73)
2003–04	113.95	178269	364547	336344	275.30	97644
	(4.07)	(5.12)	(15.78)	(9.64)	(4.41)	(13.52)
2004–05	118.59	188793	429796	372938	287.55	124417
	(4.07)	(5.90)	(17.90)	(10.88)	(4.45)	(27.42)
2005–06	123.42	198050	497842	418884	295.85	150242
	(4.07)	(4.90)	(15.83)	(12.32)	(4.28)	20.76
2006–07 (Prov.)	128.44	207307	585112	471663	312.52	–
	(4.07)	(4.67)	(17.53)	(12.60)	(4.23)	–

Note: Figures in brackets indicate increase in the percentage over the last year.
Source: Ministry of SSI, GoI, Annual Report 2005–06.

ANNEXURE 7.1.21
Export Destination (Country) of SSI Products

S. No.	Product Group	Main Destination (Countries)
1.	Readymade garments	USA, Europe, Canada, West Asia, and North Africa.
2.	Plastic items	UAE, China, Italy, Saudi Arabia, and Oman.
3.	Marine products	Japan, USA, European Union, China, and South East Asia.
4.	Sports goods	UK, USA, Australia, Germany, and South Africa.
5.	Spices	East Asia, European Union, North African Zone, and American Zone.
6.	Cashew items	USA, Netherlands, UK, Japan, and UAE.
7.	Shellac items	Indonesia, Germany, UAE, USA, and Italy.
8.	Synthetic items (Madeups)	UAE, UK, Turkey, USA, and Italy.
9.	Leather and leather items	Germany, UK, Italy, USA, and France.
10.	Engineering and electronic items	USA, Europe, Japan, Hong Kong, UAE, Germany, Belgium, and France.
11.	Basic chemical and cosmetic products	USA, Japan, Saudi Arabia, China, Singapore, and Netherlands.
12.	Chemical and allied products	Japan, Belgium, Italy, France, Bangladesh, USA, and UK.
13.	Wool and woollen (Madeups) knitted garments, etc.	Europe, Japan, and Bangladesh.
14.	Processed food items	USA, Europe, and Japan.
15.	Electronic items and computer software	USA, Hong Kong, UAE, UK, Germany, and Japan.
16.	Tobacco and tobacco items	East Europe.

Source: http://www.laghu-udyog.com/ssiindia exportdest.htm

ANNEXURE 7.1.22
Participation of Women in SSI Sector, State-wise

Name of State/UT	No. of Female Employees			No. of Enterprises Managed by Women	No. of Women Enterprises
	Regd. SSI Sector	Unregd. SSI Sector	Total		
Jammu & Kashmir	3313	8153	11466	5640	5742
Himachal Pradesh	4016	4134	8150	3515	3722
Punjab	11757	36013	47770	30190	29068
Chandigarh	659	1975	2634	2059	2243
Uttarakhand	2940	13240	16180	8706	8804
Haryana	15651	14889	30540	10087	9620
Delhi	6306	35798	42104	13368	14383
Rajasthan	15003	46065	61068	29785	36371
Uttar Pradesh	23506	180918	204424	54491	72667
Bihar	8353	68908	77261	38170	49443
Sikkim	212	9	221	30	98
Arunachal Pradesh	342	104	446	131	150
Nagaland	637	2574	3211	207	179
Manipur	3853	19485	23338	9168	10745
Mizoram	2188	4636	6824	3076	3700
Tripura	4294	3325	7619	631	863
Meghalaya	3139	5664	8803	3658	3580
Assam	9077	16988	26065	11189	11757
West Bengal	26549	304969	331518	71847	69625
Jharkhand	5105	8907	14012	7271	7865
Orissa	11723	213123	224846	33274	38233
Chhattisgarh	10177	52476	62653	11766	10034
Madhya Pradesh	29612	111703	141315	62351	68823
Gujarat	41189	79990	121179	55361	53703
Daman & Diu and Dadra & Nagar Haveli	6106	126	6232	167	213
Maharashtra	78731	162700	241431	80662	100670
Andhra Pradesh	60693	270026	330719	77347	77166
Karnataka	117934	223142	341076	101264	103169
Goa	5309	1833	7142	677	810
Lakshadweep	26	405	431	61	67
Kerala	189640	224491	414131	137561	139225
Tamil Nadu	270936	223050	493986	130289	129808
Pondicherry	5613	2670	8283	1089	1065
Andaman & Nicobar Islands	124	294	418	53	110
	974713	2342783	3317496	995141	1063721

Note: Regd. = Registered; Unregd. = Unregistered.
Source: 3rd SSI Census 2001–02– Ministry of MSME.

ANNEXURE 7.1.23
Schemes for MSME

Scheme/Goal	Eligibility	Description
	Fiscal Incentives/Subsidies	
Central excise duty exemption to make MSE products price competitive	All MSEs (manufacturing), including khadi and village industry units	Exemption up to Rs 100 lakh from excise duty, if total annual clearances or sales do not exceed Rs 400 lakh.
	Credit (Grants and Loans)	
Priority-sector lending to facilitate lending to MSEs	All MSEs	10% of all NBC by foreign banks to go to the MSE sector; no specific sub-target for domestic banks, which have to provide 40% of NBC to the priority sector as a whole.
CLCSS for Technology Upgradation	All (manufacturing) MSEs, including khadi and village industry units	Subsidy of 15% (12% prior to 29 September 2005) of capital acquired for upgrading technology or techniques for sub-sectors/products approved under the scheme upto a limit of Rs 100 lakh (Rs 40 lakh prior to 29 September 2005).
Credit Guarantee Scheme, to banks lending to MSEs	All (manufacturing) MSEs, including khadi and village industry units	Guarantee of 75% for loans up to Rs 25 lakh extended by member lending institutions of the Credit Guarantee Fund Trust, guarantee fee being borne by the borrower.
Prime Minister's Rozgar Yojana for employment generation	Educated (VIII standard pass) unemployed youth with family income up to Rs 40000 per annum	Loans of up to Rs 2 lakh for self-employment projects each case (Rs 1 lakh for business/service activities). Subsidy is released as a grant by the government, through the RBI, to the participating banks for crediting to the account of beneficiary, and adjusted against the repayment of last installment of loan by the beneficiary. The subsidy is 15% of the project cost or Rs 7500 per entrepreneur, whichever is less. The bank charges interest (not exceeding PLR) on the loan amount minus subsidy.
ISO 9000/ISO 14001 Certification Fee Reimbursement Scheme for improving quality and business processes	Individual MSEs, including those engaged in business/service	Reimbursement of expenses incurred in acquiring Quality Management System ISO 9000 certification/ environment management ISO 14001 certification, at 75% of the cost or Rs 75000, whichever is less.
Participation in international fairs for export promotion	Individual MSEs	Subsidy for renting space and partial reimbursement of air fare.
	Other Schemes	
Credit Appraisal and Rating Tool (CART)		Scheme for reimbursement of performance and credit rating of MSMEs through reputed Credit Rating agencies. To rationalize the pricing of credit, SIDBI has developed an advanced but simplified, technology-based rating model for MSEs called CART.
Reservation of products for exclusive mfg. by MSEs	All MSEs	114 items at present.
Purchase and price preference in government procurement to help improve marketing	MSEs registered with NSIC	358 items are currently reserved for exclusive purchase by the Central Government and its PSUs from the MSEs. 15% price preference for Central Government purchases, i.e. a micro/small enterprise quoting up to 15% above the quote of a non-MSE bidder would be eligible to get the order, other

Annexure 7.1.23 (contd.)

Annexure 7.1.23 (contd.)

Scheme/Goal	Eligibility	Description
		conditions of quality, terms of supply being met. Tender document is also provided free of charge and exemption from earnest money/security deposits.
Small Industry Cluster Development Programme (renamed as Micro and Small Enterprises Cluster Development Programme) to enhance the productivity, and competitiveness, as well as capacity building of micro and small enterprises	Micro and small (MSE) clusters	Implemented in PPP mode, GoI assistance varies from 30% to 80% of the project cost depending on the average investment in plant and machinery, location of the cluster, level of commercial self-sufficiency, etc.
Integrated Infrastructure Development (IID) Scheme, to facilitate provision of built-up infrastructure with necessary facilities for manufacturing and related service enterprises, with reservation of 50% for rural areas	State governments, industry associations, and NGOs for development/disposal of plots/ sheds on commercial basis	Central Government grants assistance of up to Rs 200 lakh or 40% of the project cost, whichever is less, for setting up new industrial estates for MSEs (up to 80% or Rs 40 million for the NER, including Sikkim, Himachal Pradesh, Jammu & Kashmir, and Uttarakhand). Also available for improvements in existing estates.
Mini Tool Rooms to improve availability of quality equipment, machines, and tooling facilities, necessary for manufacturing, on payment of user charges	State Governments/State Government agencies	Assistance up to 90% of the cost of plant and machinery or Rs 900 lakh, whichever is less, for setting up new mini tool rooms (75% of the cost of plant and machinery or Rs 750 lakh for upgrading existing tool rooms).
Testing centres to improve availability of quality test equipment, machines and other facilities, necessary for testing of raw material, intermediates, and finished products on payment of user charges	Industry associations	Assistance up to 50% of the cost of testing equipment and machinery or Rs 50 lakh, whichever is less, for setting up testing centres.
Sub-contracting exchanges to assist associations of MSEs track bulk orders/ tenders for bulk supplies by large industries to enable member MSEs to bid for parts of these orders	Industry associations	One time grant upto Rs 4 lakh for procurement of hardware such as plain paper copier, telex, fax machine, computer, furniture. Grant paid on reimbursement basis and provides a matching grant on a tapering basis at 50%, 30%, and 10% for running expenses, not exceeding Rs 125000, Rs 75000, and Rs 25000, respectively, during the first three years, subject to a ceiling of Rs 157000 per exchange.
SSI Market Development Assistance for export promotion	MSEs and their associations	Partial subsidization of costs of air fare, space rental, publicity, etc., to MSEs at varying rates, with preferential terms to the micro enterprises, partial financial assistance to contest anti-dumping cases, undertaking market studies, etc. Provision for reimbursement of 75% of one-time registration fee or Rs 15000, whichever is less for adoption of bar coding.
Assistance to Entrepreneurship Development Institutes	State/UT governments and other agencies involved in entrepreneurship development	Financial assistance in the form of non-recurring grant for strengthening infrastructure like building, training aids/equipment, and other support services on matching (50:50 basis) of the cost or Rs 100 lakh whichever is less.
Micro Finance Programme	Micro finance institutions (MFIs)	Portfolio Risk Fund provided to SIDBI for security deposit requirements of the loan amount from the MFIs.

Source: SIDO online information, viewed at *http://www.smallindustry.india.com* [4 July 2006]; RBI online information, viewed at *http://www.rbi.org.in/scripts/FAQView.aspx?Id=8*; and Ministry of Finance (2006), *Economic Survey 2005–06.*

ANNEXURE 7.2.1
Organization/Company-wise Actual Expenditure in the Tenth Five Year Plan—Ministry of Mines

(Rs Crore)

Organization	Approved Tenth Plan	Revised Tenth Plan (Mid-term)	Actual Tenth Plan
National Aluminium Co. Ltd	7056.00	2864.25	1840.27
Hindustan Copper Ltd	50.00	326.16	266.34
Mineral Exploration Corp. Ltd	50.00	73.75	66.45
Geological Survey of India	1000.00	998.56	537.54
Indian Bureau of Mines	103.00	136.08	84.88
S&T Programmes	57.50	52.48	32.95
Construction#	28.00	34.00	27.86
Total	8344.50@	4485.28	2856.29
GBS	1271.00	2881.75	986.27
IEBR	7073.50	1603.53	1870.02

Note: @ excluding outlay for HZL since disinvested; # construction in GSI and IBM.

Source: Tenth Five Year Document, Planning Commission, and Ministry of Mines.

ANNEXURE 7.2.2
Life Indices of Important Minerals

(in Million Tonnes)

S. No.	Mineral	Total Resources as on 1 April 2000	Total Balance Resources as on 1 April 2007	Estimated Domestic Production during 2006–07	Life Index Beyond 1 April 2007 at 2006–07 Production Level
1.	Bauxite	3306.763 (2221.549)	3269.525 (2184.311)	13.142	166
2.	Copper ore	1394.425 (659.789)	1385.094 (650.458)	3.293	200
3.	Chromite	232.120 (146.483)	220.532 (134.895)	4.090	33
4.	Lead–zinc ore	522.579 (316.879)	510.072 (304.372)	4.414	69
5.	Iron ore (haematite and magnetite)	25250 (15946)	24795 (15432)	160.33	97

Note: Figures in parentheses (of proved and probable reserves) have been considered for life index.

Source: Working Group Report on Mineral Exploration and Development (Other than coal and lignite) for Eleventh Five Year Plan, Volume II.

ANNEXURE 7.2.3
Estimated Apparent Consumption, Domestic Production, Resource Situation and Life Index of Selected Minerals

(Thousand Tonnes)

Minerals	Estimated Apparent Consumption in Terminal Year of		Estimated Production for Terminal Year of		Total Estimated Balance of Resources as on 1 April 2012	Life Index beyond 2012
	Tenth Five Year Plan 2006–07	Eleventh Five Year Plan 2011–12	Tenth Five Year Plan 2006–07	Eleventh Five Year Plan 2011–12		
A Refractory minerals						
1. Bauxite	12934	19900	14214	21875	3176799 (2091585)	96
2. Chromite	2978	4583	4302	6619	192569 (106932)	16
3. Graphite	113	174	113	174	157788 (10087)	58
4. Ball clay	2045	3147	1610	2477	52493 (13335)	5
5. Wollastonite	170	262	194	298	18429 (14255)	48
B Flux and construction minerals						
1. Gypsum	3437	5289	3994	6145	1194934 (767507)	125
2. Asbestos	227	349	6	9	21724 (11228)	Very large
C Fertilizer and chemical minerals						
1. Rock phosphate	4475	6695	1340	2061	383547 (139631)	68
2. Sulphur (by-product)	1320	2031	128	197	–	–
3. Fluorspar	126	194	12.86	20	12591 (10765)	538

Note: Figures in parenthesis (proved and probable reserves) considered for life indices.

Source: Working Group Report on Mineral Exploration and Development (other than coal and lignite) for Eleventh Five Year Plan, Volume II.

ANNEXURE 7.2.4
Material Balance of Principal Non-ferrous Metals

(Thousand mt)

	Aluminium			Copper			Zinc			Lead		
	2001–02	2006–07	2011–12	2001–02	2006–07	2011–12	2001–02	2006–07	2011–12	2001–02	2006–07	2011–12
Production (Primary)	660	950	1250	390	740	808	201	423	638	31	63	95
Secondary	40	50	60	–	–	–	25	30	40	40	60	75
Total Production	700	1000	1310	390	740	808	226	453	678	71	123	170
Import	150	120	270	45	–	–	71	2	–	61	152	273
Export	150	200	300	61	300	219	–	–	11	–	–	–
Domestic Demand	700	920	1280	374	440	589	297	455	667	132	275	443

Note: Demand for copper for 2011–12 has been projected at 6% compound growth rate per annum and production at 90% capacity utilization of existing installed capacity of 897500 tonnes.

Source: Working Group Report on Mineral Exploration and Development (other than coal and lignite), Eleventh Five Year Plan, Volume III.

ANNEXURE 7.2.5
Iron Ore Availability—Haematite (as on 1 April 2005)

(Qty in Million Tonnes)

Grade	Reserves	Remaining Resources	Total
High grade (Fe +65%)	1304.3	629.03	1933.33
Medium grade (Fe 62%–65%)	3544.03	3062.02	6606.05
Low grade (Fe below 62%)	1989.75	1686.94	3676.69
Unclassified	159.23	743.67	902.90
Black iron ore	2.52	12.72	15.24
Others	1.62	5.05	6.67
Unclassified	1.98	0	1.98
Not known	0.73	1486.79	1487.52
Grand Total	7004.17	7626.22	14630.39

Source: IBM.

ANNEXURE 7.2.6
Iron Ore Availability—Magnetite (as on 1 April 2005)

(Qty in Million Tonnes)

Grade	Reserves	Remaining Resources	Total
Metallurgical	0.67	2185.05	2185.74
Coal washery	3.33	5.00	8.33
Foundry	0.46	0.30	0.76
Others	0.97	24.16	25.13
Unclassified	52.64	8060.34	8112.98
Not known	0.43	286.12	286.55
Grand total	58.50	10560.98	10619.48

Source: IBM.

ANNEXURE 7.2.7
Physical Targets Proposed by GSI for some Important Activities for the Eleventh Plan (2007–12)

Schemes	Physical Target
1. Survey and Mapping	
Specialized thematic mapping	35000 sq km
Geochemical mapping	180000 sq km
Geophysical mapping	240000 sq km
Air-borne geophysical survey	76000 sq km
Marine surveys	12 cruises with RV Samudra Manthan, 13 cruises with new blue water research vessel, 70 cruises by coastal launches, that is RV Samudra Kaustubh and RV Samudra Saudhikama.
2. Mineral Exploration	226 items out of which 154 items on non-coal minerals and 72 items on coal and lignite (coal 66 items and lignite 6 items). Large scale: mapping 13530 sq km, Drilling: 429000 m
3. Specialized Investigations	Land slide hazard zonation on 1:50000/25000 scale of about 10000 line km through land slide prone hilly terrains; on 1:10000/5000 scale in thickly populated localities. In 20 sites, development of early warning system in 3 problematic land slides. Other specialized investigations include earthquake geology and seismology, environmental geology, geotechnical studies, glaciological and geothermal studies.
4. R&D and Antarctica Studies	202 items covering geochronology and isotope geology, petrology, photo-geology, and remote sensing, etc.
5. Publication and dissemination of information	Transformation of 3892 maps of 1:50000 scale geological maps into uniform .COOF format under GIS platform out of total 4306 maps digitized so far and digitization of 118 mineral belt maps; 130 district resource maps to be placed in public domain after completing them; completion of 1:0.5 M scale maps of 14 States; departmental publication: 100.
6. Human Resource Development	177 in house training courses.
7. Modernization and Replacement	Procurement of laboratory equipment, replacement of RV Samudra Manthan, Geotechnical vessel, and Heli-borne Geophysical Survey System.

Note: M scale = Million scale.
Source: Ministry of Mines.

ANNEXURE 7.2.8
Physical Targets Proposed by IBM and MECL for some Important Activities for the Eleventh Plan (2007–12)

Schemes	Target
Indian Bureau of Mines	
Inspection of mines for enforcement of provision of MCDR 1988.	2500 mines per annum.
Mineral beneficiation studies	Ore dressing investigations: 70 and chemical analysis of 50000 radicals annually; mineralogical studies: 2300.
Technological upgradation and modernization	Management of solid waste from mining in India.
Collection, processing, dissemination of data on mines and minerals	Adoption of UNFC system, 100 multi-mineral maps with corresponding forest overlays on yearly basis. Computerized online register of mining tenements system.
Mineral Exploration Corporation Limited	
Remote Sensing studies	23 items
Environmental studies	75 items
Geophysical surveys	1535 sq km
Geophysical logging	557462 sq m
Geological mapping	4655 sq km
Drilling	1066325 m
Exploratory mining	17500 m
Sampling and analysis	358250 nos

Source: Ministry of Mines.

ANNEXURE 7.2.9
Expansion Projects of NALCO—Capacity Additions

	Product	Unit	Existing Capacity	Expanded Capacity	Increase Capacity
Mine	Bauxite	Lakh TPY	48.00	63.00	15.00
Alumina Plant	Alumina Hydrate	Lakh TPY	15.75	21.00	5.25
Smelter	Aluminium	Lakh TPY	3.45	4.60	1.15
CPP	Power	MW	960 (120 × 8)MW	1200 (120 × 10) MW	240 (120 × 2) MW

Note: TPY = Tonne per Year; CPP = Captive Power Plant.
Source: Ministry of Mines.

ANNEXURE 7.2.10
Scheme-wise Break-up of the Eleventh Plan Outlays at Current Price—Ministry of Mines

(Rs Crore)

S. No.	Organization/Company	Outlay	IR	EBR	GBS	NBS
1.	NALCO	6927.08	6927.08	0.00	–	–
2.	HCL	223.00	223.00	–	–	–
3.	MECL					
	Promotional	50.00	–	–	50.00	50.00
	Capital	44.00	44.00	–	–	–
4.	GSI (including construction)	1020.00	–	–	1020.00	1020.00
5.	IBM (including construction)	90.00	–	–	90.00	90.00
6.	S&T	49.92	26.97	2.95	20.00	20.00
	Total	8404.00	7221.05	2.95	1180.00	1180.00

Note: NBS = Net Budgetary Support.
Source: Planning Commission.

IV
Services

8

Services

8.1 CONSTRUCTION

Background

8.1.1 The development of physical infrastructure in the country and, consequently, the construction sector has been in focus during the last decade. The increasing significance of construction activities in the growth of the economy was also evident during the course of implementation of the Tenth Plan with areas such as transportation, irrigation, housing, urban development, and civil aviation having received greater importance. It is well established that the influence of the construction industry spans across several sub-sectors of the economy as well as the infrastructure development, such as industrial and mining infrastructure, highways, roads, ports, railways, airports, power systems, irrigation and agriculture systems, telecommunication systems, hospitals, schools, townships, offices, houses and other buildings; urban infrastructure, including water supply, sewerage, and drainage, and rural infrastructure. Thus, it becomes the basic input for socio-economic development.

Criticality to Economy

8.1.2 The contribution of construction to the GDP at factor cost in 2006–07 was Rs 196555 crore, registering an increase of 10.7% from the previous year. The share of construction in GDP has increased from 6.1% in 2002–03 to 6.9% in 2006–07. The increase in the share of construction sector in GDP has primarily been on the account of increased government spending on physical infrastructure in the last few years, with programmes such as National Highway Development Programme (NHDP) and PMGSY/Bharat Nirman Programme receiving a major fillip of late. The construction industry is experiencing a great upsurge in the quantum of the work load, and has grown at the rate of over 10% annually during the last five years. Although various steps have been taken to strengthen the construction industry, it is crucial to take necessary measures in order to prepare the industry to meet the challenges of growth.

8.1.3 The importance of construction activity in infrastructure, housing, and other asset-building activities can be seen from the fact that the component of construction comprises nearly 60%–80% of the project cost of certain infrastructure projects such as roads, housing, etc. In projects such as power plants, industrial plants, etc., though the share is lower but it still remains critical. In terms of magnitude, construction activity is second only to agriculture. The construction industry also has major linkages with the building material manufacturing industry including cement and steel, bricks and tiles, sand and aggregates, fixtures and fittings, paints and chemicals, construction equipment, petrol and other petro-products, timber, mineral products, aluminum, glass, and plastics. Construction materials account for nearly two-third of the average construction costs. On the basis of an analysis of the forward and backward linkages of construction, the

multiplier effect for construction on the economy is estimated to be significant.

Employment in the Construction Industry

8.1.4 With around 27770 enterprises involved directly in the activity of construction in 2005, the industry is one of the largest employers in the country and is characterized by a mix of both organized and unorganized entities. The employment figures have shown a steady rise from 14.6 million in 1995 to more than double in 2005, that is 31.46 million personnel comprising engineers, technicians, foremen, clerical staff, and skilled and unskilled workers. Larger investments in infrastructure have resulted in an increased demand for construction and, consequently, for construction engineers and technicians. However, due to the limited availability of engineers and technicians in general and the greater demand in sectors such as IT, there is a substantial drop in the percentage of qualified engineers employed at the work sites from 4.71% in 1995 to 2.65% in 2005, and similarly at sub-engineering levels from 2.46% in 1995 to 1.85% in 2005. The strength of skilled workforce has also been consistently and substantially going down from 15.34% in 1995 to 10.57% in 2005, whereas relative proportions of unskilled workers have gone up from 73.08% in 1995 to 82.45% in 2005. The workers community accounted for 93% of the total employment in the construction sector in 2005, with a predominance of migrant labour workforce. It is important to create a reliable information system for labour migration both at the destination as well as at the point of origin of migration to reduce vulnerability. As macro level data is often inadequate to capture the flow and pattern of migration, state-centric surveys are required to fill in this gap. With several ambitious projects on anvil during the Eleventh Plan, the demand for construction manpower is going to grow at a consistent pace of at least 8%–9%, thereby resulting in an annual accretion of around 25 lakh persons to the existing stock.

Developments during the Tenth Plan

8.1.5 During 2002–07, many milestones were achieved by the Indian construction industry in the areas of institutional finance, human resource development, dispute resolution, procurement procedures, safety and quality in the construction industry, and disaster mitigation initiatives. The construction industry was accorded Industrial Concern Status under the Industrial Development Bank of India (Amendment) Act, thereby providing the much-needed impetus in terms of availability of finance to the construction industry. Many national initiatives in human resource management were implemented for the non-formal construction sector, addressing workers as well as engineers and management professionals in the industry. Other major initiatives included, inter alia, the establishment of arbitral institutions for dispute resolution, development of institutions for safety and quality aspects, setting up of disaster mitigation and Retrofitting Clinics along with the training of professionals in disaster mitigation, improvement in procurement practices in public sector, development of regulatory manuals for procurement procedures, as well as dissemination of information regarding good practices and development of action framework for quality and safety audits, certification, and training of manpower.

Strategies for the Eleventh Plan

8.1.6 The major challenge that the construction industry faces during the Eleventh Plan is to raise its delivery capabilities commensurate with the Plan targets for sectors such as transportation, housing, and urban development. The planned development of infrastructure would face constraints, unless the construction industry improves the delivery potentials by addressing crucial issues and impediments by bringing in systemic changes. The major issues in the construction industry have been detailed in the following sections.

Productivity in the Construction Industry

8.1.7 Since capacity building for the construction industry to achieve expected delivery capabilities is the key focus area, introduction of efficient technologies and modern management techniques to raise the productivity of the industry are vital. R&D in the construction industry should be seen as a continuing activity, because the scientific and technological advancements are needed to strengthen and raise the technological base of the construction industry. Recognizing this, support to the national institutions engaged in scientific research and incentives for private sector players to undertake in-house R&D need to be provided.

8.1.8 The low technological level of Indian construction leads to low value addition, productivity, quality, and high time and cost overruns. A national strategy and policy framework, focusing particularly on productivity enhancement and cost reduction, is required to be developed to match the envisaged work load and delivery targets. Introduction of new technologies, construction systems, and energy-efficient materials (preferably based on waste recycling) needs to be adequately emphasized in the national strategy. For RR sector, there is a need for developing and introducing use of 'marginal materials' to enhance the cost effectiveness of works. Adequate funds should be earmarked in the field of R&D for identification of appropriate and alternate materials to reduce the cost of construction.

8.1.9 Management of information in contemporary construction projects is one of the biggest challenges that project teams face in the upgradation of productivity levels. Information technology can be leveraged to address issues related to tendering, bidding, bid evaluation, grading of construction entities, project execution logistics, project management, as well as financial accounting and reporting for the construction industry. An appropriate MIS should be developed and implemented at the national, district, and local levels. Further, an institution needs to be nominated as the repository of National Database for construction industry.

Human Resource and Entrepreneurial Development Framework

8.1.10 The major impediments faced by the construction industry in raising the levels of productivity are the acute shortage of skilled manpower, both at worker and supervisory levels, as well as the lack of experienced construction engineers. The construction industry, particularly the highway and road construction sectors, is facing acute shortages of contracting agencies. The present situation is marked by lack of a harmonized skill upgradation and certification programme for construction workers and lack of incentives and regulatory framework to prescribe a certain percentage of trained and certified manpower by the contractors. There is also a need to encourage adequate intake of civil engineers in engineering institutions to mitigate the existing shortage.

8.1.11 One of the initiatives undertaken by Construction Industry Development Council (CIDC) is the training, testing, and certification programme of the construction workers. This initiative has resulted in successfully upgrading the skills of construction workers in 47 designated trades through training, testing, and certification of the construction workers (see Box 8.1.1).

8.1.12 A National Plan for training and certification of construction personnel at all levels needs to be developed and implemented. The Plan should include

Box 8.1.1
Holistic Human Resource Development (HRD)—Construction Industry Development Council (CIDC)

- CIDC, in association with several universities and industry constituents, has offered an HRD Programme for the workers from construction industry for last three years. The programme, based on an open learning and distant mode of education, offers 38 trades through 19 centres situated in various parts of the country. A number of PSUs, SPVs, and State Governments have also been actively participating.
- CIDC conducts programmes in 29 ITIs across four States—Madhya Pradesh, Rajasthan, Haryana, and Bihar. As of date, more than 100000 workers have been tested and certified under this programme and have found gainful employment with construction companies.
- Initiative has been taken by NHAI and the State Government of Madhya Pradesh for the inclusion of a prequalification condition in NHAI's tender document that a minimum of 5% of trained and certified workers should be employed, to become eligible for any of the bid from NHAI. Such practices need to be replicated by other States.
- CIDC is also actively designing, developing, and disseminating Management Development Programmes for supervisors, managers, and senior officers in Construction Management, Project Management, Emerging Technologies, and other related issues. CIDC's Diploma Programme in Civil, Mechanical, and Electrical Engineering for Army personnel is field tested and finds increased favour with the armed forces.

initiating a system of 'Graded Certification' depending upon the levels of proficiency achieved. In order to meet the shortage of trained manpower, short-term courses in certain important trades may be introduced. The role of advisory and consultancy services in strengthening the stature of construction industry is vital. However, presently these services are only a small part of the overall construction services and need to be suitably upgraded.

Need to Reduce Construction Cost

8.1.13 It is estimated that the total cost of procuring, monitoring, and supervising and other indirect costs of construction projects consists of about 22% of the cost of the asset that is created. The reduction of these and other transaction-related costs would be decisive in improving the profitability of the Indian construction industry. Apart from the measures to improve productivity, as discussed in the earlier sections, efforts are also required to streamline procedures and mechanisms within the industry as well as enhance the levels of quality for the sector as a whole.

Contract Procedures

8.1.14 The present contract conditions, procedures of procurement of projects, and services being used by various project authorities in the country, both in the public and private sector, need to be reviewed and harmonized. According to some estimates, the cost of procuring comprises 16% of the total construction cost for certain projects. Development of standard contract procedure, documents, and the evaluation criteria would lead to significant reduction in the transaction cost and time. In order to enable fair competition as well as maintain the quality of the output, the system of pre-qualification should be adopted for large PPP projects, whereby only those companies that meet the stringent qualification criteria would be shortlisted and invited to make a bid. For smaller projects, especially those involving repair and maintenance, prequalification should be done periodically and bidding should be made on the basis of limited circulation. The guidelines issued by the Ministry of Statistics and Programme Implementation in the form of a set of Uniform Contract Conditions may be taken as a basis for further consultation with experts and stakeholders with a view to formulating standard contract and bidding documents. A shift from the current practices towards electronic tendering process, online publishing of tender notices, online contract bidding documents, and reverse bidding would eliminate unfair competition and make the bidding process transparent.

Dispute Resolution

8.1.15 In the absence of institutionalized procedures and practices, arbitration continues to be costly and time consuming. As per a survey conducted in 2001 by the CIDC, the amount of capital blocked in the construction sector disputes was over Rs 54000 crore. To minimize disputes leading to time and cost overruns, proper project planning process should be encouraged and DPRs may be completed before technical sanction. After the Arbitration and Conciliation Act 1996 came into force, there has been an improvement in the number of disputes resolved. However, certain shortcomings remain to be addressed in the ad hoc arbitration process in terms of defined selection procedures and working ethics of arbitrators, absence of specific rules for agreement, and provision of a neutral body to administer and supervise arbitration. In view of these deficiencies, there is a need to introduce new measures to resolve disputes in a fair, speedy, transparent, and cost-effective manner.

8.1.16 A procedure involving the amicable resolution by conciliation should be followed, failing which reference to arbitration by a Board of Arbitrators in accordance with the Rules of Arbitration of the International Center for Alternate Dispute Resolution, New Delhi should be made. Moreover, institutional arbitration rules, a panel of accredited arbitrators based on selection criteria to maintain the quality, standards, and code of ethics/conduct, norms for negotiable terms of appointment, management of arbitrator's fees, monitoring and supervision of progress of case, etc., should be developed and institutionalized in line with Indian Arbitration and Conciliation Act 1996, after consultation with experts and stakeholders.

Quality and Standards

8.1.17 To make the Indian construction industry more competitive, aspects related to enhanced quality in construction products should be accorded attention

at all levels. The inadequate quality in construction works emanates from lack of incentives for inducting new technology, lack of pre-qualification requirements for trained and certified workmen, lack of appreciation for lifecycle costing approach, and lack of adequate R&D. In order to enhance the technological capabilities of the industry, all stakeholders would be required to actively support training and certification levels for skilled workers, supervisors, and managers, and promote construction techniques (such as ready-mixed concrete, pre-fab techniques) that use information technology.

8.1.18 The Performance Appraisal Certificate Scheme is being implemented for the development and promotion of materials, products, and systems under the joint initiatives of Building Materials and Technology Promotion Council (BMPTC), CIDC, BIS, and other agencies. Further, in view of the widespread infrastructural development programmes, covering both urban and rural areas, particularly for roads, highways, and rural connectivity schemes, district-level testing laboratories should be established for testing and quality evaluation of materials.

8.1.19 The importance and benefit of adhering to performance standards, both in inviting tenders and in implementation, are being increasingly realized by construction entities and procurement agencies. BIS is formulating a performance standard for special jobs requiring high-quality levels. Another development, aimed at enhancing quality in construction works, is that a large number of construction companies are working to obtain ISO 9000 series certification.

Construction Finance

8.1.20 The Indian construction industry is faced with high operation, maintenance, and financial costs. This aspect is further exacerbated by inadequate access to institutional finance, especially for small contractors who execute over 90% of the total construction works. Moreover, subsequent to the conferring of Industrial Concern Status on the construction industry, existing financial institutions, and banks should adopt construction industry-specific lending norms and eligibility criteria for the borrowers from the construction sector as well as introduce special incentives or schemes for financing import of hi-tech construction equipment for infrastructure projects.

Other Important Issues

Safety and Related Issues of Construction Workers

8.1.21 Workers employed in construction activity are highly vulnerable segments of the labour force particularly because of its unorganized nature. The workers in construction industry are vulnerable to the inherent risk to their life and limbs. Construction activities are also characterized by poor training, temporary relationships between the employer and the employee, uncertain working hours, lack of basic amenities, inadequacy of welfare facilities, and casual approach of employers towards the problems of employees. In the absence of adequate statutory provisions, the requisite information regarding the nature and number of accidents is also not generally available.

8.1.22 In the recent past, several initiatives have been taken for the improvement of working conditions of the construction workers through the mandatory provision for instituting the Provident Fund Scheme among casual workers and the introduction of the Workers Welfare Cess. The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 was also enacted recognizing the need for a comprehensive Central legislation for regulating the safety, health, welfare, and other conditions of service for construction workers. However, only a few States have implemented the provisions of the Act, such as setting up welfare boards, and efforts need to be renewed to speed up the implementation of the Act.

8.1.23 Along with the provision of appropriate training facilities for safety aspects related to construction, vigilant Safety Management Teams adequately trained in compliance procedures, hazard and risk assessment, and documentation of inspections of stipulated measures for safety of workers are required to be put in place. As a substantial segment of the construction industry workforce, women workers need to be accorded special focus in terms of vocational training

and skill upgradation as well as the provision of stipulated social benefits.

Asset Management and Maintenance

8.1.24 Although the construction of physical infrastructure has been receiving emphasis in the successive Five Year Plans, the maintenance of the assets that are created has not been accorded similar importance due to the absence of necessary framework, planning, and professionals for asset maintenance. The present system of asset management needs to be reviewed and strengthened at the local, State, and Central Government levels. A policy framework for ensuring mandatory provision for maintenance of assets needs to be evolved.

Environmental Issues

8.1.25 Sustainable development concepts applied to the design, construction, and operation of construction projects can enhance both the economic well-being and the environmental health of communities. Environmental Impact Assessment (EIA) is recognized as an important tool for integrating these objectives, wherein EIA should be a necessary pre-condition before construction projects beyond stipulated size are approved. Further, initiatives for ensuring adherence to international standards and regulations, such as the Environment Protection Act 2006 and the Energy Conservation Act of 2001 are also required. Various interdisciplinary organizations such as CIDC and Building Materials and Technology Promotion Council (BMTPC) have been set up to address the issues of environment-friendly technologies and energy efficiency in building materials, along with Central and State Pollution Control Boards to approve, monitor, and regulate projects from all sectors including construction, keeping in view their impact on environment.

Construction Law

8.1.26 As per the prevailing scenario, any organization engaged in construction activity requires registration under five different legislations, apart from obtaining licenses under three enactments and being subject to inspection under 12 laws. Further, there are 27 statutes pertaining only to labour. The multiplicity of laws and authorities, anomalies in the existing legal systems, and the complexities thereof suggest the need for a Unified Construction Law along with the formulation of a single window arrangement. The Unified Construction Law should have chapters pertaining to national construction policy and plan; constitution and functions of Central and State construction authorities; dispute resolution and arbitration; grants, funds, accounts, audit, and report; registration and other provisions.

Taxation

8.1.27 The construction sector experiences a very high incidence of direct and indirect taxes for construction and construction-related activities as compared to other sectors. The taxation and regulatory systems pertaining to construction should be reviewed with a view to rationalize the same and eliminate multi-source taxation. Greater clarity needs to be brought out on the treatment of the sector as 'Industry' or 'Service' for taxation purposes.

Combating Natural Disasters

8.1.28 There is an increasing realization that the problem of natural disasters is grave because their frequency has recorded more than a five-fold increase in the last two decades. Institutional arrangements are required to identify, prevent, and mitigate the effects of natural disasters. New programmes need to be taken as per the guidelines and programmes announced by the NDMA. The development of human resources and training of professionals in disaster mitigation, disaster-resistant construction technologies, and setting up of Retrofitting Clinics and Disaster Identification Centres in all major districts falling in disaster-prone regions is also recommended.

8.1.29 Substantial national resources are being spent on building assets and the pace of investment is going to enhance considerably during the Eleventh Plan, with several new projects related to transportation including RRs, housing, industrial infrastructure, energy, and agriculture slated for time-bound implementation. Necessary modifications, amplifications, and introduction of good practices need to be adopted to achieve the desired growth in the construction sector and to align it with global trends in terms of growth, quality, and competitiveness.

Path Ahead

- Enhance capacity building in the construction sector by improving productivity through introduction of efficient technologies and modern management techniques.
- Reduce transactional costs by reviewing contract procedures and dispute resolution mechanisms.
- Enhance quality standards and provision of adequate institutional finance to the construction sector.
- Develop a National Plan for human resource development through training and certification of construction personnel.
- Accord greater importance to safety in construction activities by establishing trained and certified Safety Management Teams.
- Earmark funds in the field of R&D for identification of appropriate and alternate materials to reduce the cost of construction.

8.2 TOURISM

Overview

8.2.1 Tourism is a multi-sectoral activity characterized by multiple services provided by a range of suppliers. It is the largest service industry in the country. Its importance lies in being an instrument for economic development and employment generation, particularly in remote and backward areas. It is contributing towards overall socio-economic improvement and accelerated growth in the economy. The economic benefits flow into the economy through growth of tourism in the shape of increased national and State revenues, business income, employment, wages, and salary income. Tourism is overwhelmingly an industry of private sector providers and the public sector has a significant role to play in infrastructure areas either directly or through Public Private Partnership mode.

8.2.2 Tourism is one economic sector in India that has the potential to grow at a high rate and can ensure consequential development of the infrastructure of the destinations. It has the potential to stimulate other economic sectors through its backward and forward linkages and cross-sectoral synergies with sectors like agriculture, horticulture, handicrafts, transport, construction, etc. The particular significance of tourism industry in India is its contribution to national integration and preservation of natural as well as cultural environments and enrichment of the social and cultural lives of people like preservation of monuments and heritage properties.This sector is also helping the traditional art forms, crafts, and culture.

Global Status and Trends

8.2.3 Over the past few years, the Travel and Tourism (T&T) industry has had to contend with a series of unprecedented challenges. International events, such as terrorism and SARS, and economic turbulence have led to significant changes in T&T demand. At the same time, international events such as an increase in information and booking facilities made available over the Internet; an ongoing desire by consumers to travel more frequently; stronger branding and globalization by companies; and the expansion of low-cost carriers have acted as a catalyst, accelerating fundamental changes in market behaviour and travel patterns that have been slowly emerging over the past decade. While business plans have become increasingly short term, more and more governments are starting to realize that they cannot leave the growth of T&T to chance. This emerging global consciousness represents a great opportunity for this industry.

8.2.4 As per the estimates of World Travel and Tourism Council (Table 8.2.1), the worldwide travel and

TABLE 8.2.1
Contribution of Travel and Tourism (T&T) in GDP and Employment in 2007

	India (%) 2007	World average % during 2007	World average % Estimated in 2017
Contribution of T&T Economy to GDP	5.4	10.4	10.7
Contribution of T&T Industry to GDP	2.0	3.6	3.4
Contribution of T&T Economy employment	5.5	8.3	8.3
Contribution of T&T Industry Employment	2.3	2.7	2.8

Source: WTTC (World Travel and Tourism Council).

tourism is expected to grow by 4.3% per annum between 2008–17. The industry is expected to post US$ 7060.3 billion of economic activity (total demand) in 2007, which will increase to US$ 13231.6 billion by 2017. The industry is expected to contribute 3.6% to GDP in 2007 (US$ 1851.1 billion), which is expected to rise to US$ 3121.7 billion in absolute terms but percentage wise it will decrease to 3.4% by 2017. The earnings from T&T have made it one of the largest industries in the world and the fastest growing sector of global trade accounting for 10.4% of global GDP, 12.2% of global exports, 8.3% of global employment, and 9.5% of global capital investment.

India's Tourist Profile

8.2.5 Tourist growth in India has undergone a remarkable change during the Tenth Plan. Table 8.2.2 shows that foreign tourist arrival has increased by about 87% from a level of 2.38 million in 2002 to 4.45 million in 2006. Share of India in world tourist arrivals has increased from 0.34% to 0.52% during this period.

TABLE 8.2.2
Tourists Arrivals in India

(in Million)

Year	World Tourist Arrivals	Foreign Tourist Arrivals (In India)	Domestic Tourist Visits	Share of India in World Arrivals (%)
2002	706.4	2.38	269.6	0.34
2003	693.2	2.73	309.0	0.39
2004	761.0	3.46	366.2	0.46
2005	802.0	3.92	390.5	0.49
2006	842.0	4.45	461.2	0.52

Source: Ministry of Tourism (MoT).

8.2.6 Similarly, it is evident from the Table 8.2.3 that the foreign exchange earnings have grown by about 147% during the same period (US$ 2923 million to US$ 6569 million), 0.9% of the international tourist receipts. The average per tourist earnings in India was about US$ 1476 against the world average of US$ 872 during 2006.

8.2.7 Domestic tourist visits has also grown rapidly during the Tenth Five Year Plan from 269.6 million in 2002 to 461.2 million in 2006. According to the Tourism Satellite Account for India prepared by the MoT, the contribution of tourism sector, including both direct and indirect to GDP and employment was 5.83% and 8.27% respectively during 2002–03.

TABLE 8.2.3
Tourism Receipts

(in Billion US$)

Year	World Earnings	Earnings by India	Share of India in World Earnings
2002	487.0	2.9	0.60
2003	533.1	3.5	0.66
2004	633.0	4.8	0.75
2005	678.0	5.7	0.85
2006	735.0	6.6	0.89

Source: MoT.

8.2.8 It is universally acknowledged that the tourism resources in the country have the potential to generate significantly higher levels of demand from the domestic and international markets, which if exploited intelligently in a sustainable manner, can prove to be the proverbial engine of growth for the economy.

Review of the Tenth Five Year Plan

8.2.9 Against an outlay of Rs 2900 crore in the Tenth Five Year Plan (Central sector) an expenditure of Rs 2635.67 crore (91%) has been incurred. The scheme-wise financial performance during the Tenth Five Year Plan is given at Annexure 8.2.1. In the Tenth Five Year Plan period an emphasis was laid on positioning and maintaining tourism development as a national priority activity by enhancing and maintaining the competitiveness of India as a tourist destination and improving existing tourism products and expanding these to meet new market requirements by creating world class infrastructure, developing sustained and effective market plans and programmes and giving special thrust to rural and small segment tourism. Through broad fields of development, the MoT focused on infrastructure development in five key destinations like Ajanta-Ellora, Bodhgaya, Rajgiri-Nalanda, Kurukshetra, and Mahabalipuram. Information and technology was also given a major thrust to

promote Indian tourism products in the country and abroad. Human resource development and capacity building for service providers were given more importance. As a result more than 40000 persons were given training through 24 Institutes of Hotel Management (IHM) and 12 Food Craft Institutions. In addition to these, large revenue generating products like convention centers at Suraj Kund, Haryana, luxury trains in Karnataka, Night Safari Park at Jorepokhari in Darjeeling, West Bengal were developed through PPP mode.

Objective and Strategy for the Eleventh Five Year Plan

8.2.10 Though the Working Group on Tourism for Eleventh Five Year Plan has recommended a target of 10 million international tourist arrivals by 2011, the Vision Document presently being drafted by MoT envisages achievement of this target by 2010. As per this strategy, target for the year 2011 will be 10.25 million. This target is proposed to be achieved through diversification of principal source markets, improving the infrastructural facilities such as airports, roads, civic amenities at the tourist destinations, increasing the air seat capacity and connectivity, vigorous publicity, etc. For domestic tourism, the target to be achieved in 2010 and 2011 will be 725 million and 812 million respectively assuming an annual growth rate of about 12% over the level of 461 million domestic tourist visits in 2006.

8.2.11 In order to achieve international visitor levels of 10 million by the end of the Eleventh Five Year Plan, the emphasis would be on diversification of principal source markets to include countries such as South Africa, Israel, Spain, China, Japan, South Korea, Australia, Brazil, Argentina, etc., which offer high growth potential and from where present level of inbound tourist is low. There is also a need to concentrate on countries like South Africa, Mauritius, Kenya, Malaysia, Fiji, etc., with a large Indian diaspora for higher tourist arrivals from those countries. Similarly, greater resonance needs to be created in NRIs and persons of Indian origin to visit the country of their origin and discover their roots. The 'Baby-Boomers' group in North America and Europe would be encouraged to visit India by creating in them the desire to discover one of the oldest civilizations of the world to enjoy the plurality of cultural enjoyment, offered by this country.

8.2.12 In order to meet the requirement of growth in traffic, there would be further creation of quality accommodation. It is estimated that 200000 approved quality accommodation rooms would be required in 2011 against the current level of about 100000 rooms. Domestic travel must complement international travel. This would help in optimizing the utilization of infrastructural facilities and also make the future investment viable. The possibility of constructing hotels on surplus land with Airport Authority of India near international airports needs to be considered. The surplus railway land at specified railway stations may also be utilized for constructing budget hotels. New forms of tourism like rural tourism, cultural tourism, adventure tourism, cruise tourism, MICE tourism, and medical tourism need to be taken up with renewed zeal and efforts.

8.2.13 To achieve the above goals, suitable measures would be taken for:

- Positioning and maintaining tourism development as a national priority activity.
- Enhancing and maintaining the competitiveness of India as a tourist destination.
- Improving India's existing tourism products further and expanding these to meet new market requirements.
- Creation of world-class infrastructure.
- Developing strategies for sustained and effective marketing plans and programmes.
- Developing human resources and capacity building of service providers.

Positioning and Maintaining Tourism as a National Priority

8.2.14 Effective linkages and close coordination among various departments and ministries of government will be established to plan and implement a professionally managed and integrated communications strategy to increase awareness about tourism and its social and economic impact on the society. State governments would be encouraged to set up land

banks and streamline procedure and practices to facilitate investment in the tourism sector.

Enhancing and Maintaining the Competitiveness of India as a Tourist Destination

8.2.15 Effective steps for easier and faster availability of visas, increasing air connectivity and seat capacity from overseas markets, improving facilities and quality of services at international and major domestic airports, rationalization of taxes, and removing restrictions like Restricted Area Permit/Protected Area Permit/Inner Line Permit would facilitate tourist flow to the country.

8.2.16 Connectivity has been one of the impediments for the growth of tourism in India. Steps taken during the Tenth Five Year Plan to liberalize civil aviation sector to a large extent eased the position with regard to the availability of seats. While international airlines inducted more capacity, there is a growth in the number of carriers providing domestic air services. The increase in capacity has not only resulted in meeting the demand of the air travel but also in lowering the airfares. The infrastructure facilities at the airports would be developed to meet the rising air traffic requirements. For the promotion of tourism in the country, trained personnel and workforce need to be provided at airports for increasing the quality of service at the airports. The possibility of extending facilities of visa on arrival would be considered for tourist originating from selected countries.

8.2.17 Quality of rail services would be improved to encourage tourists to travel by train. Budget hotels may be provided by railways in all metro cities within the realm of PPP. Well maintained clean waiting rooms, basic amenities like drinking water, toilets, tea/coffee facilities, parking facilities for tourist vehicles may be available at railway stations.

8.2.18 All major tourist destinations/heritage sites should be well connected with the highways. Tourist coaches have to queue up at the border for paying toll tax and transport tax at every barrier, which is a harassment for the tourists. The respective State Governments may introduce a single toll collection point for free movement of tourist transport. Tourist transport vehicles may also be given separate identification under Motor Vehicles Act to allow free movement between States. Oil companies on the highways may be encouraged to provide basic amenities at petrol pumps.

Improving India's Existing Tourism Products Further and Expanding these to Meet New Market Requirements

8.2.19 India has a rich resource of both tangible cultural heritage in its monuments and sites and also an intangible cultural heritage in the form of its architecture, music, dance/drama, local rituals and traditions, and other folk arts. Cultural and heritage tourism will be expanded to tap rich resources of cultural heritage in its monuments and sites. An integrated circuit linking heritage monuments, with culturally rich villages and towns around them are to be formed to enable and strengthen the development of cultural tourism in India. The National Highways Authority may consider facilitating provision of suitable tourism facilities on their routes such as budget tourist accommodation and improvements in wayside amenities on roadsides and highways. Beach and coastal tourism on the beaches of Goa, Kerala, and North Karnataka may be considered for development due to easier accessibility of these places by air. Kerala and the Andaman and Nicobar Islands have already been developed as international cruise destinations. Riverine tourism may be developed along traditional routes, which may have an exotic appeal and also help sustain villages and settlement along the routes. In this way, village tourism would also be promoted. Indian cuisine has caught the fancy of people across the globe. This can be capitalized by developing culinary tour routes into different regions for enthusiasts to taste and learn the authentic way. This will create a highly skilled workforce of culinary professionals not only for India but also to promote Indian cuisine internationally. Wild Life Sanctuaries and National Parks would also be made an integral part of the Indian tourism product. For sustainable tourism, the facilities at the parks may be enhanced and proper site and visitor management plans need to be prepared so as not to disturb the ecological balance and the local habitat.

8.2.20 India offers the best mountain-based adventure tourism in the world in the Himalayas. Already a lot of work has been initiated in this segment but they have to be made comparable to or better than what is being offered in the Alpine countries. India's medical expertise has been gaining popularity in the West where the costs are prohibitive. The development of special interest tourism segment will accrue greater socio-economic benefits.

8.2.21 Indian textiles, handlooms, and handicrafts, its furniture and jewellery are already popular abroad. Now with Indian designers also receiving global recognition, shopping has become an integral part of a tourist's itinerary. Hence the development of dedicated shopping centers and the flow of special interest shopping tourists may be encouraged as it will help revive traditional crafts and craftsmen, textiles and weavers, and give these families a means of livelihood.

8.2.22 Domestic tourism in India is mainly pilgrimage related. Travel facilities as well as facilities at pilgrimage centers need to be strengthened and made more tourist-friendly. Pilgrimage centers may be identified and integrated with new domestic tourist circuits wherein transport, accommodation, catering, and darshan are all synergized to make pilgrimage tourism into a popular and comfortable mode.

Creation of World-class Infrastructure

8.2.23 Quality infrastructure may be created for developing tourist products and for providing better services to both domestic and international tourists. Creation of tourism infrastructure has favorable impact on overall economic growth and employment and on the preservation of art, culture, and heritage. Tourism projects like Destination Development are capital intensive, commercially unviable, and require financial support from the government. At the same time, it is necessary that such infrastructure is created with professional expertise of architects and landscaping experts and is then privately managed through a transparent process. Large revenue projects such as setting up of hotels, convention centers, golf courses, tourist trains, etc., normally have substantial gestation periods. These facilities may be created by private initiative with the government acting as a facilitator and catalyst.

8.2.24 Tourist sites and destinations need to be carefully selected on the basis of their potential to provide all infrastructure facilities required by the tourists within such destinations and circuits. Master planning of destinations and circuits will be done by outstanding architects/consulting agencies with sensitivity towards conservation, preservation, and aesthetic aspects to enable their development in an integrated holistic manner.

8.2.25 During the Eleventh Five Year Plan, the strategy for infrastructure development should be to select only 10 major Destinations and 6 Circuits on an annual basis. Destination Management needs attention and coordination at the 27 World Heritage Sites in the country, which are impacted by increasing number of visitors and are also subject to a number of regulatory authorities. For the development of rural tourism, a panel of professionals may be identified for selecting the rural sites, interacting with the community, and preparing projects based on tourism potential of the site.

8.2.26 One of the major bottlenecks in creation of hotel infrastructure is non-availability of land for the purpose. The steps that may be taken are: (i) Master Plan of major cities should mark commercial sites for construction of hotels, convention and exhibition centers; (ii) the hotel sites should be allotted on long-term lease basis or could be allotted under the PPP mode through joint venture, revenue sharing, etc.; (iii) our endeavor should be that the hotels are allowed higher Floor Area Ratio/Floor Space Index (FAR/FSI) so that more rooms and commercial spaces are created out of the same space and it also helps in generating sustainable revenues; (iv) the land should also be allotted for building of guest houses in all major cities and tourist destinations, if possible; (v) home stay programme under the Government of India Scheme of 'Incredible India Bed & Breakfast' needs to be promoted by all State Governments by allowing such establishments to be treated as non-commercial.

8.2.27 Rural villages, which have immense cultural heritage potential, need to be developed to showcase India's vast heritage. Infrastructure and other tourist

facilities should be developed and local community involved in the management so as to percolate tourism and its socio-economic benefits to rural areas. The focus would be on both tangible heritage and intangible heritage. The tangible heritage represents the 'hard' culture of a community, whereas intangible heritage represents the 'soft' culture—the people, traditions, folklore, music, dance, traditional games, mythology, rituals, customs, handicrafts, arts, festivals, events, storytellers, local markets, and also living human treasures.

Developing Strategies for Sustained and Effective Marketing Plans and Programmes

8.2.28 This objective can be achieved by evolving and maintaining a system of market research activities in India's major source markets to continuously receive, analyse, and respond to information on pricing, security issues, health, safety, quality of tourism services and products, etc., and making use of various technological tools, including the Internet, for advertising for greater and wider impact. Besides, it is necessary to encourage e-commerce portals to extend effective marketing support to SMEs and also offer competitive packages.

Developing Human Resources and Capacity Building of Service Providers

8.2.29 Tourism sector in the country is witnessing a boom that may bring an exponential demand for the workforce at managerial, supervisory, skilled and semi-skill levels. This increase in growth will have a direct impact on the demand and supply mismatch that the country is already passing through and trying to correct for providing of satisfactory service to visiting tourists. To bridge the widening gap at skill-level, the existing Food Craft Institutes (FCIs) are required to be strengthened and new ones opened. To enlarge the scope, hospitality education needs to be imparted through the network of ITIs, Polytechnics and at the +2 stage as a vocational stream of the school system. IHMs, which are processing the bulk of manpower at managerial and skill level, need to be strengthened and capacities augmented, with international linkages for quality and quantity output of human resources. New IHMs in the States/regions that have not been covered as yet should be established for proper distribution of government resources. Through integrated efforts with States, IHMs under PPP should be encouraged. For the young untrained staff who continue to join the industry, the government should through short-term training programmes build capacities in order to provide quality service. A scheme is required to be mooted to examine and certify the large number of industry/conventional trained skilled manpower available in the country. The existing scheme of 'Train the Trainer' should be strengthened and implemented countrywide for boosting availability of adequate trainers for training.

8.2.30 Capacity building of the service providers through shorter training courses should be taken up as an integral effort to strengthen/enlarge the manpower required by the hospitality industry. More FCIs need to be opened to meet the demand for skilled personnel in food crafts. The training programmes must cover the skill development in general for fresh candidates, specialized skill development including language courses, for fresh as well as existing service providers, basic skill upgradation in general for existing service providers, training of trainers programme, and creating awareness of tourism benefits/knowledge in rural areas.

Promotion and Publicity

8.2.31 The MoT is carrying out its promotion and publicity in both overseas and domestic market vigorously. The strategy to be adopted for the Eleventh Plan on publicity and marketing is to promote Indian tourism in the European markets like Italy, Spain, France, and Germany in the regional languages and in the Korean and Japanese markets in a focused manner. India should be promoted as a summer retreat in the months of July, August, and September when many European and North American schools and colleges have their holiday breaks. The campaign should convey India as a 'Year Round' Destination. 2009 should be declared as 'Visit India Year' as this will be very close to the Commonwealth Games in 2010, and would enable a boost to inbound tourism. While producing publicity material like brochures, etc., the key areas should be identified and a balance needs to be established between the print collaterals and the digital formats. While producing tourist literature, the availability

of infrastructure and connectivity of the areas being marketed through the collaterals also needs to be taken into account.

Taxation, Incentives, and Concessions

8.2.32 Provision of tax holiday to the T&T industry may be considered to encourage investments from non-tourism sectors into the tourism sector. The Ministry of Finance (Budget 2007–08) has accorded Tax holiday for 5 years for 2-star, 3-star, and 4-star, category of hotels in and around the adjoining districts of Delhi for the Commonwealth Games. This needs to be extended if possible, throughout the country and for all categories of hotels. Special incentives may be considered for the hilly areas, rural areas and places of pilgrimage, the NER including Sikkm, J&K, Uttaranchal, and Himachal Pradesh. Each State Government has its own criteria for Luxury Tax varying from 5% to 20%. Rationalization of Luxury Tax and other tourism related taxes and levies may be considered by all the States. The tax structure should not be based on announced tariff; rather it should be on the basis of actual payment made by the clients. There is acute shortage of hotel accommodation and in particular budget accommodation all over the country. The MoT has estimated that there is a shortage of 150000 hotel rooms all over the country. Out of this, 110000 rooms are in the budget category. The subsidy/incentives should be on the room created basis and should be also applicable in metro towns and the procedure of disbursement of subsidy should be simple. In order to create standard budget accommodation, incentives may be given to guest houses and accommodation under the Home Stay programme of the government also.

Outlay for the Eleventh Plan

8.2.33 The total projected GBS for the Eleventh Plan for the MoT is Rs 4558 crore (2006–07 price) and Rs 5156 crore (current price). The scheme-wise details are given in Appendix (Volume III).

8.3 IT and IT-enabled Services

Overview

8.3.1 Information Technology has marked a turning point in the history of global trade and services. With ever increasing availability of international bandwidth and powerful workflow management software, it is now possible to disaggregate any business process, execute the sub-processes in multiple locations around the world, and reassemble it, in near-real time, at another location. This is driving fundamental changes in the global IT services landscape. The vendors and customers are redefining the levels of value creation in the industry. IT also makes significant contribution in increasing productivity in various sectors of the economy. Indeed, the phenomenal growth of the Indian IT Software and Services and IT-enabled Services-Business Process Outsourcing (ITES-BPO) sector has had a perceptible multiplier effect on the Indian economy as a whole. In addition to the direct positive impact on the national income and employment generation, it has triggered a rise in direct-tax collections and propelled an increase in consumer spending, thanks to the significantly higher disposable incomes. Today, India has found its niche in the IT world and is regarded as the premier destination for the global sourcing of IT and IT-enabled Services (ITES). ITES like Medical Transcription, Call Centers, Data Processing, Back-Office Operations, GIS, Revenue Accounting, etc., are considered as niche areas of the country and the IT industry is now getting involved in providing end to end business solutions, system integration, remote management, etc.

Review of the Tenth Plan

8.3.2 The IT and ITES fall into two segments: (i) Exports and (ii) Domestic, as described below.

IT-ITES (Exports Segment)

8.3.3 India's success in the export of IT Software and Related Services over the past decade remains unparalleled. Total export revenues earned by this sector have grown from US$ 7.7 billion in 2001–02 to US$ 31.3 billion in 2006–07, thus showing a near 32% compound growth rate. India now accounts for 65% of the global market in offshore IT and 46% of the ITES market. A majority of the Fortune 500 and Global 2000 corporations are sourcing IT and ITES from India. While the US and the UK remain the dominant markets, contributing to 67% and 15% of total exports respectively, Indian firms are also keenly exploring

new geographies for business development, and to strengthen their global delivery footprint.

8.3.4 Since the inception of IT industry in India, companies have been focusing on quality initiatives to align themselves with international standards. Over the years, the industry has built robust processes and procedures to offer world class IT software and technology related services. Today, India-based centers (both Indian firms as well as MNC-owned captives) constitute the largest number of quality certifications achieved by any single country. As of December 2006, over 440 Indian companies had acquired quality certifications with 90 companies certified at Software Engineering Institute–Capacity Maturity Model (SEI–CMM) Level 5—higher than any other country in the world.

8.3.5 The growth of the sector has led to tremendous payoffs in terms of wealth creation and generation of high quality employment. Market capitalization values of leading Indian IT companies now exceed those of global competitors, and the exports segment of the Indian IT-ITES sector directly employed over 920000 people in 2005–06.

8.3.6 With only 10% of the US$ 300 billion market potential accessed so far, there is significant headroom for growth. Further, with the global offshoring market continuing to grow rapidly, as the proven benefits of offshoring (also termed global sourcing or global delivery) induce more companies to adopt these practices and develop the capabilities to offer more sophisticated products and services—the size of the overall pie is also expanding.

8.3.7 Key service lines and vertical markets including newly emerging sectors for the ITES industry are listed below:

SERVICE LINES

- R&D and engineering services
- Consulting services
- System integration
- Application development and maintenance
- Traditional IT outsourcing
- Horizontal services (finance accounting and administration, customer interaction services, human resource administration, research, etc.)

VERTICALS (INCLUDING NEWLY EMERGING SECTORS)

- Agriculture
- Banking
- Insurance
- Manufacturing
- Health Care and pharmaceuticals
- Travel and hospitality
- Animation, media, and entertainment
- Biotechnology and life sciences
- Nanotechnology
- Judiciary
- Power and energy
- Very Large Scale Integration (VLSI) and CAD
- Automobile and transportation
- Smart governance

8.3.8 This represents a 'make or break' opportunity, capable of catapulting India into a high growth orbit and on a fast track to becoming a developed nation. Given that we are closely chased by other aspiring countries to grab a share of this pie, there has to be a concerted effort by the government and industry to maintain the lead position thus created and expand it further. The benefits of global leadership in these knowledge industries go far beyond the economic dimensions. As major global companies offshore more mission-critical work to India, their dependence on India increases, thus providing significant strategic advantage.

Domestic IT/ITES-BPO Segment

8.3.9 The Banking and Financial Services, Communications and Media, Manufacturing (Consumer Durables/Automobile), Aviation, Hospitality, and Retail are some of the key verticals that primarily benefit from the ITES-BPO services in the domestic market in India. While cost savings have been the primary driver of offshore outsourcing, vendors do not have comparable differences in labour costs to leverage while serving the domestic market. As a result, the primary motivation for the domestic market, in its early years of evolution are not cost savings but access to specialist skills and freeing client resources to focus

on the core business. Scalability and process efficiency are expected to result in some degree of cost savings in the domestic market as well. Notwithstanding its relatively smaller contribution to the industry revenues, this segment is witnessing a noticeable increase in interest and activity on the part of customer organizations as well as service providers. However, the total size of the domestic market is expected to cross US$ 8.335 billion in financial year 2006–07, a growth of 28% over financial year 2005–06. Although this segment has been led by MNCs in the past few years, Indian firms are gradually gaining ground. Over time, this segment would provide significant space for larger SMEs, as the mid-sized firms increase their levels of IT adoption. Table 8.3.1 depicts the growth of IT-ITES professionals in India during the Tenth Five Year Plan period.

Vision and Strategy for the Eleventh Plan

Vision

8.3.10 Our vision is to make India the most preferred destination for providing IT and IT-enabled services and creating the required eco-system to demonstrate the full potential of Indian skills and enterprise in this vital sector. The objective during the Eleventh Plan would be to make an effective and maximal utilization of ICT to improve the quality of life of the common man and promote inclusive growth, increase productivity and competitiveness and generate wealth and strength so that India emerges as a knowledge superpower in the comity of developed nations.

Strategy

8.3.11 India's performance in IT-enabled and other high end services is clearly a source of strength that we must build upon. Our strategy is to identify gaps, if any, in existing skill sets in different ITES-BPO/Knowledge Process Outsourcing (KPO) verticals and suggest programmes for bridging them through formal and non-formal sectors so that India becomes a leading software developer in the world. Besides, the thrust areas need to be identified where the country has potential to become internationally competitive for achieving significant exports in the field of electronics hardware manufacturing.

Policy Issues, Programme Reforms, and New Initiatives in the Eleventh Plan

8.3.12 Some of the policy issues which need to be addressed in a focused manner in the IT and ITES sector in the country are elaborated hereunder.

Improving the Supply of Suitable Talent

8.3.13 Table 8.3.2 shows the manpower requirements for IT-ITES in India, which is self-explanatory. Our biggest challenge is, of course, in relation to human resources. While we produce a large number of graduates and technologists, the demand of the IT industry is growing and is becoming more discerning. There are problems of quantity and quality in this regard. These problems have to be tackled in different time frames: the short-term, medium-term, and long-term.

8.3.14 In the short term, we need programmes to top up the skill level of graduating students through 'finishing schools' and 'finishing programmes' which will help resolve the quality problem. As the quality of talent pool is not industry ready, implementation of finishing school concept ensures that the right talent is available for immediate deployment. To enhance the

TABLE 8.3.1
Growth of IT-ITES Professionals in India—Indian IT Sector: Knowledge Professionals Employed*

(Nos)

	1999–2000	2000–01	2001–02	2002–03	2003–04E	2004–05E	2005–06E
IT, Engineering and R&D, Software Products Exports	110000	162000	170000	205000	296000	390000	513000
ITES Exports	42000	70000	106000	180000	216000	316000	409000
Domestic Sector	132000	198114	246250	285000	318000	352000	365000
Total	284000	430114	522250	670000	830000	1058000	1287000

Note: *Does not include employee numbers in the hardware sector; E = Estimated.
Source: National Association of Software and Service Companies (NASSCOM).

TABLE 8.3.2
Manpower Requirements for IT-ITES in India

(Million)

	2002	2003	2006	2009	2012
IT export services					
Consulting, Integration, Installation	0.01	0.02	0.03	0.09	0.27
IT Development	0.07	0.08	0.08	0.08	0.11
Outsourced IT Support	0.09	0.11	0.17	0.28	0.53
Training and Education	0.00	0.00	0.00	0.02	0.06
Total	0.17	0.21	0.29	0.48	0.97
IT-enabled services					
Customer Care	0.03	0.05	0.15	0.42	1.03
Finance	0.02	0.03	0.05	0.09	0.21
Human Resource	0.00	0.00	0.02	0.15	0.69
Payment Services	0.00	0.1	0.05	0.14	0.45
Administration	0.2	0.3	0.5	0.15	0.15
Content Development	0.03	0.04	0.07	0.09	0.20
Total	0.11	0.16	0.38	1.0	2.72

Source: ITD, NASSCOM-Mckinsey Manpower Profile of India, KPMG, 2003.

pool of experienced, mid-level managers, that is willing and suitable to work in the IT-ITES sectors, a 'bridge course' could be introduced to equip professionals who may not have read for a course in IT. In the medium term, this kind of training needs to be back-ended into the formal system itself by improving the quality of our technical and general education programmes at the graduate level. This will make graduates far more employable. In the long term, we need to address the quantity problem. The education system needs to be expanded rapidly at all levels. This would also require a huge expansion in our Masters and Doctoral programmes. Easing the supply constraint requires more investment as well as a radical reform of our education system. There is also a need for starting academic programmes for developing manpower in some of the niche areas like IT in health care, transportation, manufacturing, nanotechnology, animation and entertainment, etc. Faculty development is another major issue which needs focus. For this purpose, a national programme on faculty development in niche areas would be required. During the Eleventh Plan period, the above important issues need to be tackled and the government needs to provide the necessary resources and policy framework for achieving the desired objectives. In this national endeavour, industry and government need to work together in close unison. Some of the other measures that need to be introduced in order to maintain and improve the quality of manpower are:

- Introduction of standardized national level tests similar to Scholastic Aptitude Test (SAT), Graduate Record Examination (GRE), Management Aptitude Test (MAT) etc., for benchmarking of students seeking admissions in undergraduate and postgraduate institutes in India.
- Rating and accreditation of all educational institutions by an independent agency.
- Introduction of a common nation-wide benchmark for assessing graduating students and inclusion of industry needs in this assessment process.
- Making the teaching/academic profession more attractive and respectable.
- Encouraging students and working professionals to pursue further education for skill enhancement.
- Periodic review and updation of curriculum to make it more industry oriented and encouraging faculty to constantly upgrade skills.

Building Adequate Basic, Business, and Social Infrastructure

8.3.15 The growth of IT and ITES industry requires building and strengthening of basic, business, and social infrastructure. The incremental infrastructure required to support the projected growth is unlikely

to be absorbed into the existing city centres (Tier I/II), which are already witnessing signs of strain. With Tier III/IV cities lacking important elements of business and social infrastructure, decentralized growth of the IT and ITES sector will require a coordinated, large scale (distributed) urban planning exercise. Some of the important initiatives required to be taken include:

- Strengthening of the intra-city road network and public transport infrastructure to decongest existing hubs.
- Decentralization of the industry beyond existing hubs by developing new townships.
- Introduction of faster public transport (high speed trains similar to Train à Grande Vitesse of France and Bullet of Japan) between important cities.

Ensuring a Favourable Business Policy and Regulatory Environment with Special Focus on Encouraging Small and Medium Enterprieses (SMEs) and New Ventures

8.3.16 A favourable business policy and a regulatory environment are critical for the success of any sector. The example set by the Software Technology Parks of India (STPI) scheme stands testament to this fact. In order to strengthen India's proposition for sustained leadership in the IT and ITES space, it is essential to actively support the SME sector. In addition, the issue of intellectual property protection, data and information security is a key risk to the sector. Hence, it is essential for India to proactively formulate a robust policy framework to address this challenge. This calls for: (i) Continuation of the benefits provided by the STPI scheme, (ii) strengthening the IP protection, data privacy, and information security environment in the country, (iii) providing support for SME segment growth to ensure that SMEs can continue to leverage the benefits offered under the STP/SEZ scheme without constraints on where they may be located, and (iv) ensuring adequate access to venture capital and angel funding for start-ups.

Global Trade Development and Promotion of Global Free Trade in Services

8.3.17 Expansion of the global IT-BPO market opportunity is directly influenced by the policy and regulatory frameworks governing cross-border trade in services. Growth of cross-border trade in services is constrained not only by tariff barriers—but more so by non-tariff barriers (e.g., national treatment in cross-border supply and movement of people). India must continue to work proactively with its trading partners (through the WTO and other trade promotion agencies) to streamline trade in professional services. India must push for the free movement of professionals engaged in delivering services on the basis of formal contracts, through a global General Agreement on Trade in Services or professional services visa. At the same time, it must engage in bilateral or multilateral negotiations on these issues with countries of specific interest to us. Negotiations are also needed to conclude agreements relating to exemption or refund of social security taxes paid by Indian professionals working abroad.

Fostering a Sustainable Ecosystem for Innovation and Research and Development (R&D)

8.3.18 In order to structurally strengthen India's proposition and ensure its long-term leadership, it is essential to nurture a sustainable ecosystem for innovation and R&D in the country. This will require a multifaceted approach comprising (i) developing core capabilities at the academic level in identified focus areas, (ii) encouraging industry–academia participation in R&D, and (iii) facilitating the incubation/commercialization of innovations. IPR awareness should be increased in institutes and industries. With a view to encourage and reward innovation, there is a need to ensure availability and access to adequate funding for technology entrepreneurs and commercialization of innovation. Research and training should go hand in hand. This is the practice worldwide. The CSIR laboratories should pair with universities and targeted R&D should be undertaken.

The Transformation of the Industry from BPO to KPO and Related Human Resource (HR) Issues

8.3.19 The society is shifting from an era of industrial society into 'knowledge society'. Knowledge creation and its applications are primary features of this change in today's networked society. In any

industrial society, the growth rate in the services sector is higher than that of the manufacturing sector. Services themselves are also becoming an increasingly integral part of all production businesses and there are relatively more people working in this sector now. This trend is ultimately leading to an increased emphasis on intangible products, which is also called service concepts. Providing services is a much more challenging task than just delivering goods, and, therefore, there will be an increasing focus on making optimal use of resources for maximizing their competitiveness.

8.3.20 The IT and ITES-BPO sector should continuously identify the emerging verticals, which have the potential to grow and generate revenues keeping the dynamic nature of this sector in view. Generating the right kind of manpower with skill-sets requirement for each of the potential vertical is so diverse that it becomes a challenge for the HR function of a company to continuously evolve vertical specific training methodologies and design suitable training modules. Further, the HR companies will have to continuously scan the horizon for the emergence of newer technologies and knowledge areas. The situation will become more complex as the transition from BPO to KPO takes place. Intuitively, one can say that the transition is likely to be very crucial for sustenance of the industry's growth and subsequent establishment in the market place.

8.3.21 It will be essential for each company to build internal capabilities to manage knowledge effectively and also the collective competence building for the IT sector. Managing knowledge is a process which involves multi-period decision framework, starting from investment in R&D to diffusion of knowledge to creation of innovation and ultimately realizing the value through commercialization of innovation and inventions.

Software Technology Parks (STPI) Scheme

8.3.22 A favourable business policy and a regulatory environment are critical for the success of any sector and the STPI scheme stands testament to this fact. STPs were set up in various parts of the country as per the Resolution issued by the government in 1993. Over the last few years, it has played a seminal role in placing India on the global map as an IT superpower. In fact, significant credit for the record growth in exports, foreign exchange earnings, employment generation, and the development of the Indian IT-ITES sector is attributed to this scheme. Under the STP scheme, units engaged in the export of IT-ITES are entitled to tax benefits under section 10A and 10B of Income Tax Act 1961. However, these benefits under the scheme are scheduled to lapse post assessment year 2009–10.

IT in School Education

8.3.23 Technology could be effectively used for digital delivery of high quality lectures and course material to other institutions and embellish the same with class room teaching for enhancing the learning. ICT tools can make it easier to monitor not only the attendance and performance of the students but also that of the teachers as well. The MIS also needs to be developed to monitor national projects such as SSA, MDM, ICDS, etc.

Gender Empowerment through ICT

8.3.24 The Indian IT-ITES industry with revenues of US$ 39.6 billion has emerged as the largest private sector employer in the country with direct employment of 1.6 million professionals, and indirect employment for over 6 million people in different sectors. This fast expanding IT and ITES sector in India has opened new doors of opportunity for women. The participation of women in the IT-BPO workforce is seen as a critical enabling factor for continued growth of the industry. While the percentage of women in the IT-BPO workforce at an entry level is commensurate with their proportion amongst graduating students, anecdotal evidence suggests that this is not so at the middle and senior management positions. However, companies are recognizing that having women on board at all levels in the organization makes good business sense. IT-BPO companies are, therefore, considering ways to involve and develop women for higher roles and functions. Their increased professional participation will result in changing the socio-economic status of women within the employing organization and will also contribute towards the breakdown of gender disparity. In a study conducted by NASSCOM in 2006, 76% of software professionals in IT companies are men, whereas

24% are women. However, NASSCOM says this ratio is likely to be 65:35 (men:women) by the year 2007. Interestingly, this ratio is reversed in the ITES-BPO sector where the ratio of men to women is 31:69. In line with the basic principles of governance to which the government is committed under the NCMP, which includes empowerment of women, the government has introduced gender budgeting. In accordance with this, gender empowerment through ICT should be a regular feature during the Eleventh Plan and efforts should be made to support schemes of gender empowerment through ICT for reducing digital divide.

Faculty Development in IT

8.3.25 The prevailing system of education in India is constrained by several factors. The government needs to strengthen the education system structurally with a number of strategies. There is a dire need for continuously updating the course content, curriculum, and pedagogic methods to make them more relevant to the needs of the industry. Additionally there is a need to take up specific programmes for the development of faculty and provide adequate incentives for making teaching an attractive career option. Some of the policy issues in this regard which need immediate attention are the following:

- Make teaching/academics as attractive a career option as working in the industry. The academic institutes need to provide suitable faculty remuneration as there is a large gap between the salary structures in the industry and in academics. The industry needs to come forward and supplement government efforts through establishment of Chairs for professors, incentives, sponsored research, and the like.
- Need to increase the number of faculty positions in the Indian universities and technical institutions as well as creation of adjunct faculty from the industry to address the twin issue of quantity and quality and R&D activities.
- Need to tie up with institutions abroad for professors to come here on sabbatical.
- Need to train the ICT faculty of both the formal and the non-formal sector of education to keep pace with the demands of the industry as well as the technological changes.
- Develop a mechanism to encourage migration of students between formal and non-formal streams to address the issue of quantity. Also introduce a credit system whereby the students can accumulate and carry forward their credits and complete their education at their own pace. This would particularly help the in-service personnel.
- Evolve National Mission for faculty development in general and faculty development in niche ITES areas such as IT in tourism, health, medical, and legal services and finance in particular.

IT in Health Sector

8.3.26 The importance of Health in the process of economic and social development and improving the quality of life of our citizens has been well recognized. The government has identified Health as one of the seven Thrust Areas and has given focused attention to it. Since independence, a vast public health infrastructure has been created comprising Public Health Centres and Community Health Centres (CHCs) and District/State and Super Specialty hospitals. In rural areas especially, there are pockets of under-served populations where the vicious circle of poverty, malnutrition, and poor health reinforce each other. There is an urgent need to reach out to the un-reached especially in the remote areas. This can effectively be done with the infusion of technology into the Health sector.

8.3.27 Integrated disease surveillance projects, creation of district and State Health Data Centres for the surveillance units, networking and operating of district health centres through video based distance communications, early warning system for disease incidence and collection of call centre based information, web-based health MIS, and telemedicine are some of the important areas that need to be operationalized. Electronic health—or e-health is one of the next frontiers of ICT innovations. Some of the well known hospitals in the country have developed MIS for health which is also known as Medical Information System, which would go a long way in creation and adoption of nationwide electronic medical records for all patients treated at various hospitals in the country. The issues like data privacy, security, and interoperability of systems are to be dealt with properly from an e-health perspective.

IT in Agriculture Sector

8.3.28 Agriculture continues to be one of the mainstays of Indian economy. Increased agricultural production and incomes would put more money in the hands of the people living in the rural areas. Keeping in view the important role that IT can play in boosting productivity and incomes of farmers and reducing the cost of operations, agriculture has been identified as one of the Mission Mode Projects (MMPs) under the National e-Governance Plan (NeGP), a nationwide initiative for promoting e-governance in the country.

8.3.29 By means of IT, the agriculture sector would achieve higher efficiencies to redefine the way in dealing with the production and post harvest losses. The Agricultural Resources Information System is envisaged to create a comprehensive database on various parameters related to land use, water use, and a system for strengthening advisory services to farmers in adopting the latest agricultural production practices. The portal AGMARKNET which provides daily market information on commodity prices in respect of about 300 commodities and 2000 varieties from over 2700 markets is a Sunshine Portal for farmers to bargain better prices for their produce. Similarly, the 'Gyandoot' portal of the State of Madhya Pradesh provides information regarding rates of grains and vegetables, dispenses land records and issues income, domicile, and caste certificates. Further attempts need to be made in providing the latest information on real time basis to the farmers and other rural population in the remotest parts of the country. Market is now the driver for agricultural growth and efficiency of the market depends on effective dissemination of information. IT has the potential to help the agriculture sector to overcome some of the traditional barriers to development by improving access to information, expanding the market base, enhancing employment opportunities, and making government services work better. Decision Support System on agricultural production and marketing, water allocation in an irrigation system, and cattle farming system in livestock are required to be developed aggressively.

8.3.30 In the private sector also several initiatives have been taken to optimize the supply chain. 'e-Choupal' has been conceived as a more efficient supply chain aimed at delivering value to its customers around the world on a sustainable basis. The e-Choupal model has been specifically designed to tackle the challenges posed by the unique problems of Indian agriculture, characterized by fragmented farms, weak infrastructure, and the involvement of numerous intermediaries, among others.

IT in Rural Sector

8.3.31 Rural Content Providers: The creation of local/rural content is of utmost importance in order to make the PCs and Internet an attractive proposition to a much larger number of people. Involving the private sector in this regard would also be essential. Therefore, it is felt that a new entrepreneurial category of Rural Content Providers would give a further boost to and drive the demand, both for PCs and Internet access as well as for rural connectivity. It will also help in better utilization of the cable/wireless network already laid, or being planned in the rural areas by the bandwidth providers. The Rural Content Providers would provide content and other facilities, including entertainment, which will be of interest to the rural population.

8.3.32 Content creation would be a specialized area requiring thorough understanding of the local requirements and language which can only be done through local entrepreneurs. The business model of such a Rural Content Provider would vary from region to region and would be driven by the market. The Department of IT and the Department of Telecommunications (DoT) need to evolve a suitable strategy to encourage such Rural Content Providers. The IT revolution would remain incomplete unless the benefit of this revolution reaches rural masses.

Targets of IT-ITES Sector for the Eleventh Five Year Plan

8.3.33 Given the backdrop of large untapped demand potential and strong fundamentals, India is uniquely positioned to secure global leadership. Table 8.3.3 shows the exports forecast for the Eleventh Plan period as estimated by NASSCOM-McKinsey Report 2005.

TABLE 8.3.3
Indian IT-ITES Exports Forecast 2007–12

Year	IT-ITES Exports (US$ billion)
2007–08	37.6
2008–09	47.5
2009–10	60.0
2010–11	72.1
2011–12	86.6

Source: NASSCOM-McKinsey Report 2005.

8.3.34 Additionally, Indian IT-ITES export growth can be further accelerated through deep and enduring innovation by industry participants. Such extensive innovation could generate an additional US$ 15–20 billion in export revenue over the next five to ten years.

8.3.35 Further, establishing India's leadership in the global IT-ITES sector will mean more than achieving a targeted growth in exports. Attaining these ambitious outcomes will require breakthrough collaboration amongst industry players, Central and State Governments, and NASSCOM—to ensure that appropriate actions required to maximize the global sourcing market potential and sustain India's superiority as the preferred sourcing destination are executed in a timely manner.

8.3.36 Achieving these growth targets will entail a significant demand for incremental human and financial capital in the country. US$ 86 billion in IT-ITES exports by 2012 translates to incremental direct employment of about 2.5 million people and capital investment of approximately US$ 20 billion.

The Path Ahead

8.3.37 The outlook for Indian IT/ITES-BPO remains bright and the sector is poised to achieve its target of US$ 86.6 billion in export revenues by financial year 2011–12. In order to achieve these targets, both the GoI as well as the industry need to work in unison. While the basic policy framework and fiscal incentives as enumerated above need to be put in place by the government, the industry associations and industries need to actively support the initiatives.

8.4 FINANCIAL SERVICES

Introduction

8.4.1 The financial services sector in the country has been displaying a varying growth rate in the recent past. The annual growth rates since 2000–01 are given in Table 8.4.1.

TABLE 8.4.1
Growth Rate (Real) of Financial Services (Banking and Insurance)

S No.	Year	Rate of Growth	Percentage Share in the GDP
1.	2000–01	–2.0	5.5
2.	2001–02	9.1	5.7
3.	2002–03	11.3	6.1
4.	2003–04	2.2	5.8
5.	2004–05	8.8	5.9
6.	2005–06	14.0	6.1
7.	2006–07	13.0	6.3
8.	2000–01 to 2006–07 (Average)	8.1	5.9

Source: CSO.

8.4.2 The financial sector as a whole is estimated to employ between 3.5 million to 4.0 million people, including direct employees and agency forces. To support the GDP growth aspiration of 9%–10%, the financial sector would need to grow by 25%–30% annually over the next five years. The penetration of the financial sector in India remains low relative to many markets, with bank credit/GDP at under 50.0%, overall insurance premium/GDP at under 5.0%, and general insurance premium/GDP at under 1.0%. The underlying GDP growth and higher penetration potential offer strong growth opportunities for the financial sector. The financial sector also has substantial potential for employment creation.

8.4.3 This sector performs the vital functions of enabling productivity and income growth in the economy as a whole, and has an equally important part to play in making this growth more inclusive. The sector has to be enabled to attain an increasing level of sophistication so as to meet the requirements of globalizing trade and industry and the increasing engagement of the Indian economy with the rest of the world, both on the current as well as on the

capital accounts. The government has recently received the report of the EC on making Mumbai an International Financial Centre. This report has made very far reaching recommendations on the fiscal and monetary policies, financial sector regulation and supervision, as well as on the development of various financial markets. While these recommendations would be relevant to the needs of medium- and large-scale industry and commerce, it would be necessary to look at certain further policy measures in order to ensure that small and marginal farmers, micro enterprises in the unorganized sector, the weaker and disadvantaged sections of society, and the relatively backward regions and States are enabled to participate more fully in the growth process.

8.4.4 This chapter outlines some of the major issues that the financial services sector needs to address in this task of facilitating inclusive growth and suggest some necessary steps in the way forward.

Financial Inclusion

8.4.5 Financial inclusion can be described as the delivery of banking and other financial services at affordable costs to the vast sections of the disadvantaged and low-income groups. To bring the 'financially excluded' population within the formal financial system, many policy initiatives have been taken, such as making available a basic banking 'no frills' account either with 'nil' or very low minimum balances, issuing of General Credit Cards to eligible beneficiaries without insistence on security, purpose, or end use of credit; introduction of KCCs, allowing banks to utilize the services of NGOs, SHGs, MFIs, and other civil society organizations as intermediaries in providing financial services; credit linking of SHGs, support to MFIs; introduction of Financial Sector (Regulation and Development) Bill 2007 to develop and regulate the MFIs; and constitution of Financial Inclusion Fund and Financial Inclusion Technology Fund of Rs 500 crore each to strengthen the institutional and technological infrastructure for greater financial inclusion. We have to introduce suitable policy interventions and technological innovations to maximize the financial inclusion during the Eleventh Plan period.

Extent and Causes of Financial Exclusion

8.4.6 Lack of access to financial services such as credit, savings, and insurance at an affordable cost not only results in exclusion but also acts as a constraint to growth impetus in the rural and unorganized sectors. Despite years of policies aimed at the financial inclusion, a large number of households do not have access to formal financial services even today.

8.4.7 The financial exclusion covers exclusion from any or all of the financial services necessary for participating in a modern market economy. Nevertheless, exclusion from credit provision has been looked at as being more significant than that from other services. There is a rural–urban divide and a regional skew to the financial exclusion. Table 8.4.2 presents the prevailing situation:

TABLE 8.4.2
Savings and Loan Accounts

S. No.	Regions	No. of Savings Accounts to Adult Population (2005) (%)	No. of Loan Accounts to Adult Population (2005) (%)
1.	North	80	12
2.	North East	37	7
3.	East	34	8
4.	Central	52	9
5.	West	60	13
6.	South	66	25
7.	All-India	59	14
7a	Rural	39	9.5
7b	Urban	60	14

Source: Speech of Usha Thorat, Dy Governor, RBI (19 June 2007).

8.4.8 The NSSO Situation Assessment Survey on 'Indebtedness of Farmer Households' (2003) reveals that 51.4% of farmer households do not access credit either from formal or non-formal sources. The region-wise position of the level of indebtedness is indicated in Table 8.4.3.

8.4.9 There are several reasons for financial exclusion: lack of awareness, low income/assets, social exclusion, and illiteracy are the demand side factors. On the supply side, distance from branches, branch timings, cumbersome documentation and procedures, unsuit-

TABLE 8.4.3
Credit Access of Farmer Households

Region	Farmer Households (HHs) Borrowing from both Formal and Non-formal Sources		Farmer Households (HHs) not Accessing Credit from either Formal or Non-formal Sources	
	No. (Lakh)	Percentage of total HHs	No. (Lakh)	Percentage of total HHs
Northern	56.26	51.40	53.20	48.60
North Eastern	7.04	19.90	28.36	80.10
Eastern	84.22	40.00	126.39	60.00
Central	113.04	41.66	158.29	58.34
Western	55.74	53.77	47.92	46.23
Southern	117.45	72.70	44.11	27.30
Group of UTs	0.49	33.10	0.99	66.90
All-India	434.24	48.6	459.26	51.4

able products, language, and staff attitudes are the reasons for exclusion.

8.4.10 While steps need to be taken to improve the access to and the supply of credit and other financial services, there can be no overemphasis of the importance of building up the capacity of the weaker sections to use the financial services. To some extent, a financial service such as insurance would be necessary to use another financial service such as credit; financial literacy would help in using savings, credit, and insurance services, etc., but there remain several other very important factors outside of the financial sector that are complementary to financial services and need to considered as an integrated package.

8.4.11 On the supply side, the post-1991 period has also seen significant changes in the credit provision for the weaker sections. Despite emphasis on increasing the credit penetration and outreach of institutional sources of credit, the number of rural bank branches has declined from 35134 in March 1991 to 30572 in March 2006. Even the number of small borrowers' accounts (less than Rs 25000) has declined from 625.48 lakh to 387.33 lakh. The result has been that the share of money lenders in the total dues of rural households has increased from 17.5% in 1991 to 29.6% in 2002. (All-India Debt and Investment Survey as on 30 June 2002, NSS 59th Round Released in December 2005.)

8.4.12 A continuing policy measure is the stipulation of priority sector lending. However, this has got diluted in the last 10 years by a shift in the focus to better creditworthy activities such as housing, transport, professional activities, etc.

8.4.13 The priority sector now comprises agriculture (both direct and indirect), SSIs, small road and water transport operators, small business, retail trade, professional and self-employed persons, State-sponsored organizations for SC/ST, education, housing loans, micro credit, loans to software, and food, and agro-processing sectors.

8.4.14 The share of agriculture in total bank credit declined sharply from 15.9% at end-March 1990 to 9.6% by end-March 2001. During this period, however, the share of agriculture in GDP also declined significantly. As a result, the credit intensity of the agriculture sector (credit to agriculture sector as percentage of sectoral GDP) remained broadly at the same level. Credit to agriculture picked up significantly from 2004–05 onwards. The government announced on 18 June 2004 a package for doubling the flow of credit to agriculture and allied activities in a period of three years commencing from 2004–05 over the amount disbursed during the year 2003–04. Table 8.4.4 indicates the target and achievement of the agricultural credit flow during 2004–05, 2005–06, and 2006–07.

8.4.15 The credit intensity of the sector increased sharply from 11.1% in 2001–02 to 27% in 2005–06. The number of borrowal accounts in the agriculture sector also increased from 19.84 million in 2000–01

TABLE 8.4.4
Flow of Credit to Agriculture

(Rs Crore)

Year	Target	Achievement
2004–05	105000	125309
2005–06	141000	180486
2006–07	175000	203296
2007–08	225000	66888#

Note: # Upto July 2007.

to 26.66 million in 2004–05. Within the overall minimum priority sector target of 40% of NBC, the share of agriculture is 18%. The share of agricultural loans as a percentage of NBC for public sector banks was 15.3% at end-March 2005 and 15.2% at end-March 2006. Private sector banks were at 13.5% as at both end-March 2005 and 2006. While commercial banks have taken care of the needs of the small farmers, they have not done so in respect of the marginal/sub-marginal farmers, tenants/share croppers, oral lessees, non-cultivator households, etc.

8.4.16 The distribution of credit upto Rs 2 lakh by SCBs over the last 10 years reveals a disturbing trend (see Table 8.4.5). The number of loan accounts for availing credit upto Rs 25000 has declined from 5.19 crore in 1996 to 3.84 crore in 2006. As a proportion of total loan accounts, it has declined from 91.6% to 45% during the same period. Similarly, the outstanding credit has reduced drastically from about 14.2% of total bank credit in 1996 to 3% in 2006. However, the average outstanding has increased from Rs 6985 to Rs 11769.

8.4.17 For credit disbursed above Rs 25000 and upto Rs 2 lakh, the number of loan accounts has increased nearly 10-fold and credit outstanding has multiplied over seven times. Consequently, the average loan outstanding has declined from about Rs 70000 in 1996 to Rs 52500 in 2006.

8.4.18 Disbursal of credit displays the rural–urban divide (see Table 8.4.6). Rural and semi-urban loan accounts, as a proportion of total loan accounts, have declined from about 79% in 1996 to about 59% in 2006. The fall has been sharper in the rural segment. The credit outstanding in this category has declined by about five percentage points from 29.64% of bank credit to 24.72% during the same period. On the contrary, the urban and metro segments reflect the opposite trend. The number of loan accounts in the urban and metro areas has multiplied about two and

TABLE 8.4.5
Distribution of Outstanding Credit of SCBs according to the Size of the Credit Limit

S. No.	Year	Credit upto Rs 25000			Credit above Rs 25000 and upto Rs 2 lakh		
		No. of Accounts	Amount Outstanding (Lakh)	Average Outstanding	No. of Accounts	Amount Outstanding (Lakh)	Average Outstanding
1.	1996	51904658 (91.59)	3625319 (14.23)	6985	3991468 (7.04)	2808470 (11.03)	70362
2.	1999	42747346 (81.73)	3828497 (10.01)	8956	8249220 (15.77)	4999659 (13.07)	60608
3.	2001	37252319 (71.14)	3781632 (7.02)	10151	13203909 (25.22)	6847786 (12.72)	51862
4.	2004	36766092 (55.38)	3855543 (4.38)	10487	25133746 (37.86)	12414438 (14.10)	49394
5.	2005	38732564 (50.20)	4299179 (3.73)	11100	32373797 (41.96)	15688824 (13.61)	48461
6.	2006	38419104 (44.97)	4521734 (2.99)	11769	38703221 (45.30)	20328082 (13.43)	52523

Note: Figures in brackets are percentages.

Source: Basic Statistical Returns, RBI.

TABLE 8.4.6
Sector-wise Distribution of Outstanding Credit of SCBs

S. No.	Year	Rural		Semi-urban		Urban		Metro	
		Accounts	Outstanding	Accounts	Outstanding	Accounts	Outstanding	Accounts	Outstanding
1.	1996	28795008 (50.8)	3861351 (15.2)	15907178 (28.1)	3689050 (14.5)	7034553 (12.4)	4439731 (17.4)	4935690 (8.7)	13479079 (52.9)
2.	1999	24473040 (46.8)	5390862 (14.1)	14457568 (27.6)	5482002 (14.3)	6992485 (13.4)	7071668 (18.5)	6382363 (12.2)	20297971 (53.1)
3.	2001	22510707 (43.0)	6888194 (12.8)	14046994 (26.8)	7110588 (13.2)	7933614 (15.2)	9530289 (10.8)	7873080 (15.0)	30314307 (56.3)
4.	2004	25564806 (38.5)	10990745 (12.5)	16108316 (24.3)	11487098 (13.0)	8931305 (13.5)	16997379 (14.7)	15785863 (23.8)	48555981 (55.2)
5.	2005	29357131 (38.1)	16047938 (13.9)	18225926 (23.6)	14283629 (12.4)	10176816 (13.2)	21229977 (18.4)	19390921 (25.1)	63685248 (55.3)
6.	2006	29053685 (34.0)	19942287 (13.2)	21474702 (25.1)	17479436 (11.5)	12918689 (15.1)	27636541 (18.3)	21988305 (25.7)	86325949 (57.0)

Note: Figures in brackets are percentages.
Source: Basic Statistical Returns, RBI.

four times, respectively. As a proportion of the total loan accounts, it increased from about 21% in 1996 to about 41% in 2006. The loan outstanding has increased by about five percentage points from 70% in 1996 to 75% in 2006.

8.4.19 Artisan, village, and tiny (AVT) industries and other SSIs have received insufficient credit. The number of AVT and other SSIs loan accounts, as a percentage of total bank accounts, has declined by 4.6 percentage points from 7.2% in 1996 to 2.6% in 2006 (see Table 8.4.7). In absolute terms, it declined from 40.9 lakh to 21.8 lakh. The loan accounts have declined secularly during the period in rural, semi-urban, and urban areas. However, in the metros it has increased. The outstanding credit has also declined by 6.6 percentage points from 10.7% of bank credit in 1996 to 4.1% in 2006. The decline across the rural and

TABLE 8.4.7
Artisan and Village Industries and Other Small-scale Industries

Year	No. of Accounts					Amount Outstanding (Rs lakh)				
	Rural	Semi-urban	Urban	Metro	Total	Rural	Semi-urban	Urban	Metro	Total
1996	2306666 (8.01)	1022012 (6.42)	537760 (7.64)	227208 (4.60)	4093646 (7.22)	333261 (8.63)	503052 (13.64)	740522 (16.68)	1155699 (8.57)	2732534 (10.73)
1999	1894551 (7.74)	1069453 (7.40)	616374 (8.81)	347256 (5.44)	3927634 (7.51)	414597 (7.69)	592352 (10.81)	985547 (13.94)	1342224 (6.61)	3334720 (8.72)
2001	1340518 (5.96)	715700 (5.10)	588912 (7.42)	442582 (5.62)	3087712 (5.90)	373850 (5.43)	716957 (10.08)	1105629 (11.60)	1701256 (5.61)	3897692 (7.24)
2004	1134176 (4.44)	480711 (2.98)	258361 (2.89)	138583 (0.88)	2011831 (3.03)	489411 (4.45)	809427 (7.05)	1247847 (7.34)	1787782 (3.68)	4334467 (4.92)
2005	1213263 (4.13)	555214 (3.05)	287666 (2.83)	171364 (0.88)	2227507 (2.89)	601963 (3.75)	977442 (6.84)	1558533 (7.34)	2184599 (3.43)	5322537 (4.62)
2006	1000377 (3.44)	550984 (2.57)	352933 (2.73)	279702 (1.27)	2183996 (2.56)	711926 (3.57)	1156510 (6.62)	1834442 (6.64)	2532432 (2.93)	6235310 (4.12)

Note: Figures in brackets are percentages.
Source: Basic Statistical Returns, RBI.

urban areas is, however, more pronounced in the metros. Though the loan accounts during the period have nearly halved, the average outstanding credit has increased more than four-fold from Rs 66750 in 1996 to Rs 285500 in 2006. While AVT industries are concentrated predominantly in the rural areas, other SSIs are dominant in the urban areas and the metros. This reflects that the AVT industries, which are relatively less credit worthy, have been credit starved.

8.4.20 The share of credit to SSIs has declined from 15% of NBC in 1998 to 6.4% of NBC in 2005–06. Including small business, retail trade, etc., the total share is less than 10% of NBC. Housing has gone up from 2.9% to 9.23%.

8.4.21 SHGs and their linking up to the banking system has been a very notable feature of the provision of the financial services to the weaker sections in the recent years. However, apart from the fact that this has been largely in the south, the overall quantum of credit extended is still quite small. As at end-March 2006, 22.39 lakh SHGs were linked to banks. Cumulative lending amounted to Rs 11398 crore. The current outstanding credit is around Rs 4000 crore which is a very small fraction of the NBC. About 24 million families have been assisted. The average bank loan per SHG has increased from Rs 18227 in 2001 to Rs 32012 in 2005.

Policy Issues

8.4.22 A number of committees have provided guidance on improving the financial inclusion. The Sub-Group on Financial Services headed by K.V. Kamath (2007) is the most recent one. The C. Rangarajan Committee on Financial Inclusion (2007) has, in its Interim Report, made detailed recommendations on the supply side solutions to improve the delivery of financial services through traditional and non-conventional channels. It has also laid emphasis on the complementary demand side measures that are necessary. The Vaidyanathan Committee on Restructuring of Co-operatives (2004) and the Committee on Moneylender Legislation (2006) have recommended policy measures to improve the financial inclusion.

8.4.23 Some of the key policy issues emerging out of these and the other reports for extending the outreach and depth of the financial inclusion are discussed in the succeeding paragraphs.

Interest Rate Caps

8.4.24 Interest rates on loans made by the banks have been deregulated from 1994, with the exception of export credit and loans upto Rs 2 lakh. In the latter case, the interest rate cannot exceed the bank's notified benchmark PLR. Recently, the government has announced a subsidy of 2% to the banks for extending the production credit upto Rs 3 lakh for agriculture at 7%. However, as the Report on Currency and Finance 2005–06 States, 'although the supply-led approach to rural credit prior to the 1990s ensured availability of credit at a subsidized rate, it turned out to be financially unsustainable as it impacted on the health of credit institutions adversely'.

8.4.25 The entire issue of deregulating/regulating the interest rate is embedded in the question of whether access and timely availability of credit should be an overriding concern rather than the cost of credit per se.

8.4.26 The Working Group on Outreach of Institutional Finance and Co-operative Reforms examined this issue and also conducted studies, through its sub-groups, on the actual costs incurred in financing small borrowers in the rural areas. A sample study of lending by a public sector bank showed that the all-inclusive cost of loans of Rs 25000 and less is 21%. In the case of a private sector bank, it was found that the cost of direct lending was much more than when the lending was through an intermediary MFI. However, the cost difference declines as the size of the loans increases. The all-inclusive cost, as per this study, works out to as much as 33.1% for the direct lending of loan of Rs 10000 while this is 17.5% for a loan of Rs 25000 through an MFI. The overall balance sheet analysis of RRBs and Central Co-operative Banks (CCBs) produced a cost of 7.75% on earning assets for RRBs and 10.16% for CCBs. Commercial banks estimates range from 7.5% to 13.5%. A College of Agricultural Banking study of 22 MFIs showed an average cost of 30.2%.

8.4.27 There is clearly a need for carrying out periodic studies based on scientifically selected samples

and factoring in all costs to arrive at the actual cost of lending to small borrowers in the rural areas.

8.4.28 In addition to the interest rates charged, the borrowers have to incur other costs, such as submitting certificates/documents (land documents, search reports by lawyers, 'no dues' certificate from other bank branches, valuation certificates, etc.), and often bribes. Taking all these into account, the total cost of borrowing through the formal institutional channels may not be less than the rates charged by the formal credit channels.

8.4.29 If documentation and other procedures are simplified, thereby reducing the transaction costs of the farmers significantly, the farmers may not mind paying market driven rates of interests, covering the costs of funds, and the transaction costs and risk costs of the banks. Allowing the interest rates to be market driven and taking into account the risk perceptions of the banks would lead to the banks considering agricultural lending as a viable business proposition.

8.4.30 The Report on Currency and Finance itself quotes the Prime Minister to raise significant questions relating to credit to the weaker sections. It raises the fundamental issue of whether farmers need reliable access to credit at reasonable rates or a lower rate of interest, whether we need to create new institutional structures, etc.

8.4.31 There appears to exist an element of inconsistency in the stipulations relating to the interest rates. While the interest rate on direct lending by the banks upto a limit of Rs 2 lakh cannot be at a rate higher than the bank's PLR, there is no such restriction if the lending is to an ultimate borrower through the intermediation of an MFI. The RBI in 2000 deregulated the interest rates on loans made by the commercial banks to the MFIs, and interest rates on loans made by the MFIs to the borrowers. Micro credit extended by the commercial banks either directly or through an intermediary was to be considered as part of the bank's priority sector lending. Again in 2006, the RBI emphasized that the interest rates applicable to loans given by banks to MFIs or by MFIs to SHGs/member beneficiary would be left to their discretion. This leads to an anomalous situation where loans to the same beneficiaries if dispensed through alternate channels of financing are priced differently. In order to remove this anomaly, no interest rate ceilings should be imposed on the banks by the government.

8.4.32 The available data show that around 82% of the lending by the banks is taking place at sub-PLR rates. While better creditworthy corporates are getting credit at sub-PLR rates, the agriculture and SSI sectors and others are charged PLR or even higher rates. This would again point out to the need to carry out proper costing studies for credit provision to different classes of customers. It must be recognized that if the effort for financial inclusion of the underprivileged is to be sustained, the cost of providing such services should invariably be met. However, the model should, at the same time, penalize inefficiencies in providing credit. Therefore, the costs should be appropriately benchmarked in accordance with the best practices. A free interest rate regime and competition should be recognized as the primary means of ensuring reasonable rates; this should be supplemented by the publication of the results of such studies.

8.4.33 It is necessary to recognize that there are limitations beyond which the institutional credit system will not be able to provide services inspite of the adoption of technology, especially when it pertains to the disadvantaged groups. Experience through case studies shows that the expansion of micro finance has helped in smoothening of the interest rates charged by the informal sector.

8.4.34 While the approach of the RBI has been very open and driven by the larger interest for the development of the micro finance sector, there have been instances of the State Governments regulating the interest rate. The State Governments have taken the plea that MFIs charge usurious rates of interest and this increases the indebtedness of the usually poor borrowers.

8.4.35 Consultative Group to Assist the Poor guiding principles on regulation and supervision of micro finance state that interest rate caps, where they are in force, almost always hurt the poor by limiting the

services, far more than they help the poor by lowering the rates. The Report of the Internal Group to Examine Issues relating to Rural Credit and Micro Finance (Khan Committee) of the RBI has also deliberated on this issue. The Report mentions that the empirical data in respect of several micro finance projects being carried out in different parts of the world prove that timely availability and right quantity of credit, and not the interest rate, are crucial to the success of the micro finance programmes. Since the method of costing applied by the MFIs is fundamentally different from that followed by the banks, the methodology for applying interest rates for them would be different from the methodology for the banks. Since providing services at the doorstep of the customer has a cost, no undue intervention is required to set the interest rates charged to the ultimate borrower through the financial intermediation route. This is best left to the commercial judgment of the borrowing MFIs and the lending institutions.

8.4.36 It has been argued that both the Central Government and State Government can play a central role in reducing the interest rates without introducing rate caps. This can be done by creating a database and monitoring system for interest rates being charged by the MFIs. Under the system, it would be mandatory for the MFIs to report the effective interest rate offerings periodically. However, transparency in the fixation of interest rates is the major bottleneck. At present, there is no uniform agreed methodology followed by the MFIs for disclosing effective interest rate charged including loan processing fees, bad debt provisions, and other ancillary charges. This makes it difficult to compare interest rates across all MFIs. One of the options could be self-regulation, that is associations of the MFIs themselves voluntarily adopt and enforce a code of conduct including disclosure norms. As self-regulatory organizations have serious limitations to enforcing their rules, the other option is formal regulation of the sector. This would include formulation and enforcement of uniform financial reporting guidelines including norms for treatment of non-performing assets; unambiguous interest rate disclosure guidelines including norms for disclosing loan processing fees, bad debt provisions, and other hidden charges; clear conduct codes for behaviour of the MFI staff with penalty for breach of conduct rules; and audit provision for the MFIs above a certain level of portfolio.

8.4.37 Ratings of MFIs by external agencies such as SIDBI could also be thought of to promote transparency in the operations of the MFIs.

8.4.38 With the use of IT solutions and transparency in pricing coupled with growing competition amongst MFIs, it is expected that the interest rate charged by the MFIs would come down. Credit dispensation through alternate channels, namely, MFIs, SHGs, Non-banking Financial Companies (NBFCs), HFCs, and post offices would be effective in increasing access, reducing transaction costs, as also in improving recovery.

Modes of Extending Outreach

UP-SCALING SHGs–BANK LINKAGE PROGRAMME (SBLP)

8.4.39 Essentially, two forms of providing micro credit are being followed, namely SBLP and MFIs. Within the SHG–bank linkage model, SHGs are formed by NGOs and SHG Promoting Institutions (SHPIs) and credit is extended by the banks to the SHGs directly. This is the predominant form of disbursement of credit within the SBLP model.

8.4.40 The geographical distribution of both the SHGs–bank linkage and the MFIs is highly skewed. The southern States account for the bulk of SHGs. However, in the recent years, SBLP has been making inroads into the regions with a large percentage of rural poor. About 90% of the SHGs that are linked to the banks are of women.

8.4.41 SBLP has registered an impressive growth during the last five to seven years. At present, 90% of the micro credit is being disbursed through the SHGs–bank linkage model. The SHGs linked to banks have increased from 2.64 lakh in 2000–01 to 22.39 lakh in 2005–06. Despite such an impressive growth, a vast gap between the demand and supply of micro credit exists. As per the estimate by the Task Force headed by V.S. Vyas (2007), the minimum requirement of the micro credit is Rs 70000 crore as against the supply of Rs 11378 crore. This programme is also concentrated

in the southern States. However, in 2005, NABARD had identified 13 priority States accounting for the bulk of India's poor for special efforts and location-specific strategies.

8.4.42 Under the SBLP, the average loan per member is less than Rs 4000. This is grossly insufficient for financing income-generating activities. The interest rate charged from members has been reported to be 15%–24% per annum. The cost of forming and nurturing the group up to the stage of credit linkage is borne by NABARD. The norms of the MoRD provide for Rs 10000 per group as the cost of formation of the groups.

8.4.43 The binding constraint in the SBLP is the ability to form groups and to build up their capacities. This, in turn, is strongly dependent on the availability of committed NGOs and SHPIs. The Rangarajan Committee has identified the SBLP as one of the two main instruments for achieving financial inclusion and has suggested that the Department of Women and Child Development should be actively involved in this process. Upon the recommendation of this Committee, a Financial Inclusion Fund has been set up by NABARD for promotional activities. NABARD is already engaged in a variety of capacity-building efforts in this area. NABARD's programme needs to be more closely integrated with those of the State Governments, especially in the 13 priority States. It is to be noted that the NCEUS has also made a similar recommendation for a fund to be used for promotional activities.

8.4.44 At the same time, it has been suggested by some that this model may be allowed to grow organically in response to needs and capabilities and there should be emphasis on quality rather than quantity. SHGs should not be allowed to go the co-operatives way. Co-operatives were burdened with non-credit business that is used as a mechanism to deliver government programmes such as PDS, sale of fertilizer, etc. They subsequently became politicized. SHGs being such a large-scale movement are also susceptible to politicization. It needs to be ensured that SHGs retain their character as a peoples' movement and do not become a tool in power politics.

8.4.45 Interestingly, the Vaidyanathan Committee States that co-operatives, of the mutual thrift and credit type, are the only form of organization by which economically disadvantaged individuals and groups, through voluntary collective action, overcome their disadvantageous position in an unequal market and promote their well being. It further adds that the credit would be put to good use in the organizations in which the members know each other first hand, are closely linked through kinship and social relations, and have a strong mutual stake in the proper use of the common credit pool. One would not be mistaken if this description were understood as being one of SHGs. In fact, there is nothing new in the SHG concept that has not been embedded in that of the co-operatives earlier. That the co-operatives have reached their present state should serve as a serious warning to the SHG movement as well.

THE MFI SECTOR

8.4.46 In the MFI model, the MFIs both form the groups and provide credit to SHGs and individuals. MFIs raise funds from the banks and financial institutions for on-lending to SHGs and individuals.

8.4.47 MFIs are an amorphous collection of legal entities, both for-profit and not-for-profit institutions. Amongst not-for-profit institutions are included NGOs incorporated as trusts/societies, co-operatives set up under the Co-operative Acts, and Section 25 companies under the Companies Act. For-profit MFIs include NBFCs incorporated under the Companies Act and regulated by the RBI.

8.4.48 In the MFI model, the rate of interest charged is higher (at about 20%–24%) than the SBLP model as the MFIs have to charge a rate of interest that recovers cost of funds as well as the cost of formation of groups. Sa-Dhan's voluntary code of conduct lays down that the MFIs will charge reasonable rate of interest, that is 21%– 24% per annum. This is comparable to the rate of interest charged by SHGs from their members. Even the cost of formation and nurturing the groups is borne by the MFIs themselves. The cost of funds to MFIs is higher than the rate at which the banks lend to SHGs under the SBLP. Transaction costs are also higher owing to weekly collections

and delivery of services at the doorstep. On the flip side, transparency in fixation of the rate of interest and disclosure norms, consumer protection, and coercive practices of MFIs have emerged as the major concerns.

8.4.49 MFIs require funds for credit expansion and on-lending to the SHGs and individual members. As of now, studies reveal that the Indian MFIs are very highly leveraged compared to those of the rest of the world. With a low equity base, the ability of MFIs to raise debt resources from the banks and other financial institutions is limited. Several measures to enlarge equity capital of MFIs include relaxing the constraint on equity investment by venture capital into MFIs, lowering the minimum capital requirement for foreign equity participation, and enhancing the corpus of equity support from NABARD.

REVITALIZATION OF CO-OPERATIVES

8.4.50 Co-operatives have the largest nominal outreach amongst the rural financial institutions including the commercial banks. Presently, they are at a crossroads owing to resource constraints, poor governance, bad management, and inefficiency. On the basis of the recommendations of the Vaidyanathan Committee, the GoI has formulated a revival package for restructuring and strengthening of the rural co-operative credit institutions. A total of 17 States have accepted 'in-principle' the revised revival package as formulated by the GoI. Of the 17 States, 12 States have executed an MoU with the GoI and NABARD. The conditionalities free the societies from the necessity of being a part of the three-tier structure. Individual societies would also be free to establish business contact with the commercial banks and borrow from any RBI regulated institution. Freedom from compulsory federation would help in reducing unnecessary tiers in financing which add to costs. The co-operatives are also to be free to decide interest rates on deposits and advances subject to RBI regulations. These reforms are salutary and will enable the co-operatives to function on sound commercial lines. The insistence on signing the MoU with its conditionalities and acceptance of guidelines prescribed by RBI for ensuring 'fit and proper' criteria for Directors in the Boards and Chief Executive Officers of rural co-operatives are apparently some of the reasons for the slow pace of implementation of the revival package.

8.4.51 It is imperative that the revival package is implemented in toto, without diluting the contingent legal, financial, regulatory, and institutional reforms. This would have the effect of cleansing the balance sheets and strengthening the capital base of rural co-operatives so that they begin on a clean slate and are at par with other rural financial institutions. However, there are several valid concerns that need to be addressed so that the financial and institutional sustainability of the rural co-operatives is not impaired.

8.4.52 The Vaidyanathan Committee states that, co-operative societies in India, unlike the world over, have not been mutual, but only agencies for credit dispensation. Upper tiers were created to provide refinance for the lower tiers. This resulted in a structure driven by borrowers at all levels. The Committee, therefore, recommended that there should be an aggressive effort to convert pure credit to thrift-cum-credit societies. In this form, it is expected that there would be natural incentives for good governance. This vision has been largely preserved in the reform package that has now been worked out. However, the process of organic growth that this entails is likely to constrain the ability of the co-operatives to quickly scale up their operations.

8.4.53 The Vaidyanathan Committee has recommended liquidation of the non-viable and defunct Primary Agricultural Co-operatives (PACs). The exact modality of liquidation, however, has not been spelt out. As the number of PACs to be liquidated is quite large, transitional arrangements need to be put in place to maintain the ground-level credit flow. Mergers with healthy PACs or take-over by neighbouring PACs may adversely affect the financial performance and burden the functioning of the taking-over PACs. A better solution lies in development of new PACs under the Model Act suggested by the Vaidyanathan Committee. However, this would be a time-taking but a sustainable option in the long run.

8.4.54 Co-operatives offer high rates of interest on deposits. Co-operatives also suffer from high transaction

costs owing to over-staffing and salaries unrelated to the magnitude of business. High-risk costs arise on account of low recovery levels, lack of adequate risk mitigation systems and procedures, absence of appropriate credit appraisal and monitoring, and over-exposure to agricultural lending. Actual repayments are influenced by ad hoc government decisions to suspend, delay, or even waive recovery. The revival package, significantly, does not disempower the State Governments from giving directives to the credit co-operatives. These powers have been used often in the past to subject the co-operatives to commercially unsound decisions. The costs of funds are also high as PACs depend on borrowings from the upper tier co-operatives. Lack of information about credit worthiness of the clients further compounds the problem. The lending rates need to cover cost of funds, transaction costs, and risk costs. While the Vaidyanathan Committee has identified these factors that increase the cost of co-operative credit operations, it has not adequately suggested mechanisms to reduce the associated transactions and risk costs.

8.4.55 The apprehension, therefore, is that the implementation of the revival package is unlikely to provide any substantial remedy to the problem of financial exclusion. This would be even truer of the production and investment financing needs of agriculture. There appears to be no alternative to a vigorous increase in the outreach and the scale of rural operations of the commercial banks.

SCHEDULED COMMERCIAL BANKS (SCBs)/ REGIONAL RURAL BANKS (RRBs)

8.4.56 While the rural branch network of commercial banks had steadily grown in the years following nationalization in 1969, there has been a rollback since 1991. The average rural population served by a bank branch has therefore gone up, as shown by the following numbers (see Table 8.4.8).

TABLE 8.4.8
Average Population per Branch Office

	1991	2005
Population per branch	13711	15680
Population per rural branch	13462	16650
Population per urban branch	14484	13619

8.4.57 However, there is an opinion that the existing rural branch infrastructure can be more intensively used so as to service a much larger customer base. A major recommendation of the Rangarajan Committee is that the banks be given targets to add at least 250 farmer accounts per year per branch. This, the Committee feels, will enable covering all the unbanked farmer households in the next five years. Prescribing a target-based approach for the commercial banks to extend their outreach in rural areas may not be a viable option until and unless banks are allowed to charge a rate of interest that covers their cost of funds, transaction costs, and risk costs.

8.4.58 While several policy measures have been initiated to augment the credit flow to small and marginal borrowers, the results speak differently. During 1996 and 2006, the loan outstanding for accounts upto Rs 2 lakh credit has declined from 25.3% to 16.4% of bank credit. These loans are disbursed at or below PLR. Sub-PLR lending has increased from 39% in September 2004 to 82% in March 2007. These loans are essentially disbursed to better creditworthy corporates. However, agriculture and SSI sectors, in particular AVT and other SSIs whose loan outstanding is more than Rs 2 lakh, are charged interest rates above PLR. This has several implications. First, lending at below PLR lacks transparency and affects both lenders and borrowers. Second, to compensate for the sub-PLR lending, other segments are charged higher rates of interest thus leading to cross-subsidization of the economically well-off borrowers by the economically poor borrowers.

8.4.59 The employment intensive and greater regional spread of AVT and other SSIs make them an engine of inclusive growth. However, they are considered more risky by the banks and collaterals are insisted upon. This has been partly addressed by setting up of a Credit Guarantee Fund Trust for SSIs. This fund guarantees upto 75% of the credit risk subject to loan cap of Rs 50 lakh per borrower. The other option to obviate the need for collateral could be introducing independent rating of the borrowers and generating their credit history.

8.4.60 Today's small entrepreneur is tomorrow's big businessman, if provided appropriate financial

support. The banks have to be proactive and gear up their risk assessment and management capacities. They have to finance the first-time entrepreneurs, notwithstanding the risk, if financial inclusion is to become a reality. The inevitability of some degree of failed ventures should not lead to unreasonable attachment of accountability which otherwise leads to risk aversion amongst lenders. Prudential norms need to be laid down by the regulator to provide this comfort.

8.4.61 Along with the above, it may be necessary to modify the priority sector lending guidelines by creating sub-limits for lending to the weaker sections. As suggested by the NCEUS, a sub-target of 10% should be reserved for marginal and small farmers within the 18% reserved for agriculture. The flow of credit against this sub-target should be separately monitored. Similarly, a separate target of 10% for small and micro enterprises, of which again 4% is reserved for micro enterprises with a capital investment of less than Rs 5 lakh, should be imposed and enforced. Along with the freeing of interest rate that has been recommended above, this would help in credit reaching the needy sections.

8.4.62 There have been some suggestions made that the priority sector targets should be enforced in a different fashion than hitherto. A suggestion that merits consideration is that the targets be made tradeable amongst banks. This would have the merit of acting as means of achieving the targets at the lowest possible cost.

8.4.63 A major step taken recently is to permit the banks to extend their outreach through engaging business facilitators and business correspondents (BC). The banks are required to formulate their own schemes in line with the guidelines of the RBI to operationalize these mechanisms. Though these guidelines were brought out more than one and a half years ago, the NCEUS notes that the banks are not inclined to adopt this model because of cost considerations. They, therefore, suggest that some incentives may be provided to the banks, in the form of tax or other benefits, to adopt this model. The Rangarajan Committee says that the banking system has not yet been able to fully appreciate the business gains that could accrue from adopting the model. It adds that discussions with a cross-section of bankers reveals that the muted response is, in part, due to disinclination on the part of the banks to absorb the costs involved on grounds of its impact on the viability of operations.

8.4.64 Prohibition on banks to charge more than the PLR on loans less than Rs 2 lakh has made the BC model unworkable for provision of micro credit. Even if the banks were willing to absorb the difference between their PLR and their cost of funds, margins would not be adequate to compensate the BCs to cover the costs of originating, monitoring, and collecting loans. Second, under the model, the bank is responsible for omissions and commissions of the BC. Third, the lack of IT connectivity (owing to cost considerations) would make it difficult to report and incorporate the BC's transactions in the books of the bank by the end of the next working day. Due to these reasons, the BC model has received a rather lukewarm response from the banks. However, this seems to be the best available option for increasing financial inclusion. Apart from removing interest rate controls, a systematic programme for capacity building for the BCs, establishing robust procedures for monitoring their performance and rating them, and the building up of IT connectivity, perhaps even by sharing it amongst banks so as to reduce costs, are all essential for this model to succeed.

8.4.65 The industry feels that the financial sector participants would find it difficult to expand into underserved areas in the absence of appropriate payment processing infrastructure. More than 80% of India's financial transactions are processed in physical cash. Cash as means of payment has a large cost in terms of handling, transaction processing, holding, and risk of loss. Looking ahead, card-based solutions are likely to emerge as the key mechanism for delivering financial services to the unbanked. There is therefore a need to create a national payments system with participation by all banks, reduce transaction costs, and substantially increase the deployment for Point of Sales terminals and their utilization for both high- and small-value payments.

8.4.66 India has achieved good mobile penetration both geographically and in terms of socio-economic

classes. The total number of mobile phone connections has already greatly exceeded the number of bank accounts. South Africa has reportedly pioneered the large-scale use of mobiles for payment. Japan, South Korea, and other countries also are said to be using this method. Enabling mobile payments would facilitate cheaper payment processing, wide geographic coverage, online payments straight through processing, and financial inclusion. The mobile phone can be used as a device to transfer funds and make payments from a bank account using appropriate authentication protocols.

TRADITIONAL MONEYLENDERS

8.4.67 The All-India Debt and Investment Survey (NSS 59th Round) has revealed that the share of institutional agencies in the total cash dues of urban households had increased from 72% in 1991 to 75.1% in 2002 and that of moneylenders had also increased during the period from 10.2% to 14.1%. In the case of rural households on the other hand, the share of institutional agencies had in fact declined from 64% in 1991 to 57.1% in 2002. And more significantly, the share of moneylenders had increased in the same period from 17.5% to 29.6% in the case of rural households.

8.4.68 Despite measures to extend institutional credit especially in the rural areas, the dependence on moneylenders has only increased. Thus there is a case to look at the possibility of using moneylenders for providing credit within a regulated framework. Usurious rates of interest and coercive practices are a reality that needs to be appropriately addressed.

8.4.69 International experience also suggests that moneylenders perform similar activities all over the world both in developed and developing countries. Internationally, the nature of moneylending laws is regulatory. The emphasis of such laws is on protecting the interests of the borrowers by capping the rate of interest and curbing coercive recovery practices.

8.4.70 The technical group of the RBI to review the legislations on moneylending in its report has also recommended that registration of the moneylenders should be made compulsory and a penalty should be imposed on those conducting business without registration. It has also recommended that the State Governments should stipulate the maximum rate of interest that could be charged by the moneylenders. The group has also recommended a model legislation for adoption by the State Government to regulate the moneylenders. The legislation provides incentives for registration and mainstreaming the activity of moneylending. It also provides for penalties for violation of its provisions as well as disincentives to those who circumvent the law in the form of more stringent action against unregistered lenders.

8.4.71 A major issue that needs to be resolved here is the regulatory capacity of State Governments, who are the competent authorities for this purpose. A possible solution could be to outsource the regulatory function to the banking system. The incentive of obtaining credit from banks to enlarge their businesses could be used to overcome the fear of costs associated with registration. The government could consider mainstreaming moneylending by instituting an effective regulatory framework as has been done worldwide.

Building up the Demand Side

8.4.72 Perhaps the greatest benefits of public policy initiatives towards the financial inclusion are in the area of creating systemic infrastructure for provision of credit and other financial services. Specific measures include creating credit registries, national identification numbers, payment systems, electronic commodity and auction markets, and weather measurement systems—all of which are public goods which would help stimulate economic activity. Other measures that would help generate demand for financial services include public investment in rural infrastructure programmes, vocational training programmes, and measures to improve market linkages that help micro entrepreneurs find reliable channels for marketing their products and services.

New Initiatives

8.4.73 There are certain NGOs, societies, trusts, and co-operative societies operating in the micro financial sector that are engaged in providing credit and other financial services to the economically active low-income people especially women, poor households, and

their micro enterprises. However, the financial activities undertaken by such organizations lack a formal statutory framework. It was, therefore, considered expedient to provide a formal statutory framework for the promotion, development, and orderly growth of the micro credit sector. Accordingly, the Micro Financial Sector (Development and Regulation) Bill 2007 was introduced in the Lok Sabha on 20 March 2007. Some of the important features of the Bill are given below:

- Entrust the function of development and regulation of the micro financial sector to the NABARD.
- Define various entities engaged in the activity of micro finance such as co-operative societies, mutual benefit societies, or mutually aided societies registered under any State enactments or multi-State co-operative societies registered under the Multi-State Co-operative Societies Act, 2002; societies registered under the Societies Registration Act 1860; or any other State enactments governing such societies and a trust created under the Indian Trust Act, 1882 or public trust registered under any State enactments, that will be governed by the regulatory framework that is proposed to be set up.
- Define various categories of beneficiaries of micro financial services as eligible clients including SHGs or joint liability groups of such eligible clients.
- Provide for extending micro financial services to eligible clients by way of financial assistance subject to ceilings to be prescribed and such other financial services as may be specified by NABARD.
- Provide for constitution of Micro Finance Development Council to advise the NABARD on formulation on policies, schemes, and other measures required in the interest of orderly growth and development of the micro finance sector.
- Provide for constitution of Micro Finance Development and Equity Fund to be utilized for the development of the micro finance sector.

8.4.74 The Bill is currently under examination with the Standing Committee on Finance.

ANNEXURE 8.2.1
Financial and Physical Performance of Tourism during the Tenth Five Year Plan

(Rs in crore)

S. No.	Schemes/ Programmes	Financial Performance Tenth Plan				Physical Performance Tenth Plan	
		Outlay	BE	RE	Actual Exp.	Targets	Achievements
I	Central Sector Schemes						
1	Externally Aided Projects	50.00	40.50	40.50	31.24	To ensure effective plan preparation and supervision on execution of Ajanta-Ellora Conservation and Tourism Development Project Phase-II and Development of Buddhist Circuit projects in UP with the assistance of Japan Bank for International Cooperation (JBIC).	Infrastructure upgradation of Buddhist circuits has been taken in a big way through identification of 22 important Buddhist sites throughout the country. MoT has entered into an agreement for undertaking infrastructure development at Buddhist sites of Sarnath, Kushinagar, Kapilvastu, Shravasti, and Sankisa in UP, with JBIC for a loan assistance of Rs 395.63 crore for total project of Rs 680 crore.
2	Assistance to IHMs/FCIs etc.	110.00	127.50	127.50	135.43	To provide financial assistance for improving and upgrading of existing infrastructure of IHMs/FCIs/Indian Institute of Tourism and Travel Management (IITTMs).	Assistance was extended to 22 IHMs and 7 FCIs following National Council's curriculum.
3	Capacity Building for service providers	24.00	31.50	31.50	12.25	To conduct training programmes for participants thereby qualitatively improving tourism manpower in the country.	Conducted training to the persons who are engaged in the unorganized sectors and come in contact with a major segment of the tourists. More than 40000 persons were given training under this CBSP scheme.
4	Overseas promotion and Publicity including Market Development Assistance (MDA)	500.00	485.00	485.00	509.34	To promote tourism across the globe through global campaigns, fairs and festivals, road shows etc.	Global campaigns and market specific campaigns as a part of the 'Incredible India' campaign in the overseas markets were carried out. Participated in international trade fairs and exhibitions and organized road shows/ India Presentations in important overseas markets to showcase the varied Indian tourism products.

(*Annexure 8.2.1 contd.*)

(*Annexure 8.2.1 contd.*)

S. No.	Schemes/ Programmes	Financial Performance Tenth Plan				Physical Performance Tenth Plan	
		Outlay	BE	RE	Actual Exp.	Targets	Achievements
5	Domestic promotion and publicity including hospitality	230.00	172.00	172.00	173.40	To popularize the culture and natural beauty of different regions, pilgrim sites, and new tourism products like Eco-tourism, Adventure and Rural Tourism, etc.	Theme-based domestic media campaigns, mass social awareness programmes, production of publicity material and collaterals, were carried out and central financial assistance was extended to States/UTs for fairs & festivals.
6	Incentive to accommodation infrastructure	45.00	47.00	47.00	47.50	To create budget accommodation in the country by providing subsidies/incentives.	Provided subsidy on the loan taken by the entrepreneurs for construction of budget category hotels.
7	Construction of building for IISM at Gulmarg, Kashmir.	0.00	16.00	16.50	13.80	To upgrade the Institute with construction of building and providing machinery and other equipments.	The construction of building is near completion.
8	Market research including 20 years perspective plan.	20.00	15.50	15.50	32.22	To conduct Master Plans/DPRs (Detailed Project Report), Survey/Study reports and tourism statistics publications supported on different aspects of tourism to provide inputs to policymakers.	24 Master Plans/DPRs, 14 Survey/Study reports, and 2 tourism statistics publications were published in different aspects of tourism to provide inputs to policymakers.
9	Assistance for Large Revenue Generating Projects	98.00	122.00	92.00	34.96	To promote large revenue generating tourism projects in PPPs and in partnerships with other government/semi-government agencies.	21 Large Revenue Generating Projects were sanctioned.
10	Computerization and IT	100.00	72.00	72.00	52.33	Effective use of IT for exclusive promotion and publicity, and streamlining data collection and updating through appropriate hardware and software.	Emphasis has been given on maximum use of IT to promote 'Incredible India' more aggressively through Online Campaign on World Wide Web to drive traffic to the official website of the MoT.
11	Tourism Infrastructure Development Fund	0.00	30.00	30.00	0.00		The Scheme was dropped
12	Revival of Tourism in J&K	0.00	9.00	16.00	16.00	To create employment, self employment, and revival of economic activities.	Ministry had extended a package for financial assistance and subsidy to the service providers

(*Annexure 8.2.1 contd.*)

(*Annexure 8.2.1 contd.*)

S. No.	Schemes/ Programmes	Financial Performance Tenth Plan				Physical Performance Tenth Plan	
		Outlay	BE	RE	Actual Exp.	Targets	Achievements
							viz., Houseboat Owners, Hotels and Guest Houses, Shikara owners, and Ponywalas. An amount of Rs 7.00 crore was sanctioned and released to the Government of Jammu and Kashmir during the year 2003–04 and Rs 9.00 crore in the year 2004–05.
13	Ongoing Ninth Plan Schemes	71.50	71.50	71.50	78.88		The amount was utilized for the schemes which were continued from Ninth to Tenth Five Year Plan.
II	Centrally Sponsored Schemes						
1	Product/Infrastructure Development for Destinations and Circuits	1361.50	1242.50	1260.00	1498.21	To create tourism infrastructure facilities at circuits and destinations in various States/ UTs in consultation with the concerned State/UT governments.	The MoT sanctioned 1160 projects comprising a major part of infrastructure projects.
III	10% lump sum provision for NE States including Sikkim	290.00	184.00	184.00	0.00	As per specific schemes mentioned above.	As per specific schemes mentioned above
	Total (I+II+III)	2900.00	2666.00	2661.00	2635.67		

Note: BE = Budget Estimate, RE = Revised Estimate, Exp. = Expenditure.

V
Physical Infrastructure

9

Transport

9.1 INTEGRATED TRANSPORT SYSTEM

9.1.1 The transport system in India comprises a number of distinct modes and services, notably railways, roads, road transport, ports, inland water transport, coastal shipping, airports, and airlines. Railways and roads are the dominant means of transport carrying more than 95% of total traffic generated in the country. Although other modes such as coastal shipping and inland water transport would play a greater role, the railways and roads would continue to dominate the transport landscape in the foreseeable future.

9.1.2 It is necessary to foster the development of the various transport modes in an integrated manner that will lead to the realization of an efficient, sustainable, safe, and regionally balanced transportation system, where each mode of transport operates in its field of economy and usefulness, with competitive and non-discriminatory prices that are adequate to support progressive development of transport infrastructure and services. This would also enable the comparative advantages and economic efficiencies to be properly reflected in the user costs.

9.1.3 The liberalization of our economy has brought home the urgency of recognizing that an efficient transportation system is necessary for increasing productivity and enabling the country to compete effectively in the world market. Adequacy and reliability of transport infrastructure and services are important factors that contribute towards the ability of the country to compete in the field of international trade and attract foreign direct investment. The government has a major role to play in this sphere. Even in a market economy, the framework that national governments provide for the transport sector largely determines the level of cost and transport operations. It is, therefore, necessary to create a policy environment that encourages competitive pricing and co-ordination between alternative modes in order to provide an integrated transport system that assures the mobility of goods and people at maximum efficiency and minimum cost.

9.1.4 With the vision of formulating an integrated policy and long-term investment planning, the Planning Commission has undertaken a project of conducting a Total Transport System Study with the help of M/s Rail India Technical and Economic Services. This study will generate traffic flows covering the four major mechanized modes of transport—railways, highways, airways, and shipping—and also forecast mode-wise traffic demand for specified horizon years upto 2025–26. The study will also help to analyse inter-modal transport resource costs and determine optimal inter-modal mix.

9.2 RAILWAYS

9.2.1 Indian Railways is often referred to as the lifeline of the Indian economy because of its predominance in transportation of bulk freight and long-distance passenger traffic. The network criss-crosses the nation, binding it together by ferrying freight and passengers

across the length and breadth of the country. As the Indian economy moves into a higher growth trajectory, Indian Railways has also stepped up developmental efforts and is preparing itself for an even bigger role in the future.

Review of the Tenth Plan

9.2.2 The Tenth Plan has seen a remarkable turnaround in the financial performance of the Indian Railways, making it possible for it to place increased reliance on internal resources and market borrowings for development. The actual mobilization of internal resources went up from a meagre Rs 3113 crore or 27% of the total resource mobilization in its first year to a sizeable contribution of more than Rs 12000 crore or nearly 50% of the total resource mobilization in its final year. The table in Annexure 9.2.1 also shows the marked step up in internal resource generation in the last two years of the Tenth Plan, with commensurate decrease in the contribution of GBS during this period. Notably, the bulk of the contribution to the GBS has been on account of the Special Railway Safety Fund (SRSF), as brought out in the table in Annexure 9.2.2. Additional GBS provided through SRSF has helped the Railways in wiping out arrears in renewal of critical assets that enabled improvement in availability as well as utilization of assets, which has eventually contributed to the turnaround in the performance of the Railways.

Physical Targets and Achievements

9.2.3 The Tenth Plan targets and achievements are summarized in Table 9.2.1. Indian Railways have far exceeded the Tenth Plan projections both in passenger and freight traffic. Originating freight has shown an average annual growth of 8.1% over the Tenth Plan period as against 3.8% in the Ninth Plan period. Similarly, in BTKM, the corresponding growth in freight was 7.4% and 3.7%. The average annual passenger growth in the Tenth Plan was no less impressive, at 4.2% in terms of the number of originating passengers and 7.4% in terms of the passenger kilometre as compared to respective figures of 4.2% and 6.7% in the Ninth Plan.

A Remarkable Performance

9.2.4 The impressive achievement in freight loading and movement—exceeding the target by 16.7%/20%—was the result of a market-focused strategy aimed at capturing large volumes of traffic along with efficient utilization of assets and resources with associated reductions in unit costs despite rising input costs. The major initiatives that contributed to enhancing the competitive advantage included the decision to use the carrying capacity of the wagons optimally by increasing the loadability of the wagons on selected routes up to 15%, realignment of tariffs to the competitive conditions in the market, and incentivization of loading in the lean season and in the empty flow direction. Incremental loading has come across-the-board from all commodity groups, barring the expected decline in petroleum products. Major increases were seen in coal, iron ore for export and steel plants, cement, and other commodities (which include containers). The Railways' share in respect of commodities such as cement and steel has increased despite stiff competition from roadways. This praise-worthy performance needs to be sustained, consolidated, and carried forward with outcome-based enhancements in the Eleventh Plan.

TABLE 9.2.1
Physical Targets and Achievements

	Ninth Plan (2001–02)	Tenth Plan					
		Target for Terminal Year (2006–07)	2002–03	2003–04	2004–05	2005–06	2006–07
Originating freight (mt)	492.5	624	518.7	557.4	602.1	666.5	728.4
Freight net tonne km(billion)	333.2	396	353.2	381.2	407.4	439.6	475
Originating Passengers(million)	5169.3	5885	5048.2	5202.9	5475.5	5832.4	6352.1
Passenger km (billion)	494.2	625	515.4	542.1	576.6	616.6	691.8

Productivity

9.2.5 The spurt in traffic has been supported by a concomitant increase in the productivity of the assets. This quantum jump in the productivity of assets, including wagon and track utilization, has come about as a result of various initiatives. The increase in axle load on mineral routes, improved maintenance practices, and reduced detentions at terminals have all contributed significantly to higher wagon productivity. With the growth in volumes and the improved productivity, the unit cost of operations has been brought down. Improved productivity of assets over the Plan period is summarized below in Table 9.2.2.

9.2.6 There is a sustained improvement in wagon utilization from 2468 net tonne kilometre (NTKM) per wagon per day in the first year of the Tenth Plan to 2963 NTKM in its final year. The wagon turnround has come down to six days from seven days in the beginning of the Tenth Plan and eight and a half days in 1996–97. Track utilization improved markedly from 7.74 million NTKM per route km to 9.05 million NTKM per route km.

9.2.7 Significant improvements in managerial practices have underpinned the improvements in the productivity of human resources during the Tenth Plan, which increased from 0.26 million NTKM per employee to 0.33 million NTKM per employee by the fourth year of the Tenth Plan while passenger km per employee increased from 0.37 million to 0.47 million during the same period.

Policy Issues and Strategies for the Eleventh Plan

9.2.8 Indian Railways is at the threshold of a major change at the beginning of the Eleventh Plan. The key challenge before it is not attracting additional traffic, but rather meeting the accelerating demand for high-quality services imposed by a vibrant economy for which it has to take immediate and appropriate steps to augment capacity and deploy it optimally through new investment and tariff policies. The Railways also has to execute projects speedily and procure assets at a rapid pace by incorporating best practices in project implementation, production, and procurement of new assets.

9.2.9 The mid-term appraisal of the Tenth Plan document had noted that the Chinese Railways is carrying 4.5 times more freight than the Indian Railways, mainly due to the larger investments made in the Chinese Railways in expanding and strengthening the infrastructure which also contributed towards improvements in the productivity of the Chinese Railways. Indian Railways carries more passengers than Chinese Railways, but the longer term development of the Railways in India depends crucially upon its ability to

TABLE 9.2.2
Productivity Performance

Productivity Indicator	Ninth Plan	Tenth Plan			
	(2001–02)	2002–03	2003–04	2004–05	2005–06
Wagon Utilization					
NTKM/wagon/day (Broad Gauge [BG])	2223	2468	2574	2617	2872
Wagon km/wagon/day (BG)	191.6	204.6	187.8	204.5	211
Wagon turnround (in days) (BG)	7.2	7.0	6.7	6.4	6.1
Track Utilization					
NTKM/route km (million)	7.38	7.74	8.14	8.57	9.05
Passenger km/route km (million)	10.1	10.5	10.8	11.5	12.2
NTKM/Engine Day Online (Goods-BG)					
Diesel	167163	164713	199958	218045	279066
Electric	311061	326798	352669	415244	465375
Human Resources Productivity					
NTKM/employee (million)	0.24	0.26	0.28	0.31	0.33
PKM/employee (million)	0.35	0.37	0.40	0.43	0.47

move freight, in keeping with the needs of the growing economy, and at speeds and reliability determined by the need to be competitive. This is especially important given the greater energy efficiency of the Railways in the long-distance freight (Box 9.2.1).

Box 9.2.1
Expansion of Chinese and Indian Railways (1992–2002)— A Comparison

	China	India
New track (RKM)	13797	682
Track doubling (Kilometres)	9400	1519
Electrification (RKM)	8975	5192
Investment (billion $)	85	17.3
Freight (2003–04) (billion Net Ton Kilometres)	1724	381
Passenger (2003–04) (billion Passenger Kilometres)	478	541

Investments

9.2.10 In light of the huge arrears in replacement of over-aged assets in the early part of the Tenth Plan, a decision was taken to create a Rs 17000 crore SRSF of which Rs 12000 crore was to come from general revenues. As a result, the proportion of GBS had increased to 45% during the Tenth Plan as compared to 34% in the Ninth Plan and 23% in the Eighth Plan. With SRSF coming to a closure, the GBS would normally be expected to decline from this level in the Eleventh Plan. However, the projected levels of economic growth and the sharp rise in manufacturing output would necessitate that capacity augmentation of the Railways is supported by GBS to the maximum extent possible. Even so, the trend of increased reliance on internal resources (IR) and extra budgetary resources (EBR) witnessed in the last two years of the Tenth Plan would need to continue in the Eleventh Plan. For this to happen, innovative, non-traditional strategies and methods have to be adopted for garnering the resources to fund the higher levels of investment required for capacity augmentation of the system to meet the heightened demand for railways' services. The situation calls for concerted efforts to generate IR and EBR in light of the possibility that a significant proportion of the surpluses generated may have to be set aside for implementation of the Sixth Pay Commission recommendations, to meet the increased requirement of replacements and renewals, as well as the payment of increased dividend liability.

9.2.11 The scope for resource mobilization also needs to be enlarged by rationalizing the tariff structure of freight and passengers with a view to reducing the present cross-subsidization both within the passenger segment and also from the freight to the passenger segment. At present, there is excessive cross-subsidization from freight to passenger services. Specific areas have to be thrown open for private sector participation, including those through PPPs. The PPPs are projected to contribute over 9% of the total required investment of around Rs 215000 crore in the Railways during the Eleventh Plan, a sharp increase from the 0.4% private sector share in the Tenth Plan.

Renewals, Rehabilitation, and Replacements

9.2.12 A clear priority is achieving higher maintenance standards of the existing assets to sustain the 2006–07 levels of traffic of about 730 million tonnes. Renewals, rehabilitation, and replacements have to be accomplished with an overall objective of reduced asset failures and, even more importantly, improved safety. An investment of over Rs 60000 crore (at constant 2006–07 price) will be required during the Eleventh Plan to maintain existing assets by timely rehabilitation and replacements, as well as for modernization to improve their utilization levels. Such a strategy would enable the Railways to increase throughput from the existing level of assets.

Capacity Enhancement

9.2.13 Another key priority is to achieve a significant enhancement of the capacity given the expected growth in traffic. Until now the emphasis has been on incremental capacity augmentation. Recognizing the need for a major shift in the strategy for capacity augmentation, the mid-term appraisal of the Tenth Plan document had envisaged construction of Dedicated Freight Corridors (DFCs) on selected trunk routes. This has since been given effect to with the announcement of construction of DFCs separating freight traffic from passenger traffic on trunk routes. The proposal for capacity augmentation through construction of DFCs along the highly saturated freight routes is a major

prong of the new long-term strategy to provide premium services in freight and passenger. Passenger services on the existing trunk routes along these DFCs will also benefit from the release of capacity by freight movement but would require investments to improve speeds and capacity so that both quantum availability and quality of passenger services offered can be significantly enhanced (Box 9.2.2).

9.2.14 Additional capacity on other routes based on a route-wise planning and low-cost capacity improvements will be another prong of the Eleventh Plan strategy. Route-wise planning will enhance line and terminal capacity simultaneously, since inadequate terminals often are the binding constraints affecting the seamlessness of train movement.

9.2.15 With the quantum increase in both passenger and freight traffic during the last three years of the Tenth Plan and the projected increase in the Eleventh Plan, rolling stock availability will be a key factor. In addition to augmenting the existing production capacities, new production facilities for coaches, locomotives, and wagons would be required. These new production facilities would have to be capable of producing superior locomotives, coaches, wagons, and other rolling stock.

9.2.16 For successful implementation of all the capacity-enhancement projects, including DFCs, a crucial input is availability of sufficient capacity in terms of construction agencies and qualified human resources. Adequate awareness has to be created in the country so that appropriate agencies, namely, the technical institutions and the construction industry, prepare for the task of making available necessary technical human resources and acquire necessary capabilities through joint ventures, etc. Identification of financially viable 'bankable' projects with acceptable risk profiles would need to be coupled with a cogent and comprehensive approach to regulation that establishes the role and scope of regulatory institutions, and their relationship with the legislative and executive branches of the government and the consumers at large.

Strategy for Capacity Enhancement in the Short Term

9.2.17 The strategy in the short run should be focused on maximum utilization of the existing capacity by addressing the directional and seasonal variations in demand. Initiatives taken in the recent years for generating traffic in the traditional empty flow direction and managing seasonal fluctuations in demand using a system of differential pricing should be further strengthened and the response mechanism

Box 9.2.2
Dedicated Freight Corridors (DFCs)

In order to create capacity and improve quality of services, Dedicated Railway Freight Corridor Projects on Western and Eastern Routes were included in the Rail Budget of 2006–07. The Western corridor of 1469 km will connect Jawaharlal Nehru Port to Dadri and Tughlakabad in the North. The Eastern corridor of 1232 km will connect Ludhiana to Sonnagar via Dadri and Khurja, thus facilitating transfer from one corridor to another. The Eastern corridor will further get extended to Kolkata region to connect the proposed deep-sea port. The estimated cost of construction of both these corridors is expected to be around Rs 28000 crore and it is likely to take about five years for completion of these corridors and have a spill-over beyond the Eleventh Plan.

In order to obtain increased throughput and reduce the cost of operations, DFCs are designed to run double stack container trains with 25 tonne axle load running at a maximum speed of 100 km per hour.

An SPV (Dedicated Freight Corridor Corporation of India Ltd) has been formed to implement the DFCs Project. The SPV will plan, construct, and maintain infrastructure. It will also be responsible for operation of trains. The relationship between the Ministry of Railways and the SPV will be codified in a Concession Agreement which draws upon best practices worldwide. Feasibility studies and detailed planning for DFCs on the North–South, East–West, East–South, and South–South routes would also be taken up.

Construction of DFCs would reduce unit cost of transportation with substantial savings in operations and by increasing throughput for infrastructure. Coupled with improved reliability and quality of service, including more efficient inventory management, competitive advantage of Indian goods in the international market is expected to improve significantly.

The Western DFC is expected to also service an Industrial Corridor, for which necessary initiatives are being planned.

institutionalized, so that policy and operations' responses are dynamic and flexible.

9.2.18 The second important strategy would be investments in identified mineral routes and feeder routes to DFCs. It is envisaged that the entire 6973 km of iron ore route will be upgraded for running 25 tonne axle load trains during the Eleventh Plan period. This has already started in the terminal year of the Tenth Plan. Track and bridge structures will be strengthened concomitantly. It is also envisaged that 4220 km of existing feeder routes joining the DFC will be upgraded to 25 tonne axle load. With investments directed into identified mineral routes, it should be possible to switch over to 25 tonne axle load concurrently with availability of requisite rolling stock.

9.2.19 Finally, the investments in signalling improvements such as automatic signalling, introduction of intermediate block sections, block-proving axle counters, track circuiting, etc. coupled with induction of high power locomotives should also create additional capacity in the short run at low cost. Further, the improved wagons with the higher pay-load to tare ratio of around 4, as against the extant 2.6, should be inducted expeditiously to obtain the much needed additional capacity. Switching over to mechanized maintenance of track by investing in track machines would also free some of the capacity locked up in manual maintenance of the track. Reduction in asset failures would also be a part of the strategy to improve line capacity in the interim period.

Technology Upgradation

9.2.20 To keep pace with the technological developments in various aspects of the Railways sector, it is necessary to continuously upgrade the technology. In addition to pursuing the measures indicated above, measures such as introducing longer trains and optimization of coach capacities have to be fully explored.

9.2.21 Speed differential between the freight and passenger trains has to be narrowed down by inducting high-speed freight stock and upgrading freight terminals and their approaches to obtain additional capacity in the medium term as well as to increase the reliability of service in freight business.

9.2.22 Information technology applications hold the key to the Railways' sustained improvement in services and efficiency. Internet ticketing was introduced in August 2002 with the objective of providing tickets at the doorstep of the customer. Initially it was started in Delhi, which is now extended to over 200 cities. Further, in September 2005, e-ticketing was started as a pilot project in two trains, which is now extended to all trains. Booking of *Tatkal* tickets was also started through Internet in December 2005.The concept of 'ticket at doorstep' will have to be further developed for reserved, unreserved, and sub-urban tickets. An integrated Railway information system on real-time basis would be developed and implemented to provide information of train movement, ticketing, facilities on display systems on stations and trains, as well as through diversified media.

9.2.23 Freight Operation Information System (FOIS) which was sanctioned initially in 1984 was taken up in right earnest after detailed scrutiny in 1998–2003 and the first module of the two modules identified, that is, Rake Management System, is fully implemented and commissioned. Implementation of the FOIS has reached the next stage with the implementation of the second module, that is, Terminal Management System, in 489 locations and benefits will now begin to accrue to customers. FOIS will have to be extended to all loading points and be interfaced with customers' information systems, weigh bridges, etc. This is expected to be over during this Plan period.

9.2.24 Coach toilets are the main source of poor sanitation in railway premises. In order to prevent discharge from the toilets while the train is in railway station premises, speed actuated controlled discharge toilets and biodegradable toilets will be introduced in passenger coaches. In collaboration with IIT, Kanpur, efforts are already on to develop indigenous technology to produce fully environment-friendly toilets to suit Indian conditions, so that the discharge from coach toilets does not create unhygienic conditions all along the railway track.

Throw Forward

9.2.25 The Railways has a large number of ongoing projects, which require very large funds for completion

(Box 9.2.3). The requirement of fund for completing these projects under various categories is as shown in Table 9.2.3. At current prices, the total throw forward would be around Rs 65000 crore. In comparison with the position at the beginning of Tenth Plan, the maximum increase has been in the areas of new lines and doubling.

Box 9.2.3
Throw Forward—A Way Forward

Arising from operational necessity, works on doubling, electrification, and gauge conversion are to be completed in a time-bound manner. Due to scarcity of the available resources it is not possible to fix time frames for the completion of other throw forward works. However, works on new lines, accounting for almost 60% of throw forward's value, have been accorded priority gradings as a part of the mid-term review of the Tenth Plan in order to focus the available resources on such works which give immediate benefits and also meet national priorities. All pending works were, thus, categorized in order of their importance into four categories, and higher outlays are being provided to 'last mile' projects, 'operationally required' projects, projects of strategic importance, and projects taken up on cost-sharing basis. This has already started showing results with physical achievements matching the financial outlays, especially in respect of gauge conversion works.

TABLE 9.2.3
Throw Forward of Projects

Type of Projects	Estimated Throw Forward	
	Km	Rs Crore
New lines	8132	31519
Gauge conversion	7148	10417
Doubling	3213	7314
Electrification	1952	1080
Traffic facility works	325 (nos)	2044
Metropolitan transport projects	–	3820
Total		56194

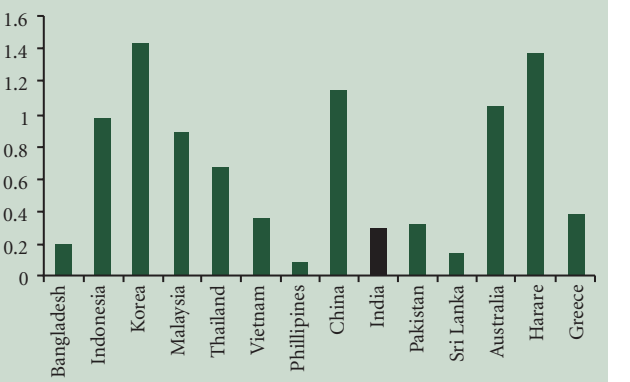
Tariff Regulating Mechanism

9.2.26 The Indian Railways has embarked upon a review of its accounting policies and practices to introduce a fully computerized accounting and MIS so as to generate costing data on commercial lines. The objective is to enable assessment of profitability of different operations and routes, provide specific cost information to be used for marketing purposes, and facilitate indexing of tariffs to input costs.

9.2.27 The fare–freight ratio, that is the ratio of passenger fare per km and freight rate per tonne km, in India is among the lowest in the world, indicating the extent of cross-subsidization from freight to passenger (Box 9.2.4). In addition, premium passenger services are priced very high vis-à-vis second class. This is not a viable strategy since the Railways are competing with air traffic for premier segment and the airline sector is strongly competitive. Reducing cross-subsidization within passenger fares and between the fares of passenger and freight is now an urgent necessity. In any case, Railways have to move towards aligning the fares with the costs in all modes and classes of traffic.

9.2.28 With the availability of more reliable and scientific data on costs, there will be a rational basis for arriving at costs for individual services within the passenger services as also for freight services. Therefore, the next logical step is to have a Tariff Regulating Authority to determine rail fares on a rational basis, after factoring in relevant issues of unavoidable losses on account of uneconomic lines and sub-urban services.

Box 9.2.4
Fare–Freight Ratio of World Railways



Source: World Bank Study.

Logistic Solutions

9.2.29 Railways have to play an increasing role in the integrated multi-modal transport system to capture the new traffic thrown up by the growing Indian economy. To realize this, Railways needs to seriously consider provision of complete logistic solutions to its freight customers, in addition to decreasing unit costs and providing superior services. It is proposed to develop logistic parks integrating bonded warehousing, logistic processing, commodity exposition, and logistic distribution. The key development is targeted at import/export logistic distribution facilitating international purchasers, third-party and fourth-party logistic companies, and logistic agencies.

9.2.30 Further, logistic hubs can be developed along or near important railheads through joint ventures between State Governments and Railways, through PPPs and direct private sector participation. These hubs will be strategically located to capture agro-industrial produce in the hinterland and to provide competitive transport to expand access to markets for industries in the covered areas. These hubs could be developed as mini-freight villages or as logistics parks depending on the turnover. In the event of a large turnover, there is scope for accommodating a gamut of value-added facilities such as warehousing, refrigerated store houses, cranes and other handling facilities, packing/repacking, assemble, repairs, maintenance, financial services, agro-marts, and electronic centres. These hubs can be developed through PPPs on Build–Own–Operate (BOO) basis as 24 × 7 service centres. For the promotion and development of logistical hubs, Railways should assume a central role and establish consultative machinery involving the major user industries and logistical service providers. Such a forum would also help the Railways to plan for capacity augmentation on a long-term basis.

High-speed Passenger Services

9.2.31 The Eleventh Plan strategy is to consolidate the share of Railways in passenger business, particularly, in long-distance and medium-distance segment by increasing the commercial speed of passenger trains, and introduction of fast services between metropolitan cities with peak speeds up to 150 km per hour from the present speed of 110–130 km per hour. The development of high-speed corridors, which are an

Box 9.2.5
Public–Private Partnership (PPP)

As on date, the Indian Railways have a large shelf of uncompleted projects whose completion would require about Rs 65000 crore. To meet the requirement of future growth of the Indian Railways, further new investment projects are required for which very large funds are needed. The magnitude of the task is huge and any neglect of the same is bound to lead to severe capacity limitations adversely affecting the competitiveness and growth of the economy.

It is estimated that the Indian Railways would not be able to generate sufficient funds internally, through borrowings and from budgetary support for meeting the investment requirements of the Eleventh Five Year Plan. The shortfall would be met through private investments in PPP projects. Additional investment from private sector is also expected through their investments in manufacturing facilities created as a consequence of partnerships with IR. Together it is expected that about Rs 20000 crore worth of investments would be done by private sector during the Eleventh Five Year Plan.

Private sector participation in container movement is already unfolding on a large scale after it was decided to introduce competition in this segment. Necessary Model Concession Agreement (MCA) has been finalized, agreements signed with 15 parties in January 2007, and the scheme has since been operationalized with seven new operators, excluding CONCOR, commencing operations by utilizing about 30 new rakes.

This policy is required to be taken forward by building in suitable guarantees and commitments from railways in order to enable the private operator to provide value-added container services and make investments in container handling facilities such as Inland Container Depots and Container Freight Stations (CFSs). Long-term commitments on transit time and access charges on the part of Railways would be necessary for stimulating private investments in the container logistics sector.

A range of PPP models have been identified which need further fine tuning. These include multi-modal logistics parks, upgradation of major freight and passenger terminal, construction of road over bridges (ROBs), Railway Optical Fibre Cable (OFC) network, consolidation of piece meal parcels into wagons and train loads, etc. A programme for re-development of 22 railway stations into world-class stations through the PPPs has already been initiated.

environment-friendly solution for high-speed passenger transport, will be explored on selected routes. This will be done through PPP route. Speeding up delivery of passenger services by utilizing Mainline Electric Multiple Unit (MEMU) and Diesel Electric Multiple Unit rakes would also be pursued with greater vigour. Trains would be augmented to 24 coaches on all important sectors.

Terminal Facilities

9.2.32 Terminal capacity is an important determinant of the carrying capacity affecting the flow of passenger and freight trains. Full benefits of the line capacity works cannot be derived until terminal constraints are removed. In order to make Indian Railways a world-class railway system, substantial improvements to the terminal facilities are required.

World-class Stations

9.2.33 Most of the railway stations and passenger terminals on the Indian Railway network were built several years back and are suffering from severe infrastructural inadequacies in handling the passengers. As the stations occupy the prime land in the heart of cities, they offer promising possibilities for their re-development by leveraging a part of the real estate development potential. A total of 22 stations have been identified which are located in metropolitan cities and major tourist centres for development through PPP route. The preparatory work for New Delhi and Patna stations through appointment of consultants has already been taken in hand.

Safety and Security

9.2.34 Improved safety is best achieved by upgrading technological aids together with improving reliability of assets, while minimizing human dependence. Elimination of collision through use of anti-collision devices, adoption of fire-proof coaches to reduce fire accidents, crash worthy coaches to reduce fatalities in case of accidents, and reducing level crossing accidents are all part of this Plan. Enhanced training to impart better skills in O&M of assets will also be the focus during the Plan. In order to improve the security of the passengers in general, and women and children in particular, efforts will be made to empower the Railway Protection Force by providing them modern equipment and weaponry as also through better training facilities and upgrading the information system.

Physical Targets for the Eleventh Plan

Freight Traffic

9.2.35 The freight traffic projections for the terminal year of the Eleventh Plan have been pegged at 1100 million tonnes of originating freight and 702 billion tonne km (BTKM) of transportation output. The projections for freight traffic are given in Table 9.2.4.

TABLE 9.2.4
Projection of Freight Traffic in the Eleventh Five Year Plan vis-à-vis Achievements in the Ninth and Tenth Plans

	2001–02	2006–07	2011–12
Originating freight (million tonnes)	492.5	728.4 (47.9)#	1100 (51.0)#
Freight tonne km	332.2	475 (43.0)#	702 (47.8)#

Note: # % increase over the previous Plan.

Passenger Traffic

9.2.36 Passenger traffic is expected to grow at a rate of about 5.5%. The projections for passenger traffic are given in Table 9.2.5. The Eleventh Plan will focus on reducing the cost of operations, developing attractive service packages, and adopting competitive pricing to safeguard the market share of upper-class rail travel against airlines.

TABLE 9.2.5
Projection of Passenger Traffic in the Eleventh Five Year Plan vis-à-vis Achievements in the Ninth and Tenth Plans

	2001–02	2006–07	2011–12
Originating passengers (million)	5169.3	6352.1 (22.9)#	8400 (32.2)#
Passenger km (billion)	494.2	691.8 (40.0)#	942 (36.2)#

Note: # % increase over the previous Plan.

9.2.37 To cater to the projected annual growth of non-sub-urban traffic at 8%–9%, it would be necessary to expand supply by increase in train services and augmentation of seating capacity of trains. Augmentation of train composition to 24 coaches, started in the Tenth Plan, would be continued and extended to other sectors.

Bridges

9.2.38 There are 127768 bridges of Indian Railways. Of these, 44% are more than 100 years old. Railways will undertake repair, rehabilitation, and rebuilding of bridges on the basis of their physical condition as ascertained during annual inspections.

Signalling and Telecommunication

9.2.39 More than 10000 Route Kilometres (RKM) still has obsolete overhead alignment-based communication system on certain routes. It is planned to speedily replace it with an Optical Fibre Cable (OFC) and quad cable-based communication system.

Electrification

9.2.40 During the Eleventh Plan about 3500 km of track will be electrified which is nearly double the Tenth Plan achievement of about 1800 km.

Energy Management

9.2.41 For the first time in the history of Indian Railways, direct power supply from the NTPC has been obtained for the Ghaziabad–Kanpur section yielding substantial savings of about Rs 50 crore per annum with relatively small investment of Rs 68 crore. Further, Railways is also exploring the possibility of buying power from NTPC or from other power utilities, through tariff-based competitive bidding, under Open Access System. Setting up of a 1000 MW captive generation power plant at Nabinagar in Bihar, a joint venture with NTPC, is also approved which is expected to be commissioned during this Plan period. To further the cause of clean and green energy, a 10 MW wind energy plant is being set up at Chennai to provide captive power to a Railway production unit.

Rolling Assets

9.2.42 Technological upgradation and modernization of rolling stock is a key element of the plan for rolling assets. Universal switch-over to 22.9 tonne axle load wagons from the present axle load of 21.3 tonne will lead to improved loadability of the wagons. Efforts will be directed to bring lighter and corrosion-resistant material to improve the payload to the tare ratio of wagons. Railways are also planning to introduce special types of wagons for movement of automobiles, bulk cement, fly ash, and hazardous chemicals. During the Eleventh Plan the proportion of high horsepower locomotives will be increased. The requirements are shown in Table 9.2.6.

TABLE 9.2.6
Eleventh Five Year Plan—Requirement for Rolling Stock

	Tenth Plan		Eleventh Plan Target
	Target	Actual	
Wagons (nos in FWUs)	65000	90554	155000
Electric locos (nos)	343	524	1800
Diesel locos (nos)	444	622	1800
BG conventional Coaches (VUs)	9160	10789	17500
EMUs/DEMUs/MEMUs (VUs)	2715	1413	5000

Note: EMUs = Electric Multiple Units; FWUs = Four Wheeler Units; VUs = Vehicle Units.

Metropolitan Transport Projects

9.2.43 The sub-urban services would require separation from main line systems in places like Mumbai. The emphasis in sub-urban services would be to increase peak time services and augment trains to 12 car rakes.

9.2.44 The Mumbai sub-urban services are severely strained and will be augmented with the capacity additions as part of the Mumbai Urban Transport Project (MUTP) works. The introduction of air-conditioned sub-urban coaches/trains will also be considered, if possible, through PPPs.

9.2.45 Mumbai Rail Vikas Corporation Ltd type model which is implemented for rail component of Phase II of the MUTP, wherein the State Government of Maharashtra has agreed for financing on the basis of Peak Cash Deficit Funding (a kind of viability gap funding [VGF] wherein the gap in debt service liability and the surcharge collection levied for servicing the debt is met by the concerned State Government) should be tried out for other sub-urban systems in Chennai, Kolkata, and Delhi. The first step would be to form a separate SPV for each of these sub-urban systems with the necessary mandate for modernization and upgradation of the existing system.

Physically Challenged and Senior Citizens

9.2.46 All mail and express trains would be provided with specially designed coaches which have separate

compartments and suitably designed toilets for the physically challenged and senior citizens. In addition, trains having air-conditioned accommodation would also be provided with air-conditioned compartments for physically challenged persons.

North East Region (NER)

9.2.47 Providing rail connectivity to all States in the NER is a national priority. It has been decided to create a dedicated fund for the National Projects of North East with 25% contribution from the GBS of Railways and the remaining 75% to be provided as additionality from the general revenues. With these scaled-up funds, Railways has been directed to ensure completion of all the sanctioned works within the Eleventh Plan period.

Resource Mobilization

9.2.48 For the economy to grow at 9% per annum over the Eleventh Plan period, it is targeted to increase the GCF in the infrastructure from 5% of GDP at the start of the Tenth Plan to around 9% at the end of the Eleventh Plan. For this to be achieved, private sector participation in a big way is imperative. The areas identified for private sector participation include new manufacturing units, multi-modal logistics parks, construction of high-speed passenger corridors, induction of privately owned rolling stock of container operators, commercial development of land and air spaces, port connectivity works of the private ports, ore lines for steel plants, upgradation of major freight and passenger terminals, construction of road over bridges (ROBs), and railway OFC network.

9.2.49 To garner additional internal resources for bridging the gap between the projected requirement and the availability of resources, Railways may consider levying a 'developmental surcharge' on passenger as well as freight traffic to fund the DFCs as also upgradation of existing network to run high-speed passenger trains.

9.2.50 The total projected outlay for the Eleventh Plan for the Ministry of Railways is Rs 194263 crore at 2006–07 price (Rs 219717.36 crore at current price) which includes Rs 44263 crore of GBS at 2006–07 price (Rs 50063.36 crore at current price) including Rs 3750 crore at 2006–07 price (Rs 4241.36 crore at current price) of cess accruals. The scheme-wise break up of the GBS at current prices is given in the Appendix (Volume III). In addition, the sector is expected to generate private sector investment of Rs 20000 crore during this period. Further, the additional GBS needed for the National Projects of J&K and North East during the Eleventh Plan period would be of the order of Rs 12000 crore and this would be made available during the course of the year, as in the past. This should meet the requirement of Railways. However, if there is a need to further enlarge the Plan size, this would be accomplished by mobilizing necessary additional IEBR and private investments during the course of implementation of the Plan.

9.3 ROADS

9.3.1 A good road network is a critical infrastructure requirement for rapid growth. It provides connectivity to remote areas; provides accessibility to markets, schools, and hospitals; and opens up backward regions to trade and investment. Roads also play an important role in inter-modal transport development, establishing links with airports, railway stations, and ports.

9.3.2 India has one of the largest road networks in the world, of 33.14 lakh km, consisting of (i) national highways (NHs), (ii) State highways (SHs), (iii) major district roads (MDRs), and (iv) RRs that include other district roads and village roads. NHs with a length of 66590 km comprise only 2.0% of the road network but carry 40% of the road-based traffic. SHs with a length of about 137000 km and MDRs with a length of 300000 km together constitute the secondary system of road transportation which contributes significantly to the development of the rural economy and industrial growth of the country. The secondary system also carries about 40% of the total road traffic, although it constitutes about 13% of the total road length. RRs, once adequately developed and maintained, hold the potential to provide rural connectivity vital for generating higher agricultural incomes and productive employment opportunities besides promoting access to economic and social services.

9.3.3 Despite its importance to the national economy, the road network is grossly inadequate in various

respects. It is unable to handle high traffic density and high speeds at many places and has poor riding quality. Besides speedy implementation of the Golden Quadrilateral (GQ) and the North–South and East–West (NS–EW) corridors, addressing the deterioration of large stretches of NHs and other improvements in the road network are, therefore, to be accorded high priority in the planning process.

Review of the Tenth Plan

9.3.4 Against an outlay of Rs 59490 crore in the Tenth Plan for the road sector, the expenditure was Rs 42577.43 crore (Rs 48593.95 crore at current price). The overall financial and physical performance is given in Annexure 9.3.1. The scheme-wise and year-wise outlay and expenditure are given in Annexure 9.3.2.

National Highways (NHs)

9.3.5 In absolute terms, there has been considerable growth in the NHs network since Independence. Table 9.3.1 details the various achievements over select periods and Annexure 9.3.3 provides Plan-wise details of increase in the NHs network.

9.3.6 The progress of four-laning, two-laning, strengthening of roads, and construction of bridges during the Tenth Plan period has been satisfactory, keeping in view the availability of funds. There has, however, been some shortfall in construction of bypasses, primarily due to the time-consuming process of land acquisition and shifting of utilities in the case of bypasses. A large number of deficiencies, however, remain in the network, in terms of inadequate capacity, insufficient pavement thickness, weak, narrow and distressed bridges/culverts, ROBs, etc. Annexure 9.3.1 provides an overview of the physical targets and achievements of normal NH works, Border Roads Development Board (BRDB) works, and works by the NHAI during the Tenth Plan period.

9.3.7 Despite the progress reported above, the NHs are not what they should be. Only 12.5% of their total length is wider than two lanes (as on 31 March 2007), leading to heavy congestion. Shortfall in construction of bypasses, inadequate capacity, insufficient pavement thickness, and weak, narrow, and distressed bridges/culverts as well as ROBs are some of the other deficiencies. Upgradation of large segments of SHs to NHs under the NHDP during the Ninth and Tenth Plans, although impressive, has not kept pace with the demand for road transportation, besides spreading available resources too thinly across competing projects. The result is poor maintenance and riding quality of NHs network, particularly of the non-NHDP section. Also many of the NHs declared during the last two Plan periods were substandard, resulting in further aggravation of the problem.

National Highway Development Programme (NHDP)

9.3.8 The Committee on Infrastructure (CoI) has approved a massive phased programme for the improvement and development of NHs during the period 2005–12. This programme envisages an investment of Rs 236247 crore. Although, the NHDP envisages award of concessions/contracts by 2012, the completion of

TABLE 9.3.1
Achievements on National Highways

Period	Total Length# (km)	Widening to Two Lanes (km)	Widening to Four Lanes (km)	Strengthening of Pavement (km)	Major Bridges (nos)
1947–69	24000	14000*	Nil	Nil	169
1969–90	33612	16000	267	9000	302
1990–2002	58112	3457	1276	7000	87
Tenth Plan (2002–07)	66590	4177	6769**	8377	611***
Total	–	37634	8312	24377	1169

Note: # Length at the end of the period.

* Includes 6000 km which were already two-lane at the time of designation as NHs.

** Includes 216.62 km which have been six- or eight-laned upto the Tenth Plan.

*** This does not include the bridges constructed/rehabilitated by NHAI under the stretches of NHDP.

part of Phase III and Phases IV, V, VI, and VII is expected to be accomplished only by the middle of the Twelfth Plan.

9.3.9 NHDP Phase I consists of the GQ, port connectivity, and 962 km of NHs covered under NS–EW corridor of NHDP Phase II. All works on GQ have been awarded, but there have been some slippages in its completion. Against the total length of 5846 km of GQ, 5602 km, that is 95.82%, have been four-laned, thereby leaving a balance of 244 km for completion. Progress of various segments of the GQ is given in Table 9.3.2.

9.3.10 The port connectivity project envisages improvement of 380 km of NHs connecting 10 major ports. Till date, the works on Kandla, Mormugoa, Phase I; JNPT, Phase I; and Vizag ports have been completed. By end-August 2007, four-laning of about 159 km roads of port connectivity and 322 km of other NH had been completed. Improvement of about 215 km roads of port connectivity and 620 km of other NH is under implementation and the balance length of 6 km of port connectivity and 20 km of other NHs is yet to be awarded.

9.3.11 Under NHDP II, by end-August 2007, 1418 km of the NS–EW corridors had been four-laned out of a total length of 7300 km (7200 km at present), that is 19.42% of the total. Work is in progress over a length of 4903 km, while work for the balance 821 km is still to be awarded. The target for substantially completing the NS–EW corridor project is December 2009.

9.3.12 The major reasons for shortfalls in fulfilling the targets fixed during the Tenth Plan period include, inter alia, delay in land acquisition, obtaining environment and forest clearances, getting clearance of Railways for ROB designs, shifting of utilities, local law and order problems, and poor performance by some contractors.

9.3.13 In respect of NHDP III, which initially envisaged four-/six-laning of about 10000 km (subsequently enhanced to 12109 km) on build, operate, and transfer (BOT) basis, the first phase covering 4815 km is expected to be completed in December 2009. Four-laning in a total length of 126 km road length has been completed in NHDP III, the work is in various stages of progress over an aggregate length of 1866 km, and work aggregating to 2823 km is yet to be awarded. The second phase of NHDP III, which has also been approved, involves preparation of DPR for the balance length of about 7294 km and is targeted for completion by December 2013.

9.3.14 Approval of NHDP IV for widening of 20000 km to two lanes with paved shoulders as well as for NHDP VII comprising construction of ring roads of major towns, bypasses, flyovers, etc. is pending.

TABLE 9.3.2
Corridor-wise Details of Progress on the Golden Quadrilateral as on 31 August 2007

Corridor	Four-laned	Under Implementation		Total Length (km)
	Length (km)	Length (km)	No. of Contracts	
Delhi–Kolkata (NH-2)	1364 (92.15)*	89	13	1453
Kolkata–Chennai (NH-5, 6, and 60)	1568 (93.11)	116	6	1684
Mumbai–Chennai (NH-4, 7, and 46)	1251 (96.97)	39	6	1290
Delhi–Mumbai (NH-8, 76, and 79)	1419 (100)	–	–	1419
Total	5602 (95.82)	244	25	5846

Note: Figures in parenthesis denote percentages.

9.3.15 Under NHDP V, out of 6500 km to be six-laned, two projects covering 148 km have already been awarded, leaving a length of 6352 km still to be awarded as on 31 August 2007.

9.3.16 NHDP VI which has also been approved relates to construction of 1000 km of expressways with full access control on new alignment. The Vadodara–Mumbai corridor (400 km) on NH-8, the highest density corridor, has been prioritized and is likely to be awarded by 2008–09. The balance 600 km will be selected out of the other high density corridor routes identified on the basis of traffic volume. The status of physical parameters of NHDP and other roads, including port connectivity projects, is given in Table 9.3.3.

9.3.17 The approved Special Accelerated Road Development Programme for the North Eastern (SARDP-NE) Region, which envisaged improvement of about 7616 km of road length (3251 km NH and 4365 km of State roads (SRs)/roads of strategic importance), has been subsequently enhanced to 8737 km of road length (3846 km of NHs and 4891 km of SRs/roads of strategic importance). This is to be undertaken in two phases. Implementation of Phase A of SARDP-NE aggregating to 2304 km as also initiating action for preparation of DPRs under Phase B for 6433 km has been approved. A High Powered Inter-Ministerial Committee (HPC) has been set up for co-ordinating the programme, ensuring avoidance of overlapping of various proposals, and sanctioning of individual sub-projects under SARDP-NE. The HPC has so far approved proposals in an aggregate length of 571 km at an estimated cost of Rs 1424 crore covering mainly Assam, Manipur, and Sikkim. The DPRs for the other stretches are under preparation. A provision of Rs 9562 crore (Rs 10814.83 crore at current price) has been made during the Eleventh Plan for this important initiative of road connectivity in the North East.

9.3.18 Regular monitoring of financial and physical progress of works is carried out at various levels with a view to removing bottlenecks. Several initiatives have been undertaken to expedite the implementation of contracts and make improvements in its internal processes, some of which are detailed in Box 9.3.1.

State Highways (SHs) and Major District Roads (MDRs)

9.3.19 The present condition and stage of development of the secondary network varies widely across States. Though reasonable in terms of size, the quality of SHs and MDRs is particularly worrisome. This is mainly because the funds for the development of this secondary system are very inadequate. The NHs and RRs are provided with reasonable funds for their development at the Central level, while the RRs also receive some share at the State level. In the process, the secondary system of roads is neglected.

9.3.20 The result is that there are several deficiencies in the existing SHs and MDRs as a result of (i) inadequate width of carriageway in relation to traffic demand; (ii) weak pavement and bridges; (iii) congested stretches of SHs and MDRs passing through cities/towns; (iv) poor safety features and road geometrics, and inadequate formation width in hilly and mountainous region; (v) missing links and bridges, and (vi) several railway level crossings requiring urgent replacement with ROB/road under bridge (RUB).

TABLE 9.3.3
Status of NHDP and Other NHAI Projects as on 31 August 2007

Project	Length (km)	Already Four-laned (km)	Under Implementation		Yet to be Awarded
			Length (km)	No. of Contracts	
Golden Quadrilateral	5846	5602	244	25	–
North–South/East–West	7300	1418	4903	148	821
Port Connectivity	380	159	215	8	6
Others	962	322	620	16	20
NHDP IIIA	4000	126	1866	31	2008
NHDP V	6500	–	148	2	6352
Total	24988	7627	7996	230	9207

Box 9.3.1
Initiatives taken to Expedite Completion of Quality Road Projects

- Standard format for acquisition of land approved by Ministry of Law, based on which Department of Road Transport and Highways (DoRTH) are to take action on specific proposals for land acquisition.
- For resolving problems in pre-construction activities, regular follow-up meetings are being held with senior officials and specifically designated nodal officers of State Governments.
- In pursuance of decision of CoI, an Empowered Committee of Secretaries has been constituted under the Cabinet Secretary to address Inter-Ministerial and Centre–State issues regarding land acquisition, utility shifting, environmental clearance, etc.
- MOU signed with M/s IRCON for speedy construction of ROBs.
- Works Manual incorporating the Guidelines for procurement of works and consultancy services, compiled by NHAI in July 2006, will guide procurements and management of contracts, including under PPP Projects.
- Action has been taken against defaulting civil contractors: 14 contracts terminated and 17 contractors declared non-performers.
- For ensuring preparation of quality DPRs for civil works, provisions made for peer review, 10% performance guarantee, and penalty for delays and variation of quantities of more than 15%.
- DPR Consultants are now required to co-ordinate at field level with Project Implementation Units (PIUs), NHAI, local officers, and local residents at every stage of preparation of DPR. Proof Consultants are to review the DPR to ensure full compatibility with project requirements, timelines, and detailed guidelines.
- DPR contracts to provide for mandatory continuation of certain key personnel of DPR consultants for a period of at least three to four months after award of civil contracts for technical co-ordination.
- JV partners to compulsorily submit performance security separately from each partner's bank account to the extent of their participation in JV.
- Steps taken to improve cash flow problems of contractors by granting interest bearing discretionary advance at the request of contractor, release of retention money against bank guarantee of equal amount, deferment of recovery of advances (on interest basis), and relaxation in minimum Interim Payment Certificate amount.

9.3.21 The existing road network is under severe strain due to traffic growth, overloading of vehicles, and paucity of funds for road maintenance. A broad assessment shows that over 50% of SHs and MDRs network have poor riding quality. According to one assessment, losses due to poor condition of these roads would be around Rs 6000 crore per annum.

9.3.22 Although, efforts have been made by several States to encourage and attract private sector financing in augmenting capacity of roads and provision of bridges, ROBs, and bypasses, the resources have remained a major constraint in the execution of the programmes for SRs during the Tenth Plan. Other constraints include, inter alia:

Thin Spreading of Resources

- More projects are sanctioned than can be undertaken within the available resources, leading to spreading of available funds thinly and resulting in time and cost overruns.

Delay in Pre-construction Activities

- Work has at times been awarded without acquiring full land for the project. This has affected obtaining the environmental clearance and shifting/removal of utilities.

Weak Management by Contractors

- Although, several measures have been taken by the contracting industry to acquire state-of-art equipment and procure good technical and managerial staff, considerable scope exists for improvement in achieving project management excellence, proper scheduling of human resources, and equipment resources.

Poor Implementation Capacities

- The State Public Works Departments (PWDs) are required to be reoriented for the current needs of modern technology and commercial management principles. There is a need to improve the capacity for planning, designing, and execution of works to

meet the transport demand of users in many States. Considerable scope also exists for enhancing the training arrangements of engineering personnel. Side-by-side contracting industry and consultancy sector also need to grow on healthy lines.

Rural Roads (RRs)

9.3.23 To boost the rural connectivity, a rural roads programme, the PMGSY was launched as a 100% CSS. It aims to provide all-weather roads by 2003 to habitations with a population of 1000 and above, and by 2007 to those with a population of 500 and above. In respect of hilly/desert/tribal areas, it aims to link habitations with a population of 250 and above.

9.3.24 However, despite all efforts about 35% of all habitations still remain to be connected by all-weather roads. Table 9.3.4 details the progress made in physical parameters of PMGSY by end-March 2007. As may be seen, only 21% of the habitations have been actually connected so far, although 24% were targeted during the Tenth Plan period. To address this slippage, the PMGSY has been re-phased to achieve time-bound targets of rural connectivity by folding it into the Bharat Nirman Programme (initiated in 2005–06). It aims to connect all 1000-plus habitations in rural areas (500-plus for hilly and tribal areas) by 2009. The Bharat Nirman Programme also envisages a massive scaling up of the programme in terms of habitation, connectivity coverage, construction targets, and financial investment.

TABLE 9.3.4
Connectivity Status under PMGSY (as on 31 March 2007)—Targets versus Achievements

Population Category	No. of Eligible Habitations	Target up to Tenth Plan	No. of Habitations Connected
1000 and above	60030	25371	20478
500 and above	79208	14854	13193
250 and above	39530	2511	3816
Total	178768	42736	37487

Issues in the Construction and Maintenance of Roads

Road Maintenance

9.3.25 The road network built at a huge cost needs to be maintained properly to prevent disintegration and deterioration, ensure its continuous utilization in an optimum manner, and ensure road safety to users. However, maintenance of roads, being a non-plan activity, has tended to be neglected in the face of available financial resources. A study by the World Bank estimated that US$ 45 billion invested in main roads in 85 countries had been eroded over the previous 20 years. In India too, some of the excellent roads, constructed with International Development Association loan four decades back, have been reduced to a very poor condition. As the Twelfth Finance Commission has observed, '…it is far more important to ensure that assets already created are maintained and yield services as originally envisaged than to go on undertaking commitments for creating more assets…'. What is important is that repair activities, if required, on the road are to be taken up at an appropriate time, as the rate of progression of deterioration of roads increases rapidly once the deterioration starts. The vehicle operating cost on highways, which is a major component of the total transport cost, is entirely dependent on the condition of the roads. A rupee spent on maintenance saves two to three rupees in vehicle operating cost, besides providing a very cost-effective option to improving traffic flow. Although attention has been given to maintenance work in the Tenth Plan period, there is compelling need to give it overriding priority with increased emphasis on higher standards so as to reduce the frequency of reconstruction.

9.3.26 The maintenance requirement of the high density corridor of NHs under construction and post-implementation is provided by NHAI. However, the non-NHDP NH sections, which are maintained by State PWDs, are poorly managed, primarily because the funds made available to them for maintenance are well short of the requirement as per norms. For NHs, the DoRTH gets only 40% of the total funds required for maintenance of NHs, as per the specified norms. The year-wise details of shortfall are given in Table 9.3.5.

9.3.27 Maintenance of SHs and MDRs has also been suffering from paucity of resources made available for the purpose. Keeping this in view, the Twelfth Finance Commission allocated Rs 15000 crore for maintenance of roads and bridges in the entire country during the period 2006–10. This amount is distributed to the

TABLE 9.3.5
Shortfall in Funds for Road Maintenance in the Tenth Plan

(in Rs Crore)

Year	Requirement as per Norms	Amount Provided	Shortfall	Shortfall (%)
2002–03	2200.00	800.00	1400.00	63.64
2003–04	2200.00	731.74	1468.26	66.74
2004–05	2480.00	745.56	1734.44	69.94
2005–06	2480.00	868.10	1611.90	65.00
2006–07	2480.00	814.38	1665.62	67.16

States on the basis of their road length, with appropriate weights being assigned to different type of roads. For rural roads under PMGSY, there is provision for maintenance for five years following the completion of a project although the long-term issue of maintenance has not been addressed so far.

9.3.28 Besides inadequacy of resources, management of roads is unsystematic and inspections irregular. Maintenance work is done departmentally with disproportionate allocation spent towards the gang establishment. Modern mechanized equipments for road maintenance are not used to the desired degree. There is weak accountability and poor monitoring of the maintenance activities.

9.3.29 The first task is to ensure that the allocation for repair and maintenance is adequate. The Central Road Fund Act 2000, which gave statutory status to the Central Road Fund (CRF), clearly specifies that the fund be meant, inter alia, for development and maintenance of NHs. Despite the clarity in the statutory provision, the entire share meant for the NHs has been appropriated for the NHDP programmes for development and further upgradation of roads. Since maintenance of existing assets is more important than the creation of new ones, all alternatives for making resources available for maintenance must be considered, including possible earmarking of a fixed proportion, say one-third, of the NH share of road cess for maintenance. Likewise, State Governments may have to consider supplementing the allocation for road maintenance from the Twelfth Finance Commission with the State share of road cess. Beginning with the Eleventh Plan, but increasingly in future Plans, resources will have to be found for maintaining the substantial road assets being created in the PMGSY, bearing in mind that the road cess share for rural roads has already been pre-empted for original construction for many years.

9.3.30 Additionally, in NH projects under BOT mode, maintenance is taken care of during the period of concession. For other tollable roads, the Model Concession Agreement (MCA) for Operation, Maintenance, and Tolling (OMT), published by Planning Commission, should be adopted. For non-tollable roads on NHs, SHs, and MDRs, long-term maintenance contracts should be introduced. Other steps to be taken include adoption of Pavement Management Systems (PMS), outsourcing of work, increased mechanization, corridor management, and enforcement of the Control of National Highways (Land and Traffic) Act 2002 (Box 9.3.2).

Modalities for Execution of a Road Project

9.3.31 The problems of development of road networks are diverse and future requirements are of a formidable magnitude. Therefore, the strategy for development of roads would have to vary keeping in view the nature of problem and the development. It has been decided to award all contracts for high-density corridors under NHDP III onwards only on BOT basis, with traditional construction contracts awarded only in specified exceptional cases. However, NHs characterized by low density of traffic and passing through far flung, remote, or strategically important areas would be developed primarily through budgetary resources.

9.3.32 During the Tenth Plan, the total quantum of private sector investment on NHDP has been Rs 6367.25 crore, as against a target of Rs 7580.27 crore. The shortfall in its achievement, especially during 2006–07 (Rs 1578 crore against a target of Rs 2243 crore) is attributable mainly to the teething problems encountered while establishing an appropriate policy and regulatory framework for the PPPs, including their institutional mechanism. However, given the complexity of the PPP contracts and the exposure of the government in such contracts, some standardized structures that provide predictability and mitigate risk to private capital have been put in place. Thus, MCA for BOT projects has been developed to facilitate

Box 9.3.2
Modernization of Maintenance Management

- PMS incorporating a rational method of assessment of distress and decision support system for maintenance activities needs to be introduced for productive use of limited resources. Inventorization programme, including the Road Information System, may be used for PMS.
- Use of machines for repair of distress in pavements and mobile inspection units for proper inspection/distress in bridges to improve maintenance culture should be encouraged.
- Maintenance works hitherto being done departmentally should be outsourced to the private sector to enhance efficiency. Concepts involving OMT contracts need to be extended to NHs with State PWDs.
- Corridor management, including engineering and non-engineering experts, is needed for the proper management and maintenance of NHs section. This would include:
  - Maintenance of roads and bridges to the desired standard.
  - Tackling safety hazards and traffic bottlenecks.
  - Traffic management.
  - Collection of users' fee.
  - Incidence management.
  - Land management.
- Steps need to be taken for enforcing the necessary provision of the Control of National Highways (Land and Traffic) Act 2002, which came into force from January 2005 for safe and speedy movement of traffic on NHs. The Highways Administration has already been established for its enforcement.

speedy award of contracts and the roll out of projects are being accelerated. Besides, MCA for OMT has been published by the Planning Commission. The MCA for Annuity Projects is presently under finalization. The initiatives taken in order to facilitate private sector investment are given in Box 9.3.3.

9.3.33 Although, private sector investment would show an increase during the Eleventh Plan, there would undoubtedly be a limit to road stretches that can be awarded on BOT (Toll) basis. In this mode of delivery, the private sector takes a market risk as the concessionaire not only builds the road and maintains it during the concession period, but also charges toll to recover the cost of construction and maintenance. In view of the uncertainty of future traffic flows and in the cases where toll earning may not fully cover the capital cost, the concessionaire is allowed a VGF of upto

Box 9.3.3
Initiatives taken to Facilitate Private Sector Investment

- In order to maximize the volume of investments in the road sector, given the limited availability of public resources or the need to use them for development of roads in backward/remote areas, it has been decided that all the sub-projects in NHDP Phase III to Phase VII would be taken up on the basis of PPP on BOT mode.
- The government has announced several incentives such as tax exemptions and duty-free import of road-building equipment and machinery to encourage private sector participation.
- The MCA for NHs, which was approved by CoI in 2005, has now been adopted for implementation of PPP projects by Ministry of Shipping, Road Transport, and Highways (MoSRTH)/NHAI; the MCA for SHs has been published by the Planning Commission.
- A review of tolling policy in respect of NHs has been concluded and the report, once finalized, would serve to impart greater certainty in revenue projections for concessionaires.
- Manuals of Standards and Specifications for four-laning and six-laning of NHs through PPPs are under finalization by DoRTH. Adoption of these manuals would reduce project preparation time as project specific manuals would no longer be needed.
- The substantial completion of NHDP Phase I, that is GQ, has called for a shift in emphasis to corridor management so as to deliver maximum throughput in terms of speed and traffic volume, while minimizing operational cost and enhancing road safety. In this regard, an MCA for O&M of Highways has been published by the Planning Commission.

40% of the project cost based on competitive bid for the lowest subsidy. Some projects can also be taken up on BOT (Annuity) mode of delivery basis, wherein tolling is not an integral part of the project and the project is, therefore, essentially a road construction and maintenance arrangement that involves deferred payment by the government. It may not be difficult to find concessionaires willing to take up the project on BOT (Annuity) basis. This mode of delivery, which is not classical PPP, is costlier, and should be the least preferred option.

Expressways

9.3.34 Traffic conditions on the stretches other than those that would be taken up under NHDP VI, whether of two-lane, four-lane, or six-lane, are substantially short of world standards. The mix of motorized and non-motorized traffic on these roads is a huge hurdle. These roads pass through habitations and pedestrians' traffic impedes vehicular traffic flow. Bypasses have been built for some cities but ribbon development and roadside eating establishments abound. In the absence of adequate roadside amenities, roads are also used for parking by trucks encroaching upon the ROW. Intersections have been provided on these highways to enable vehicles to take a U-turn at different places. Vehicles standing in the middle of the road, waiting for the oncoming traffic to stop before turning around constrain the traffic flow. Worse, since there is no restriction on access, it is a common practice all over the country for vehicles to move in the wrong direction in order to avoid driving to the next intersection and coming back.

9.3.35 Another impediment is the stoppage of vehicles at the check posts at State borders even when the vehicle is merely transiting the State. Vehicles moving on inter-state routes remain stationary about 40% of the time in the process of being thus inspected. The World Bank has estimated that truck delays at checkpoints costs the Indian economy anywhere between Rs 900 crore to Rs 2300 crore.[1]

9.3.36 The cumulative result of all deficiencies is that even when the road surface is good and has adequate width, vehicles move at a slow speed. Trucks (with one or two drivers and one helper) travelling from Delhi to Mumbai (1419 km) take three days and those from Delhi to Bangalore (2019 km) four to five days. According to the same World Bank study, 'US equivalent transit times, with one driver operating legally would be two and three days (actually second and third morning), respectively. If the US carrier used two-driver teams, a day would be cut from each movement.' On the average, Indian trucks are used for 60000 km to 100000 km a year, which is less than a quarter of those in developed countries.

9.3.37 A study group of the Ministry of Shipping, Road Transport, and Highways (MoSRTH) set up during the Ninth Plan proposed a total expressways network of about 15600 km by the year 2020 with broad phasing as shown in Table 9.3.6.

TABLE 9.3.6
Phasing of Expressway by the Study Group of MoSRTH

Year	Cumulative Length (km)
2005	4900
2010	10500
2015	14100
2020	15600

More recently, the Tenth Plan Working Group on the road sector had observed 'It is strongly felt that segments of highways where traffic levels in the next five to seven years are assessed to be justifying a six-lane facility (considering both local and long distance inter-city traffic) say traffic exceeding 60,000 PCUs [Passenger Car Units] per day, it would be more prudent to think in terms of an Expressway than opting for widening of existing highway. The need of traffic in the interim period should be met by provision of paved shoulders along existing roads. Maharashtra State provides a good example of the initiative taken by them in going ahead with the construction of Mumbai-Pune expressway.' In 2005, the CoI approved a plan for the construction of NHs during the period 2005–12, which included the construction of 1000 km of expressways under NHDP Phase VI.

[1] *India Road Transport Service Efficiency Study*, World Bank, 2005.

9.3.38 In order to provide world-class road infrastructure during the Eleventh and Twelfth Plans, the NHDP Phase VI would need to be substantially scaled up. Access-controlled expressways best serve to overcome the deficiencies of NHs. Even checking on inter-state traffic can be minimized by requiring that the checks be carried out only at the time of entry into or exit from the expressway network. It is, therefore, necessary to formulate a comprehensive Master Plan for the construction of access-controlled expressways on new alignments and then proceed with land acquisition. Active participation and necessary financial support, especially for acquisition of land by the State Governments, would be essential for developing such expressways. A blueprint for the development of 15600 km of expressways, which may include the GQ and NS–EW corridors is required, using modern scientific methods to determine alignments and avoid habitations as far as possible. The establishment of an Expressways Authority of India to implement the scheme should be considered by the Ministry.

Need for Studying the Capacity of Existing Roads and Revision of Capacity Norms

9.3.39 The design service volume norms that have been developed quite some time back have been used for the purpose of planning. A study on updating of road user cost data (July 2001) carried out by Central Road Research Institute (CRRT) indicates that these norms, particularly those relating to four-lane, may be under-estimated. As a matter of fact, no systematic study has ever been undertaken to determine the capacity of multi-laned roads. The reduction in the difference of speed of various vehicles, change in the mix of traffic as well its pattern, etc., may also have favourable impact on the capacity of various categories of roads. Thus, there is a need to initiate a study on the capacity of highways depending upon the carriageway/roadway widths, etc.

Supply Side Constraints

9.3.40 Apart from the resource constraints, the limited absorptive capacity of certain States, inadequate institutional and implementing capacities, availability/capacity of local contracting and consulting services, and availability of raw materials and human resources are some of the important supply side constraints, especially when a number of competing road projects are under implementation under various initiatives such as the Bharat Nirman Programme, RSVY, etc. The State Government may depute a dedicated team of officials to strengthen and expedite the land acquisition process for projects under NHDP.

9.3.41 The measures to strengthen institutions responsible for developing and maintaining roads, such as NHAI, State PWDs, and Border Roads Organization (BRO), are underway. These include restructuring the NHAI and training technical officers in BRO in project preparation, new specifications, and construction and maintenance technologies. State PWDs need to reorient themselves to meet the challenges from heightened emphasis on private sector participation and large-scale projects funded by multi-lateral agencies. Although, the account codes and works manuals in the State PWDs are well developed, these need to be reviewed and synchronized with upgraded systems adopted at the Central level.

9.3.42 Although, Programme Implementation Units (PIUs) have been established at the district level under PMGSY for planning and executing rural road projects, a single specialized nodal agency, for State-level co-ordination, with responsibility for overall policy, planning, and management of RRs is desirable. As ownership of RRs will rest with the PRIs eventually, capacity is required to be built at the grass-root level by qualified manpower and training.

9.3.43 For RRs, which are essentially low cost roads, use of local materials which are cheap and involve minimum haulage should be maximized. The use of non-conventional road construction material such as industrial wastes and by-products should also be promoted.

Integrated Development of Road Network

9.3.44 The State Governments should consider formulation of an integrated transport plan for development of their road network. The Centre is providing funds for the balanced development of the SRs from the CRF. In this context, it may be mentioned that the SARDP-NE is a major initiative, not only for improving connectivity in hilly/remote areas

but also for ensuring integrated development of road works.

Goals and Objectives for the Eleventh Plan

9.3.45 The main thrust is to create world-class road infrastructure, with the objective of improving mobility and accessibility while reducing the cost of transportation. The expanded NHDP when implemented will bring about a major improvement in the riding quality and capacity of around 46000 km of arterial roads out of a total of 66590 km of NHs, which carry around 40% of the road traffic. Some adjustment may be necessary in the NHDP programmes keeping in view the availability of resources. Out of the 20000 km originally envisaged under NHDP Phase IV, it may be possible to take up 6800 km through the BOT route during the Eleventh Plan. The remaining length of roads of 13200 km would be taken up in stretches, which have deteriorated so much that they have become virtually impassable, for Improvement of Riding Quality Programme (IRQP) and strengthening at the estimated cost ranging from Rs 50 lakh per km to Rs 1.75 crore per km. Furthermore, it is necessary to significantly up-scale the expressways project, initially by preparing a blueprint for 15600 km of access-controlled expressways, determining the alignments, and completing the acquisition of land for 6000 km within the Eleventh Plan period. Strict monitoring would be required in order to ensure that construction of 1000 km of expressways is expedited during the Eleventh Plan.

9.3.46 Ensuring a balanced development of the total road network across the country would continue to be an important objective of the Eleventh Plan, including thorough widening of roads, improvement in riding quality and strengthening, road safety measures, and providing world-class wayside amenities to cater to the growing demand for road services. In particular, 100% rural connectivity with all-weather roads to habitations with a population of 1000-plus (500-plus in hilly/tribal areas) is a priority objective under the Bharat Nirman Programme. Inter-modal issues such as road connectivity with airports, railways, ports, etc. are also crucial issues. The broad goals and objectives for road sector development in the Eleventh Plan are given in Box 9.3.4.

Mobilizing Resources

FUNDING FOR NHs

9.3.47 In the past, funds for development of NHs have essentially been provided through the Central Government budget. Fees/tolls levied by the Central Government on bridges on NHs and selected stretches are utilized for upgradation and improvement of roads. Of the Rs 2 per litre cess on petrol and high-speed diesel oil collected by the Central Government and accredited to the Central Road Fund, the cess amount of Rs 1.50 per litre is distributed for development and maintenance of NHs, SRs, RRs, and for the construction and development of ROB/RUB and other safety features, as provided in the CRF Act 2000, in accordance with the prescribed formula. The remaining cess of Rs 0.50 per litre is allocated solely for development and maintenance of NHs. The multilateral financing agencies such as the World Bank and the ADB have been providing loan assistance for highway projects and efforts need to be made to continue tapping this source.

9.3.48 Implementation of NHDP would leave a substantial part of non-NHDP NH network, which would also require development in the Eleventh Plan period. These sections are characterized by low density of traffic. Some of these stretches fall in backward and inaccessible areas, while others are of strategic importance. In fact, the substantial addition made to NH network during the last two Plan periods has led to an increased gap between availability of resources and requirements and thus contributed to poor maintenance and riding quality of the non-NHDP network. The development of these stretches of NHs would be financed primarily through budgetary resources. However, it would be essential to prioritize them in order to ensure that resources are not spread thinly among competing projects, which are responsible for time and cost overruns.

FUNDING FOR SHs

9.3.49 Although State Governments provide funds for SHs, besides allocations from the CRF (of, for instance, Rs 1566 crore during 2007–08), BOT projects are also being encouraged to meet the large financing requirements of SHs in the Eleventh Plan. For this purpose

Box 9.3.4
Road Sector Objectives for the Eleventh Plan

- Develop roads as an integral part of transport system, supplementing other modes, with high priority being accorded to balanced development of road network (primary, secondary and tertiary systems).
- Expedite implementation of enhanced NHDP:
  - Completion of balance work of GQ and North–South and East–West corridors.
  - NHDP Phases III through VII, with reduction in scope of NHDP IV from 20000 km to 6800 km.
  - Restructure NHAI, the main implementing agency of NHDP.
- Phased removal of deficiencies in existing NHs concomitant with development of traffic over the next 10–15 years:
  - Emphasis on augmentation of capacity of high-density corridors.
  - Greater attention to construction of missing links and missing bridges, rehabilitation and reconstruction of weak/dilapidated bridges for traffic safety.
- Formulate comprehensive Master Plan for development of 15600 km of access-controlled expressways:
  - Determine alignments.
  - Acquire land for about 6000 km.
  - Expedite and complete construction of 1000 km.
  - Consider establishing an 'Expressways Authority of India' to implement the Master Plan.
- Prioritize SARDP-NE:
  - Improve connectivity of all State capitals in North East with two- or four-lane NHs with paved shoulders.
  - Connect all district headquarters with two-lane NHs/SHs.
- Prioritize development of high-density corridors in SHs/MDRs.
- Promote private sector participation for development of the national and State roads networks:
  - Adopt BOT (Toll) for construction.
  - Adopt MCA for OMT for tollable roads.
  - Earmark sufficient funds for maintenance for non-tollable roads;
  - Adopt improved maintenance practices NHs/SHs/MDRs.
- Achieve Bharat Nirman time target of providing rural connectivity through all-weather roads to all habitations with a population of 1000-plus persons (500-plus in hilly/tribal areas) by 2009 and thereby improve the quality of life in rural areas and ensure balanced regional development.
- Focus on proper upkeep and maintenance of the existing road network and on attaining higher maintenance standards for optimum utilization of existing network capacity and preserving road assets already created. Adopt modern management techniques for scientific assessment of maintenance strategies/priorities.
- Improve capacities of implementing agencies: NHAI, State PWDs, and BRO.
- Prioritize road safety: prevent overloading of trucks, encroachments, unplanned ribbon development, etc. Focus on issues like energy conservation and environment protection.
- Provide world-class wayside amenities along highways.
- Reduce transportation costs: better riding surface, use of containers, multi-axle vehicles in the haulage of goods, etc.
- Ensure road connectivity where rail link is not possible.
- Integrate road development with railways and other modes of transport.
  - Identify feeder roads to important railway routes and undertake needed improvement including periodic maintenance.
  - Link minor important ports with minimum two-lane NHs/SHs/SRs.
  - Link all inland container depots/CFSs with minimum two-lane NHs/SHs.
- Develop a road data bank, computerize project monitoring system, promote use of information technology in the roads sector.

an MCA for the PPPs in SHs has been published by the Planning Commission and State Governments have been recommended to use it. Further, opportunities for providing VGF of up to 20% of project cost for financing State sector schemes have been made available by the Central Government. Specific initiatives have been taken by some State Governments, in particular, State Governments of Gujarat, Rajasthan, and

Punjab in order to strengthen and upgrade SRs (Box 9.3.5). The possibility of tolling ROBs, constructed at level crossings where heavy traffic crosses the railway line, could be explored and success stories replicated across States. External funding could also be explored as a possible source of finance for the development of selected highways. Some States have established Road Construction Corporations which augment resources through market borrowings.

FUNDING FOR RURAL ROADS (RRS)

9.3.50 In order to augment funding for meeting the time targets of rural connectivity under the Bharat Nirman Programme, it is proposed to borrow Rs 16500 crore from the NABARD by leveraging cess accruals. However, with loan repayments commencing in 2009–10, the amount of cess available (net of repayments) to finance the rural roads programme would be limited in the last two years of the Eleventh Plan. Options to continue leveraging cess, to increase budgetary support and various other strategies for mobilizing funds could be explored (Box 9.3.6).

PHYSICAL TARGETS FOR THE ELEVENTH PLAN

National Highways

9.3.51 High priority is accorded to expeditious completion of the balance works under NHDP Phases I and II and first phase of NHDP Phase III. The GQ is scheduled for substantial completion by December

Box 9.3.5
Innovations by some State Governments

- Crucial role being played by Madhya Pradesh Road Development Corporation and Gujarat State Road Development Corporation (GSRDC) in upgrading SRs using Central Government's VGF which extends subsidy of up to 20% of total project cost and an additional up to 20% financed by State Government. Contribution to GSRDC is also kept to defray expenditure on pre-construction activities.
- PPP (Annuity) model adopted by Gujarat since strengthening/widening of SRs does generate a commercially viable return despite 40% upfront subsidy.
- Adoption of a plan scheme for land acquisition for identified corridors by Punjab to reduce traffic congestion on major highways, with funds proposed to be released on the condition that these shall be recovered by PWD by imposing a cess on sale/purchase and any development activity carried out by the private parties on lands adjoining PWD roads.
- Creation of a Rajasthan State Road Development Fund, through a cess on sale of petrol and high speed diesel, towards extending interest free loan and share capital to the Road Infrastructure Development Company of Rajasthan for projects to upgrade SHs.

Box 9.3.6
Some Options of Resource Mobilization for Rural Roads

Independent Road Fund: There is practically no scope for private sector financing of rural roads since they carry very low volumes of traffic. Creation of an independent road fund in various States, as has been done by a few States such as Uttar Pradesh and Karnataka for maintenance, needs to be explored.

Market Committee Funds: Extension of the scheme of levying marketing fee and rural development cess on agriculture produce to all States with the support of the farmers' community could be explored.

Vehicle Fees: In addition to taxes on fuels, additional funds should be generated through special purchase tax on two wheelers, cars, and agricultural tractors. Part or whole of such funds so collected may be allocated for rural roads and provision of road transport services in rural areas.

Domestic Borrowings: Recently, NABARD in India has come up in a significant way to provide loan assistance for construction of rural roads in several States under RIDF programme. As the financial institution like NABARD may not have the requisite technical expertise, it may be worthwhile to consider providing NABARD loans with technical and management inputs of NRRDA. This would enhance the financial and technical discipline, as well as help in adoption of uniform standards for these roads, on the lines of the PMGSY. This can be channelized by transferring the total loan amount to a pool to be availed of by the States under guidelines similar to that of PMGSY.

2007. North–South, East–West corridors are expected to be substantially completed by December 2009. The other priorities include:

- Complete the first phase of NHDP Phase III by December 2009. Although, the second phase of NHDP Phases III, V (six-laning of 6500 km), and VI (expressways of 1000 km) are scheduled for completion in the Twelfth Plan, their implementation must be strictly monitored in the Eleventh Plan.
- Initiate work for two-laning 6800 km of identified stretches under NHDP Phase IV through the BOT (Toll) mode and construct ring roads of major towns and bypasses and flyovers under NHDP Phase VII.
- Consider establishing an Expressways Authority of India to formulate and implement a Master Plan for 15600 km of access-controlled expressways for high-density corridors and initiate action for determining the alignment and acquiring the land for 6000 km; simultaneously expedite construction of 1000 km of expressways under NHDP Phase VI to provide unhindered, high-speed, and safe movement of traffic.
- Complete SARDP-NE (Phase A) and initiate action to implement Phase B to catalyse development of the NER.
- To keep the balance non-NHDP section in reasonably good shape, earmark a proportion of the cess available for NH exclusively for maintenance.

9.3.52 The targets for stretches other than NHDP have to be prioritized according to their importance to the national economy so that the available resources are not spread thinly among competing projects. The major targets for non-NHDP components include:

- Accelerated efforts to bring NHs network (presently, 20644 km is single lane/intermediate lane) to a minimum of two-lane standard within the next 10 years and four-laning small segments of non-NHDP stretches.
- Removing existing deficiencies, such as inadequate capacity, insufficient pavement thickness, etc., in the road network by strengthening the NH network/improving riding quality.

State Roads (SRs)

9.3.53 Greater focus should be given to augment the capacity and quality of SRs rather than any large-scale expansion. There is a need to identify and develop a core network of major arterial routes covering SHs/MDRs, which are either already experiencing high volumes of traffic or have such potential in the light of industrial and other growth strategies by the public and/or the private sector.

9.3.54 The core network would include expressways, four-laned roads, strengthened pavements, and pavements with good riding quality, bypasses, bridges, etc. for a length of about 71500 km, with a financial outlay of about Rs 80000 crore covering the States. This network could be based on the 'corridor concept', such that a commercial vehicle can cover about 500 km on this network in one day (800 km or more on expressways) with adequate road safety.

9.3.55 Although, it is difficult to precisely estimate physical and financial requirements for upgrading SHs and MDRs without a detailed study of traffic forecasts and their existing conditions by concerned States, it is broadly estimated to amount to Rs 100000 crore for the construction of 300 km of expressways, four-laning 5000 km, and widening to two lanes 40000 km of the core network. For the non-core network in the NER, 2500 km length is to be upgraded for two-laning, and for the other States 10000 km length is to be upgraded to two lanes.

Rural Roads (RRs)

9.3.56 The physical targets set under the Bharat Nirman Programme till the end of 2008–09 are generally found to be beyond the capacity of the States to achieve them. Therefore, the leftover targets of the Bharat Nirman Programme (that is, about 33%) will be completed only in 2009–10. To achieve the targets of the Bharat Nirman Programme, 146185 km of rural roads are proposed to be constructed to benefit 66802 unconnected eligible habitations in the country. It is also proposed to upgrade nearly 1.94 lakh km of the existing rural roads which are identified in the core network. State-wise and year-wise targets for new connectivity, number of new habitations to be connected, and length to be upgraded under the

Bharat Nirman Programme are given in Annexure 9.3.4.

9.3.57 For the remaining two years of the Eleventh Plan, that is 2010–12, targets, both for new connectivity and upgradation, have been specified, leaving 42% of the balance PMGSY works to be completed in the Twelfth Plan, as given in Table 9.3.7.

9.3.58 As per the programme guidelines currently applicable in the plain areas, the eligibility of the habitations getting connected varies from 19% to almost 100% in different States. However, in some hilly States, for instance in Arunachal Pradesh, only 17% of the habitations (466 out of 2741) is eligible for new connectivity under PMGSY because of the very wide spread of smaller habitations. Efforts would, nevertheless, be made to initiate provision of connectivity to even lower order settlements as even such habitations need to have primary access to health, education, and market facilities. The issue of connecting habitations which are not eligible according to the current norms of PMGSY, therefore, will be tackled during the Eleventh Five Year Plan.

Outlay for the Eleventh Plan

9.3.59 The Eleventh Plan budgetary support for central sector roads is Rs 72530 crore (Rs 82032.97 crore at current price). The scheme-wise break up GBS at current prices for road sector is given in Appendix (Volume III). In addition, the sector is expected to generate IEBR amounting to Rs 34829 crore and private sector investment of Rs 86792 crore during this period.

Road Transport

Overview

9.3.60 The transport demand for freight and passenger movement within the country is met mainly through road transport and railways. Between these two modes, road transport has steadily expanded its scope of operation and is now not merely a mode for the last haul but is also handling freight over long distances. It also plays a complementary role to railways in moving freight from and to railheads vis-à-vis the Origin-Destination movements of cargo. Its intermodal share in carrying freight, which was around 14% in 1950–51, had increased to around 61% in 2004–05. The share of road transport in passenger movement has also witnessed a quantum jump from 15% in 1950–51 to an estimated 87% of the total traffic by the end of the Tenth Plan.

9.3.61 However, the growth of vehicular traffic on roads has been greater than the growth of the highways, with capacity saturation in the main arteries. Between 1951 and 2004, the vehicle population grew at a CAGR of 10% compared to CAGR of 4.3% in the total road length.

Review of Tenth Five Year Plan

9.3.62 The approved outlay for the Tenth Plan for Central Road Transport Sector was Rs 210 crore, out of which 73% was for road safety and the balance 27% for the Model Driving Training School, pollution testing equipment, and National Database Network. Against this, the total expenditure incurred was 85.41% of the total allocation for the Tenth Plan. Scheme-wise

TABLE 9.3.7
Estimated Targets for the Eleventh Five Year Plan

Period	No. of Habitations to be Covered	Length for New Connectivity (km)	Length for Upgradation (Funded under PMGSY) (km)	Length (km) for Renewal (to be borne by the State Governments)
Target up to the year 2009 as per the Bharat Nirman Programme	30200	62720	43220	51227
Target for 2010–12#	30438	66987	57520	25759
Overall target for the Eleventh Plan	60638	129707	100740	76986

Note: # includes spill-over targets of the Bharat Nirman Programme.

financial and physical performance for the Tenth Plan is given in Annexure 9.3.5.

Model Driving Training School as Centrally Sponsored Scheme

9.3.63 The scheme, started in the Tenth Plan with the objective of imparting training to drivers in order to reduce the rate of accidents, envisages the Central Government assistance in the form of a one-time capital grant for building and other infrastructure of up to 70% of the project cost. The remaining cost, including maintenance and operational cost, is borne by the State Government. During the Tenth Plan, 11 such schools were sanctioned. Although the scheme has been dropped in the Eleventh Five Year Plan, it will need to be replaced by a more broad-based action plan. The State-wise and year-wise allocation and releases are given in Annexure 9.3.6.

Passenger Services

9.3.64 Passenger road transport services in India are met by personalized and public transportation. Public transport is provided by the State Road Transport Undertakings (SRTUs) and by private operators. At the end of 2003–04, the country had about 73 million registered automobiles. The composition reveals a dominance of two-wheelers, with a share of more than 71%, followed by cars with 13%, and other vehicles (a heterogeneous category which includes three-wheelers, trailers, tractors, etc.) with 9.4%. The share of buses and trucks in the vehicle population is 1% and 5%, respectively. The share of the personalized modes of transport, viz. two-wheelers, cars, and jeeps increased from 60% in 1951 to 84% in 2004, at the expense of public transport, notably buses, whose share declined from 11.1% in 1951 to 1.1% by the end of 2003–04. Within the buses category, the share of SRTUs in total buses has declined from 37% in 1985–86 to 15.8% in 2002–03 and the share of private buses has risen from 63% in 1985–86 to a lion's share of 84.2% in 2002–03.

State Road Transport Undertakings (SRTUs)

9.3.65 Of the 53 SRTUs operating in the country, 15 are operated by local bodies and 38 have been established by State Governments under the Road Transport Corporation Act 1950. These 38 SRTUs are estimated to have a total of 1.13 lakh buses, with a total investment of Rs 18669.19 crore, and they provided direct employment to about 7.09 lakh workers during 2006–07.

Physical Performance of SRTUs

9.3.66 The overall productivity of SRTUs improved in the Tenth Plan. Fleet utilization improved from 78.72% in 2002–03 to 82.50% in 2006–07, while vehicle productivity increased from 210 km per bus per day to 229 km per bus per day, staff productivity from Rs 39.23 per worker per day to Rs 39.39 per worker per day, and fuel efficiency from 4.11 km per litre to 4.31 km per litre during the same period.

9.3.67 However, there is wide variation in the performance of physical parameters of various SRTUs. Efficiently run undertakings include those in Haryana, Tamil Nadu, Andhra Pradesh, Rajasthan, Maharashtra, and Karnataka, while the undertakings in Bihar, Jammu and Kashmir, North Eastern States, Punjab Roadways, and Delhi Transport Corporation have considerable scope for improvement. An action plan on Management Monitoring needs to be worked out by these undertakings for speedy improvement in performance of their physical parameters. The State-wise physical performance of SRTUs is given in Annexure 9.3.7.

Financial Performance of SRTUs

9.3.68 The financial performance of the SRTUs has been deteriorating year after year, with their net loss of Rs 1503.02 crore in 2002–03 having increased to Rs 2137.66 crore in 2006–07. Uneconomic passenger fares, high burden of taxes, operations on uneconomic but obligatory routes, concessions in fares provided to certain category of commuters, and high bus staff ratio, and of late, increase in interest burden due to larger institutional borrowings have all contributed to the losses.

9.3.69 Various initiatives taken by SRTUs to improve their physical and financial parameters include route rationalization, introduction of special services such as deluxe buses and night time services, better maintenance practices at depot level, introduction of electronic ticketing, and outsourcing of staff and services. However certain other measures such as providing SRTUs with full reimbursement of cost concessions,

allowing SRTUs to make required commercial fare adjustments, rationalization of motor vehicle and related taxes also need to be taken. It is also necessary to rationalize the procedures for award of transport routes to private operators. For commercial routes the private operator should be selected through the process of competitive tendering. As for non-commercial routes, instead of burdening the SRTUs with them, these too should be subjected to the competitive bidding process on the basis of alternatives such as universal service obligation (USO) or VGF models.

Freight Services

9.3.70 Freight movement on the road is predominantly carried out by the private sector truck operators. The volume of freight in BTKM carried by road grew annually at an average rate of 6.5% as compared to 3.6% for railway freight during the last 10 years. The road freight industry is mostly unorganized and highly fragmented with more than 85% of the truck operators owning less than five trucks. The population of goods vehicles has burgeoned from 82000 in 1951 to 8.63 lakh in 1986 (over 10-fold increase), and further to 37.49 lakh in 2004 (increase of 46 times from the 1951 level). This increase signifies the accelerating increase in the demand for road freight services faced by the industry and the subsequent challenges of improving service standards, rationalizing costs, enhancing productivity, and reorganizing the road freight services industry.

Policy Issues

9.3.71 The expected future growth of road transportation for both passengers as well as freight movement is tremendous, due to substantial investments in improvement of reach, capacity, and quality of the NH network. However the sector is beset with low technology, low energy efficiency, high pollution, poor quality roads, and hindered movement of goods and passenger traffic. A number of policy aspects are to be addressed for gearing up the Indian road transport sector to meet the challenges of further growth.

Need to Strengthen the Public Transport System

9.3.72 Public transport causes lesser environmental damage in terms of air and noise pollution, optimization of road space, increased per unit throughput, and reduction in traffic congestion, as compared to personalized vehicles. However, the composition of vehicle population in India is skewed towards personalized transport. The role of both public and private sector is crucial. Considering the advantage of public transport there is a need to strengthen the public transportation services through a policy regime, which fosters their financial viability and grants them more functional autonomy. They may be allowed to fix commercial fares based on a formula approved by the respective State Governments. The PSUs may also be reimbursed full cost of concessions provided to various categories of passengers.

Private Sector Participation

9.3.73 Almost all State Governments have facilitated entry of private sector in providing passenger transport services to ease pressure on the public sector. As on 31 March 2004, the share of private buses was 85%. Private bus operators have, however, exhibited deplorable quality of service, with disregard to traffic rules, unsafe driving practices, unscheduled operation, and usage of irrational cost cutting measures and tax evasion. The private sector has also adversely affected the performance of public sector by resorting to unfair competition.

9.3.74 A prerequisite is, therefore, to strictly enforce rules, for which specially designated regulatory bodies need to be set up, with powers to lay down minimum basic service standards, impose heavy fines, suspend or even cancel licenses, and launch and pursue prosecutions for accidents vigorously.

Pollution Control and Energy Conservation

9.3.75 Rapid growth of motorized vehicles in the country over last one decade has raised the demand for petroleum fuel, resulting in increased vehicle pollution. The Central Government has taken measures to bring down the existing sulphur content level of 0.5% in diesel to 0.10% in phases by introducing the following emission norms during the Tenth Plan:

- Bharat Stage II emission norms extended to entire country in respect of all categories of motor vehicles w.e.f. 1 April 2005 in respect of vehicles manufactured after 1 April 2005.

- Bharat Stage III emission norms have been introduced w.e.f. 1 April 2005 in respect of four-wheeled vehicles manufactured on and from 1 April 2005 in the National Capital Region (NCR) and cities of Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, including Secundarabad, Ahmedabad, Pune, Surat, Kanpur, and Agra except for four-wheeled transport vehicles plying on interstate permits, national permits, or all-India tourist permits within the jurisdiction of these cities. The emission norms for tractors have also been upgraded. While Bharat (Trem) Stage II norms have come into force from 1 June 2003, the Bharat (Trem) Stage III norms have come into force from 1 October 2005.

9.3.76 The emission norms are being revised apace with international emission norms. Enforcement, however, is sadly lacking, and there may be improvements by accrediting private sector institutions to complement the responsible governmental agencies. Under the Motor Vehicles Act, the authorized testing stations issue certificate of fitness for transport vehicles. The State Governments are empowered to authorize any agency through a notification.

Barrier Free Movement of Freight and Passengers

9.3.77 Barriers to inter-state movement, through multiple checking by the police, sales tax department, transport department, and excise and custom, entailed huge economic costs in the range of Rs 3200 crore to Rs 4300 crore in 2004 which are estimated to progressively increase to Rs 60168 crore by 2017.

9.3.78 By way of remedy, apart from introducing online information network for registration and tax administration at national, regional, and local level, and different colour-codes for the number plate of trucks that move inter-state, the concept of 'Green Channel' may also be promoted, initially for high-value freight and perishable commodities, by certifying the consignment at the origin and transmitting the required documents to the authorities for an unhindered journey to their destination.

Motor Vehicle Taxation

9.3.79 The existing tax structure for CVs shows wide variations across States due to different classification principles for the taxation of vehicles, variations in the application of lifetime and annual tax rates to vehicle categories, use of specific and ad valorem rates, and the multiplicity of rates. There is a need to study the economic implications of rationalization of the tax structure across the country in terms of its impact on the reduction of transaction costs. Vehicle taxation is road damage related, but levied on the basis of gross vehicle weight rather than on potential axle loads, resulting in under-taxation of two-axle trucks compared to multi-axle vehicles, and should be changed for goods vehicles from gross vehicle weight to axel loads.

Overloading

9.3.80 To check overloading, Weigh in Motion (WIM) bridges need to be installed at selected points on NHs, inter-state check posts, industrial areas, etc., with facilities for unloading and temporary warehousing of excess loads. The Honourable Supreme Court has held that the excess load needs to be variably off-loaded even if the offence is compounded. The Government of India has recently proposed to expand the area of overloading offence of the Motor Vehicles Act 1988 by introducing the Motor Vehicle Bill 2007. The proposed extension makes the common carrier and consignor also liable for overloading along with vehicle owner (who is already covered under the present Act) and would therefore discourage the extensive operation of illegal overloading on goods.

Road Safety

9.3.81 The number of accidents has quadrupled from 1.1 lakh in 1970 to 4.3 lakh in 2004, with 92618 persons killed in accidents (one fatality per 4.6 accidents) and 464521 persons injured in 2004. The social cost impact of road accidents is 3% of the GDP.

9.3.82 Road safety is a multi-dimensional issue, incorporating development and management of road infrastructure, provision of safer vehicles, legislation and law enforcement, mobility planning, provision of health and hospital services, child safety, and urban land use planning. The success of road safety strategies also depends upon a broad base of support and common action from all stakeholders. Its existing institutional set up is multi-tier, with MoSRTH, National Road Safety Council, and the Transport Development

Council at the Centre, State Transport Department and State Road Safety Councils at the State level, and finally, organizations and agencies involved including the police, Indian Road Congress, CRRI, Central Institute of Road Transport (CIRT), NGOs, and academic institutes.

9.3.83 In order to assess the magnitude of road traffic injuries and fatalities in India and to suggest measures for rescue and relief of accident victims, an EC of India was constituted. The Committee has recommended setting up of a National Road Safety and Traffic Management Board to lay down standards and guidelines as well as to oversee and coordinate all activities pertaining to road safety at Centre as well as State level for promoting and improving traffic management in India. The Report is under active consideration.

9.3.84 With a view to reducing accidents, injuries, and deaths during the Eleventh Five Year Plan, some more measures need to be taken. Road safety audit on all NHs should be made mandatory at different stages of the projects, coupled with a stringent highway patrolling system. Trauma care centres need to be established, accident-prone spots need to be identified, and their road geometry improved. There is a need to upgrade all urban and rural roadside furniture standards to international best practices, coupled with review of road design, road maintenance, and traffic management. Strict enforcement of the Motor Vehicle Act to ensure adherence of traffic rules is vital.

Human Resource Development

9.3.85 The human resources requirement is estimated to grow from 12.83 million in 2007 to 17.64 million in 2012, out of which 66% will be drivers, four-fifth of which in turn would be absorbed in goods vehicle category. To substantially improve driving skills and enlarge the pool of drivers, institutions such as the ITIs and CIRT need to create competent driver training instructors with training of trainers by accredited institutions. Adequate infrastructure facility including driving tracks needs to be provided near the cities for use by driving schools. Many initiatives have been taken up both by the government and the private sector to promote road safety education and driving training facility in India, which include the Institute of Driving Training and Research (IDTR) which is a joint venture between the Department of Transport, Government of Delhi, and Maruti Udyog Limited; Automobile Association of Upper India (AAUI) Driving School (which also provides electronic simulator based training facilities); Institute of Road Traffic Education and Driver Training Institute by Ashok Leyland in Burari, near Delhi, in partnership with the Government of Delhi. Such initiatives inviting automobile manufacturers and insurance companies for providing training to drivers of automobiles need to be encouraged. The minimum educational qualification for obtaining a driving license needs to be increased from the passing certificate of Class VIII to Class XII in the future.

Research and Development (R&D) to Improve Vehicle Efficiency

9.3.86 R&D efforts should be focused on bus body design, with emphasis on energy conservation and eco friendliness; propulsion technology for use of hybrid cells, bio fuels, etc.; and developing appropriate transmission systems for urban driving conditions.

Database

9.3.87 Motor Vehicles Act provides for maintenance of State registers of motor vehicles. An IT-based centralized vehicle registration system; depository of motor vehicle registration by assigning unique number similar to permanent account number; data on tax paying and non-tax paying vehicles; public surveys to measure freight/passenger movement by road, with time motion surveys of trucks to assess transaction costs are required to be established.

Non-motorized Transport (NMT)

9.3.88 The status of NMT needs to be studied and appropriate infrastructure created coupled with enactment of safety code for NMT to reduce the risks borne by cycles, walk trips, and the like. This will also help to free road space for motorized transport.

Outlay for the Eleventh Plan

9.3.89 The Central Sector outlay for road transport sector for the Eleventh Five Year Plan at current price is Rs 1131.00 crore, which would be budgetary support.

The scheme-wise details are given in the Appendix (Volume III).

9.3.90 The total projected outlay for the Eleventh Plan outlay for DoRTH is Rs 108359 crore at 2006–07 price (Rs 122557 crore at current price) which includes Rs 73530 of GBS at 2006–07 price (Rs 83164 crore at current price) and Rs 34829 crore of IEBR at 2006–07 price (Rs 39393 crore at current price).

9.4 SHIPPING

Significance of Shipping

9.4.1 The recent accelerated growth in Indian economy and trade underscores the increasing criticality of the shipping sector for India, as the bulk of the country's Export-Import trade takes place through the maritime route. One of the objectives of the Foreign Trade Policy 2004–09 is 'to double our percentage share of global merchandise trade within the next five years' taking it to 1.5%. With 8.42 million gross tonnages (GT), India stands at the 20th rank among maritime nations, in terms of fleet size, with a share of 1.19% of the world fleet.

9.4.2 Indian tonnage was practically stagnant till 2004–05, but reforms introduced in that year stimulated a burst of growth in 2005–06. The Shipping Corporation of India (SCI), a PSU under the Department of Shipping, has a major share in India's shipping tonnage. A feature of recent experience in India's shipping sector is the sharp decline in the share of Indian ships in the carriage of India's overseas trade from 31.5% in 1999–2000 to 13.7% in 2004–05. Indian shipping fleet is characterized by the predominance of oil tankers and bulk carriers. While oil tankers account for 60.6% of the total tonnage, bulk carriers account for 29.6%, with the other vessel types such as liner vessels, OSVs accounting for a mere 9.8%.

Review of the Tenth Plan

9.4.3 During the Tenth Plan, shipping tonnage witnessed a rise from 560 vessels carrying 6.82 million GT to 787 vessels amounting to 8.60 million GT. A total of 227 vessels of 1.78 million GT were added to the fleet as against a target of 156 vessels of 3.26 million GT.

9.4.4 The main reason for the fleet growth in 2005–06 was the change in fiscal regime applicable to the sector. Tonnage Tax was introduced in 2004–05 and was further extended to dredgers in 2005, as an alternative to regular corporate tax, thereby reducing tax to a nominal rate and making profits from shipping exempt from tax if they were used for creating an investment fund for acquisition of new tonnage. Expansion of cargo volumes due to rapid growth of the economy and the increased availability of low cost capital due to liberalized policy governing external commercial borrowings also boosted acquisitions.

9.4.5 An outlay of Rs 7753.85 crore was provided in the Tenth Plan for the shipping sector. Against this, the expenditure was Rs 2991.62 crore, accounting for 38.6 % of the total outlay. The scheme-wise details are given in Table 9.4.1.

TABLE 9.4.1
Financial Performance of the Shipping Sector in the Tenth Plan

(In Rs Crore)

S No.	Scheme/Programme	Financial Performance—Tenth Plan		
		Approved Tenth Plan Outlays	Approved Annual Plan Outlays	Actual Expd.
1.	SCI	5800.00	6378.95	2380.94
2.	DG (S)	288.84	58.03	59.91
3.	DG (LL)	185.00	132.00	67.41
4.	IWT	903.00	615.57	475.87
5.	Information Technology	–	7.49	7.49
6.	Unallocated	577.01	–	–
	Total	7753.85	7192.04	2991.62

Note: Expd.= Expenditure

Strategies for Eleventh Plan

9.4.6 As recognized in the Report of the EC to Review Indian Shipping headed by Dr Rakesh Mohan (2002), 'Shipping is not a stand-alone industry and has got collateral linkages with several other industrial activities of considerable economic consequence', the Report goes on to give the assessment, 'Having regard to the combined impact of the mother industry i.e. Shipping and its satellites, the net aggregate contribution to the national economy could well be of the order of 2.5–3% of the national GDP.' In light of this and in order to maximize gains from the growth of merchandise trade, it is imperative that the shipping tonnage grows steadily along with trade. Retained earnings from the shipping sector are as important as export earnings from important service sectors such as IT and ITES.

9.4.7 A national shipping fleet commensurate with our overseas cargo needs would help in reducing the freight costs of Indian cargo. Transchart and 'right of first refusal' policy also help to discourage undue freight increases. A thriving shipping sector encourages the growth of associated industry and services providers required for servicing this industry, accounting to over 75% of the shipping sector's national contribution. Most importantly, national tonnage is decisive in maintaining the supply line of essential cargo during international emergencies, as was also demonstrated during the Iraq war, when every drop of crude imports from the Middle East came on Indian Ships.

Increase in Tonnage

9.4.8 During the Eleventh Plan, it would be possible to achieve a tonnage target of 10 million GT. An environment conducive to the growth of Indian shipping can be fostered by fiscal rationalization, strengthening of regulatory mechanism, and increased focus on maritime training. If supportive policy measures as detailed below are taken, acquisition of vessels up to 12 million GT and 15 million GT may be achieved. These scenarios are given in Table 9.4.2, along with their required investments.

TABLE 9.4.2
Increase in Tonnage

	Tonnage Target	Additional Ships		Investment (in Rs Crore)
		Numbers	Tonnage	
Scenario 1	10 m GT	279	4.6 m GT	35000
Scenario 2	12 m GT	404	6.2 m GT	55000
Scenario 3	15 m GT	609	9.2 m GT	80000

Fiscal Regime Rationalization

9.4.9 Ship owners can shift registrations easily and consequently they move to regimes where the tax regime is least onerous. The favourable effect in India of the introduction of the Tonnage Tax as seen initially, quickly evaporated because of the lower taxation in other regimes, estimated by the industry to be of the order of 5%–6%. There is an urgent need to study the cumulative incidence of taxes on ships registered in India vis-à-vis the incidence in other jurisdictions so that necessary measures can be taken to reduce or eliminate the disparity in tax treatment. Another aspect, which translates itself into a tax-related disadvantage for the ships with Indian flags, is that national manning is compulsory for them. The company has to make withholding tax payments for Indian seafarers since they are not exempt from income tax. As this obligation does not devolve on ships registered in other jurisdictions and employing Indian seafarers, the result is that the Indian ships have to pay a higher salary. It is critical for the growth of shipping in India that a level playing field is created as compared to other regimes in respect of taxes.

Cargo Support

9.4.10 The continuation of the policy with respect to government owned and controlled cargo to be imported on FOB basis and shipping arrangements to be channelized through the Department of Shipping's Chartering Wing, Transchart would be advisable. This policy, which is similar to that followed in some developing countries, has proved to be advantageous not only by providing cargo support to Indian ships, but also by enabling the buyers/receivers to retain control over shipping arrangements and shipment schedules according to their import requirements. The assurance of cargo support encourages new entrants and mitigates the risks of tonnage and fleet expansion for existing companies.

Maritime Human Resource Development and Training

9.4.11 India has positioned herself as a major human resources-supplying nation to the maritime industry. As a result of the initiatives taken by the government in encouraging private participation in maritime training, the number of maritime training institutes under the assurance of quality training by the Directorate General of Shipping DG(S) rose to 128 in 2005. India's share of global maritime human resources rose to 26950 officers and 75650 ratings, comprising an estimated 6% of the world's seafarers. The Eleventh Plan target for the marine training programme is to retain our 6% share of the global workforce and additionally supplying 20% of the current estimated shortages.

9.4.12 By virtue of income tax applicable to Indian seafarers, Indian ship owners are at an inherent disadvantage as foreign flag vessels become the first choice for Indian seafarers and the best talent is denied to the local shipping industry. Moreover, it is mandatory for Indian ships to employ Indian seafarers compounding the problem further. It would be necessary to review this restriction so that the Indian shipping industry may not face human resources shortage.

9.4.13 Policy initiatives are required to retain and build talent. In the area of maritime training, although the intake capacities at all training institutes for officers have risen from 2185 in 2000 to 5263 in 2006 and for ratings to 4726 in 2006 to reach the necessary targets, there is a shortage of sea-time berths to absorb the number of pre-sea officers and ratings trainees. Thus, there is a need to shift the focus in strategy from increasing cadet intake at pre-sea levels to more sea-time training slots. Initiatives for this could include the co-option of the member lines of the INSA into allocating 10% of each ship's manning scales exclusively for sea training berths at the cost of these future employers.

9.4.14 With the objective of providing world-class training opportunities for the shipping sector, the government would be establishing an Indian Maritime University (IMU) at Chennai, with campuses at Kolkata, Mumbai, and Vishakhapatnam, through an Act of Parliament. IMU would play the role of a centralized nodal agency for co-ordinating, monitoring, and controlling maritime training in India, through nation-wide rating, consolidation, and reorganization of training systems under IMU. This would facilitate and promote maritime studies and research in emerging areas such as marine science and technology and marine environment. The aim of IMU would be to become a centre of excellence in the content and quality of maritime training and also seek affiliation to the World Maritime University.

9.4.15 There is also a need for capacity building in the DG(S), with greater technological tools, training, human resources availability, and greater autonomy for authorizing surveyor movement to ships on foreign shores and deciding on the delegation of powers to Mercantile Marine Department.

Other Issues

9.4.16 In view of the increasing traffic in territorial waters, and with a growing fleet, marine disaster and emergency response system should be established. For the protection of the environment, it is also necessary to develop a 'Ballast Water Management System' in accordance with the requirements of International Convention for the Control and Management of Ships as adopted by the IMO in 2004, along with the development of waste disposal facilities in ports. Further, in the interest of safe operations of OSVs, a regulatory mechanism should be developed for this sector.

Coastal Shipping

9.4.17 Coastal shipping serves as an integral part of the supply chain in the domestic and overseas trade of merchandise. It is a viable, eco-friendly alternative to the already stretched rail and road infrastructure with low socio-economic cost. Apart from their substantial contribution to the nation's trade and economy, shipping services also play a crucial role as the major source of income for the population in many of the coastal States and act as the lifeline especially for places such as Andaman & Nicobar Islands and Lakshadweep Islands. During 2004–05, the coastal traffic at major ports was 109.80 mt, accounting for 28.6% of the total major ports traffic and growing at 5.81% CAGR. India's coastal traffic is estimated to increase from 116 mt in

2002–03 to 220 mt by the end of the Eleventh Plan period (2012). A total of 497 vessels of 8.17 lakh GT comprised the Indian coastal vessels tonnage as on 31 March 2006. During the last decade, coastal shipping has exhibited significant growth in smaller size vessels such as liners, passenger-cum-cargo launches, tugs, ro-ros, dredgers, pilot/survey launches, etc. At present, coastal shipping also includes activities like offshore supply and multi-purpose support for the oil and gas exploration and production, port and harbour services, and dredging.

9.4.18 With a view to encouraging the growth of Indian coastal shipping, during the Plan period the government had accorded various concessions and initiatives to this sector such as certain relaxations in customs procedures, benefit of tonnage tax, lower vessel and cargo related charges at ports, and provision of dedicated terminals for coastal shipping. In addition to its economic advantages coastal shipping also eases traffic congestions which occur frequently in road transport. Despite the inherent advantages, coastal shipping is hampered by inadequate port and landside infrastructure, the burden of customs duties, cumbersome procedures, and poor port productivity. Considering the positive externalities of coastal shipping, there is a need to consider fiscal incentives for registered multi-modal transport operators, shippers, trade/industries that prefer transporting sizeable domestic cargoes through coastal shipping.

9.4.19 For improving infrastructure facilities for coastal shipping, it is important to provide adequate rail and road connectivity to each port along with the development of required infrastructure for encouraging emerging areas with promising potential in coastal shipping sector. Berthing capacities at Indian ports may be developed to address the needs of coastal shipping and berth space at all terminals may be reserved for coastal shipping vessels, if so required.

9.4.20 Other policy initiatives relate to manning requirements, training initiatives, and surveying. Although the manning scale of coastal vessels has been reviewed in the last few years with an objective to simplifying the same, yet it requires further rationalization. Adequate facilities may be instituted for training the floating staff to ensure that the operating standards are upheld and adequately trained hands are available. It is suggested that a Special Training Programme may be designed specifically for coastal shipping to produce and retain more cadet officers for employment only on Near Coastal Voyages. Since there is a shortage of surveyors, with a view to avoiding delays to vessels, the work of surveying may be assigned to classified surveyors.

Multi-modal Transportation

9.4.21 The growth of multi-modalism globally, fuelled by increasing trade, containerization, and reducing logistics costs, has impacted the Indian shipping scenario. The physical infrastructure required to propel the multi-modal movement in India is being addressed in terms of investments in port capacities and infrastructures, port to hinterland connectivity, and port–rail–road interfaces. However, there is also a need to simultaneously address policy issues such as regulation of services, co-ordination in planning, and simplification of processes and procedures in customs. The multi-modal transportation in India is governed by the Multimodal Transportation of Goods Act 1993 which needs to be strengthened in order to address issues such as liability regime, setting of service standards, registration of service providers, etc. in order to provide transparency in operations.

Shipping Corporation of India (SCI)

9.4.22 An outlay of Rs 5800 crore was provided in the Tenth Plan for SCI. This included a sum of Rs 1290 crore as internal resources and Rs 4510 crore as external borrowings. Against this outlay, the expenditure was Rs 2381 crore or 41.1% of the total outlay. Due to the speculation regarding its disinvestment, the SCI could only acquire 9 vessels of 0.79 million GT against the target of acquisition of 39 vessels of 2.10 million GT.

9.4.23 The profitability of SCI increased during the Plan. The net profit increased from Rs 241.6 crore to Rs 1042.2 crore and the fixed assets increased from Rs 3463.6 crore to Rs 5729.8 crore. As a result, net worth of the SCI rose from Rs 2095.6 crore to Rs 4355.4 crore during the same period, reflecting a rise in the level of reserves and surplus from Rs 1852.1 crore to Rs 4077.8

crore. The dividend payment also increased from Rs 98.8 crore in 2001–02 to Rs 239.9 crore in 2005–06.

9.4.24 The SCI plans to acquire 62 vessels of various categories during the Eleventh Plan period.

Directorate General of Shipping, DG(S)

9.4.25 The DG(S), a statutory authority under the Merchant Shipping Act 1958, is responsible for implementing the Act. During the Tenth Plan, the approved outlay for DG(S) was Rs 288.84 crore for the implementation of e-governance, execution of civil works, etc., including an IEBR component of Rs 200 crore for acquisition of simulators under grant-in-aid from the Government of Japan for the maritime training institutes under Indian Institute of Maritime Studies. However, this did not materialize and against the remaining amount of Rs 88.84 crore under GBS, the total anticipated expenditure is Rs 63.94 crore.

9.4.26 In the Eleventh Plan period, DG(S) proposes to carry out activities for strengthening the Mercantile Marine Department, procuring modern survey instruments for Minor Ports Survey Organization (MPSO), and establishing the IMU.

Lighthouses and Lightships

9.4.27 The Directorate General of Lighthouses and Lightships, DG(LL) provides marine aids to navigation along the Indian coast. At present, there are 169 lighthouses, 1 lightship, 22 differential global positioning systems (DGPS), 48 racons, and 22 deep sea lighted buoys available as aids to marine navigation. DGLL also earns revenue, deriving its income from light dues from ships entering and leaving Indian ports.

9.4.28 During the Tenth Plan, the anticipated revenue earning by DGLL is Rs 507 crore. Against the Plan outlay of Rs 185 crore, the expenditure in this sector is expected to about 45.9% of the outlay at Rs 85 crore. The major achievements are placement of work order for establishment of Vessel Traffic Service for Gulf of Kachch, installation of racons, and introduction of DGPS. To a certain extent, the progress of projects got affected due to tsunami damages along the East Coast and Andaman and Nicobar Islands, entailing priority restoration work.

9.4.29 In the Eleventh Plan, the Directorate would be taking up new projects such as visual aids, radio aids, development of information technology, replacement of assets and flotilla, along with new initiatives such as rendering assistance for improvement of local lights, beautification of lighthouses for attracting tourists, establishment of the National Automatic Identification System network, and the Vessel Traffic Service in the Gulf of Khambat.

Inland Water Transport (IWT)

9.4.30 India has about 14500 km of navigable waterways which comprises rivers, canals, backwaters, creeks etc. About 45 million tons of cargo (2.5 BTKM) is being moved annually by IWT. Inland Waterways Authority of India (IWAI) was constituted in 1986 for the development and regulation of inland waterways for shipping and navigation. However, most waterways suffer from navigational inadequacies such as shallow waters, narrow width, siltation, and bank erosion. Consequently, its operations are currently restricted to about 5200 km of major rivers and 485 km of canals suitable for mechanized craft operations. Today, there are three waterways that have been declared as National Waterways (NWs), namely Ganga from Haldia to Allahabad (1620 km); Brahmaputra from Dhubri to Dadiya (891 km); and West Coast Canal from Kottapuram to Kollam, including Champakara and Udyogmandal canals (205 km), with the declaration of three more waterways being considered. At present, organized cargo transportation is spread over the Ganga river in NW-I, the Brahmaputra river in NW-II, West Coast Canal in NW-III, and Goa and Mumbai waterways. The States covered are Uttar Pradesh, Bihar, Jharkhand, and West Bengal under NW-I; Assam under NW-II; and Kerala under NW-III. A number of private operators provide their services in all the three NWs whereas the public sector Central Inland Water Transport Corporation operates on NWs I and II.

9.4.31 The cargo movement by IWT increased from 197.65 lakh tonnes (1 BTKM) in the Ninth Plan to 504.13 lakh tonnes (2.82 BTKM) by 2005–06. An outlay of Rs 903 crore was approved for IWT in the Tenth Plan, against which an expenditure of Rs 275 crore or 30% of the outlay has been made. The

approved Plan outlay for IWAI was Rs 626.73 crore against which an expenditure of Rs 386.74 crore or 62% of the outlay was made. The expenditure was mainly incurred on the maintenance of fairway including procurement of vessels for channel development (dredgers, survey launches, etc.), setting up of terminals, provision of navigational aids, procurement of cargo vessels for demonstration purpose, techno-economic feasibility studies on other waterways, assistance to States under CSS, and Inland Vessel Building Subsidy Scheme to entrepreneurs for procurement of IWT vessels.

9.4.32 With a view to providing an impetuous to the development of IWT mode, the Government of India had approved the Inland Water Transport Policy which includes several fiscal concessions and policy guidelines for the development of IWT, including encouraging private sector participation in the development of infrastructure and ownership and operation of inland vessels. IWAI is also authorized for establishing joint ventures and undertaking equity participation in BOT projects.

9.4.33 The CIWTC was earlier also engaged in activities of ship-building and ship repair, apart from operating a fleet of vessels. Following continuous losses since its inception and the decision to restructure CIWTC, Rajabagan Dockyard has been transferred to Garden Reach Ship Builders and Engineers on 1 July 2006 on outright sales basis. In respect of decision on writing off interest and conversion of outstanding principal amount into equity, a suitable provision has been made in the Supplementary Budget 2006–07 by the Minister of Finance. Regarding disinvestment of CIWTC and Voluntary Retirement Scheme (VRS), the government is in the process of assessing viability of disinvestment with different sets of employee number.

Policies and Programmes in the Eleventh Plan

9.4.34 The focus in the Eleventh Plan would be to put requisite infrastructure on the existing waterways to make them fully functional, along with the development of new waterways. By the end of the Eleventh Plan, three waterways, namely, canal system from Kakinada to Pondicherry integrated with Godavari and Krishna rivers (1095 km), East Coast Canal integrated with Brahmani river and Delta of Mahanadi river (623 km), and Barak river in Assam (152 km) are to be added to the existing three NWs, taking the coverage up to 4500 km.

9.4.35 For IWT to play a more meaningful role in multi-modal transportation, the planning and development process for IWT requires a structured and scientific approach. The investments required for augmenting the existing IWT infrastructure need to consider overall, end-to-end traffic movement and the requisite phasing of the project for holistic growth. The entire process of project formulation and approvals need to be systemized. IWAI may prepare a comprehensive proposal for each waterway for approval of Expenditure Finance Committee/Public Investment Board (EFC/PIB) and funds may be released according to the phasing as approved for these projects. The IWAI needs to identify some viable stretches and their development may be accorded high priority. Ministry of Shipping needs to formulate the development programme on the above lines.

9.4.36 During the Eleventh Plan, emphasis would be laid on co-operation with Bangladesh for achieving higher exports and better connectivity to NER, by adding more protocol routes, more ports of call, and improved cargo handling facilities on protocol routes. Uniformity in the legal regime and conducive, hassle-free inter-state IWT operations must also be fostered. Amendments in the Indian Vessels (I.V.) Act 1917 may be considered along with formulation of model IV rules framed by IWAI, for State Governments to follow.

Outlay for the Eleventh Plan

9.4.37 The Eleventh Plan outlay for the shipping sector is Rs 1000 crore at 2006–07 price (Rs 1131 crore at current price). The scheme-wise break-up of GBS at current prices is given in the Appendix (Volume III). The sector is also expected to generate IEBR amounting to Rs 12285 crore at 2006–07 price. In addition, the budgetary support for ship-building and repairs is Rs 150 crore (Rs 170 crore at current price). The IEBR for this sector is Rs 550 crore at 2006–07 price.

9.5 PORTS

9.5.1 Ports constitute the inter-modal interface between maritime and road and rail transport. India has a coast line of around 7517 km with 12 major ports and 187 notified non-major (minor/intermediate) ports along the coast line and sea islands. Almost 95% by volume and 70% by value of India's global merchandise trade is carried through the sea route. In 2006–07, the 12 major ports handled about 73% of the maritime cargo of the country. The balance 27% was handled by the non-major ports. Overseas cargo accounts for about 77% of the total cargo handled at Indian ports. Of the 12 major ports, 11 are administered by the respective Port Trusts and Ennore Port, the 12th major port, which started functioning in February 2001, is corporatized.

Review of the Tenth Plan

Traffic and Capacities

9.5.2 The projected traffic for the Tenth Plan period was 415 million tonnes for the major ports and 150 million tonnes for the minor ports, making an overall target of 565 million tonnes. The achievements have been more than the targets in the case of major ports and are likely to exceed the targets in the case of non-major ports also. Major ports have handled 463.84 million tonnes and non-major ports are expected to have handled around 171.92 million tonnes during 2006–07. The actual traffic handled as on 31 March 2006 is 423.42 million tonnes at major ports and 151.14 million tonnes at non-major ports. The commodity-wise traffic handled in the terminal year of the Tenth Plan is given in Table 9.5.1 and year-wise details are given in Annexure 9.5.1. Year-wise and port-wise (major ports) physical achievements are given in Annexure 9.5.2.

9.5.3 The increase of about 70 million tonnes over the target is primarily due to the increase in quantum of iron ore exports to countries such as China, Japan, and South Korea. The traffic in fertilizer (including FRM), break bulk cargo, and containers also exceeded the projections. On the other hand, there was a shortfall in POL, since the port facilities of Nagarjuna Oil Refineries Ltd and LNG handling facilities at Ennore and Cochin expected to be commissioned during the Plan period did not materialize. There is also a shortfall in coal traffic against the projections as the new power plants expected to come up at New Mangalore and Mumbai have not materialized.

9.5.4 The actual capacity of major ports at the start of the Tenth Plan was 343.95 million tonnes which was targeted to go upto 470.60 million tonnes by the end of the Tenth Plan. However, the actual capacity of major ports at the end of the Tenth Plan is likely to have gone upto 504.75 million tonnes by 31 March 2007, showing an increase of 160.80 million tonnes during the Plan period. Such capacity addition was achieved as a result of implementation of spill-over schemes of the Ninth Plan as well as new schemes during the Tenth Plan and improvement in productivity. Thus, the capacity of 504.75 million tonnes of major ports at the end of the Tenth Plan was a little over the actual traffic of 463.84 million tonnes. There has to be

TABLE 9.5.1
Tenth Plan Cargo Traffic Targets and Achievements

(Million Metric Tonnes)

Commodity	Tenth Plan Target	Actual in 2006–07		
		Major Ports	Non-major Ports (Prov.)	Total
POL	235.30	154.35	81.87	236.22
Iron ore	65.50	80.56	29.21	109.77
Coal	88.30	60.22	14.05	74.27
Fertilizers, incl. FRM	18.45	14.11	7.05	21.16
Containers	66.10	73.47	5.0	78.47
Other cargo	91.35	81.13	34.74	115.87
Total	565.00	463.84	171.92	635.76

Note: Prov.= Provisional.

greater cushion for making allowance for bunching of traffic. The details of the capacity addition of 160.80 million tonnes are given in Table 9.5.2.

TABLE 9.5.2
Tenth Plan—Capacity Added to Major Ports

(Million Metric Tonnes)

Commodity	Capacity as on 31 March 2002	Addition during the Tenth Plan	Capacity as on 31 March 2007
POL	135.35	39.35	174.70
Iron ore	43.60	13.90	57.50
Coal	44.20	2.05	46.25
Containers	37.00	51.08	88.08
Other cargo	83.80	54.48	138.22
Total	343.95	160.86	504.75

Productivity

9.5.5 The average turnaround time for all major ports has improved from 4.24 days during the last year of the Ninth Plan to 2.58 days during the last year of the Tenth Plan. Among the ports, Chennai, Tuticorin, Mumbai, Jawaharlal Nehru Port Trust (JNPT), and Kandla have shown appreciable improvement. The pre-berthing detention, which showed substantial improvement and reduced to 4.9 hours in 2003–04 as compared to 11.5 hours during the last year of the Ninth Plan, slipped down slightly in the last two years of the Tenth Plan (but was still better than the Ninth Plan performance). Among the ports, improvement has been noticed in Paradeep, Chennai, Tuticorin, Ennore, and New Mangalore. The output per ship berth day has also shown consistent improvement during the Plan period as detailed in Table 9.5.3.

9.5.6 The major factors contributing to deterioration in average pre-berthing retention time in the last two years were priority berthing and ousting priority to vessels carrying foodgrains and fertilizers notably in the ports of Kandla, Haldia Dock System in Kolkata Port, and Vishakhapatanam Port; bunching of vessels; and lack of mechanized cargo handling equipment for certain dry bulk commodities. Though the cargo handled was within the total capacity of the ports, there was shortfall in the capacity of certain commodities in some specific ports. Inadequate port capacity leads to congestion, thereby leading to ship detention, etc. Most of the ports are not equipped with latest navigational aides and facilities such as Vessel Traffic Management System, sophisticated marine crafts, etc., channel restrictions in width leading to unidirectional movements, number of dedicated berths available being limited leading to bunching of vessels and calling of larger vessels combined with inadequate cargo handling equipments are the other factors contributing to increase in detentions.

Private Sector Participation

9.5.7 The government has put in place a scheme for private participation in major ports mainly in container terminals, specialized cargo berths, warehousing/storage facilities, etc. on BOT basis with a concession period not exceeding 30 years. The scheme also includes formation of joint venture by the ports with the private operators selected on the basis of competitive bidding. The scheme did not take off as expected during the Tenth Plan. Necessary policy initiatives in respect of management control, etc., are required to be evolved for facilitating the formation of joint ventures. In case of non-major ports, the VGF

TABLE 9.5.3
Tenth Plan—Productivity Parameters of Major Ports

Year	Average Turnaround Time (Days)	Average Pre-berthing Detention (Hours)	Average Output per Ship Berth Day (Tonnes)
2001–02 (Ninth Plan)	4.24	11.53	7158
2002–03	3.69	6.90	8455
2003–04	3.45	4.90	9079
2004–05	3.41	6.03	9298
2005–06	3.41	8.73	9586
2006–07	2.58	9.94	12612

scheme of the GoI will have to be made compatible with the requirements and the operational imperatives of the sector so as to enable the non-major ports to access these funds. During the Tenth Plan period, private sector schemes costing Rs 11257 crore were identified, eight schemes costing Rs 2435 crore have been completed with incremental capacity addition of 44.40 million mt, another six schemes costing Rs 3818 crore have already been awarded to private operators which are expected to create an additional capacity of 45.50 million mt.

Sethusamudram Channel Project (SSCP)

9.5.8 SSCP, sanctioned in June 2005 with the objective of creating a navigable channel from Gulf of Munnar to Bay of Bengal/Palk Bay, would save up to 424 nautical miles of navigation and up to 30 hours sailing time for ships plying between the east and west coasts. For the project with an estimated cost of Rs 2427.40 crore, an SPV, the Sethusamudram Corporation Ltd was formed with equity participation of Rs 495 crore by the government.

Tsunami Rehabilitation Programme

9.5.9 The Tsunami Rehabilitation Programme initiated after the severe earthquake and tsunami waves severely damaged the 56 ports, harbours, jetties, wharfs, and allied structures, especially in the southern islands of Hut Bay, Car Nicobar, Nan Cowry group of islands, and Great Nicobar, at an estimated cost of Rs 897.31 crore, is to be completed by March 2009.

Tenth Plan Outlay and Expenditure

9.5.10 An outlay of Rs 5418.29 crore had been approved for the port sector, comprising Rs 972 crore as GBS and Rs 4446.29 crore through IEBR. However, year-wise allocations were aggregated to Rs 5954.84 crore (details are given in Annexure 9.5.3) of which Rs 2892.65 crore or 48.58% was utilized. The acute shortfall in expenditure, particularly in respect of major ports, is due to failure of project formulation leading to delays in implementation and savings on account of schemes dropped/deferred.

Emerging Scenario Impacting the Port Sector

9.5.11 In the backdrop of doubling of India's share in the world trade in the next five years, efficiency and speed in the movement of cargo through ports are vital. Shipping and cargo technologies are changing rapidly; ships are bigger and faster with large-sized container vessels drawing 14.5 m draft and moving at speeds of 25 knots; and containerization of traffic is growing steadily and significantly.

9.5.12 To meet such challenges, initiatives taken include Electronic Data Interchange (EDI)-based single window clearance in many ports and development of an International Container Transshipment Terminal at Cochin. Non-major and private ports have seen spectacular growth. Notably, non-major ports increased their share of cargo traffic from 23.58% in 2000–01 to 27% in 2006–07 while their traffic volume grew by 11.74% (CAGR) in the last five years against 8.54% for major ports. However, the growth of traffic in non-major ports was skewed across coastal States, with Gujarat handling more than 60%.

9.5.13 Nevertheless, much more needs to be done by the Indian ports to improve their operational efficiency through enabling policies, regulatory and institutional mechanisms adopted to raise port efficiency, productivity, human resource planning, and equipment, initially to achieve the benchmarks of efficient ports in the region and to eventually become world class.

Issues and Strategies for the Eleventh Plan

Capacity Augmentation

9.5.14 To meet the overall projected traffic of 1008.95 million tonnes by 2011–12, of which the share of major ports would be 708.09 million tonnes, adequate port capacity is required to be created, the details of which are given in Table 9.5.4.

Dredging

9.5.15 In this crucial component of port capacity, only 11% of the target for capital dredging could be achieved during the Tenth Plan period. The requirement of capital dredging in the Eleventh Plan has increased more than two-fold, to 298.28 million cubic metres (MCuM) for major ports and SSCP and 367.18 MCuM for non-major ports, besides maintenance dredging of 380.06 MCuM and 33.89 MCuM, respectively. During the Eleventh Plan, dredging capacity of ports would

TABLE 9.5.4
Capacity Creation and Projected Traffic in Major Ports in the Eleventh Plan

(Million Metric Tonnes)

Port	Projected Traffic in 2011–12	Existing Capacity 2006–07	Capacity Addition by 2011–12	Total Capacity in 2011–12
Kolkata	13.43	13.40	18.85	32.25
Haldia	44.50	43.50	21.20	64.70
Paradeep	76.40	56.00	55.00	111.00
Vishakhapatnam	82.20	58.50	52.40	110.90
Ennore	47.00	13.00	51.20	64.20
Chennai	57.50	50.00	23.50	73.50
Tuticorin	31.72	20.55	43.43	63.98
Cochin	38.17	20.15	35.40	55.55
New Mangalore	48.81	41.30	22.50	63.80
Mormugao	44.55	30.00	37.46	67.46
Mumbai	71.05	44.65	48.16	92.81
JNPT	66.04	52.40	43.90	96.30
Kandla	86.72	61.30	58.80	120.10
Total	708.09	504.75	511.80	1016.55

be 29.73 MCuM per annum and that of the Dredging Corporation of India (DCI) 168 MCuM per annum.

9.5.16 To enable this capacity creation, a more liberal dredging policy has been brought into force which allows ports to charter foreign flag dredgers after granting the Indian companies the 'first right of refusal'. It is necessary to consider the policy option of procuring the required dredgers from private dredging companies on a long-term basis, with appropriate guarantees and risk-sharing with the terminal operator incorporated in the concession agreement. Joint Ventures should be preferred for projects with a substantial dredging component.

9.5.17 Cargo traffic in general and container traffic in particular is concentrated in western ports leading to congestion and delays. Western ports are typically used even for much of the East Sea lane traffic, which is about 40% of total container traffic. The development of dredging facilities to handle container vessels requiring deeper drafts at the eastern ports should be prioritized in the Eleventh Plan.

Dredging Corporation of India (DCI)

9.5.18 The capacity of the DCI, established in 1976, to provide integrated dredging services to major and minor ports at the beginning of the Tenth Plan was 73.60 MCuM of Trailer Suction Dredgers (TSDs) and 6.25 MCuM of Cutter Suction Dredgers (CSDs). Due to delays in finalization of procurement orders for the dredgers, there was no capacity addition during the Tenth Plan. The expenditure for the Tenth Plan is Rs 206.12 crore as against the outlay of Rs 365 crore.

9.5.19 During the Eleventh Plan, DCI proposes to acquire 10 TSDs of 5000–9000 CuM hopper capacity and 5 CSDs of 2000–3000 CuM hopper capacity in addition to other auxiliary equipment.

Development of New Deep Draft Ports

9.5.20 In order to meet the expected growth in traffic at ports of 10% and more, necessary feasibility and locational studies for developing some more ports, especially on the East Coast, are being undertaken.

Productivity

9.5.21 Improvement of labour productivity through enhanced training and redeployment of surplus human resources is a major area to be addressed during the Eleventh Plan. Equally important, ports would need to pay greater attention to selection, deployment, and operation as well as maintenance of the cargo handling equipment, with on-time replacement of obsolete equipment with state-of-art multi-tasking flexible equipment guided by specified procedures for disposal

of surplus/obsolete equipment. Competition from private operators is already showing some improvements in productivity of public berths.

Dwell Time

9.5.22 The dwell time of cargo in Indian ports is high on account of many constraints. The workflow in Indian ports is manual with low level of IT penetration. For container handling, adequate electronic environment with Enterprise Resource Planning (ERP), which enables the resources of ports to be used in an even and efficient manner, is yet to be established in a full-fledged manner. The EDI, which ensures flow of data electronically between port, customs, shipping lines, and users, resulting in greater accuracy, speed, and efficiency of the total maritime logistic chain, is yet to be commissioned on a common platform. This information bottleneck is estimated to contribute to about 40% of the documentation. At present, EDI is minimal and consists of the proprietary message exchange format formulated by customs. To maximize the benefits of EDI and move towards a paperless regime, necessary steps have been already initiated to implement centralized web-based Port Community System (PCS), which would ultimately achieve seamless integration of the port community. Besides the above, there are other constraints such as inadequate infrastructure, absence of seamless connectivity with other modes, etc. A Committee of Secretaries has gone into these issues and made suitable recommendations indicating time frames ranging from December 2007 to June 2010. After implementation of these recommendations, the expected reduction in terminal dwell time for dry bulk, break bulk, and containers, respectively, would go down from the existing 3.23, 5.62, and 1.88 days to 1.60, 1.50, and 1.00 days in the case of imports and from 3.57, 6.60, and 3.78 days to 1.70, 3.30, and 1.50 days in the case of exports.

Risk Management System (RMS) of Customs

9.5.23 Two main customs components of detention of cargo at ports are assessment and examination at ports. Implementation of RMS is expected to bring about significant reduction in detention to cargo at ports. The basic approach of the RMS is to 'trust the accredited trade partners' and involves self-appraisal and use of minimal and appropriate intervention to address perceived risks. The scheme of the RMS incorporates an Accredited Clients Programme which envisages assured facilitation to clients who meet specified criteria in terms of amount of duty paid, volume of imports, and a clean compliance record. Their imports will be subject to a small percentage of system-generated random checks in order to monitor their continuing compliance and to retain an element of surprise. In respect of non-accredited clients' imports, the RMS will determine the treatment to be given to individual transactions on the basis of an assessment of risks associated with such transactions. The purpose is to ensure that the department's resources are focused on high risk areas so that the threats to revenue and restriction/prohibitions on imports are effectively tackled. A large number of low risk bills of entry are cleared on the basis of self-appraisal mode, without any assessment and examination by officers.

Private Sector Participation

9.5.24 The bulk of capacity augmentation would be undertaken through the PPPs and captive users. New berths at major ports would be constructed through PPP mode, except where operational exigencies necessitate taking up development of new berths through the ports' own resources. In addition to the areas already identified, possibilities for inviting private investment in maintenance dredging operations and pilotage would also be explored during the Eleventh Plan period. For providing stable policy and regulatory framework, the existing model bid documents including the concessions agreement are being refined on the basis of the experiences gathered from the existing PPP projects. A new MCA is being developed taking into account all the experience from existing private terminals and the concerns of all stakeholders.

Non-major Ports

9.5.25 Traffic at non-major ports and private ports is growing at 11.74% (CAGR) and its share is expected to grow from 26.30% in 2005–06 to 30% in 2011–12. During the Eleventh Plan, non-major ports are expected to more than double their capacity, from 228.31 million tonnes upwards to 575 million tonnes. The total value of the developmental schemes to be taken

up during the Eleventh Plan amounts to around Rs 36000 crore, with contribution predominantly from private entities.

9.5.26 A holistic and integrated development perspective of major and non-major ports is necessary as they would complement and compete with each other. Suitable policies need to be devised so that non-major ports also act as centres of growth with appropriate coordination among the maritime States and the Central agencies.

Tariff Regulation

9.5.27 Increasing induction of private players in port operations is resulting in the gradual emergence of a competitive environment. The multiplicity of port operators has brought into focus the pressing need for an institutional mechanism that provides a level playing field for all port operators. Areas such as navigational safety, security, and conservancy in ports; safety and occupational health; disaster management; and pollution control measures would also need to be regulated by a national authority. The jurisdiction of Tariff Authority for Major Ports is restricted to the levy of tariffs for services rendered by major ports or by private operators authorized by them. A suitable regulator and a regulatory framework to address issues specific to the ports should be put in place.

Institutional Reforms

9.5.28 To make port management more responsive to the dynamic and growing needs of port users, it would be necessary to impart (i) financial and operational autonomy to them, (ii) separate regulatory and management functions with a view to commercialize the latter, (iii) improve access to long-term capital and project finance, and (iv) unbundle various services and privatize identified areas.

Box 9.5.1
Tariff Setting Mechanism

The present 'cost plus' tariff setting mechanism combined with the revenue sharing model for the PPP projects has certain inconsistencies. The Task Force, set up under the chairmanship of Anwarul Hoda, Member, Planning Commission, to examine the tariff setting mechanism and bidding parameters for PPP projects has noted that tariffs to be charged by port operators would be determined by market forces once adequate capacity is developed and sufficient competition introduced. However, in the interim the berths should be bid out after determining the tariff caps up front on the basis of norms to be developed for the purpose. As at present the revenue share would continue to be the sole bidding parameter.

Corporatization

9.5.29 Corporatization of Ports Trusts would provide better accessibility to funds, create a board-managed corporate entity, and facilitate disinvestment. On the other hand, corporatization with revaluation of assets could merely push up tariffs without the port users seeing any change in the quality of service, if such a move is not supported by other reforms. The provisions of the Major Port Trusts Act can be purposefully invoked to serve the desired purpose in tandem with judicious privatization of the port services with the Ports Trusts playing a landlord's role. Where a particular service does not generate a sufficient stream of revenue and is thus non-viable for total privatization, the JV route for attracting private investment and management expertise should be encouraged.

9.5.30 For improving productivity, quality of service, and enhancing their competitiveness, the existing structure in the major ports would be reoriented for rendering port services, consistent with the practices followed in the Landlord Port Model.

IT in Ports

9.5.31 So far, from amongst the two basic IT systems, namely, Application Software to manage the operation of ports and EDI to facilitate appraisal and payment of duty without any human interface, the port–user interface has been achieved in some of the ports, while EDI has been introduced and port–customs interface achieved in all major ports, except Paradeep. Now, all activities across the maritime transport chain have to be integrated through one common standard PCS. It is expected that PCS in major ports would be implemented in the first year of the Eleventh Plan. The ports should draw up their IT Policy with the objective to develop and deploy state-of-art information and communication technologies to maximize the port's efficiency and effectiveness.

9.5.32 In sum, the thrust of IT in port sector in the Eleventh Plan would be: (i) to implement centralized web-based EDI-PCS at major ports and to further extend this to supply chain management system and to bring other ports into its ambit, (ii) to gear up ports to have Radio Frequency Identification (RFI) device reader to capture the data from RFI device tags on shipments, and (iii) to implement centralized ERP covering all major ports.

Hinterland Connectivity

9.5.33 Apart from other deficiencies, port efficiency is impeded owing to the port's inability to handle additional traffic because of slow evacuation of cargo from ports or slow turnaround of ships. This undermines the competitiveness of Indian ports vis-à-vis other ports in the region, and vitiates the environment for investment in manufacturing in the country. Therefore, it is important that connectivity of major ports with the hinterland is augmented not only to ensure smooth flow of traffic at the present level but also to meet the requirements of projected increase in traffic.

9.5.34 The recommendations of the Committee of Secretaries constituted to address hinterland connectivity include construction of a four-lane road as well as double railway line connectivity for each major port, consideration of projects less than minimum prescribed IRR on case to case basis, and consideration of budgetary assistance and also the assistance under VGF scheme for such projects. The Committee further recommended that 10 road projects of value Rs 2036 crore and 8 rail projects of value Rs 2014 crore, which had already been sanctioned, should be completed in a time-bound manner. All approved recommendations are to be implemented within a period of three years, that is, by 2009.

Andaman Lakshadweep Harbour Works (ALHW)

9.5.35 ALHW was set up in 1965 for planning, execution, and maintenance of port and harbour facilities in the Andaman and Nicobar Islands and Lakshadweep Islands. During the Tenth Plan, construction of breakwaters at Mus in Car Nicobar and extension of wharf at Hut Bay in Little Andamans were completed. Embanking facilities at Agathi, Amini, and Minicoy and Kawaratti in Lakshadweep, and development works of Junglighat Harbour in Port Blair and deep water wharf in Campbel Bay have been taken up. Against the Tenth Plan outlay of Rs 200 crore, expenditure incurred till 31 March 2007 was Rs 144.20 crore.

Outlay For the Eleventh Plan

9.5.36 The Eleventh Plan budgetary support for Central sector ports is Rs 3315 crore at 2006–07 price (Rs 3749 crore at current price). The scheme-wise break up of GBS at current prices is given in the Appendix (Volume III). In addition, the sector is expected to generate IEBR of Rs 26574.11 crore at 2006–07 price and private sector investment of Rs 36868.00 crore during this period. Further, a public investment of Rs 3627.00 crore is expected in the State sector.

9.5.37 The total projected outlay for the Eleventh Plan for the Department of Shipping (including Ports) is Rs 43874 crore at 2006–07 price (Rs 49623 crore at current price) which includes Rs 4465 crore of GBS at 2006–07 price (Rs 5050 crore at current price) and Rs 39409 crore of IEBR at 2006–07 price (Rs 44573 crore at current price).

9.6 CIVIL AVIATION

Overview

9.6.1 Air transport is the preferred mode of transport especially for long-distance travel, business travel, accessing difficult terrains, and for transporting high-value and perishable commodities mainly on account of the speed of travel and saving of time. With the opening up of domestic skies to private carriers in the second half of the Tenth Plan, air services have become affordable and are now effectively competing with other modes of transport. Propelled by growth of the economy and liberalization, the sector experienced an unprecedented growth during the Tenth Plan, accelerating particularly in its last three years.

Review of the Tenth Plan

9.6.2 During the Tenth Plan an outlay of Rs 12928.00 crore was provided to the Ministry of Civil Aviation (MoCA), out of which Rs 7792.09 crore or 60% of the outlay was spent by them. However, against a sum of Rs 672.73 crore provided as GBS, the expenditure

incurred was to the tune of Rs 546.10 crore or 81%. Details of outlay and anticipated expenditure are given in Annexure 9.6.1.

9.6.3 Important developments in the airline and airport sector included: (i) modernization and restructuring of Delhi and Mumbai airports launched through JV companies; (ii) development of greenfield air-ports at Bangalore and Hyderabad on a Build–Own–Operate–Transfer basis with PPP; (iii) approval of modernization of 35 non-metro airports and 13 other airports to world-class standards in phases; (iv) liberalization of FDI limit upto 100% through automatic route for setting up greenfield airports; (v) acquisition of modern and technologically advanced aircraft for Air India (AI) Ltd, Air India Charters Ltd (AICL), and Indian Airlines Ltd; (vi) liberalization of bilateral air services agreement in line with the contemporary developments in international civil aviation sector; (vii) adoption of a limited Open Sky Policy in international travel to meet the traffic demand during peak season; and (viii) adoption of trade facilitation measures in custom procedures to facilitate speedy clearance of air cargo.

Eleventh Plan

Objectives

9.6.4 The main objectives of the Civil Aviation Sector for the Eleventh Plan would be to provide (i) world-class infrastructure facilities; (ii) safe, reliable, and affordable air services so as to encourage growth in passenger and cargo traffic; and (iii) air connectivity to remote and inaccessible areas with special reference to north eastern part of the country.

Strategies

9.6.5 The realization of above objectives would call for capacity building that will include modernization and expansion of major international and domestic airports, construction of new greenfield airports including that of the NER, enhancement of cargo handling facilities at all airports, and upgradation/modernization of Air Traffic Management (ATM) System.

9.6.6 Similarly, in the airline sector, acquisition of modern fuel-efficient aircraft fitted with the latest equipment would be encouraged. The capacity building process in both airlines and airports would be mainly through increased private sector participation. While a decision has been taken to modernize the non-metro airports through the Airports Authority of India (AAI), the city side development at these airports would be done through PPP. Two major metro airports (Delhi and Mumbai) and two greenfield airports (Bangalore and Hyderabad), which would be completed during the Eleventh Plan, are already being developed through PPP. A similar strategy is envisaged for the Navi Mumbai airport for which in-principle clearance has been given. While the existing airports at Kolkata and Chennai would be developed by AAI, the greenfield airports at these locations will need to be taken up through PPP.

9.6.7 Acute shortage of technical and operating manpower would be addressed by upgrading the existing training institutes and opening new world-class flying training institutes.

Traffic Projections

9.6.8 Both domestic and international traffic witnessed a boom during the last three years of the Tenth Plan, that is 2004–05, 2005–06, and 2006–07, with growth in passenger traffic of 21.5%, 23.7%, and 31.38%, respectively, resulting in overall growth (CAGR) of 19.23% (13.58% in international passenger and 21.78% in domestic traffic) during the Tenth Plan. The main factors contributing to this growth include the growth of the economy, falling fares, and increasing capacities of domestic private airlines. It is estimated that international and domestic passengers are forecast to grow at the rate of 15.9% and 19.9%, respectively, resulting in overall increase of 18.8% during the Eleventh Plan. All the Indian airports taken together, passenger traffic is forecasted at 2054.00 lakh (540.37 lakh international and 1513.63 lakh domestic passengers) and cargo traffic at 2683.47 thousand metric tonnes (TMTs) (1822.69 TMTs international and 860.78 TMTs domestic cargo) by 2011–12.

9.6.9 Additional capacities of about 296.95 lakh international and 1035.74 lakh domestic passengers would require to be created at 45 major airports by 2011–12, as the total international passengers and

domestic passengers projected would be 539.39 lakh and 1489.70 lakh, respectively.

9.6.10 Similarly, during the Tenth Plan, cargo traffic grew (CAGR) by 12.70% (12.75% international and 12.61% domestic cargo). During the Eleventh Plan, international and domestic cargo traffic is expected to grow at the rate of 12.1% and 10.1%, respectively, resulting in overall increase of 11.4%.

9.6.11 To take care of above growth in respect of cargo terminal, additional capacity would require to be created to the tune of 800.00 TMTs of international cargo traffic and about 300.00 TMTs of domestic cargo traffic by 2011–12.

Policy Framework

Air Transport

9.6.12 The main advantage of civil aviation lies in its speed particularly over long distances and difficult terrain. A major disadvantage is the high cost of transportation on account of high Aviation Turbine Fuel (ATF) cost, which is further aggravated by taxes. Viewed in inter-modal context, it is desirable to rationalize ATF pricing and to review the tax structure.

Multi-modal Connectivity

9.6.13 The major airports in India are mostly at considerable distance from the city centre. Apart from causing inconvenience to the passengers, this also adversely affects the comparative advantage in terms of saving in time otherwise enjoyed by air transport vis-à-vis other modes of transport. These airports need to be connected to cities by metros and expressways to get full advantage of air transportation by reducing the total travel time.

Foreign Equity Participation

9.6.14 The Domestic Air Transport Policy approved by the government provides for foreign equity participation up to 49% and investment by non-resident Indians (NRIs) up to 100% in the domestic air transport services. Foreign airlines are, however, not permitted to participate in equity directly or indirectly. With a view to attracting new technology and management expertise, this policy needs to be reviewed.

Air Cargo

9.6.15 Today, about 40% of the world's cargo business, in terms of value, moves by air. Although cargo traffic is growing steadily in recent years it has not kept pace with the passenger traffic growth because of shortcomings such as lack of facilities for transhipment of imports and exports; absence of integrated cargo infrastructure; deficiencies in gateway and hinterland connectivity through rail and road; complexities in custom procedures in air cargo; and need for technological upgradation and performance-based service standards. To address these shortcomings, during the Eleventh Plan, steps will be taken including (i) streamlining/simplification of procedures by various regulatory agencies; (ii) provision of infrastructural facilities relating to cargo handling; (iii) promoting and developing India as a Regional Air Cargo Hub; and (iv) setting up of 'Cargo Villages' at key international airports.

Maintenance, Repair, and Overhaul (MRO)

9.6.16 Owing to the availability of skilled manpower, India has the potential to emerge as an MRO hub in Asia Pacific region. Currently, the two merged National Airlines, viz., Indian Airlines and AI, have in-house aircraft maintenance facilities, but at times they too have to outsource maintenance to foreign companies. At present, there is virtually no credible third-party MRO facility in India to support the requirements of the rapidly expanding aircraft fleets of private operators. The current growth phase provides India an ideal opportunity to develop into an MRO hub. Investment by the private sector including foreign direct investment would be encouraged to this end.

Regional Airlines

9.6.17 In order to tap the vast potential of growth of traffic and to encourage balanced growth of civil aviation, regional airlines need to be promoted. The promotion of regional airlines would, however, be through more liberal policy and provision of better infrastructure facilities. The rules and procedures governing the entry may also be simplified.

Route Dispersal Guidelines (RDG)

9.6.18 According to the RDG laid down in 1994, all scheduled operators are required to deploy a certain

percentage of their capacity on trunk routes (Category-I routes) to the North Eastern and other inaccessible areas (Category-II) and within Category-II regions. In view of the vital changes that have taken place in civil aviation sector since the policy was laid down, it is desirable to review the RDG to bring them in line with these developments. One way to make the RDG workable will be to make the obligation tradable. Another alternative could be to provide direct subsidies to operators willing to operate in inaccessible and isolated areas and require the operators on trunk routes to contribute towards the subsidy.

Air Connectivity in NER and Other Remote/Inaccessible Areas

9.6.19 In view of the hilly terrain with uneasy access through the land link, improvement of air connectivity and development of airport infrastructure in NER and other remote areas such as the hill States of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and island territories of Andaman and Nicobar and Lakshadweep need to be accorded top priority.

9.6.20 During the Eleventh Plan, three greenfield airports, one each at Pakyong in Sikkim, Itanagar in Arunachal Pradesh, and Chiethu in Nagaland, would be constructed. In addition, some existing airports in NER would also be taken up for expansion/modification so as to make them operational for scheduled flights. Airports in other crucial areas such as Jammu, Dehradun, Agatti, and Port Blair would be taken up under the scheme for modernization and upgradation of 35 non-metro airports.

Air Transport Security

9.6.21 Security issues, particularly arising out of the terrorist-related activities, have assumed even greater importance in the international environment in recent decades. The legal and institutional framework for civil aviation security needs to be strengthened by evolving appropriate technology, training, and equipments.

Role of the Private Sector

9.6.22 The private sector is now playing a crucial role in the development of both airline and airport sector. Its market share in the domestic traffic during 2006 reached 78.5%, which includes the 29% traffic of low cost airlines. Jet Airways has emerged as the market leader with a share of 31.2%, followed by Indian Airlines (21.5%), Air Deccan (18.3%), Air Sahara (8.8%), Kingfisher (8.7%), Spice Jet (6.9%), Go Air (2.8%), Indigo (1.3%), and Paramount (0.7%). The private sector share is likely to increase during the Eleventh Plan with an estimated further acquisition of additional fleet by them of about 258 aircraft through a mix of lease/purchase involving an investment of as much as Rs 71863.00 crore.

9.6.23 The total private investment envisaged for this sector, including Rs 1500.00 crore for city side development 35 non-metro airports, would be to the tune of Rs 93493.00 crore during the Eleventh Plan.

New Initiatives

9.6.24 In order to sustain the spectacular growth registered by the civil aviation sector in the last few years through the Eleventh Plan, the following initiatives have been taken:

- Model Concession Agreement (MCA) is being evolved to help attract private investments and also facilitate smooth execution of air transport projects.
- Airports Economic Regulatory Authority (AERA) is being established in order to create a level playing field and healthy competition amongst all major airports (handling more than 1.5 million passenger per annum); encourage investment in airport facilities; regulate tariffs of aeronautical services; protect reasonable interest of users; and operate efficient, economic, and viable airports.
- Merger of AI and Indian Airlines to optimize fleet acquisition, to leverage the asset base, to strengthen the network, and to achieve economy of scale, with estimated cost and synergy benefits (net) of Rs 600.00 crore at the end of the third year of merger.
- Human Resource Development (HRD) to mitigate the acute shortage of qualified personnel, especially pilots and flying instructors. The following steps are being taken in this regard:
  - Training facilities at Indira Gandhi Rashtriya Uran Akademi (IGRUA) would be upgraded/augmented.
  - A new Flying Training Institute would be set up at Gondia, Maharashtra.

  - Flying clubs and schools would be encouraged to improve equipment and infrastructure.
- Revamping of AAI in light of the strain on aviation infrastructure resulting in traffic congestions and delays at some of the airports resulting from the high growth in the sector. It would be revamped with multidisciplinary staff and expertise along with independent directors. The framework for revamp of AAI would be worked out during the Eleventh Plan.

Organizations of Ministry of Civil Aviation (MoCA)

Air India (AI)

9.6.25 During the Tenth Plan, AI Ltd has incurred an expenditure of Rs 2388.27 crore as against the approved outlay of Rs 2661.39 crore, which works out to about 90% of the approved outlay. The shortfall was mainly due to appreciation of Indian rupee and deferment of non-aircraft capital expenditure to subsequent years due to resource constraints. The financial performance of AI during the Tenth Plan is given in Table 9.6.1.

9.6.26 The net profit of AI Ltd has declined from Rs 133.86 crore during 2002–03 to Rs 12.50 crore during 2006–07 due to its fall in share of the traffic due to increased competition. Absence of an adequate fleet of new aircrafts was a major contributory factor for the decline in competitiveness of the airline.

9.6.27 AI has been successful in increasing its capacity as is evident from Table 9.6.2. During the Eleventh Plan, AI Ltd would acquire 50 new long-range aircrafts comprising 8 Boeing 777–2000 LR, 15 Boeing 777–300 ER, and 27 Boeing 787 aircraft. With these acquisitions, its targeted capacity would increase to 10484 million in terms of available tonne kilometres (ATKMs) and 7092 million in terms of revenue tonne kilometres (RTKMs) by the end of the Eleventh Plan.

Indian Airlines

9.6.28 During the Tenth Plan, Indian Airlines could spend only Rs 1431.54 crore as against the approved outlay of Rs 4240.50 crore, a shortfall of 66%, mainly attributed to the appreciation of Indian rupee, less outgo towards new aircraft project, and taking up of operationally essential projects only under 'other supporting facilities' on account of resource constraint. Indian Airlines has improved its financial performance as given in Table 9.6.3.

TABLE 9.6.1
Financial Performance of Air India

(Rs in Crore)

S. No.		2002–03	2003–04	2004–05	2005–06	2006–07
1.	Total revenue	5689.88	6331.78	7676.39	9251.02	8887.00
2.	Total expenses	5545.87	6238.07	7579.85	9232.52	8874.50
3.	Net profit/loss before tax	144.01	93.71	96.54	18.50	12.50
4.	Net profit/loss after tax	133.86	92.33	96.36	14.94	12.50

TABLE 9.6.2
Growth in Capacity and Traffic during the Tenth Plan

(in Million)

Year	Capacity Available (ATKMs)	Capacity Utilized (RTKMs)	Load Factor (%)
2002–03	2415.9	1561.0	64.6
2003–04	2897.5	1774.0	61.2
2004–05	3600.4	2218.0	61.6
2005–06	4193.2	2363.7	56.4
2006–07 (Prov.)	4152.9	2204.20	53.1
Total	17259.9 (13711.00)#	10120.90 (9185.80)#	58.6 (67.0)#

Note: # Targets for the Tenth Plan.

TABLE 9.6.3
Financial Performance of Indian Airlines

(Rs Crore)

S. No.		2002–03	2003–04	2004–05	2005–06	2006–07 (BE)
1.	Total revenue	4173.51	4725.67	5362.57	5788.82	7944.00
2.	Total expenses	4370.07	4677.50	5290.96	5725.82	7847.50
3.	Net profit/(loss) before tax	(–)196.56	48.17	71.61	63.00	96.50
4.	Profit/(loss) after tax	(–)196.56	44.17	65.61	49.50	43.00

Note: BE= Budget Estimate.

9.6.29 Indian Airlines started earning net profit of Rs 44.17 crore in 2003–04, mainly due to increase in domestic fares and various cost-cutting measures initiated by the company. However, increase in ATF price and fall in passenger yields as a result of intense competition in domestic aviation market made the financial performance erratic.

9.6.30 During the Tenth Plan, the physical performance of Indian Airlines, in terms of capacity produced and utilized, indicates that it has not been able to achieve the targets, mainly due to delay in acquisition of aircrafts and intense competition from other domestic airlines, as given in Table 9.6.4. In order to increase its capacity and expand network during the Eleventh Plan, Indian Airlines would acquire 43 new Airbus aircrafts, the order for which was placed during the Tenth Plan. In addition to these aircrafts, Indian Airlines proposes to lease 12 wide-body aircrafts and 8 Turbo Prop aircrafts (50-seater), among others, thereby enlarging the total fleet size to 117 by the end of the Eleventh Plan. At the same time, it proposes to phase out 11 Boeing 737–200, 3 Airbus A 300, and 2 Dornier. As a result, the capacity of Indian Airlines is expected to grow from 1686 million ATKMs to 4238 million ATKMs by the end of the Eleventh Plan. Similarly, the capacity in terms of RTKMs is expected to grow from 1233 million RTKMs during 2006–07 to 3093 million RTKMs during the same period.

Airports Authority of India (AAI)

9.6.31 Against the approved budget of Rs 5404.21 crore including budgetary support of Rs 250 crore, AAI spent Rs 3534.62 crore including budgetary support of Rs 150.67 crore during the Tenth Plan. The shortfall in expenditure of 35% was mainly due to deferment of projects at Delhi and Mumbai airports due to their restructuring through PPP, delay in finalization of certain projects for non-metro airports, and delay in procurement of communication/surveillance and distance measuring equipment.

9.6.32 The net profit of AAI has increased from Rs 282.05 crore during 2002–03 to Rs 793.71 crore during 2006–07, thus earning an appreciable total profit of Rs 2433.71 crore during the Tenth Plan, as indicated in Table 9.6.5.

9.6.33 During the Eleventh Plan, AAI would be undertaking development of 35 non-metro airports and 13

TABLE 9.6.4
Growth in Capacity and Traffic during the Tenth Plan

(In Million)

Year	Capacity Available (ATKMs)	Capacity Utilized (RTKMs)	Load Factor (%)
2002–03	1308.018	845.097	64.6
2003–04	1334.069	877.475	65.8
2004–05	1472.062	1017.284	69.1
2005–06	1592.642	1140.947	71.6
2006–07 (Prov.)	1686.29	1232.67	73.1
Total	7393.081 (8384.00)#	5113.473 (5793.00)#	69.2 (69.1)#

Note: # Targets for the Tenth Plan.

TABLE 9.6.5
Financial Performance of Airports Authority of India

(Rs Crore)

S. No.		2002–03	2003–04	2004–05	2005–06	2006–07
1.	Total revenue	2384.49	2630.59	2999.65	3490.46	3431.86
2.	Total expenses	1887.44	2086.63	2314.83	2281.85	1948.15
3.	Net profit/loss before tax	497.05	543.96	684.82	1208.61	1483.71
4.	Provision for tax	215.00	229.00	359.45	490.99	690.00
5.	Profit after tax	282.05	314.96	325.37	717.62	793.71

other airports; development of Chennai and Kolkata airports; construction of new greenfield airports, including three in NER; expansion of five airports in NER and other crucial areas; up-gradation of technology from ground-based Communication, Navigation, and Surveillance-Air Traffic Management (CNS-ATM) to satellite-based CNS-ATM facilities; installation of new facilities including security equipment at various airports; installation of safety and facilitation equipment; development of airspace capacity enhancement; and development of IT.

Pawan Hans Helicopters Ltd (PHHL)

9.6.34 PHHL has incurred an expenditure of Rs 281.95 crore as against an approved outlay of Rs 458.90 crore, which is 61% of approved outlay for the Tenth Plan. The shortfall was due to delay in acquisition of new helicopters.

9.6.35 In spite of ever increasing ATF price, PHHL could increase its profit to Rs 49.00 crore in 2006–07 from Rs 15.39 crore during 2002–03, as per the details given in Table 9.6.6.

9.6.36 During the Eleventh Plan, PHHL would add 20 more helicopters to expand its present fleet including five medium class helicopters with longer range and higher pay-load capabilities for deep water exploration. The provision of helicopter support services would also be extended, beyond servicing ONGC, National Hydroelectric Power Corporation Ltd (NHPC), Ministry of Home Affairs, and State Governments, especially of North Eastern States and other remote and inaccessible States/UTs, to new areas such as tourism, medical evacuation, law enforcement, news gathering, intra-city transportation, and corporate travel. Besides, possibility would also be explored to expand its repair and overhaul business by offering repair services to other operators as well as by creating a new state-of-art maintenance centre at Mumbai.

Hotel Corporation of India (HCI)

9.6.37 An outlay of Rs 15.00 crore was approved for HCI during the Tenth Plan, against which the expenditure incurred was Rs 26.27 crore, or 75% more than the allocation, mainly on the maintenance and operation of hotels due to delay in their disinvestment.

9.6.38 HCI is expected to earn a profit of Rs 2.19 crore during 2006–07 after incurring losses for the first four years of the Tenth Plan.

9.6.39 The hotels of HCI were recommended for disinvestment and, accordingly, the disinvestment in two hotels, viz., Centaur Hotels at Mumbai airport and Juhu Beach in Mumbai, was completed during 2002–03. The

TABLE 9.6.6
Financial Performance of Pawan Hans Helicopters Ltd

(Rs Crore)

S. No.		2002–03	2003–04	2004–05	2005–06	2006–07(RE)
1.	Total revenue	205.02	224.00	241.85	199.08	211.50
2.	Total expenses	145.54	158.78	173.90	163.98	177.86
3.	Net profit/loss before tax	24.37	77.84	83.86	64.60	40.30
4.	Profit after tax	15.39	52.69	49.58	47.39	49.00

Note: RE= Revised Estimate.

process of disinvestment was, however, discontinued following a change in the government policy under which it has been decided to run Centaur Hotel at Srinagar and Flight Kitchens at Mumbai on a long-term management contract. The two other hotels, viz., Centaur Hotel and Flight Kitchen at Delhi airport will be run by the HCI till the Commonwealth Games and a decision would be taken thereafter. During the Eleventh Plan these hotels would need renovation so as to make them competitive.

Air India Charters Limited (AICL)

9.6.40 AICL is a subsidiary of AI Ltd. It used to provide manpower for allied services at airports. However, there has been a metamorphosis in the role of the company from being merely a service provider of ground handling and security to the first international low cost, no frill 'budget' airline from India. Its low cost airline, viz., AI Express has commenced operations on 29 April 2005. Since then it has incurred plan expenditure of Rs 59.01 crore. The net profit earned by AICL has increased to Rs 2.50 crore in 2006–07 showing an increase of about 85% over the net profit of Rs 1.35 crore earned during 2005–06, as per the details given in Table 9.6.7.

9.6.41 With the objective of increasing capacity and modernizing its fleet, it had placed an order for 18 Boeing 737–800 aircrafts during the Tenth Plan, of which 6 were delivered. The remaining 12 would be delivered during the Eleventh Plan period. With these acquisitions, capacity enhancement in terms of ATKMs and RTKMs would be 1107.00 million and 883.00 million, respectively, by 2011–12.

Indira Gandhi Rashtriya Uran Akademi (IGRUA)

9.6.42 The approved outlay of IGRUA during the Tenth Plan was Rs 10.00 crore, against which an expenditure of Rs 37.88 crore was incurred mainly on account of upgradation/modernization of the institute to increase its capacity to meet the growing demand for pilots due to entry of new airlines and expansion of fleet by the existing airlines.

9.6.43 IGRUA, as the premier institute for imparting flying training to commercial pilots, would need to increase its capacity during the Eleventh Plan by upgrading and augmenting its existing facilities so as to increase the number of pilots to be trained from the existing capacity of 30 pilots per annum to 100 pilots per annum. A project for upgradation/strengthening of IGRUA including augmentation of training facilities such as acquisition of 11 aircrafts (10 single engine and 1 multi-engine aircraft) was approved during the Tenth Plan. However, during the Eleventh Plan two more aircrafts, one King Air Simulator (Glass Cockpit) and one TB-20 CPT (Glass Cockpit) would be acquired. Further, in order to bring professionalism in the management of the Akademi and to make the institute self-sustaining, the possibility of entrusting the management of IGRUA to a private sector partner on a management lease basis would be explored.

Aero Club of India (ACI)

9.6.44 During the Tenth Plan, ACI spent Rs 11.00 crore as against the approved outlay of Rs 5.00 crore which is 120% more than the approved outlay.

9.6.45 ACI being the apex body of all the flying clubs, gliding clubs, and aero sports organizations in India encourages them to improve equipment and infrastructure by providing support to them. During the Eleventh Plan, ACI would acquire trainer aircraft, simulator, and training aids for distribution among the member flying clubs. Besides, it would also explore the possibility to develop aero-sports facilities including an aero-sports complex.

TABLE 9.6.7
Financial Performance of Air India Charters Ltd

(Rs Crore)

S. No.	Particulars	2002–03	2003–04	2004–05	2005–06	2006–07 (RE)
1.	Revenue	–	–	–	432.38	736.50
2.	Expenses	–	–	–	427.54	734.00
3.	Net profit/(loss) before Tax	–	–	–	4.84	2.50
4.	Net profit/(loss) after Tax	–	–	–	1.35	2.50

Directorate General of Civil Aviation (DGCA)

9.6.46 During the Tenth Plan, an outlay of Rs 19.00 crore was provided to DGCA, against which it could spend only Rs 12.03 crore. The shortfall was due to the acquisition of lesser number of trainer aircrafts from National Aerospace Laboratories (NAL).

9.6.47 With the objective of ensuring safety in air transport, the existing training programmes of DGCA such as Safety Oversight Programme of ICAO, Co-operative Development of Operational Safety and Continuing Airworthiness Programme (COSCAP) and European Union Training Programme will be continued during the Eleventh Plan. The other programmes which DGCA would be taking up will be procurement of trainer aircrafts (light helicopters/simulators for restructuring of flying/gliding clubs/institutions), purchase of machinery and equipment for aircraft accident investigation laboratories, and modernization of examination system and civil works at DGCA headquarters and their field offices.

9.6.48 Keeping in view the acute shortage of technical and operating manpower, it is proposed to establish a new world-class state-of-the-art National Flying Training Institute at Gondia, Maharashtra. The main objective of the institute is to provide flying training to trainees for acquiring Private Pilot Licence, Commercial Pilot Licence, Airline Transport Pilot Licence, Micro Pilot Licence, etc. The institute would also be utilized for R&D in the field of flying training, aviation-related innovative and practical courses.

Bureau of Civil Aviation Security (BCAS)

9.6.49 During the Tenth Plan, BCAS could spend only Rs 9.52 crore as against the approved outlay of Rs 114.00 crore, which works out to about 8%. The huge shortfall in utilization of funds was mainly due to non-finalization of schemes, such as restructuring of BCAS, construction of additional Regional Deputy Commissioner of Security Office, setting up of additional Bomb Detection and Disposal Squad (BDDS)/dog squads, and also due to delay in commencing work on setting up the Civil Aviation Security Academy.

9.6.50 Security in airlines operations has assumed greater importance especially after the incident of 9/11 and threats arising out of other terrorist-related activities. It would be necessary to undertake measures to strengthen and restructure BCAS, its training methods and training infrastructure, etc. Other measures would include electronic perimeter surveillance and protection, automated smart card access control at airports, setting up of additional BDDS and dog squads at the identified hyper-sensitive airports, and setting up of Civil Aviation Security Training Academy during the Eleventh Plan period.

Outlay for the Eleventh Plan

9.6.51 The total projected outlay for the Eleventh Plan for MoCA is Rs 43560 crore at 2006–07 price (Rs 49267 crore at current price) which includes Rs 1680 crore of GBS at 2006–07 price (Rs 1900 crore at current price). The scheme-wise break up of GBS at current prices is given in the Appendix (Volume III). In addition, the sector is expected to generate private sector investment of Rs 93493 crore during this period. The IEBR may go up by Rs 2226.68 crore at 2006–07 price on account of higher generation and utilization by AAI to fund their projects.

ANNEXURE 9.2.1
Resource Mobilization for the Tenth Five Year Plan

(In Rs Crore at Current Price)

Year	Internal Resources		Market Borrowings		Gross Budgetary Support		Total
	Amount (Rs crore)	Share (%)	Amount (Rs crore)	Share (%)	Amount (Rs crore)	Share (%)	Amount (Rs crore)
2002–03	3113	27	2517	22	5778	51	11408
2003–04	3475	26	2837	21	7081	53	13393
2004–05	3712	24	3041	20	8669	56	15422
2005–06	7033	37	3731	20	8074	43	18838
2006–07 (RE)	12233	49	4794	19	7914	32	24941
Total (Provisional)	29567	35	16920	20	37516	45	84003
Tenth Plan Outlay			33000 (54.5%)		27600	45.5	60600

ANNEXURE 9.2.2
Gross Budgetary Support

(In Rs Crore at Current Price)

Year	Capital		Special Railway Safety Fund		Diesel Cess		Total	
	Amount (Rs Crore)	Share (%)	Amount (Rs Crore)	Share (%)	Amount (Rs Crore)	Share (%)	Amount (Rs Crore)	Share (%)
2002–03	4264	37.6	1350	11.9	164	1.5	5778	51
2003–04	5315	39.8	1600	12.0	166	1.2	7081	53
2004–05	5493	35.5	2975	19.2	201	1.3	8669	56
2005–06	5312	28.3	2499	13.3	262	1.4	8073	43
2006–07	6189	24.8	1365	5.5	360	1.4	7914	33
Total (Provisional)	26573	31.6	9789	11.5	1154	1.4	37516	45

ANNEXURE 9.3.1
Financial and Physical Performance

(In Rs Crore)

S. No.	Schemes/Programmes	Financial Performance Tenth Plan			
		Outlay	BE	RE	Actual Exp.
1	2	3	4	5	6
1.	Externally aided projects	13990.00	13050.70	10007.90	9495.18
	(i) Externally aided (RW)	2560.00	403.10	99.16	7.53
	(ii) Counterpart funds (RW)	640.00	126.00	28.54	4.66
	EAP Ministry	3200.00	529.10	128.00	15.53
	(iii) Externally aided (NHAI)	8712.00	10015.72	7893.62	5182.70
	(iv) Counterpart funds (NHAI)	49.50	0.00	0.00	0.00
	(v) Loan to NHAI	2028.00	2504.88	1986.28	1346.78
	EAP—NHAI	10789.50	12520.90	9879.98	9479.48
	(vi) Strengthening of PIC	0.50	1.00	0.85	0.47
2.	Other schemes—NH (O)	8664.00	7443.60	7789.67	7560.85
3.	Works under BRDB	950.00	1564.00	1508.00	1525.43
4.	Travel expenses (domestic)	20.00	5.27	3.47	3.05
5.	Other charges		2.90	1.18	0.53
6.	Development of Information Technology	20.00	24.00	14.50	9.44
7.	Strategic roads under RW	50.00	1.50	1.50	0.00
8.	Strategic roads under BRDB		192.17	202.42	178.30
9.	R&D Plg. studies	20.00	24.75	22.75	11.50
10.	Training	10.50	17.50	15.50	13.60
11.	Machinery and equipment	15.00	37.72	37.72	34.67
12.	Charged expenditure	50.00	25.00	25.00	17.79
13.	NHAI (investment)	10500.00	15518.19	15518.19	15518.19
14.	E&I for States from CRF	500.00	716.11	626.11	374.55
15.	E&I for UTs from CRF		31.09	31.09	8.55
16.	NHDP-III, two-laning expressways and six-laning		1510.00	810.00	810.00
17.	SARDP-NE		1000.00	1000.01	550.01
18.	Strategic Roads in Arunachal Pradesh under Ministry of Defence		100.00	100.00	0.00
19.	Provision for NER		0.00	0.00	0.00
	Total (BS)	34790.00	41264.70	37715.00	36112.05
20.	IEBR	24700.00	25500.00	17782.00	12481.90
	Grand Total	59490.00	66764.70	55497.00	48593.95

Note: The outlays include provisions for NER also whereas in BE and RE figures the provisions for NER have been segregated and shown separately under item no. 19; Exp. = Expenditure; RW = Road Wing; Plg. = Planning; E&I = Roads of Economic and Interstate Importance; NH (O) = National Highways (Original); BS = Budgetary Support.

(*Annexure 9.3.1 contd.*)

(*Annexure 9.3.1 contd.*)

NH (O)

S. No.	Schemes/Programmes (Normal NH Works)	Physical Performance Tenth Plan	
		Targets	Achievements
1.	Widening to two lanes (km)	4000	3420.88
2.	Widening to four lanes (km)	800	157.01
3.	Strengthening of weak two lanes (km)	2000	3346.14
4.	Bypasses (nos)	25	13
5.	Major bridges/minor bridges including ROBs (nos)	300	548
6.	IRQP	10000	15326.62

BRDB

S. No.	Schemes/Programmes (Normal NH Works)	Physical Performance Tenth Plan	
		Targets	Achievements
1.	Widening to two lanes (km)	528.92	755.94
2.	Widening to four lanes (km)	0.00	0.00
3.	Strengthening of weak two lanes (Kms)	200.82	164.12
4.	Bypasses (nos)	LS	3
5.	Major bridges/minor bridges including ROBs (nos)	LS	56
6.	IRQP	613.03	923.70

NHAI

S. No.	Schemes/Programmes (Normal NH Works)	Physical Performance Tenth Plan	
		Targets	Achievements
1.	Widening to two lanes (km)	Completion of GQ	
2.	Widening to four lanes (km)		6612.00
3.	Strengthening of weak two lanes (km)		4867.00
4.	Bypasses (nos)		10
5.	Major bridges/minor bridges including ROBs (nos)		7
6.	IRQP		

ANNEXURE 9.3.2

Central Road Sector Outlay and Expenditure—At Current and Constant Price for the Tenth Plan

(In Rs Crore)

S. No.	Schemes	Tenth Plan (2002–07)	AP (2002–03)		AP (2003–04)		AP (2004–05)		AP (2005–06)		AP (2006–07)		Total Outlay for Tenth Plan	Total Exp. at Current Prices
		Outlay	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	RE		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Externally aided projects	13990.00	2158.00	1512.64	2390.90	1448.90	3323.70	1602.30	3200.30	2953.34	1978.00	1978.00	13050.70	9495.18
	(i) Externally aided (RW)	2560.00	123.80	4.88	39.30	0.00	80.00	2.65	160.00	0.00	0.00	0.00	403.10	7.53
	(ii) Counterpart funds (RW)	640.00	31.00	4.66	21.50	0.00	33.50	0.00	40.00	0.00	0.00	0.00	126.00	4.66
	EAP Ministry	3200.00	154.80	9.54	60.80	0.00	113.50	2.65	200.00	3.34	0.00	0.00	529.10	15.53
	(iii) Externally aided (NHAI)	8712.00	1602.00	1202.00	1863.52	1159.12	2568.00	1239.08	2400.00	0.00	1582.20	1582.50	10015.72	5182.70
	(iv) Counterpart funds (NHAI)	49.50	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(v) Loan to NHAI	2028.00	401.00	301.00	466.38	289.78	642.00	360.50	600.00		395.50	395.50	2504.88	1346.78
	EAP—NHAI	10789.50	2003.00	1503.00	2329.90	1448.90	3210.00	1599.58	3000.00	2950.00	1978.00	1978.00	12520.90	9479.48
	(vi) Strengthening of PIC	0.50	0.10	0.10	0.10	0.00	0.20	0.07	0.30	0.00	0.30	0.30	1.00	0.47
2.	Other Schemes—NH (O)	8664.00	1440.00	1425.17	1544.00	1474.57	1482.00	1503.88	1427.30	1570.34	1550.30	1586.89	7443.60	7560.85
3.	Works under BRDB	950.00	145.00	210.04	210.00	256.00	210.00	210.00	415.00	321.39	584.00	528.00	1564.00	1525.43
4.	Travel expenses (domestic)	20.00	1.00	0.40	1.02	0.33	0.50	0.37	1.00	0.70	1.75	1.25	5.27	3.05
5.	Other charges		1.00	0.03	0.50	0.0045	0.40	0.00	1.00	0.00		0.50	2.90	0.53
6.	Dev. of Information Technology	20.00	4.00	2.48	5.00	1.81	3.00	0.29	6.00	1.86	6.00	3.00	24.00	9.44
7.	Strategic roads under RW	50.00	1.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00		1.50	0.00
8.	Strategic roads under BRDB		8.50	10.25	19.00	24.50	19.50	19.50	71.00	49.88	74.17	74.17	192.17	178.30
9.	R&D Plg. studies	20.00	3.00	1.75	3.00	0.19	7.90	0.61	4.85	2.95	6.00	6.00	24.75	11.50
10.	Training	10.50	1.50	0.43	12.00	10.61	1.00		1.50	1.06	1.50	1.50	17.50	13.60
11.	Machinery and equipment	15.00	2.00	1.50	7.00	6.29	3.00	3.00	15.72	13.88	10.00	10.00	37.72	34.67
12.	Charged expenditure	50.00	5.00	5.00	5.00	3.71	5.00	0.03	5.00	4.05	5.00	5.00	25.00	17.79
13.	NHAI (investment)	10500.00	2000.00	2000.00	1993.00	1993.00	1848.00	1848.00	3269.74	3269.74	6407.45	6407.45	15518.19	15518.19
14.	E&I for States from CRF	500.00	95.00	25.00	95.00	64.52	92.00	16.88	162.05	86.09	272.06	182.06	716.11	374.55
15.	E&I for UTs from CRF	0.00	5.00	0.00	5.00	0.00	4.00	0.00	8.54	0.00	8.55	8.55	31.09	8.55
16.	NHDP-III, two-laning expressways and six-laning								1400.00	700.00	110.00	110.00	1510.00	810.00
17.	SARDP-NE								450.00	0.00	550.00	550.01	1000.00	550.01
18.	Strategic Roads in Arunachal Pradesh under Min. of Defence								100.00	0.00	0.00	0.00	100.00	0.00
	Total (BS)	34790.00	5870.00	5194.79	6290.92	5284.44	7000.00	5204.86	10539.00	8975.28	11564.78	11452.68	41264.70	36112.05
19.	IEBR	24700.00	6200.00	5592.90	4000.00	0.00	3300.00	0.00	8500.00	3389.00	3500.00	3500.00	25500.00	12481.90
	Grand Total	59490.00	12070.00	10787.69	10290.92	5284.44	10300.00	5204.86	19039.00	12364.28	15064.78	14952.68	66764.70	48593.95

ANNEXURE 9.3.3
Plan-wise Addition to NH Length

Period	Length Added in km	Total Length in km
As on 1 April 1947		21440
Pre First Plan (1947–51)	815	22255
First Plan (1951–56)	–	22255
Second Plan (1956–61)	1514	23769
Third Plan (1961–66)	179	23948
Interregnum Period (1966–69)	52	24000
Fourth Plan (1969–74)	4819	28819
Fifth Plan (1974–78)	158	28977
Interregnum Period (1978–80)	46	29023
Sixth Plan (1980–85)	2687	31710
Seventh Plan (1985–90)	1902	33612
Interregnum Period (1990–92)	77	33689
Eighth Plan (1992–97)	609	34298
Ninth Plan (1997–2002)	23814	58112
Tenth Plan (2002–07)	9008#	66590
	Tenth Plan (2002–07)	
2002–03	–	58112
2003–04	7457	65569
2004–05	–	65569
2005–06	556#	66125
2006–07	995	66590

Note: # Excluding 530 km of NHs denotified in 2006.

ANNEXURE 9.3.4
Bharat Nirman—Targets for New Connectivity

(Length in km, Habitations in Numbers)

S. No	Name of the State	2005–06		2006–07		2007–08		2008–09		Total	
		Length	Habs	Length	Habs	Length	Habs	Length	Habs	Length	Habs
1.	Andhra Pradesh	0	0	0	0	0	0	0	0	0	0
2.	Arunachal Pradesh	162.5	22	637.5	85	646.875	86	671.875	105	2118.75	298
3.	Assam	605.852	421	2864.063	1988	3889.845	2701	5793.46	4022	13153.22	9132
4.	Bihar	1665.831	896	3928.75	2062	6121.425	3214	7230.306	3784	18946.312	9956
5.	Chhattisgarh	1501.365	478	4367.606	1310	6450.644	2007	8255.181	2514	20574.796	6309
6.	Goa	0	0	0	0	0	0	0	0	0	0
7.	Gujarat	402.955	230	429.723	246	438.675	251	438.675	251	1710.028	978
8.	Haryana	0	0	0	0	0	0	0	0	0	0
9.	Himachal Pradesh	464.583	127	795.833	209	638.542	166	479.167	123	2378.125	625
10.	Jammu and Kashmir	169.972	57	1059.49	352	1781.869	593	1405.099	466	4416.43	1468
11.	Jharkhand	1051.779	526	2594.39	1295	1812.298	901	2319.31	1155	7777.777	3877
12.	Karnataka	0	0	0	0	0	0	0	0	0	0
13.	Kerala	0	0	0	0	0	0	0	0	0	0
14.	Madhya Pradesh	2602.139	768	6162.451	1760	8326.848	2399	10470.17	2905	27561.608	7832
15.	Maharashtra	0	0	0	0	0	0	0	0	0	0
16.	Manipur	100	11	460.714	48	464.286	48	719.048	74	1744.048	181
17.	Meghalaya	123.609	35	135.971	39	140.091	40	144.211	41	543.882	155
18.	Mizoram	82.746	12	274.819	39	277.884	39	306.498	43	941.947	133
19.	Nagaland	93.318	9	104.529	10	109.507	10	114.485	11	421.839	40
20.	Orissa	1055.95	493	1985.609	874	2524.021	1087	4427.774	1993	9993.354	4447
21.	Punjab	0	0	0	0	0	0	0	0	0	0
22.	Rajasthan	2153.615	743	3629.519	1252	3554.217	1225	2123.494	732	11460.845	3952
23.	Sikkim	75.031	22	104.042	30	108.043	31	132.053	37	419.169	120
24.	Tamil Nadu	0	0	0	0	0	0	0	0	0	0
25.	Tripura	94.774	66	261.74	183	354.701	248	447.661	313	1158.876	810
26.	Uttar Pradesh	1966.416	1236	2390.632	1504	2059.213	1295	1378.701	867	7794.962	4902
27.	Uttarakhand	380.609	95	422.008	106	1025.641	257	1020.299	255	2848.557	713
28.	West Bengal	739.378	787	2572.767	2738	3265.307	3473	3643.359	3876	10220.811	10874
	Total	15492.42	7034	35182.16	16130	43989.93	20071	51520.83	23567	146185.34	66802

(*Annexure 9.3.4 contd.*)

(*Annexure 9.3.4 contd.*)

(Length in km)

S. No	Name of the State	2005–06 Length	2006–07 Length	2007–08 Length	2008–09 Length	Total Length
1	2	3	4	5	6	7
1.	Andhra Pradesh	1821.494	2258.652	2258.652	2258.652	8597.45
2.	Arunachal Pradesh	0	0	0	0	0
3.	Assam	0	2005.71	2269.808	2219.843	6495.361
4.	Bihar	0	2393.617	3510.638	3390.958	9295.213
5.	Chhattisgarh	0	1986.063	3240.418	3222.996	8449.477
6.	Goa	190.114	190.114	190.114	190.114	760.456
7.	Gujarat	0	1557.971	1557.971	1413.043	4528.985
8.	Haryana	229.358	1146.789	1146.789	1238.532	3761.468
9.	Himachal Pradesh	0	1515.923	1694.268	1503.185	4713.376
10.	Jammu and Kashmir	0	1007.584	920.91	1007.584	2936.078
11.	Jharkhand	0	2108.433	2123.494	1987.952	6219.879
12.	Karnataka	2573.529	2573.529	2573.529	2573.529	10294.116
13.	Kerala	524.109	628.931	524.109	524.109	2201.258
14.	Madhya Pradesh	0	5189.543	6614.379	6823.53	18627.452
15.	Maharashtra	4334.365	4334.365	4334.365	4334.365	17337.46
16.	Manipur	0	0	0	0	0
17.	Meghalaya	0	587.583	587.583	665.189	1840.355
18.	Mizoram	0	257.998	257.998	216.718	732.714
19.	Nagaland	0	246.914	246.914	370.371	864.199
20.	Orissa	0	4438.574	4663.144	5059.445	14161.163
21.	Punjab	423.729	1483.051	1483.051	1680.791	5070.622
22.	Rajasthan	0	4764.543	4653.74	3656.51	13074.793
23.	Sikkim	0	196.85	137.795	98.425	433.07
24.	Tamil Nadu	1297.71	2824.427	2824.427	4167.939	11114.503
25.	Tripura	0	373.737	383.838	414.141	1171.716
26.	Uttar Pradesh	0	7158.962	6956.031	14408.12	28523.113
27.	Uttarakhand	0	889.454	1283.354	1270.648	3443.456
28.	West Bengal	0	2549.942	2878.965	4054.053	9482.96
	Total	11394.408	54669.259	59316.284	68750.742	194130.693

ANNEXURE 9.3.5

Tenth Five Year Plan (2002–07)—Financial and Physical Performance of Road Transport

S. No.	Schemes/Programmes	Financial Achievement (in Rs crore)				Physical Achievement
		Outlay	BE	RE	Actual Exp.	Achievements
1	Road Safety	153.00	156.95	154.16	137.19	
(i)	Refresher training to drivers in unorganized sector	12.00	15.85	15.55	13.81	192218 drivers trained.
(ii)	Publicity measures and awareness campaigns	60.00	59.80	62.35	59.97	686 video spots and 4326 radio spots were broadcast/telecast. Publicity material on road safety printed and distributed to States/UTs. Funds released to 499 NGOs for road safety awareness programme.
(iii)	Human Resource Development including training	2.00	1.40#	1.40#	1.38#	75 training programmes for State Transport Department Personnel conducted at ARAI, CIRT, Pune, IIP Dehradun, and ESCI Hyderabad.#
(iv)	Road Safety Equipment and Programme Implementation	10.00	8.60	8.56	5.14	22 interceptors provided to States of Uttarakhand, MP, Sikkim, Haryana, UP, Kerala, Rajasthan, Himachal Pradesh, Punjab, Chhattisgarh, Gujarat, and Karnataka.
(v)	National Highway Accident Relief Service Scheme	69.00	71.30	66.30	56.89	268 ambulances and 200 cranes were provided to States/NGOs.
2	Pollution Testing and Control	10.00	6.55*	4.05	3.32*	*
3	National Database Network	13.00	12.61	11.28	9.41	Physical progress cannot be quantified.
(i)	Computer Systems and National Database	8.00	7.70	7.59	7.58	
(ii)	Data Collection Research and Development transportation studies	5.00	4.91	3.69	1.83	
4	Model Driving Training School and Public Transport System	34.00	33.89	35.26	29.45	Against the target of 4, 13 schools have been sanctioned, and out of these 2 are operational.
	Grand Total	210.00	210.00	204.75	179.37	

Note: # During 2006–07, HRD has been merged with refresher training to drivers. Therefore, actual expenditure is for first four years of the Tenth Plan. * During 2006–07, Pollution Testing and Control has been merged with Road Safety Equipment and Programme Implementation. Therefore, actual expenditure is for first four years of the Tenth Plan.

ANNEXURE 9.3.6

State-wise Sanctions and Releases of Central Share in Respect of Model Driving Training School—Status as on 31 March 2007

(in Rs Lakh)

S. No.	Name of the State/NGO	Central Assistance	Amount Sanctioned					Total Amount Released	Balance
			2002–03	2003–04	2004–05	2005–06	2006–07		
1	2	3	4	5	6	10	8	9	10
1.	Assam (Betkuchi) RT-25036/2/2001-RSC	394.00	45.00 (25.3.03)	150.00 (11.3.04) 25.00 (31.3.04)	–	150.00 (19.05.05)	20.00 (14.02.07)	390.00	4.00
2.	M/s KDLOA (Vijayawada) RT-25036/2/2001-RSC	400.00	50.00 (25.3.03)	125.00 (18.3.04)	150.00 (14.10.04)	60.00 (20.6.05)	12.81 (30.3.07)	397.81	NIL [Out of 15.00 (Interest Rs 2.19 Lakhs on Rs 385 Lakhs)]
3.	Karnataka (Hagaribommanahalli) RT-25036/2/2001-RSC	269.00	100.00 (25.3.03)	–	100.00 (28.6.04)	50.00 (20.6.05)	15.00 (30.3.07)	265.00	4.00
4.	West Bengal (Jessore Road) RT-25036/2/2001-RSC	328.00	100.00 (25.3.03)	50.00 (11.12.03) 125.00 (31.3.04)	–	–	–	275.00	53.00
5.	Himachal Pradesh (Jassur) RT-25036/2/2004-RSC	181.00	–	–	75.00 (6.8.04)	80.00 (31.3.06)	–	155.00	26.00
6.	Kerala (Edappal) RT-25036/2/2004-RSC	299.00	–	–	100.00 (6.8.04)	–	–	100.00	199.00
7.	IDTR (Sarai Kale Khan) RT-25036/2/2004-RSC	325.00	–	–	100.00 (6.8.04)	150.00 (14.11.05)	40.00 (24.08.06)	290.00	35.00
8.	Uttrakhand (Dehradun) RT-25036/2/2004-RSC	325.00	–	–	125.00 (17.2.05)	–	–	125.00	200.00
9.	Uttar Pradesh (Allen forest at Kanpur) RT-25036/2/2004-RSC	339.00	–	–	–	101.70 (27.03.06)	–	101.70	237.30
10.	Orissa (Chandikhole) (joint venture with TATA Motors and All Orissa Truck Owners Federation) RT-25036/2/2004-RSC	336.00	–	–	–	100.80 (27.03.06)	200.00 (30.3.07)	300.80	35.20
11.	Nagaland at Dimapur RT-25036/2/2005-RS	354.00	–	–	–	–	106.20 (23.10.06) 200.00 (30.3.07)	306.20	47.80
12.	Madhya Pradesh (Indore) RT-25036/2/2006-RS	393.96	–	–	–	–	118.18 (13.2.07)	118.18	275.78
13.	Haryana at Bahadurgarh RT-25036/5/2007-RS	400.00	–	–	–	–	120.00 (30.3.07)	120.00	280.00
	Grand Total (As on 31 March 2007)	4343.96	295.00	475.00	650.00	692.50	832.19	2944.69	(Rs 1397.08 + Interest Rs 2.19) Rs 1399.27

ANNEXURE 9.3.7
Physical Performance of State Road Transport Corporations/Undertakings

SRTU	% Fleet Utilization		Vehicle Productivity—Rev. Earning per bus per km		Staff Productivity—Rev. Earning km per worker per day		Fuel Efficiency KMPL	
	2002–03	2006–07	2002–03	2006–07	2002–03	2006–07	2002–03	2006–07
Andhra Pradesh	99.24	99.50	320	339	48.00	55.00	5.24	5.27
Arunachal Pradesh	65.00	77.00	125	99	24.56	25.51	3.1	3.10
Assam	68.00	78.00	123	141	13.00	14.00	4	4.00
Bihar	12.00	67.00	29	176	7.52	30.83	4.1	4.03
DTC (Delhi)	79.85	85.65	171	179	17.99	27.48	3.78	3.96
Goa (Kadamba)	79.00	83.00	206	214	39.00	44.00	4.26	5.1
Gujarat	83.50	84.50	302	313	47.91	57.02	5.3	5.25
Haryana	97.00	96.00	311	338	57.50	62.79	4.54	4.93
Himachal Pradesh	97.00	98.00	223	235	45.79	46.95	3.57	3.64
Jammu and Kashmir	64.00	75.00	95	112	15.14	23.90	3.81	4.2
Karnataka								
KSRTC	95.30	95.00	343	368	62.20	57.30	4.97	5.22
NWKRTC	96.10	95.00	336	333	57.54	55.13	4.97	5.6
BMTC	95.00	95.00	216	218	42.20	37.10	4.6	4.75
NEKRTC	92.30	96.00	285	315	56.70	58.00	4.97	5.55
Kerala	78.00	82.00	335	329	45.66	52.96	3.89	4
Madhya Pradesh	83.00	0.00	245	0	42.00	0.00	4.06	0
Maharashtra	93.96	95.00	293	309	45.32	48.79	4.76	4.9
Meghalaya	72.00	68.00	85	154	7.45	3.67	3.66	3.67
Mizoram	53.00	63.00	60	138	5.92	6.26	3	3
Nagaland	61.00	63.00	90	89	13.61	19.84	3.5	3.7
Orissa	91.00	90.00	275	230	45.50	57.24	4.2	4.45
Punjab Roadways	85.10	88.40	238	206	41.40	47.80	4.29	4.42
PEPSURTC	95.00	95.00	267	318	57.90	60.82	4.39	5.12
Rajasthan	93.00	96.00	319	364	63.37	75.25	4.94	5.12
Sikkim	80.00	68.00	67	65	17.53	10.56	3.25	2.8
Tamil Nadu	91.72	93.02	379	404	52.06	58.31	4.37	4.8
Tripura	61.00	55.00	76	79	9.27	12.52	3.57	3.63
Uttar Pradesh	90.00	97.00	262	322	42.79	62.61	4.79	5.2
Calcutta STC	66.88	59.00	150	128	20.77	22.26	3.7	3.9
North Bengal STC	61.00	57.00	147	141	21.19	22.61	3.94	3.95
South Bengal STC	77.00	85.00	206	222	34.54	38.41	3.85	4.3
Calcutta Tramways	63.00	67.00	136	157	20.20	22.70	3.3	3.5
Uttarakhand	0.00	94.00	0	300	0.00	43.00	0	4.79
All-India Average	78.72	82.50	210	229	39.23	39.39	4.11	4.31

ANNEXURE 9.5.1

Year-wise Physical Targets and Achievements during the Tenth Plan—Major Ports (Commodity-wise)

(Million Metric Tonnes)

S. No.	Name of Commodity	Tenth Plan Target	2002–03 Ach.	2003–04 Ach.	2004–05 Ach.	2005–06 Ach.	2006–07 Ach.
1.	POL	154.30	109.63	122.16	126.44	142.09	154.35
2.	Iron ore	52.50	50.56	58.81	76.20	79.17	80.56
3.	Fertilizers and Fertilizer Raw Material (FRM)	13.45	8.55	7.54	9.68	12.19	14.11
4.	Thermal and Coking Coal	71.30	48.19	48.80	52.56	58.76	60.21
5.	Container	61.10	43.67	51.00	54.76	61.98	73.48
6.	Other cargo	62.35	52.95	56.49	64.11	69.38	81.13
	Total	415.00	313.55	344.80	383.75	423.57	463.84

Note: Ach. = Achievement.

ANNEXURE 9.5.2

Year-wise Physical Targets and Achievements during the Tenth Plan-—Major Ports (Port-wise)

(Million Metric Tonnes)

S. No.	Port/Organization	Tenth Plan Target	2002–03 Ach.	2003–04 Ach.	2004–05 Ach.	2005–06 Ach.	2006–07 Ach.
1.	Kolkata	21.40	7.20	8.69	9.95	10.81	12.60
2.	Haldia	33.40	28.60	32.56	36.26	42.33	42.45
3.	Paradeep	28.90	23.90	25.31	30.10	33.11	38.52
4.	Vizag	60.00	46.01	47.74	50.15	55.80	56.39
5.	Chennai	40.00	33.69	36.71	43.81	47.25	53.41
6.	Tuticorin	18.70	13.29	13.68	15.81	17.14	18.00
7.	Cochin	17.20	13.02	13.57	14.09	13.89	15.31
8.	New Mangalore	32.70	21.43	26.67	33.89	34.45	32.04
9.	Mormugao	26.30	23.65	27.87	30.66	31.69	34.24
10.	Mumbai	30.40	26.80	30.00	35.19	44.19	52.36
11.	JL Nehru	34.50	26.84	31.19	32.81	37.83	44.82
12.	Kandla	51.00	40.63	41.52	41.55	45.91	52.99
13.	Ennore Port Ltd	20.50	8.49	9.28	9.48	9.17	10.71
	Grand Total	415.00	313.55	344.79	383.75	423.57	463.84

ANNEXURE 9.5.3
Tenth Plan—Outlays and Expenditure in Ports Sector

(in Rs crore)

S. No	Name of the Port/Organization	Tenth Plan Outlay	2002–03		2003–04		2004–05		2005–06		2006–07		Tenth Plan Act. Exp
			Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	Approved Outlay	Actual Exp.	
1.	Kolkata#	789.42	199.92	6.85	210.30	10.48	46.22	47.55	54.04	59.66	50.04	71.99	196.53
2.	Mumbai	880.20	109.05	100.76	54.21	57.81	56.15	44.49	74.53	19.23	59.86	14.55	236.84
3.	JNPT	262.75	146.36	40.26	143.02	12.73	102.14	58.85	96.84	65.77	106.14	40.74	218.35
4.	Chennai	326.70	95.99	85.50	36.69	29.21	16.75	22.68	46.71	25.11	35.00	26.07	188.57
5.	Cochin	366.51	–	10.02	18.88	10.86	85.41	9.52	53.12	24.76	73.84	72.89	128.05
6.	Vizag	240.84	49.06	51.30	51.00	55.65	54.44	27.68	27.00	17.68	27.33	43.79	196.10
7.	Kandla	416.71	94.78	55.89	66.71	41.50	92.98	52.89	93.30	91.29	94.66	80.19	321.76
8.	Mormugao	348.06	30.86	26.53	87.14	43.06	53.85	11.05	33.50	17.92	28.06	20.77	119.33
9.	Paradip	222.70	59.00	41.42	53.40	14.56	87.16	28.99	116.00	44.02	83.40	23.15	152.14
10.	New Mangalore	147.40	37.00	24.41	25.00	5.14	20.00	29.60	26.00	18.09	18.00	18.02	95.26
11.	Tuticorin	230.0	76.10	36.02	17.54	21.84	25.81	5.48	43.67	13.56	52.31	29.12	106.04
12.	Ennore Port Ltd	300.00	1.00	-	150.00	0.99	95.00	2.32	76.00	13.40	70.00	9.57	26.28
	Total (A)	4531.29	899.12	478.96	913.89	303.83	735.91	341.1	740.71	410.49	698.64	450.85	1985.25
13.	Sethusamudram	–	–	–	–	–	10.00	–	107.00	150.00	304.00	334.66	484.66
14.	Web-based EDI PCS	–	–	–	–	–	–	–	6.00	0.34	7.83	1.66	2.00
15.	Others*	587.00	214.88	53.98	237.00	44.06	221.04	19.87	260.04	79.13	333.78	214.77	411.81
	Total (B)	587.00	214.88	53.98	237.00	44.06	231.04	19.87	373.04	229.47	645.61	551.09	898.47
	Total (A+B)	5118.29	1114.00	532.94	1150.89	347.89	966.95	360.97	1113.75	639.96	1344.25	1001.94	2883.70
16.	Survey Vessels	300.00	45.00	8.95	50.00	–	100.00	–	50.00	0.00	20.00	0.00	8.95
	Grand Total	5418.29	1159.00	541.89	1200.89	347.89	1066.95	360.97	1163.75	639.96	1364.25	1001.94	2892.65

Note: # includes Haldia and RR Schemes. * includes DCI, ALHW, R&D studies, Post-tsunami works, and Minor Port studies.

ANNEXURE 9.6.1
Financial Progress of the Civil Aviation Sector during the Tenth Plan

(in Rs crore)

S. No.	Organization	Tenth Plan	2002–03		2003–04		2004–05		2005–06		2006–07		Tenth Plan
		Outlay	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Total Exp.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Air India Ltd	2661.39 (1.00)	858.70 (1.00)	743.07	600.81 (1.00)	479.57	471.40 (1.00)	358.07	468.74 (1.00)	443.33	486.70	364.23	2388.27
2.	Indian Airlines Ltd	4240.50 (1.00)	510.00 (1.00)	418.93	280.00 (1.00)	248.78	226.00 (1.00)	221.70	911.73 (325.00)*	192.13 (325.00)*	706.00	350.00	1431.54 (325.00)
3.	Airports Authority of India	5404.21 (250.00)	996.05 (53.12)	445.66 (33.59)	800.00 (34.96)	566.22 (22.08)	795.08 (30.00)	606.49 (30.00)	892.30 (30.00)	876.08 (36.00)	1506.44 (42.91)	1040.17 (29.00)	3534.62 (150.67)
4.	PHHL	458.90	133.80	53.01	81.45	19.60	109.50	60.92	90.70	41.52	175.00	106.90	281.95
5.	Indira Gandhi Rashtriya Uran Academy	10.00 (10.00)	2.09 (2.09)	0.98 (0.98)	3.50 (3.50)	0.50 (0.50)	3.00 (3.00)	3.00 (3.00)	3.85 (3.85)	2.30 (2.30)	40.30 (40.30)	31.10 (31.10)	37.88 (37.88)
6.	Directorate General of Civil Aviation	19.00 (19.00)	3.10 (3.10)	2.54 (2.54)	4.15 (4.15)	2.86 (2.86)	4.00 (4.00)	3.06 (3.06)	5.00 (5.00)	1.83 (1.83)	29.00 (29.00)	1.74 (1.74)	12.03 (12.03)
7.	Bureau of Civil Aviation Security	114.00 (114.00)	7.69 (7.69)	3.87 (3.87)	7.00 (7.00)	4.24 (4.24)	10.00 (10.00)	0.28 (0.28)	5.00 (5.00)	0.98 (0.98)	5.00 (5.00)	0.15 (0.15)	9.52 (9.52)
8.	Hotel Corporation of India Ltd	15.00	8.76	8.76	1.00	0.51	1.00	1.00	1.00	1.00	15.00	15.00	26.27
9.	Air India Charters Ltd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.83	70.70	42.18	59.01
10.	Aero Club of India	5.00 (5.00)	1.00 (1.00)	0.00 (0.00)	1.27 (1.27)	1.00 (1.00)	1.00 (1.00)	1.00 (1.00)	1.00 (1.00)	0.00 (0.00)	12.79 (12.79)	9.00 (9.00)	11.00 (11.00)
	Total	12928.00 (400.00)	2521.19 (69.00)	1676.82 (40.98)	1779.18 (52.88)	1323.28 (30.68)	1620.98 (50.00)	1255.52 (37.34)	2379.32 (370.85)	1576.00 (366.11)	3046.93 (130.00)	1960.47 (70.99)	7792.09 (546.10)

Note: Figures in brackets indicate Gross Budgetary Support.

* During 2005–06, budgetary support of Rs 325 crore was released to Indian Airlines for purchase of new aircrafts, out of which the company utilized Rs 47.61 crore during 2005–06 and balance amount of Rs 277.39 crore was utilized in April 2006.

10

Energy

ENERGY SECTOR

Issues and Challenges

10.1 Availability and access to energy are considered as catalysts for economic growth. The envisaged growth of the economy at 9% in the Eleventh Plan cannot be achieved without a commensurate increase in the availability of energy. Over half of the country's population does not have access to electricity or any other form of commercial energy. Meeting the energy access challenges and ensuring lifeline supply of clean energy to all is essential for empowering individuals, especially women and girls, who have the task of collecting and using non-commercial fuels such as fire wood, crop residues, and dung cakes that remain the primary energy source for cooking in over two-thirds of the households. Provision of clean fuels or at least wood plantation within one km of habitation and dissemination of technology for use of clean fuels is vital for good health. This is essential if growth is to be inclusive.

10.2 India is both a major energy producer and a consumer. India currently ranks as the world's seventh largest energy producer, accounting for about 2.49% of the world's total annual energy production. It is also the world's fifth largest energy consumer, accounting for about 3.45% of the world's total annual energy consumption in 2004. Since independence, the country has seen significant expansion in the total energy use in the country with a shift from non-commercial to commercial sources. The share of commercial energy in total primary energy consumption rose from 59.7% in 1980–81 to 72.6% in 2006–07. It must be noted, however, that India's per capita energy consumption is one of the lowest in the world. India consumed 455 kilogram of oil equivalent (kgoe) per person of primary energy in 2004, which is around 26% of world average of 1750 kgoe in that year. As compared to this, per capita energy consumption in China and Brazil was 1147 kgoe and 1232 kgoe, respectively.

10.3 The main challenge before the energy sector for fuelling the proposed growth in the Eleventh Plan is to enhance energy supply in cost-effective ways. The persistent shortages of electricity both for peak power and energy indicate the magnitude of the problem. Average peak shortages are estimated to be 12% in 2006–07 which is an underestimate as scheduled load shedding is not included in it. The very high load factor of 76.8% for the system indicates that the system is operating under strain or has limited reserve. At the same time, for want of natural gas, some gas-based power plants are kept idle. Nuclear plants are also operated at lower load factors for want of adequate uranium. Power shortages are an indication of insufficient generating capacity and inadequate transmission and distribution (T&D) networks. To a great extent this is the outcome of poor financial health of the State Electricity Utilities having high levels of Aggregate Technical and Commercial (AT&C) losses.

10.4 The task of meeting the energy needs of development has become more complex in recent times due to the imminent threat of global warming. This poses a challenge to the world as a whole including India and points to the need for an acceptable international approach to deal with the problem. India's energy strategy has, therefore, to bear in mind the need for action as part of a reasonable international agreement which is consistent with India's development objectives.

Long-term Requirement

10.5 Since energy sector involves large gestation lags, we also need to look at the long-term requirement. The rate of growth and, therefore, the energy intensity are the key factors which impact the projections of future energy demand. The Expert Committee (EC) on Integrated Energy Policy, Planning Commission (Box 10.1) has projected primary energy demand for 2031–32 for India. Table 10.1 summarizes the range of projected requirement and supply. The projected requirement of coal has been estimated assuming its calorie content to be 4000 kcal per kg and 2865 kcal per kg for lignite.

Availability of Energy Resource

10.6 India is not endowed with large primary energy reserves in keeping with her vast geographical area, growing population, and increasing final energy needs. The distribution of primary commercial energy resources in the country is quite skewed. Whereas coal is abundant and is mostly concentrated in the eastern region, which accounts for nearly 70% of the total coal reserves, the western region has over 70% of the hydrocarbons reserves in the country. Similarly, more than 70% of the total hydro potential in the country is located in the northern and the north eastern regions. The southern region, which has only 6% of the coal reserves and 10% of the total hydro potential, has most of the lignite deposits occurring in the country.

Box 10.1
Integrated Energy Policy

The Planning Commission had set up an expert group to recommend integrated energy policy. Its report submitted in 2006 (*http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf*) deals with various sources and forms of energy (electricity, coal, oil, gas, nuclear, hydel energy, renewables including wind energy, solar energy, biofuels, wood plantations), the country's projected requirement and availability of resources, energy security, energy efficiency as well as R&D priorities.

The report lays strong emphasis on making the energy sector efficient and competitive. It argues for relative prices and taxes that reflect the true social cost of different fuels and forms of energy as the best way to encourage right choice of fuels and techniques; for competitive markets wherever possible; transparent and target subsidies when needed; policies that rely on incentives and disincentives; and policies that are implementable. The recommendations are being discussed with various ministries for implementation. Many of the policies recommended for the coal sector have already been implemented. Progress has also been made in policies concerning energy efficiency and renewable energy. Progress in the power sector has yet to show results. The oil and gas sector continues with an unsustainable pricing policy.

TABLE 10.1
Projected Primary Energy Requirement for India, 2030

(All in Mtoe)

Fuel	Range of Requirements	Assumed Domestic Production	Range of Imports#	Import (%)
Coal including lignite	632–1022	560	72–462	11–45
Oil	350–486	35	315–451	90–93
Natural gas including coal bed methane (CBM)	100–197	100	0–97	0–49
Total commercial primary energy	1351–1702	–	387–1010	29–59

Note: # Range of imports is calculated across all scenarios by taking the minimum requirement and maximum domestic production as the lower bound and maximum requirement and minimum domestic production as the upper bound.
Source: Integrated Energy Policy Report (IEPR), 2006.

Coal and Lignite

10.7 Coal continues to be the major energy resource of the country. As on January 2007, the coal reserves were 253.3 billion tonnes (bt), out of which 97.92 bt are in the 'proved' category. The lignite reserves as on April 2006 were estimated at 38.27 bt, out of which 4.5 bt is in the proved category. If all the inferred reserves materialize, these reserves can sustain current level of production for 140 years.

Petroleum and Natural Gas

10.8 The balance of recoverable oil reserves as on 1 April 2006 is around 1653 mt (Directorate General of Hydrocarbon, DGH 2005–06 report), which can sustain the current level of production for the next 35 years. The current level of production barely caters to 26% of the petroleum products demand and the balance oil requirements are met by importing the crude. The current level of natural gas production in the country is inadequate to meet the industrial demand, particularly of the power and fertilizer industries. LNG imports since 2004–05 have been able to bridge the gap partially. The situation is likely to improve once production starts from Krishna–Godavari (K–G) basin reserves in a couple of years.

10.9 Besides natural gas, the country has significant CBM and underground coal gasification (UCG) resources. Coal India Limited (CIL) and ONGC are already implementing two CBM projects. Blocks have also been allocated through competitive bidding process to private companies for exploration and exploitation of CBM. Production of 3.78 bcm from CBM and 2.99 bcm from UCG are included in the Eleventh Plan targets.

Nuclear Energy

10.10 At present, nuclear energy installed capacity is 3900 MW_e which is 3.1% of total installed power generation capacity and the Plant Load Factor (PLF) of Nuclear Power stations is 57%. India's long-term nuclear power programme is based on utilizing the vast indigenous resources of thorium for electricity generation. The three-stage nuclear power development programme in India is aimed at converting thorium to fissile material. India is poorly endowed with uranium and available uranium resources can support 10000 MW_e electricity generation programme based on pressurized heavy water reactors (PHWRs) using natural uranium as fuel and heavy water as moderator and coolant. The energy potential of natural uranium can be increased to about 300000 MW_e in the second stage through fast breeder reactors (FBRs) which utilize plutonium obtained from the recycled spent fuel of the first stage along with thorium as blanket to produce U_{233}. With the deployment of thorium in the third stage using U_{233} as fuel, the energy potential for electricity generation is large and substantial.

Renewable Sources of Energy

10.11 Projections made in the IEPR reveal that to achieve its development goals, India would need to rely increasingly on imported oil, gas, and coal in the medium term (2032). Against this backdrop, the role of new and renewable energy assumes added significance, irrespective of whether it replaces coal or oil. In this regard, IEPR recognizes 'the need to maximally develop domestic supply options as well as the need to diversify energy sources…', although renewables are likely to account for only around 5%–6% of the primary commercial energy-mix by 2032. Given the growing concerns for climate change and energy security, it is imperative that this energy in the longer term will substantially increase its share in the fuel-mix. Continuing to support the growth of new and renewable energy is in the country's long-term interest, even though in the medium term this option might appear somewhat costlier. Thus, a balanced approach for new and renewable energy that factors in the need to develop domestic and renewable sources of energy has to be adopted.

Trends in Primary Energy Demand and Supply

10.12 The demand for energy, particularly for commercial energy, has been growing rapidly with the growth of the economy, changes in the demographic structure, rising urbanization, socio-economic development, and the desire for attaining and sustaining self-reliance in some sectors of the economy. Table 10.2 gives the trend of primary commercial energy demand and supply between 1960–61 and 2006–07 and projected requirement for 2011–12.

Box 10.2
Energy Equivalence

The energy labeled as 'final energy' such as electricity, petrol, gas, coal, firewood, etc. is obtained from the sources available in nature, labeled as 'primary energy', and includes hydrocarbons (coal, oil, and natural gas), fissile or fertile elements primarily uranium, the kinetic energy of natural elements (wind, water, etc.), and the electromagnetic rays of the sun and the natural heat of the Earth (geothermal energy). As per convention, final energy consumption is generally expressed as weights of fuels burnt, or from kWh consumed if it is electricity. Each fuel, while burning, produces certain amount of energy in the form of heat that can be measured in standard units such as kilocalories or Joules. Fuels are compared using their calorie content with that of oil in tonnes or million tonnes of oil equivalent (mtoe). One tonne of oil is worth 42 billion Joules or 10 billion calories whereas one million tonne of Indian coal has 4.1 billion calories. Thus 1 mt of coal is 4.1/10 mtoe or 0.41 mtoe. Electrical energy measured in kWh is also converted into the thermal energy kcal or kJ using the definition and finally expressed as mtoe (1 billion kWh = 0.86 billion calorie). Taking the thermal efficiency of the power plant and other losses in the system, the equivalence between electricity and fossil fuels would be 1billion kWh = 0.28 mtoe (in case of coal-fired boilers) and 0.261 mtoe (in case of nuclear electricity). 1 billion kWh generated from hydroelectricity or wind power, however, are considered as equivalent to 0.086 mtoe since there is no intermediate stage of heat production while using these primary energies. It is possible to argue that the efficiency of thermal power plant should be used to convert hydroelectricity and wind power also. In this case, 1 billion kWh of hydroelectricity would be equivalent to 0.28 mtoe. This has an important bearing when one considers how much renewable energy is renewable. Thus in 2006–07 renewable energy was 2.8% or 8.3% of India's total primary commercial energy depending on the conversion factor used.

TABLE 10.2
Trends in Demand and Supply of Primary Energy

(All in Mtoe#)

	1960–61	1970–71	1980–81	1990–91	2000–01	2006–07	2011–12*
Domestic production of commercial energy	36.78	47.67	75.19	150.01	207.08	259.56	435
Net imports	6.04	12.66	24.63	31.07	89.03	131.97	111
Total commercial energy	42.82	60.33	99.82	181.08	296.11	391.53	546
Non-commercial energy	74.38	86.72	108.48	122.07	136.64	147.56	169
Total primary energy demand	117.20	147.05	208.30	303.15	432.75	539.09	715

Note: # Mtoe = million tonne of oil equivalent. For details see Annexure 10.3.
* Projected requirement at the end of the Eleventh Plan is as per the Report of the EC on Integrated Energy Policy and projection of domestic supply is as per the Working Group Reports. Import requirement is the difference between projected requirement and domestic supply projections.
(i) Domestic production of commercial energy includes coal, lignite, oil, natural gas, hydro power, nuclear power, and wind power.
(ii) Net imports include coal, oil, and LNG imports.
Source: IEPR.

10.13 While total primary energy requirement registered an average annual growth rate of 3.67% between 1990–91 and 2006–07, the primary commercial energy requirement registered an average annual growth rate of 4.93% during the same period. The Tenth Plan had envisaged a declining primary commercial energy intensity of GDP reflected in growth of 6.64% in primary commercial energy supply by the end of 2006–07 over the 2001–02 level while GDP grew at 8% implying an energy elasticity of 0.83. However, the primary commercial energy consumption actually registered a growth rate of 5.51% over the consumption level in 2001–02, whereas the economy registered an average growth rate of 7.8% during the Tenth Plan period yielding an elasticity of primary commercial energy consumption with respect to the GDP of only about 0.71%.

10.14 Non-commercial energy resources include the traditional fuels such as wood, cow dung, crop residue, and biogas and constitute a significant percentage of total primary energy consumption in the country. A larger share of these fuels is used by the households, particularly in rural areas, for meeting

their cooking and heating needs. The consumption of 147.56 mtoe of traditional fuels in 2006–07 includes consumption of 238 mt of fuel wood, 98 mt of dung, and 38 mt of agricultural waste. Around 80% of the fuel wood is used for household consumption and the balance is used by the cottage industry, hotels, etc.

10.15 The total energy needs are met by different energy sources. Table 10.3 gives the source-wise breakup of the energy demand and Table 10.4 gives the percentages of these met from domestic production, the rest coming from imports.

10.16 Though the share of oil and gas has been progressively increasing over the years, coal continues to be the dominant fuel in the total energy use in the country. Imports constituted about 33.70% of the total primary commercial energy consumption in 2006–07.

10.17 While production of coal in 2006–07 has increased about three times the level of production in 1980–81, the share of coal and lignite in total primary commercial energy supply has been declining progressively over the years. On the other hand, share of oil and natural gas in the total primary commercial energy supply has been rising progressively. While the share of oil and natural gas rose from 37.89% in 1980–81 to 42.93% in 2006–07, the share of coal and lignite declined from 56.83% in 1980–81 to 53.11% in 2006–07.

10.18 Our dependence on imports is growing. Table 10.4 shows that we imported 13.4% of our coal requirement, 73.4% of oil and product needs, and 1.6% of gas requirement. Net imports of 131.97 mtoe in 2006–07 covers import of 95.43 mt of crude oil and petroleum products, 44.29 mt of coal, and 5 mt of LNG.

10.19 India needs to eliminate shortage of energy supply and enhance the availability of commercial energy resources if it has to sustain the projected 9% economic growth in the Eleventh Plan period. Table 10.5 shows projected commercial energy requirement of all the

TABLE 10.3
Source-wise Energy Demand

(All in mtoe)

	1960–61	1970–71	1980–81	1990–91	2000–01	2006–07	2011–12#
Coal	35.64	36.48	56.96	94.15	131.52	200.02	270
Lignite	0.01	0.81	1.23	3.58	6.43	8.72	13
Oil	8.29	19.14	32.26	57.75	106.97	132.75	186
Natural gas	–	0.60	1.41	11.49	25.07	34.60	48
Hydro power	0.67	2.17	4.00	6.16	6.40	9.75	12
Nuclear power	–	0.63	0.78	1.60	4.41	4.86	17
Wind power	–	–	–	–	0.13	0.83	<1
Total	44.61	59.83	96.73	174.73	280.93	391.53	546

Note: # Projected requirement at the end of the Eleventh Plan as per the IEPC report.
Source: Planning Commission.

TABLE 10.4
Percentage Demand met from Domestic Sources

(All in %)

	1960–61	1970–71	1980–81	1990–91	2000–01	2006–07	2011–12#
Coal	100	100	99.7	97.8	96.1	90.33	93.02
Lignite	100	100	100	100	100	100	100
Oil	5.4	35.6	32.6	42.8	30.3	26.6	27.59
Natural gas/LNG	–	100	100	100	100	82.08	69.30
Hydro power	100	100	100	99.93	99.96	99.74	95.94

Note: # Projections from various Working Group Reports.
Source: Planning Commission.

TABLE 10.5
Projected Commercial Energy Requirement for 2011–12 at the Rate of 9% Growth

Primary Fuel	Unit	Quantity
Coal	mt	731
Lignite	mt	55.59
Oil	mt	145
Natural gas	bcm	106
Hydro power	BkWh	165
Nuclear power	BkWh	44.64
Wind power	BkWh	7

Source: Working Group Reports of various sectors.

available resources in the terminal year of the Eleventh Plan period in physical units. Coal demand of 731 mt covers 51 mt of imports. 74% of this is expected to be consumed by the power sector including captive plants. Out of the oil demand of 145 mt, domestic production will be around 40 mt and the balance would be imported. Domestic availability of natural gas in the terminal year of the Eleventh Plan is expected to be about 47 bcm. An import of 23.75 mt of LNG would augment the supplies to meet the demand shortfall. There will be a gap of around 32 bcm between availability and demand if no addition by the private sector is achieved. The shortfall in availability will adversely affect the power sector and fertilizer industry, which consume around 70% of the current gas demand.

10.20 Availability of hydro, wind, and nuclear energy is estimated assuming a capacity factor of 37% for hydro, 20% for wind, and 70% for nuclear for taking into account the likely capacity additions during the Plan period.

10.21 Table 10.6 shows the realized growth rates of domestic supply of different fuels in the past as also those projected for the Eleventh Plan.

Supply Options

10.22 Coal production in the terminal year of the Eleventh Plan period is projected to increase more than one and half times the production level in 2006–07. In spite of the significant increase in domestic coal production, around 51 mt coal is required to be imported to meet the gap between demand and supply. Domestic production is likely to reach 680 mt level in the terminal year of the Eleventh Plan registering an average annual growth rate of 9.37% as compared to a growth rate of 5.8% achieved during the Tenth Plan period. Power sector alone will consume more than 70% of the projected demand.

10.23 Domestic production of crude is likely to increase to around 40 mt in the terminal year of the Eleventh Plan representing a modest increase from the current level of about 34 mt. By the end of the Eleventh Plan, the domestic production will cater to only around 28% of the projected petroleum products demand of 145 mt.

10.24 Domestic production of natural gas in the terminal year of the Eleventh Plan is likely to be 63.23 bcm, which will be around 100% higher than the current level of production. This increase in gas production will be mainly from K–G basin production of 40 million standard cubic metres per day (MMSCMD). The level of production may go further up if the Gujarat State Petroleum Corporation Limited is able to develop its resources in K–G basin in the Eleventh Plan period itself.

TABLE 10.6
Growth Rates of Domestic Supply

(All in %)

	1960–70	1970–80	1980–90	1990–2000	2002–07#	2007–12*
Coal	2.74	4.57	6.39	3.87	5.80	9.37
Lignite	–	4.18	10.42	5.24	4.64	11.72
Oil	31.23	4.42	12.1	–0.18	0.56	3.31
Natural gas	–	5.50	22.32	5.06	0.09	18.53
Hydro power	12.61	7.03	3.17	2.66	9.02	7.87
Nuclear power	–	7.95	4.86	11.10	(–) 9.18	19.13

Note: # The Tenth Plan period; * projected for the Eleventh Plan as per various Working Group Reports.
Source: Planning Commission.

10.25 Ministry of Power's (MoP) proposal of 78577 MW during the Eleventh Plan includes addition of 16553 MW of hydro capacity and 3380 MW from nuclear reactors. Taking into account this capacity addition, projected energy generation from both hydro and nuclear plants will be 165 Trillion Watt hour (TWh) and 44.6 TWh, respectively.

Energy Imports

10.26 Traditionally, India has remained supply constrained in energy and the country is forced to resort to imports to bridge the gap between demand and supply. With the rising demand of natural gas in the power and fertilizer sectors, LNG imports were started in 2004–05. Though LNG imports have augmented the demand to some extent, still there is a considerable shortfall. Oil imports also continue to grow every year to meet the petroleum products demand. Of late, import of non-coking coal by the power utilities and cement industry also started increasing besides the coking coal imports by steel industry to meet the growing demand. As a result of this, the share of imports in the total primary energy supply is progressively rising. The GoI is making efforts to import nuclear fuel from the US which is expected to improve the supply of nuclear fuel for nuclear power plants.

The Way Forward

10.27 It is evident from the discussions above that India is short of all energy resources and that coal will dominate India's energy basket. We need to expand resources through exploration, energy efficiency, renewables, and R&D. The environmental impact of various energy options is of growing concern owing to widespread use of energy. It is necessary that the demand of energy in the country is met in an environment-friendly and sustainable manner.

10.28 Available fossil energy resources must be optimally exploited using enhanced recovery techniques. Additional sources of energy such as CBM must be fully exploited and fossil fuel reserves advanced through more intensive exploration. Though the renewable energy sources such as wind energy, biomass, and biofuels account for a small percentage in the total energy, their contribution must increase by 2%–3% in the Eleventh Plan. Accordingly, a roadmap with detailed policy initiatives is necessary in all the sub-sectors of the energy sector for achieving the desired growth. While the Central and State sectors will continue to dominate the energy sector in the Eleventh Plan, energy policy should not be determined sector by sector where the dominant public sector players often have significant vested interests. We need to move towards a more transparent policy framework that treats different sources of energy in a similar fashion. Such a framework must be able to meet the energy requirements cost effectively by introducing competition for minimizing distortions across sectors and maximizing efficiency gains. Further, availability of clean, modern fuel to all households should be our guiding concern. This would require removal of barriers to entry at all stages and an optimal pricing and tax strategy so that resource allocation takes place based on market forces operating under a credible regulatory regime that also ensures a level playing field to public and private players.

10.29 Institutions for promoting and forcing the pace of energy conservation and improvement in energy efficiency need strengthening. Restructuring incentives and support by shifting from supply driven programmes to demand driven programmes and technologies would assist development and use of new and renewable energy sources. The subsidies and support need to be linked to the outcomes in terms of renewable energy generated rather than to capital investments. There is need for meeting social objectives as far as possible through direct and tradable entitlements offered to those in genuine need. The renewables may be given appropriate incentives for the environmental externalities.

10.30 It is also necessary to set up a robust energy R&D system for developing relevant technology and energy sources that enhance energy security and lead to energy independence in a cost-effective way in the long run. A number of technology missions covering areas such as in situ gasification, integrated gasification combined cycle (IGCC), solar energy, energy storage, etc. are proposed to be launched. The scope for biofuels including extraction of ethanol from agricultural waste using reported advances in technology needs to be pursued.

10.31 Sector-wise programmes and financial requirement for the Eleventh Plan are given in the following section.

POWER SECTOR

Issues and Challenges

10.32 Rapid growth of the economy will place a heavy demand on electric power. Reforms in this sector, for making the power sector efficient and more competitive, have been under way for several years and while there has been some progress, shortage of power and lack of access continues to be a major constraint on the economic growth. The greatest weakness is on the distribution front which is entirely the domain of the States. AT&C losses of most of the State Power Utilities (SPUs) remain as high as 40% and this has made them financially sick and unable to invest adequately in additional generating capacity. For the same reason, these utilities have had only limited success in attracting private investors to set up power plants.

10.33 The Eleventh Plan must ensure substantial expansion in order to move to a comfortable situation consistent with a growth rate between 9% and 10% per annum. Policies must be evolved that would ensure completion of on-going projects quickly and add new capacity in an efficient, least cost manner, while emphasizing exploitation of India's hydro potential and nuclear capabilities especially in the field of FBRs. Renewables such as wind power, which can be set up in a short time, play a useful role. One of the main challenges is a major step-up in investment in distribution infrastructure and a restructuring of the Accelerated Power Development and Reforms Programme (APDRP), using technological and managerial tools such as smart metering and GIS mapping for real time, monitoring and accountability at each distribution transformer with a goal set for the State Governments to bring down AT&C losses from the current level of around 40% to at least 15% by the end of the Eleventh Plan. Given the high level of such losses at present, it may be difficult for some States to attain these targets. Another challenge is to provide electricity access to all households and actually connect all BPL households under the RGGVY.

10.34 Establishment of new generation capacity and reducing cost of power will require action on many fronts:

- Availability of fuel such as coal or natural gas for new power plants must be assured.
- Long-term finance should be made available to lower the capital charge.
- The presently provided guaranteed rate of post tax returns for CPSUs, the rate of return to the utilities, needs to be realigned by Central Electricity Regulatory Commission (CERC) keeping in view the assessments of overall risks and prevalent cost of capital.
- Inter-state and intra-state transmission system of adequate capacity needs to be built that is capable of transferring power efficiently from one region to another.
- Distribution system must be made efficient which alone can ensure financially viable expansion.
- Thermal stations should be rehabilitated through Renovation and Modernization (R&M) to augment generating capacity and improve PLF.
- Hydro stations should be rehabilitated to yield additional peaking capacity.
- Supply side and demand side efficiencies should be improved to effectively lower primary energy demand by 5%–7% during the Eleventh Plan period.
- Use of washed coal should be ensured for power generation.
- Captive capacity should be harnessed to meet the power deficit.

Review of the Tenth Plan

Power Sector Reforms

10.35 Power sector reforms have been underway for over a decade. Enactment of 'Electricity Act 2003' during the Tenth Plan was an important step towards reforms in the power sector. The objectives of the Act are 'to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and taking measures conducive for the development of electrical industry, protecting interests of consumers and supply of electricity to all areas, rationalization of electricity tariffs, ensuring transparent policies

regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Regulatory Commissions and establishment of Appellate Tribunal for matters connected therewith or incidental thereto'.

10.36 The following milestones were achieved in the power sector during the Tenth Plan:

- As many as 14 States have restructured or corporatized their power sector and unbundled their boards into separate entities for transmission, distribution, and generation.
- Distribution has been privatized in Orissa and Delhi.
- Setting up of State Electricity Regulatory Commissions (SERCs) has become mandatory. A total of 25 States have either constituted or notified the constitution of SERC and 21 SERCs have issued tariff orders.
- A total of 26 States have notified rural areas under Section 14 of the Act, permits have been taken of composite schemes of generation and distribution without any license.
- In compliance with Section 3 of the Electricity Act 2003, the Central Government notified the National Electricity Policy in 2005. Similarly, National Tariff Policy was also notified in 2006. Further, in compliance with Sections 4 and 5 of the Electricity Act 2003, the Central Government notified the Rural Electrification Policy on 28 August 2006.
- The Central Government constituted the Appellate Tribunal for Electricity and the same became operational in July 2005. The Tribunal has started hearing appeals against orders of the Regulatory Commissions/Adjudicating Officers.
- Open access has been technically allowed and also made functional for inter-state transmission; however it has, in fact, been hindered by the high cross-subsidy surcharge set by many SERCs.
- Finally, under APDRP, nine States have shown a cash loss reduction of Rs 5254.60 crore over their loss levels of 2001–02. However, the progress is small and AT&C losses continue to remain high in most States.

Other New Major Initiatives in the Tenth Plan

Guidelines Formulated for Merchant Plants/Coal Linkages

10.37 Guidelines were formulated on Merchant Power Plants with an aim to restructure the electricity industry on 3 November 2006. Under this policy, coal blocks/coal linkage will be provided to the successful bidders in setting up thermal power stations.

Guidelines for Procurement of Electricity

10.38 In compliance with Section 63 of the Electricity Act 2003, the Central Government has notified guidelines for procurement of power by Distribution Licensees through competitive bidding. Further, the Central Government has also issued the standard bid documents for long-term procurement of power from projects having specified site and location.

Launch of Ultra-mega Power Projects (UMPPs)

10.39 The Electricity Act 2003 requires competitive tariff-based bidding from independent power producers. To initiate the process and to realize the benefits of international competitive bidding and economies of scale, a scheme was launched for development of coal-based UMPPs with a capacity of 4000 MW or above through tariff-based competitive bidding. The projects will include development of power projects as well as associated coal mines in respect of pithead sites and imported coal sourcing in respect of coastal sites. These projects will be awarded to developers on BOO basis. The bidding process has been completed in respect of two projects, that is, Sasan in Madhya Pradesh and Mundra in Gujarat and the projects allotted to Reliance Energy and Tata Power, respectively. The process is underway in respect of Krishnapattanam in Andhra Pradesh.

Guidelines Issued for Encouraging Competition in Development of Transmission Projects

10.40 The Central Government has also notified guidelines for encouraging competition in development of transmission projects through tariff-based bidding.

Capacity Addition

10.41 The all-India installed generating capacity of utilities at the beginning of the Tenth Plan was 104917.50 MW. This included 26261.22 MW of hydro, 74428.82 MW of thermal, 2720.00 MW of nuclear power, and 1507.50 MW of wind energy.

10.42 The capacity addition target for the Tenth Plan was 41109.84 MW. Against this, a capacity addition of 21080.24 MW was actually achieved during the Plan period. The sector-wise, mode-wise summaries of the Tenth Plan capacity addition target and achievement are given in Table 10.7.

10.43 It may be noted that the above capacity includes 1210.6 MW thermal-based capacity (Central: 500 MW, State: 538 MW, and private: 172.60 MW) which was not included in the original Plan target. Despite these additional projects, the Tenth Plan performance has been disappointing.

10.44 The cumulative capacity at the end of the Tenth Plan was 132329.21 MW, including 7760.60 MW renewable sources of energy, the details of which are given in Table 10.8.

Transmission and Distribution (T&D) Facilities

10.45 The major portion of the HVDC, 765 kV and 400 kV transmission network planned to be set up during the Tenth Plan, was in the Central sector, while that of the 220 kV network was in the State sector. Most of the targeted addition achieved was inadequate as neither the targeted generation nor the projected demand was realized. A summary of the Tenth Plan transmission achievement up to 31 March 2007 is given in Table 10.9.

Transmission and Distribution (T&D) Losses/AT&C Losses

10.46 T&D losses in India continue to be among the highest in the world and are the main concern in the development of power sector. The reported all-India average T&D losses increased from 19.8% in 1992–93 to 33.98% at the beginning of the Tenth Plan. There is a wide variation in the losses reported by different States. T&D losses for the country as a whole are estimated to be in the range of 35%–45%.

10.47 As T&D losses figures did not capture the gap between the billing and the collection, the concept of AT&C loss was introduced in 2001–02 to capture the

TABLE 10.7
Installed Capacity Addition during the Tenth Plan

Type	Target				Achievement			
	Central Sector	State Sector	Private Sector	Total	Central Sector	State Sector	Private Sector	Total
Hydro	7842.00	5381.20	1170.00	14393.20	4495.00	2691.00	700.00	7886.00
Thermal	12790.00	6675.64	5951.00	25416.64	6590.00	3553.64	1970.60	12114.24
Nuclear	1300.00	0.00	0.00	1300.00	1080.00	0.00	0.00	1080.00
Total	21932.00	12056.84	7121.00	41109.84	12165.00	6244.64	2670.60	21080.24

Source: Central Electricity Authority (CEA).

TABLE 10.8
All-India Cumulative Generating Capacity

(MW)

	Hydro	Thermal	Nuclear	Total
Centre	7562.00	33658.99	3900.00	45120.99
State/UTs	25785.62	43334.33	0.00	69119.95
Private	1306.15	9021.52	0.00	10327.67
Total	34653.77	86014.84	3900.00	124568.61#

Note: # excludes the capacity of 7760.60 MW from renewable energy sources (State: 975.65 MW and private: 6784.95 MW).
Source: CEA.

TABLE 10.9
Cumulative Achievements of Transmission Lines at the End of the Tenth Plan

Transmission System Type/Voltage Class	Unit	At the End of Ninth Plan (March 2002)	Addition during Tenth Plan	At the End of Tenth Plan (March 2007)
		Transmission Lines		
(i) 765 kV	ckm	971	733	1704
(ii) HVDC + 500kV Bi-pole	ckm	3138	2734	5872
(iii) 400 kV	ckm	49378	26344	75722
(iv) 230/220kV	ckm	96993	117636	114629
(v) HVDC 200 kV Mono-pole	ckm	162	0	162
Total of (i), (ii), (iii), (iv), and (v)	ckm	150642	47447	198089
		Sub-stations		
(i) 765 kV	MVA	0	2000	2000
(ii) 400 kV	MVA	60380	32562	92942
(iii) 230/220 kV	MVA	116363	40134	156497
Total of (i), (ii), and (iii)	MVA	176743	74696	251439
		HVDC		
(i) Bi-pole link capacity	MW	3000	2000	5000
(ii) Back-to-back capacity	MW	2000	1000	3000
(iii) Mono-pole link capacity	MW	200	0	200
Total of (i), (ii), and (iii)	MW	5200	3000	8200

Source: CEA.

total performance of the utility. The AT&C losses are presently in the range of 18% to 62% in various States. The average AT&C loss in the country is about 40%. There is wide variation of losses among the States and variation among the distribution companies within the States. The major portion of losses is due to theft and pilferage, which is estimated at about Rs 20000 crore annually as per the *Economic Survey 2006–07*. More than 75%–80% of the total technical loss and almost the entire commercial loss occur at the distribution stage.

Programme for Central Assistance under APDRP

10.48 To encourage distribution reforms, the APDRP was launched in March 2003 consisting of an investment financing component and an incentive component for improved performance. Under the investment component, projects worth Rs 17033.58 crore had been sanctioned. All of these projects were designed to reduce the AT&C losses through strengthening of the sub-transmission and distribution system. While the total investment needs for projects in special category States were to be met by the GoI, the non-special category States were required to fund 75% of the approved project outlay through counterpart funding arranged by the State Governments. A broad summary of the investment component is given in Table 10.10.

TABLE 10.10
Summary of Investment Component of APDRP (as on 31 August 2007) (at Current Price)

(Rs Crore)

S. No.	Category of States	Project Outlay	Revised APDRP Component to be Funded by GoI	Amount Actually Released by GoI	Counterpart Funds Provided by States	Total Utilization (Actual Investment)
1.	Non-special	13668.28	5567.26	5094.32	4750.97	9232.01
2.	Special	3365.30	3152.81	2292.49	62.95	1830.41
Grand Total		17033.58	8720.07	7386.83	4813.92	11062.42

Source: MoP.

10.49 APDRP was promoted with the promise of bringing down AT&C losses to 15% over five years. Actual performance has not come anywhere close to the targeted level. Table 10.11 summarizes the performance of SEBs. The scope for further tariff increase is limited since tariffs for paying customers are already among the highest in the world and it may make sense for them to opt out for captive generation.

significant worsening between 2001–02 and 2005–06. However, Gujarat has shown improvement in 2006–07. Given absence of a baseline, lack of consistency in reporting and fluctuating performances, it may be difficult to state whether the improvement, if any, is of a permanent in nature.

10.52 Evaluation studies have shown what is wrong with APDRP:

TABLE 10.11
Viability of State Utilities not Improving

(Rs Crore)

	2001–02 (Actual)	2002–03 (Actual)	2003–04 (Actual)	2004–05 (Actual)	2005–06 (Provi.)
Energy sold/energy available (%)	66.02	67.46	67.47	68.75	69.58
Revenue from sale of electricity (Rs crore)	68135	76640	85942	91738	100000
Cost of electricity sold (Rs crore)	98541	102247	110553	118975	128853
Loss on sale of electricity (Rs crore)	30407	25607	24611	27237	28853
Average cost of supply (paise/kWh)	374.57	351.72	353.80	357.35	366.96
		(–6.10%)	(–5.54%)	(–4.60%)	(–2.03%)
Average tariff (paise/kWh)	258.99	263.63	275.04	275.55	284.79
		(1.79%)	(6.20%)	(6.39%)	(9.96%)
Gap between the cost of supply and tariff (paise)	115.58	88.09	78.76	81.80	82.17

Note: 1. Financial Performance of 20 major States excluding Delhi and Orissa—as reported.
2. Figure in brackets are growth rates over 2001–02.
3. Approved tariffs hikes exceed average tariff increases estimated above.

Source: Power utilities of various States.

10.50 The reported AT&C loss of Rs 28853 crore for 20 major States is an underestimate. SEB accounts conceal more than they reveal—because of unaccounted ghost billing, manipulated consumer mix, and recording of sales and expenditure on accrual and cash basis, respectively. Further, audit comments have also not been incorporated. As per the Auditor's comments, Gujarat SEB's losses for 2002–03 have increased from Rs 476 crore to Rs 985 crore. Similar results for Uttar Pradesh could not be confirmed as for Uttar Pradesh State Electricity Board even cash balances remain un-reconciled. Actual AT&C losses are estimated to exceed Rs 40000 crore.

10.51 The performance varies across States. Haryana and Andhra Pradesh have shown considerable improvement in this regard. However, Haryana started with a very low ratio (energy billed/energy available) in 2001–02, but later its performance deteriorated considerably in 2006–07. Some States such as Rajasthan, Uttar Pradesh, Bihar, Gujarat, and Kerala have shown

- It was an investment driven programme without any outcome accountability.
- The project reports were ill-prepared. They replicated the same type of investments without a full buy-in by the host utility.
- There was no baseline data established on the distribution losses or on billing/collection efficiency. This makes it difficult to determine what has been achieved.
- Unrealistic targets were set and the scheme did not provide incentive for SEB staff to co-operate.

10.53 The APDRP needs to be restructured in order to obtain better results.

Plan Expenditure during the Tenth Plan

10.54 The Plan expenditure for Centre, State, and union territories on the basis of actual for 2002–03, 2003–04, 2004–05, revised estimates (RE) for 2005–06, and approved outlay for 2006–07 (Table 10.12) reveal the following.

TABLE 10.12
Outlay/Expenditure—Centre, State and UTs

(Rs Crore)

Sector	Tenth Plan Approved Outlay	2002–03 (Actual)	2003–04 (Actual)	2004–05 (Actual)	2005–06 (Actual)	2006–07 (RE)	Tenth Plan Likely Expenditure	% Utilization
States and UTs	93225.71 (93225.71)	17102.58 (16462.20)	17836.89 (16541.68)	17035.28 (15137.09)	17330.07 (14742.72)	19371.57 (15580.77)	88676.39 (78464.46)	95.12 (84.17)
Central Sector	177050.64 (177050.64)	10993.42 (10581.79)	14327.50 (13287.12)	17039.96 (15141.25)	21045.93 (17903.81)	27271.04 (21934.40)	90677.85 (78848.37)	51.22 (44.53)
All	270276.35 (270276.35)	28096.00 (27043.99)	32164.39 (29828.80)	34075.24 (30278.34)	38376.00 (32646.53)	46642.61 (37515.17)	179354.24 (157312.82)	66.36 (58.20)

Note: Figures in the bracket are at 2001–02 price.
Source: Planning Commission.

10.55 The shortfall in fund utilization in the Central sector is on account of the following:

- During the first two years, there was a delay in according investment approval for various projects such as Teesta Low Dam-III and IV, Sewa-II, Omkareshwar, Subansari Lower, Parbati-III, Purulia PSP (Pump Storage Project), Chamera HEP-III (Hydro Electric Project), Uri-II, Kishanganga, Tipaimukh, Turial HEP, Tuivai HEP, Lower Kopali HEP, Ranganadi Stage II, Kameng, Tripura Gas, etc.
- In case of NTPC, an outlay of about Rs 3000 crore was included as GBS to be utilized if need be. However, it was decided to fund the projects from its internal resources and in addition gas projects such as Kawas and Gandhar could not take off.

10.56 In the State sector the major shortfalls were in the States of Gujarat, Himachal Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, and Uttarakhand.

ELEVENTH PLAN PROGRAMMES

GENERATION

Capacity Additions

10.57 The gross electricity requirement by the end of the Eleventh Plan projected by the Working Group on power is 1038 Billion Unit (BU) and peak demand estimation is 151000 MW whereas the EC on Integrated Energy Policy has projected the gross electricity requirement of 1097 BU and peak demand of 158000 MW. To fulfil the estimated electricity demand requirement, the Working Group recommended the capacity addition programme initially of 78530 MW and updated at 78577 MW during the Eleventh Plan (Table 10.13). The mode-wise capacity addition is depicted in Table 10.14.

10.58 The public sector will continue to play a dominant role during the Eleventh Plan while progress along the reform path helps to clear the roadblock for greater private participation in the medium to long term.

TABLE 10.13
Status of Capacity Addition during the Eleventh Plan

(in MW)

		Central	State	Private	Total
1.	Projects commissioned (as on 18 October 2007)	1360	1350	250	2960
2.	Projects under construction	28765	16342	7378	52485
3.	New Projects	9740	10260	3132	23132
	Total	39865	27952	10760	78577

Note: At the time of going to press on 8 May 2008, 9573 MW were commissioned, 62717 MW are under construction and 6410 MW are likely to come up.
Source: CEA/Planning Commission.

TABLE 10.14
Sector-wise, Mode-wise Capacity Addition during the Eleventh Plan

(in MW)

	Source	Central	State	Private	Total
1.	Hydro	9685	3605	3263	16553
2.	Thermal	26800	24347	7497	58644
3.	Nuclear	3380	0	0	3380
	Total	39865	27952	10760	78577

Note: At the time of going to press on 8 May 2008, the mix of thermal/hydro has undergone some changes.
Source: CEA/Planning Commission.

10.59 The proposed capacity addition is three and a half times of that achieved in the Tenth Plan and in that sense is very ambitious. Effective implementation is also contingent upon fuel linkages being firmed up and early start of work on new projects. For the new projects, particularly in the Central sector, it is essential to simplify and streamline procedures for input linkages, techno-economic clearance, and investment clearance. On the basis of this, the cumulative generation capacity in the country by the end of 2011–12 will be as given in Table 10.15.

Hydro Power Development

10.60 The share of hydro capacity in the total generating capacity of the country has declined from 34% at the end of the Sixth Plan to 25% at the end of the Ninth Plan. The present share of hydro capacity of 26% is envisaged to be about 23% by the end of the Eleventh Plan if the targeted Eleventh Plan capacity addition programme is achieved.

10.61 A 50000 MW hydro initiative was launched in 2003 for accelerated development of hydro in the country and Preliminary Feasibility Reports of 162 projects totaling to 48000 MW were prepared. Out of this, 77 projects with total capacity of about 37000 MW, for which first-year tariff is expected to be less than Rs 2.50 per unit, were selected for execution. In the Eleventh Plan, a capacity addition of about 16553 MW has been earmarked keeping in view the present preparedness of these projects. Projects totaling to a capacity of 30000 MW have been identified for the Twelfth Plan on which necessary preparations have to be made from now onwards to ensure their commissioning during the Twelfth Plan. Thus, the effect of 50000 MW initiatives would be visible in the Twelfth Plan period.

10.62 Geological uncertainty, contract management, resettlement and rehabilitation, delay in land acquisition and infrastructure development have been the main reasons for time and cost over-runs in hydro projects. In order to avoid delays in project implementation, the following steps need to be taken before the zero date of the project implementation:

- Bankable DPR, based on a detailed survey, should be prepared to avoid geological uncertainty.
- Contract monitoring, as distinct from project monitoring, should be emphasized.
- Land acquisition and infrastructure development should be settled and completed before the start of the project.

10.63 Further, the following steps need to be taken in order to accelerate the pace of hydro development:

- Preparation of a DPR based on economic viability to be expedited.
- Streamline clearances for pursuing priority projects.
- Simplify approval procedures.
- Facilitate the early financial closure of projects.

TABLE 10.15
Generating Capacity Anticipated at the End of the Eleventh Plan

(in MW)

	Hydro	Thermal	Nuclear	Wind and Renewables	Total
Installed capacity as on 31 March 2007	34653.77	86014.84	3900.00	7760.60	132329.21
Addition during Eleventh Plan	16553.00	58644.00	3380.00	14000.00	92577.00
Total capacity anticipated as on 31 March 2012	51206.77	144658.84	7280.00	21760.60	224906.21

Source: Planning Commission.

- Priority to be given to projects for which concurrence has already been issued by the CEA.
- High priority to be accorded to smaller capacity Run of the River-type hydro projects having gestation period less than five years.
- Basin-wise optimization studies for all the major river basins should be carried out.
- Competitive bidding other than tariff-based competitive bidding could also be considered for hydro projects since there are formidable construction risks in hydro power construction due to geological uncertainties and other factors.

Nuclear Power

10.64 Atomic energy is an important source of electric power which has environmental advantages and is also likely to be economical in the longer run. At present, nuclear energy installed capacity is 3900 MW_e which is 3.1% of total installed capacity. The PLF of Nuclear Power Corporation of India Limited (NPCIL) stations increased from 60% in 1995–96 to 82% in 2000–01 but it has decreased to 57% in 2006–07. Constraint in nuclear fuel availability is the main reason for lower PLF. NPCIL made major strides in cutting costs and construction periods for nuclear power projects in the Tenth Plan. The lower construction period and improved contracting and contract management have resulted in reduction in the capital cost per MW_e.

10.65 The Kudankulam project (2×1000 MW_e) is being set up, based on light water reactor technology, and NPCIL has initiated pre-project activities for its expansion with another two units of 1000 MW_e. Further, the design of 700 MW_e indigenous PHWRs has been undertaken by NPCIL to enhance the pace of first stage capacity addition programme. Pre-project activities of four such units have been initiated.

10.66 Having successfully completed the R&D phase of the FBR technology, the DAE has engaged the Indira Gandhi Centre for Atomic Research (IGCAR) for the design, development, construction, and operation of the country's first 500 MW_e liquid-sodium-cooled FBR. The government has set up a new company, Bharatiya Nabhikiya Vidyut Nigam Limited, in September 2003 to implement the first project based on the FBR technology. The first 500 MW_e prototype FBR is likely to be commissioned in the Eleventh Plan. The FBR technology is critical for developing the second stage of India's nuclear power programmes. Without developing the wide-scale use of FBR technology, India would find it difficult to go beyond 10000 MW_e nuclear capacity based on known indigenous uranium resources. About 20000 MW_e nuclear power programme is critical to developing the thorium-based third stage of India's nuclear power programme. Use of FBR technology would enable indigenous uranium resources to support it. The BARC is also engaged in R&D activities to develop advanced heavy water reactors of 300 MW_e capacity that would provide an alternative route to the thorium-based third stage of India's nuclear power programme.

10.67 The Eleventh Plan power programme includes 3380 MW_e of nuclear power plants. The GoI is making efforts to import nuclear fuel from abroad which is expected to improve the supply of nuclear fuel for nuclear power plants. It is also expected that the execution of nuclear projects will also be opened up to enable participation by other PSUs and private sector. The effect of this is likely to be visible in the Twelfth Plan period. NPCIL has indicated a capacity addition of about 11000 MW during the Twelfth Plan.

Merchant Power Plants

10.68 A merchant power plant does not have long-term Power Purchase Agreement for sale of its power and is generally developed on the balance sheet of developers. The GoI has reserved coal block with reserves of 3.2 billion tonnes of coal for allotment by Screening Committee of Ministry of Coal (MoC) for merchant and captive plants. About 10000 MW capacity is expected to be developed through this initiative. This capacity has not been taken into account while working out the capacity requirement over the Eleventh Plan period as it is not likely to materialize before the Twelfth Plan.

Captive Power Generation

10.69 Large number of captive plants including co-generation power plants of varied type and sizes exist

in the country which are either utilized in process industry or used for in-house power consumption. A number of industries have set up their own captive plants so as to get reliable and quality power. The installed capacity of captive power plants has increased from 588 MW in 1950 to 24680 MW in March 2007. The annual generation from captive power plants at the end of the Tenth Plan is likely to be about 78 billion units. Captive plants including co-generation power plants could, therefore, play a supplementary role in meeting the country's power demand. It is envisaged that during the Eleventh Plan period about 12000 MW capacity power plants would be added to the system which will take care of the demand of the industry and also supply surplus power to the grid.

Private Sector Participation (Box 10.3)

10.70 New initiatives in power sector development such as UMPPs, Merchant Power Plants, and Captive Power Plants are expected to trigger the capacity addition in private sector during ensuring Five Year Plans.

Box 10.3
Private Sector Participation

The policy of inducting private investment into the power sector, initiated in 1991, was expected to result in the addition of 17588 MW of power capacity in the Ninth Plan. The actual achievement was 5061 MW, a mere 29% of the target. Further, during the Tenth Plan capacity addition target in private sector was 7121 MW against which actual capacity addition was 2670.60 MW which is merely 37.50%, while the achievement ratio for Central and State sectors were higher at 55.47% and 51.79%, respectively. The main impediments have been:

- The chronic financial weakness of SEBs.
- Unviable tariffs to IPPs, due to factors such as high cost of liquid fuels, risk factors involved, slow growth in demand for future power below the expected levels, etc.
- The absence of enabling regulatory, legislative, and market environment.
- The lack of recognition of the fact that the distribution segment would need to be made efficient and bankable before private investment and competition emerges in generation.

Fuel Requirements

10.71 The requirement of various fuels for the thermal plants by the terminal year of the Eleventh Plan (2011–12) considering a capacity addition of about 58644 MW, based on normative generation parameters such as PLF and specific fuel consumption, is summarized in the Table 10.16.

TABLE 10.16
Fuel Requirement during 2011–12

Fuel	Requirement	Availability
Coal	545 mt	482 mt
Lignite	33 mt	33 mt
Gas/LNG	89 MMSCMD	36 MMSCMD

Source: Working Group Report on Power.

10.72 However, total coal availability for power sector from domestic sources is expected to be 482 million tonnes per annum by 2011–12. There is need for augmenting availability of domestic coal for the power sector or import coal to bridge the gap between requirement and domestic supply. Further, 89 MMSCMD (million standard cubic metres per day) of gas requirement has been projected in 2011–12. At present, the availability of gas is of the order of 40 MMSCMD which is not sufficient to meet the requirement of even existing plants. Additional gas supply is expected from the K–G basin finds during the Eleventh Plan.

TRANSMISSION

Perspective Transmission System

10.73 The transmission system facilities had earlier been planned on regional basis with provision of inter-regional link to transfer regional surplus power arising out of diversity in demand. The generation resources in the country are unevenly located, the hydro in the northern and North Eastern States and coal being mainly in the eastern part of the country. Development of strong national grid has become a necessity to ensure reliable supply of power to all. A national grid can exploit the diversity of peak demand across regions, reduce it to the required peak capacity as well as facilitate better use of national hydro power capacity. The planning and operation of the transmission system has thus shifted from the regional level to the national level.

Transmission Capacity Requirement

10.74 The focus of transmission system development programme for the Eleventh Plan is to provide adequate inter-regional and intra-regional transmission capacity so as to consolidate and strengthen the national grid network towards a strong all-India grid. The inter-regional power exchange requirement has been assessed from possible scenarios of regional surpluses and deficits for the peak and off-peak conditions of winter, summer, and monsoon months. The projections are based on programme of generation and anticipated demand aim at estimating the transmission requirement at the inter-regional level. Grid expansion plan based on this projection would be able to cater to the needs of various feasible operating scenarios and also provide required margins to support market-oriented power exchanges.

Development of National Grid

10.75 It is envisaged to add new inter-regional capacities of 20700 MW at 220 kV and above during the Eleventh Plan period. This would increase the total inter-regional transmission capacity of national power grid at 220 kV and above from 14100 MW (by the end of the Tenth Plan) to 37750 MW by 2011–12. The plan for national power grid and the schemes have been identified. NER, Sikkim, and Bhutan have vast untapped hydro potential which is planned for development during the Eleventh Plan and beyond. The requirement of transmission system for evacuation of the NER hydro power has been estimated corresponding to the capacity of hydro projects which may be feasible to develop in the next 20 years. This generation is estimated to be about 35000 MW in the NER, about 8000 MW in Sikkim, and about 15000 MW in Bhutan. Taking local development at accelerated pace resulting in demand within the NER, Sikkim, and Bhutan to be in the range of 10000–12000 MW (presently it is about 1500 MW), the transmission requirement through the chicken neck works out to be of the order of 45000 MW. The total requirement including additional circuits for meeting the contingencies and reliability needs would work out to seven or eight HVDC bi-pole lines of 800 kV and four or five double-circuit lines of 400 kV—a total of 12 high-capacity transmission corridors passing through the chicken neck. For this, Right of Width requirement would be about 1.5 km in width considering the minimum distance between adjacent towers to be such that fall of any tower does not affect the adjoining line. The first 800 kV HVDC bi-pole line has been planned from a pooling sub-station at Biswanath Chariyali in the NER upto Agra in the northern region. This is being programmed for commissioning matching with Subansiri Lower HEP in 2011–12.

Transmission Capacity for Trading/Margins

10.76 The method adopted for evolving the national transmission system expansion plan provides sufficient transmission capacities which would have inherent margins for trading transactions. Transmission system implemented on the basis of the expansion plan evolved in this manner would enable trading across the regional boundaries towards optimal utilization of generation resources in the country for ultimate benefit of the consumer.

Distribution

10.77 Distribution is the key segment of the electricity supply chain. The distribution sector caters to the rural and urban areas. Rural distribution segment is characterized by wide dispersal of network over large areas with long lines, low demand density, high cost of supply, low paying capacity of the people, large number of subsidized customers, unmetered flat rate supply to farmers, non-metering due to high cost and practical difficulties, low load and low rate of load growth. Urban distribution is characterized by high consumer density and higher rate of growth of load. Both segments are distinct with different problems and issues. The biggest challenge of the power sector is the high T&D losses. A combination of technical and non-technical factors is contributing to high T&D losses. Lack of consumer awareness, political interference, and inefficient use of electricity is further aggravating the problem. In urban areas too, the distribution system suffers from a large number of unauthorized connections and power theft.

10.78 The sub-transmission and distribution system were the thrust areas during the Tenth Plan. The performance of APDRP scheme has not been up to the mark in the Tenth Plan period and needs to be

restructured in the Eleventh Plan period as distribution is the key element for improving the overall performance of the power sector. For APDRP restructuring, following actions are suggested to be taken during the Eleventh Plan:

- All distribution companies should target a reduction of 3% per annum of their AT&C losses in next five years. High loss making feeders need to be franchised by distribution companies.
- Setting up of peaking power plants should be encouraged to overcome peaking shortages as the additional power cost of supply from such a plant could then be passed on to the consumer who opt for uninterruptible/reliable supply.
- Introducing bifurcation of feeders for agricultural users with unmetered power supply, automated metering of all distribution transformers, and GIS mapping of all consumers.
- Preparation of baseline data in respect of energy flow for each distribution transformer within three months of completing the above.
- Incentive for staff linked to specific measures of improvement.
- Web-based transparency of performance of each distribution transformer level including names of the staff responsible.
- Independent external audit to track and monitor outliers.
- Funds initially to be given as loan which may be converted to grant based on achievement of specific milestones on outcomes of investments.

10.79 The Working Group of the Eleventh Plan has assessed a total investment requirement of this sector as more than Rs 2 lakh crore. A major investment of this size is beyond the capacity of State utilities. It is therefore planned to set up a National Electricity Fund (NEF) to cater to the requirement of these companies. State utilities could prepare their distribution investment plans along with supportive measures including appointment of franchises, high voltage distribution supply, fast track courts to punish persons guilty of theft of electricity, use of covered cables in areas prone to theft of electricity, installation of metres, and a monitoring system with complete audit of electricity generated and received by the company. The APDRP funds could be used to provide grant (25%) for utilities, the balance being the loan from the NEF and for North Eastern States this could be (90%) grant.

Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)

10.80 The GoI launched RGGVY in April 2005 to provide electricity access to all rural households and extend free connections to all BPL households (estimated at 2.3 crore) by 2009. RGGVY subsidizes the capital cost by 90% through GoI grants. The approved capital cost estimate for RGGVY is Rs 16000 crore with a subsidy component of Rs 14750 crore. The physical targets included electrification of 125000 un-electrified villages by creating rural electricity distribution backbone and village electrification infrastructure and last mile service connectivity to 10% households in the village at a rate of Rs 6.50 lakh per village. The target to give free connections to 2.34 crore BPL households was also included in the above estimates. Further, the estimates covered intensification works in already electrified villages at a rate of Rs one lakh per village for 4.62 lakh villages.

10.81 While approval was accorded to Phase-I of the scheme of Rural Electricity Infrastructure and Household Electrification, which was later renamed as RGGVY by CCEA in December 2004, it was decided that implementation of Phase-I of the scheme in the Tenth Plan will have a provision of Rs 5000 crore as subsidy under the Plan Budget of the MoP for the remaining two years of the Tenth Plan, namely, 2005–06 and 2006–07. It was also decided that prior commitment of the States will be obtained, before grant of subsidy, for (i) deployment of franchisees for the management of rural distribution in projects financed under the scheme and (ii) the provision of the requisite revenue subsidies to the State utilities by the State Government as required under the Electricity Act 2003. CCEA also decided that the scheme is to be subject to concurrent evaluation and a view on modifications required for implementation during the Eleventh Plan may be taken after a comprehensive review towards the end of the Tenth Plan.

10.82 The target set by the MoP was electrification of 10000 villages in 2005–06 and the achievement reported was 9819 villages during the same period. In addition, intensification works were carried out in 350 already electrified villages. Against the total subsidy amount of Rs 1100 crore provided for 2005–06, an amount of Rs 1031.067 crore was released to the States. The total amount of funds released for RGGVY in 2005–06 was Rs 1616.24 crore which includes loans provided by Rural Electrification Corporation Ltd (REC) to meet the capital cost over and above the subsidy amount released for the scheme. The MoP had also reported that a total of 34003 households (including 16815 BPL households) were provided electricity access. The implementation of RGGVY in 2005–06 was mainly in the States of Bihar, Karnataka, Rajasthan, Uttar Pradesh, Uttarakhand, and West Bengal. However, the achievement of villages electrified in accordance with the revised definition of village electrification (requiring a mandatory coverage of at least 10% of the households to be electrified in a village declared as electrified) is yet to be verified and reported by the MoP.

10.83 The MoP set a target to electrify 40000 un-electrified villages under RGGVY in 2006–07. An amount of Rs 3000 crore was provided in the budget of the MoP to meet the subsidy requirements of RGGVY during the year. As on 31 March 2007, the MoP had reported a cumulative achievement of electrification of 50402 villages during 2005–06 and 2006–07, which includes 11177 electrified villages where intensive electrification had been carried out. In other words, the number of un-electrified villages electrified during 2006–07 is limited to 28706 only, that is 72.64% of the set target of 40000 villages. The intensification works had been carried out in 11177 villages. In respect of electricity access provided to households, the cumulative achievement was 731527 households (including 672588 BPL households). During 2006–07, a total of 697524 households (including 655773 BPL households) were provided with electricity access. The total funds released for RGGVY during the Tenth Plan were Rs 5475.15 crore which includes 10% of the loan component over and above the Central subsidy provided at 90%.

RGGVY in the Eleventh Plan

10.84 An amount of Rs 3983 crore has been provided in the MoP budget for 2007–08 to meet capital subsidy under RGGVY. The MoP has set a target to electrify 40000 un-electrified villages during 2007–08. Meanwhile RGGVY for the Eleventh Plan has been approved by the Cabinet at the cost of Rs 28000 crore. A GoM has been appointed to look into enhancing the effectiveness of the scheme implementation.

10.85 The Rural Electrification component under the Bharat Nirman Programme envisages electrification of all 125000 un-electrified villages and 2.3 crore households (out of total 7.8 crore un-electrified households in the country) by 2009. Thus the Rural Electrification component under Bharat Nirman Programme is the sub-set of RGGVY. The time frame for these two programmes coincides.

R&D in Power Sector

10.86 With the twin cries of depletion of energy resources and environmental pollution, it has become more crucial to develop efficient and clean power plants and their delivery system. These plants should be capable of effective utilization of resources such as coal, NG, and other sources of energy. Thus, in order to meet India-centric requirements, various sectors related to the field of energy have been identified for segregating different research avenues. The depletion of fuel resources has resulted into the need of exploring renewable power generation. Similarly, the application of distributed power generation may be useful for electrification of remotely located un-electrified villages. Apart from this, application of new technologies in the field of generation, transmission, and distribution also needs to be given utmost emphasis.

Policy Issues

The following are the policy issues:

- Technology advancements and R&D have so far not been properly addressed. Major organizations such as NTPC, NHPC, Power Grid Corporation of India Ltd (POWERGRID) on the generation side and Bharat Heavy Electricals Ltd (BHEL), Asea Brown Boveri Ltd (ABB), and Siemens on the

manufacturing side must enhance substantially their budget allocations for R&D. The utilities should aim at least about 1% of their profit to be utilized for R&D activities and the manufacturing organizations should consider 3%–4% to be provided for technology development.

- Ultra Super Critical boiler technology, IGCC technology, and oxy-fuel technology are well researched abroad but have to be developed for Indian coal. NTPC, the major Indian Central Sector utility should have its R&D centre strengthened to expedite the work started during the Tenth Plan on IGCC. This project may be given top priority.
- There is a need to work with specialized S&T laboratories under CSIR and other space and nuclear establishments to develop material technology for advanced boilers, fuel cells, solar power, battery, and super conducting material application in power sector.
- The projects of national interest have to be taken upon collaborative research route. In future capital fund support for R&D should be reduced and utilities and industries should collaborate to fund R&D projects.
- R&D import should be exempted from custom duty to encourage indigenous R&D.
- A High Power Committee in R&D should monitor R&D projects and regulate funds. This will avoid duplication and ensure competitive R&D.

Human Resource Development and Capacity Building

10.87 Human resource development and capacity building in the present power scenario demands a very comprehensive and pragmatic approach to attract, utilize, develop, and conserve valuable human resources. Training, re-training, and career prospects are some of the important elements of human resource development. The reforms in the power sector have led to change in the role of senior engineers from a purely government-controlled technical management to business management in a corporatized framework.

10.88 Technically trained manpower comprising skilled engineers, supervisors, artisans, and managers is required in every sphere of the power supply industry. Due to the introduction of more sophisticated technology and automation, the Man/MW ratio is declining over the years. The overall Man/MW ratio in power sector which was 9.42 at the end of the Ninth Plan is expected to go down to 7.00 at the end of the Tenth Plan and it is expected to be 5.82 at the end of the Eleventh Plan. This indicates the increasing importance of each individual, the man behind the machine. Therefore, the human resource development/training needs of technical, non-technical, and supporting staff should be given importance keeping in view the National Training Policy for the power sector.

10.89 It is estimated that during the Eleventh Plan, the availability of infrastructure for training is about 0.77 lakh man-months per year against the requirement of 3.40 lakh man-months per year. This shows that there is a deficit of about 77%. In spite of such a situation of lack of availability of required infrastructure, quite often a number of training institutes remain underutilized. Therefore, there is need to network various training and academic institutions such as National Power Training Institute, Indian Institute of Management (IIMs), Administrative Staff College of India and other reputed institutions for providing training to power sector personnel.

Legislative and Policy Issues

10.90 The Electricity Act 2003 has put in place a liberal and progressive framework for the development of electricity sector in the country. Its main objectives are promoting competition, protecting interest of consumers, supply of electricity to all areas, rationalization of electricity tariff, and ensuring transparent policies regarding subsidies.

10.91 The National Electricity Policy and the Tariff Policy have been notified under the provisions of the Act. The National Electricity Policy aims at providing access to electricity to all in the next five years by overcoming energy and peaking shortages and having adequate spinning reserves by the year 2012 for fully meeting the demand and supply of reliable and quality power of specific standards in an efficient manner and at reasonable rates. The Tariff Policy aims at ensuring financial viability of the sector and promoting transparency, consistency, and predictability in

regulatory approaches. It also aims at promoting competition and efficiency in operation and meeting quality of supply. Further, the Integrated Energy Policy aimed at promoting overall development of the sector has been announced. The Electricity Tariff Policy based bidding is mandatory for all plants from January 2006 excepting for public sector plants which are required to do so by 2011.

10.92 The legal provisions of the Electricity Act 2003, National Electricity Policy, Tariff Policy, and the Integrated Energy Policy provide an appropriate legislative and policy framework for the development of the power sector. The provisions of these policies must be implemented within the stipulated time in order to make power available at affordable cost to all by 2012. The major issues to be addressed in this regard during the Eleventh Plan are as follows.

Issues Related to Capacity Building

The issues related to capacity building are the following:

- There is a need to streamline and standardize the procedure to shorten the time cycle for obtaining environmental/forest clearance for power projects.
- The captive coal blocks development should be done in advance to match with commissioning schedule of power projects.
- The number of agencies having authorization to undertake exploration of coal blocks also needs to be increased.
- State governments should take suitable policy measures to make captive generation more attractive.
- To encourage R&M of old power plants, CERC should set up benchmarks for capital expenditure on R&M.

Issues Related to Promotion of Open Access and Trading

The following are the issues related to promotion of open access and trading:

- There is a requirement of having an enabling policy framework for merchant power plants which could be in the size of up to 1000 MW so that adequate power is available for open access.
- To provide transmission corridors for merchant power plants, adequate redundancy should be built at the stage of transmission planning.
- A rational transmission tariff framework is essential for facilitating optimum network use, promoting power trade, and facilitating open access.

Issues Related to Control Cost of Bulk Power

The issues related to control cost of bulk power are the following:

- Coal blocks should be offered on the basis of competitive tariff-based bidding as part of the integrated coal mine cum power project to reduce the fuel cost as major part of the cost of bulk power is fuel cost.
- The price of domestic natural gas and its allocation should be independently regulated on a cost plus basis including reasonable return till the time domestic supply exceeds demand by fertilizer and stranded power plants after which it should be market determined. An exception needs to be made for hydro plants that involve significant geological uncertainties.
- Various taxes and initiatives on generation, transmission, and distribution projects should be identical to remove distortions.
- Taxes on fuels should not distort economic fuel choices.

Issues Related to Improvement in Distribution Segment

The issues related to improvement in distribution segment are as follows:

- An National Electricity Fund be set up and supportive measures taken to bring major improvement in the distribution system.
- There is a need to restructure the APDRP to make it sustainable for better results.
- To reduce distribution losses and improve quality of supply to the consumers. The larger investments would be required for upgradation of distribution networks and a special drive would be necessary for identifying high loss areas and controlling commercial losses in such areas.
- AT&C loss reduction of 3% every year in next five years should be targeted by all States.

- Setting up of peaking power stations should be encouraged by time of day tariff for both producers and consumers to overcome peaking shortages as the additional power cost of supply from such a station could then be passed on to the consumers who opt for uninterrupted/reliable supply.

Plan Outlays

10.93 A public sector tentative outlay for the Eleventh Plan is Rs 554766 crore at constant price. This consists of Rs 343387 crore for the Central sector and Rs 211379 crore for the State sector. The proposed outlay for Central sector includes Rs 313722 crore IEBR requirement of PSUs (Rs 278781 crore for PSUs under the MoP, Rs 12218 crore for Power projects of Neyveli Lignite Corporation (NLC), and Rs 22723 crore for power projects of Atomic Energy). It also includes Rs 29665 crore budgetary support (Rs 26924 crore for programmes of the MoP and Rs 2741 crore for power related programmes of DAE). The State sector investments include borrowing amount of Rs 25000 crore for the APDRP scheme initially as loan to the SPUs by Central PSUs of the MoP. In addition, investment would have to be made to meet the gap, particularly in the T&D systems for which a group of ministers has been set up.

PETROLEUM AND NATURAL GAS SECTOR

Issues and Challenges

10.94 Currently, India's per capita consumption of petroleum products is about one-fifth of world's average per capita consumption. The share of hydrocarbons in the commercial energy is about 45% out of which the share of oil is 36% and that of natural gas is around 9%. In India, the indigenous production of crude oil has not been increasing in tandem with the consumption/demand of petroleum products. Considering the global trend of shift in energy mix from oil to gas, the share of gas in consumption pattern is also likely to increase gradually. India's current import of crude oil is more than 70% of its total requirements and the share is expected to increase in the near future. The impact of high oil prices in the international market and stagnant domestic oil supply has led to accelerated efforts on domestic exploration, venturing into overseas equity oil and gas and LNG imports as measures for ensuring energy security. The hydrocarbon industry has been passing through very turbulent and challenging phases for the last few years.

10.95 The challenges before the country are:

- Maximizing supply of crude oil and gas at the least possible cost as part of energy security by getting as much as possible from known reserves, encouraging exploration for new finds, and getting equity oil abroad.
- Developing suitable gas market through exploration for finding new gas fields, rapid development of existing fields, creating a pipeline network for distribution and competitiveness.
- Creating conditions for competitive markets of petroleum products and regulating it to ensure that fair competition protects interests of all stakeholders.
- Rationalizing subsidies for kerosene and domestic LPG whose burden has increased dramatically. Effective delivery and targeting of subsidies are critical to reduce the burden.
- Ensuring large investment for creating marketing and associated infrastructure such as ports, storage, pipelines, etc.

10.96 Various policies and programmes have been pursued in the past for the petroleum and natural gas sector. A brief review of these is given below.

Review of the Tenth Plan

10.97 A brief review of the thrust areas identified during the Tenth Plan is given below.

Oil Security

- Under six rounds of NELP, 162 blocks have been awarded. A total of 37 discoveries have been made so far and development plans for their exploitation are under progress. In addition, 26 blocks have been awarded for exploitation of CBM and 6 TCF (trillion cubic feet) of gas reserves have been established so far.
- A number of Improved Oil Recovery (IOR) and Enhanced Oil Recovery (EOR) schemes were implemented to enhance the indigenous production of crude oil.

- Oil and gas PSUs were encouraged to pursue equity oil and gas opportunities overseas. OVL (ONGC Videsh Ltd), OIL, IOC (Indian Oil Corporation), and GAIL are actively involved in acquiring overseas exploration and production assets. Against the acquisition target of 10.14 million tonnes of oil and oil equivalent of gas (O&OEG) during the Tenth Plan period, OVL achievement was 22.24 million tonnes of O&OEG from its overseas activities.
- About 5 million tonnes strategic crude oil storage is under construction at three locations.
- Biofuels Policy initiatives for blending of petrol with ethanol and biodiesel with diesel were taken up.

Infrastructure Development

- Refining capacity at the beginning of the Tenth Plan was 118.37 million tonnes per annum which increased to 148.97 million tonnes per annum in the terminal year of the Tenth Plan.
- Private sector was allowed to market transportation fuels, namely, motor spirit, high-speed diesel, and ATF. However, the desired competition could not be achieved due to unprecedented increase in crude oil prices in the international market which led to the government intervention for moderating the prices of petroleum products.

Efficiency Improvement

- A number of energy efficiency projects were implemented to reduce energy consumption in various refineries.
- Petroleum Conservation and Research Association and other organizations have taken up a number of programmes on conservation of petroleum products in transport, industry, agriculture, and household sectors. However, the savings of petroleum products due to conservation and efficiency improvement measures have yet to be quantified.

Environment and Quality Improvement

- Road map was prepared for achieving product quality norms based on the Auto Fuel Policy Report. Diesel Hydro Desulphurization projects were implemented in the refineries.
- Introduction of Bharat Stage II petrol throughout the country was achieved by 1 April 2005. Introduction of Bharat Stage II diesel in a phased manner was completed in various States. EURO III petrol and diesel were introduced in 11 major cities.

Reforms

- Petroleum and Natural Gas Regulatory Board Bill was passed and the Board has now been constituted.
- Dismantling of administered price mechanism (APM) regime was initiated w.e.f. 1 April 2002. However, the envisaged competition in the marketing of petroleum products could not be achieved. The GoI currently exercises control by declaring price caps. As a practical matter, full competition at refinery gate and retail level within the declared price caps should be allowed. Such competition will lead to lower prices and, over a period, lead to limiting/eliminating the government support on automotive fuels. If such price caps entail any compensation to National Oil Companies (NOCs) through pricing of crude oil or otherwise then such benefit should be made available evenly to both public and private sector players. The ultimate objective should be to remove government intervention in pricing of all petroleum products and provide targeted subsidies directly to the intended beneficiaries. Such subsidies should be funded through the National Budget. Full competition at the refinery gate and retail level would lead to trade parity prices.
- The phasing out of subsidies on domestic LPG and PDS kerosene envisaged during the Tenth Plan was not achieved.

10.98 The physical and financial performances of the petroleum and natural gas are given in Tables 10.17 and 10.18.

Exploration and Development

10.99 Under NELP, so far 162 exploration blocks have been awarded, covering an area of less than 40% of the Indian sedimentary basins. Out of the above 162 blocks, 115 blocks were awarded during the Tenth Plan.

10.100 Under the CBM policy, contracts with PSUs/private companies for 23 blocks in three rounds of bidding were signed. In addition, three blocks—two blocks to ONGC–CIL consortium and one block to

TABLE 10.17
Physical Programmes—Petroleum and Natural Gas

Programme	Ninth Plan	Tenth Plan	2002–03	2003–04	2004–05	2005–06	2006–07 (Prov.)	Achievement	% of Target
	Actual	Target	Actual	Actual	Actual	Actual	Actual	2002–07	
Demand/consumption (million tonnes)	100.43#	120.4#	104.2	107.75	111.63	111.92	119.85	119.85#	99.5
Reserve accretion (Mtoe)	795.13	785–914	329.47	348.32	337.15	222.95	387.53	1652.92	178–207
Crude oil production (million tonnes)	162.99	169.38	33.04	33.37	33.98	32.19	33.98	166.56	98.3
Natural gas production (bcm)	140.92	177.48	31.39	31.96	31.76	32.20	31.55	158.86	89.5
				Net Import					
Crude oil	–	–	81.99	90.43	95.86	99.41	111.50	–	–
Petroleum products	–	–	–13.06	–6.72	–9.38	–9.38	–15.77	–	–
Refining capacity (million tonnes) as on 1 April	118.37	138–155#	118.37	127.37	127.37	132.47	148.97	148.97#	–

Note: # Figures for the terminal year of the Tenth Plan.
Source: Ministry of Petroleum and Natural Gas.

TABLE 10.18
Outlays/Expenditure—Petroleum and Natural Gas

(Rs Crore)

Tenth Plan Approved Outlay	2002–03 (Actual)	2003–04 (Actual)	2004–05 (Actual)	2005–06 (Actual)	2006–07 (Actual) (Prov.)	Likely Achievement 2002–07	% Utilization
96041.19 (119409.99)	15805.67 (18915.35)	16625.99 (19169.83)	20981.19 (23178.51)	251414.57 (26879.50)	29175.23 (29175.23)	108002.65 (117318.43)	112.45 (98.25)

Note: Figures in the bracket are at 2006–07 price.
Source: Planning Commission

Great Eastern Energy Corporation Ltd—were awarded on nomination basis.

Financial Performance

10.101 An outlay of Rs 96041.19 crore was approved for the Tenth Plan for oil and gas PSUs against which the actual expenditure was Rs 108002.65 crore at current price. At constant 2006–07 price the expenditure was 98.25% of the approved outlay.

Thrust Areas in the Eleventh Plan

10.102 The policy issues that need to be addressed in the petroleum and natural gas sector relate to oil and gas security, pricing of petroleum products, pricing of domestically produced natural gas and its allocation to the power and fertilizer industry, ensuring competition and open access in the pipeline transportation and distribution grid, and conservation of petroleum products and natural gas.

Oil and Gas Security

Enhanced Exploration and Development

10.103 The Eleventh Plan envisages bringing more and more acreage under exploration especially those in the frontier areas/basins, adoption of state-of-the-art Exploration and Production (E&P) technology, faster development of discovered reserves, development of marginal fields, and continuation of IOR/EOR schemes. These efforts would lead to a projected total crude oil production of 206.76 million tonnes against the actual production of 166.56 million tonnes during the Tenth Plan. Similarly, the projected gas production will be 255.76 bcm against the Tenth Plan production of 159.06 bcm. In addition, CBM blocks would be awarded during the Eleventh Plan in Madhya Pradesh, Jharkhand, Gujarat, Tamil Nadu, and Arunachal Pradesh. During the Eleventh Plan, the CBM production is projected to be around 3.78 bcm.

Acquisition of Equity Oil and Gas Abroad

10.104 Considering the continuing gap between the demand and indigenous production of crude oil and natural gas and low crude oil reserves replenishment, NOCs and private companies are being encouraged to venture abroad. The various strategic options in this regard are: focus on ventures with producing property in the short term; purchase of equity share of companies as a part of reserves portfolio management; focus on exploration acreages in short to medium term, and promoting upstream sector services.

Strategic Crude Oil Storage

10.105 The government has taken in principle decision to construct 15 million tonnes of strategic storage in various phases. In the first phase, a project for creating a strategic storage of 5.0 million tonnes for crude oil is under implementation at three locations, viz., 1 million tonne at Visakhapatnam, 1.5 million tonnes at Mangalore, and 2.5 million tonnes at Padur, a site near Mangalore. This storage will be over and above the existing storage capacity for crude oil and petroleum products at the various refineries and would act as emergency response in case of short-term supply disruption. The project is anticipated to be completed during the Eleventh Plan.

Development of Alternate Fuels

Coal Bed Methane

10.106 A total of 26 CBM blocks have already been offered in the three rounds of bidding. These fields are under development stage and production of CBM is expected in the Eleventh Plan. The bidding rounds will be continued in the Eleventh Plan and it is planned to offer CBM blocks in Assam, Arunachal Pradesh, Orissa, Jharkhand, Madhya Pradesh, Gujarat, and Tamil Nadu.

Gas Hydrates

10.107 National Gas Hydrates Programme was started in 1997. Till now, a large number of seismic surveys have been conducted. K–G basin, Mahanadi basin, and Konkan and Kerala basins have been identified as potential areas. The production of gas from the gas hydrates is one of the biggest challenges facing the energy sector and technology is still to be established in this area. Pilot test production is planned to be carried out in India by 2009–10.

Underground Coal Gasification (UCG)

10.108 ONGC and GAIL have been exploring the possibilities of exploiting the gas through UCG process. The techno-economic feasibility and commercial exploitation is proposed to be carried out during the Eleventh Plan. ONGC has planned to produce 2.7 MMSCMD of gas through UCG process and envisages producing 2.99 bcm of UCG gas during the Eleventh Plan.

Coal to Liquid

10.109 OIL has carried out pre-feasibility studies on Catalytic Two-Stage Liquefaction Technology and Direct Liquefaction Technologies in order to select the best suitable technology for the North East coal for liquification. The feasibility study on the selected technology will be carried out during the Eleventh Plan. A joint task force between OIL and CIL has been constructed by MOP&NG to confirm availability and assured supply of coal in Assam, Arunachal Pradesh, and Meghalaya for a commercial plant.

Biofuels

10.110 After stabilization of 5% ethanol blending petrol sales, the content of ethanol in petrol would be considered for increasing up to 10% by the middle of the Eleventh Plan, subject to ethanol availability and commercial viability of blending. Depending upon the bio-diesel production and availability, the entire country may be progressively covered with sale of 5% bio-diesel blended diesel by the end of the Eleventh Plan.

Oil Shale

10.111 In India, shale formation is exposed to the surface in the region of Belt of Schuppen falling in Assam, Arunachal Pradesh, and Nagaland. The oil shale reserves are estimated at about 100 billion barrels. However, the production of shale oil requires large amount of energy and water. Environment and monetary cost have so far made production of oil from oil shale uneconomical.

Reforms

Petroleum Product Pricing

10.112 With the dismantling of APM for petroleum products w.e.f. 1 April 2002, it was envisaged that the price of petroleum products would be moved from APM to market-determined pricing mechanism. An import parity pricing mechanism was followed by the oil industry which was subsequently modified to a trade parity pricing as an approximation to competitive market prices. Full price competition at the refinery gate and retail level needs to be adopted to enhance competition in the sector.

Phasing Out Subsidies on PDS Kerosene and Domestic LPG

10.113 For kerosene, it is proposed to provide direct subsidies to the consumers, particularly those below the poverty line. A system of smart card for supply of kerosene to BPL families would be introduced. With the smart card, kerosene may be bought from any shop at market price. In case of domestic cooking gas also, it is proposed to phase out subsidy gradually with the introduction of smart cards for domestic LPG which would help in preventing diversion of domestic LPG to the commercial sector.

Unified State Taxes and Removal of Tax Anomalies

10.114 There is a need to amalgamate the individual State markets into one nation-wide market with unified State taxes. Therefore, there is need to remove State tax anomaly, provide level playing field to domestic production vis-à-vis direct import, and introduce a uniform VAT which provides full set-off for local levies such as octroi and entry-tax at the State level.

Environmental and Quality Management

10.115 Efforts would be made to improve the Health Safety and Environment (HSE) management so as to provide occupationally healthier work force, reduced accident rates, cleaner and greener product with reduced emissions and effluents. The following measures would be implemented in the exploration and production sector during the Eleventh Plan period:

- Establishing environment management system for all oil and gas field installations and drilling rigs based on international standards to ensure improvements towards reducing discharges and emissions to internationally acceptable levels.
- Eco-rating of major installations and compulsory environmental audits.
- Pro-active measures to prevent marine pollution and to effectively combat oil spills.
- Benchmarking at par with international oil majors with respect to environmental practices.

10.116 On the basis of the assessment of the impact of Bharat Stage-II norms in the entire country and EURO III equivalent norms in identified cities, EURO IV equivalent norms in identified cities and EURO III equivalent norms in the entire country would be introduced w.e.f. 1 April 2010.

Infrastructure Development

Marketing Infrastructure

10.117 In view of the proposed increase in refining capacity during the Eleventh Plan, a large investment would be required for creating marketing and associated infrastructure such as ports, storage, pipelines, and terminals.

Manpower Planning

10.118 The rapid development of the oil and gas sector in the last few years has led to acute shortage of skilled manpower. Therefore, high degree of collaboration between the industry and academia, expanding training programmes to address emerging skill shortages, would be a major thrust area for planning sustained availability of knowledge workers in the petroleum and natural gas sector.

Servicing of E&P Activities in India

10.119 E&P service providers play a key role in enabling success for E&P operators. The accelerated growth of E&P activities has led to multifold growth in demand of technology and oilfield services worldwide. Therefore, availability of services in India is becoming constrained and expensive. Hence, there is a need to facilitate the growth of E&P service industry.

PHYSICAL PROGRAMMES

Demand/Consumption of Petroleum Products

10.120 The demand of petroleum products in the terminal year of the Eleventh Plan (2011–12) is projected at 131.77 million tonnes to 141.79 million tonnes against the anticipated consumption of 119.85 million tonnes in 2006–07, indicating a CAGR of 1.91% to 3.42% during the Eleventh Plan. The actual growth may be lower if the prevailing high oil prices continue during the Eleventh Plan resulting in policies encouraging energy efficiencies.

Demand of Natural Gas

10.121 About 70% of the natural gas is currently being consumed in the fertilizer and power sectors. As per the Working Group on Petroleum and Natural Gas, the demand for natural gas in the terminal year of the Eleventh Plan is expected to increase up to 279.43 MMSCMD out of which 126.57 MMSCMD has been assumed for power sector and 76.26 MMSCMD for fertilizer sector. However, as per the MoP projections, the demand of natural gas for power sector would be only 89 MMSCMD. The lower projected demand of natural gas by the MoP is taking into account the prevailing market price and availability of APM gas. Taking into account the lower demand for natural gas by the MoP, the total demand of natural gas in the terminal year of the Plan would be 241.86 MMSCMD. However, materialization of this demand would depend upon the price of natural gas.

Hydrocarbon Reserve Accretion

10.122 The anticipated reserve accretion during the Tenth Plan was 1652.92 million tonnes, excluding Pvt/Joint Venture Company (JVC) share, against the target of 785–914 million tonnes. The projected indicative hydrocarbon in-place reserves during the Eleventh Plan are of 2129.44 million tonnes.

Crude Oil and Natural Gas Production

10.123 The targets for production of crude oil and natural gas are given Tables 10.19 and 10.20, respectively.

10.124 It may be seen from above that against the projected demand of 241.86 MMSCMD in the terminal year of the Eleventh Plan, the production will be only 173.23 MMSCMD. The additional requirement would have to be met through the import of natural gas.

TABLE 10.19
Crude Oil Production

(Million Tonnes)

Organization	2007–08	2008–09	2009–10	2010–11	2011–12	Total
ONGC	27.16	28.00	29.00	28.53	27.37	140.06
OIL	3.50	3.55	3.73	3.91	4.30	18.99
Pvt/JVC	10.57	10.78	9.76	8.75	7.85	47.71
Total	41.23	42.33	42.49	41.19	39.51	206.76

Source: Working Group Report on Petroleum and Natural Gas.

TABLE 10.20
Natural Gas Production

(bcm)

Organization	2007–08	2008–09	2009–10	2010–11	2011–12	Total
ONGC	22.10	22.53	22.77	22.99	22.00	112.39
OIL	3.13	3.21	3.25	3.28	3.56	16.43
Pvt/JVC	8.55	22.55	29.41	28.77	37.61	126.45
Total	33.78	48.29	55.43	55.03	63.23	255.76
Total (MMSCMD)	92.20	132.30	151.86	150.79	173.23	700.38

Source: Working Group Report on Petroleum and Natural Gas.

LNG Supply during the Eleventh Plan

10.125 Currently 5 million tonnes per annum of LNG is being imported at Dahej terminal. The Hazira terminal of Shell with capacity of 2.5 million tonnes per annum is operational but is yet to stabilize its operation. LNG supply is projected to reach a level of 23.75 million tonnes per annum by the year 2011–12. A detailed break-up of LNG supply during the Eleventh Plan is given in Table 10.21.

10.126 The projected crude oil and gas production from the NOCs overseas ventures is given in Tables 10.19, 10.20, and 10.22 .

Refining Capacity

10.127 The refining capacity is projected to go up to 240.96 million tonnes per annum in the terminal year of the Eleventh Plan as against 148.97 million tonnes per annum in the beginning of the Plan. This addition to the refining capacity during the Eleventh Plan period would be 91.99 million tonnes per annum. This addition includes 38.5 million tonnes per annum (Essar—3.5 million tonnes per annum; Reliance—29 million tonnes per annum; and Nagarjun—6 million tonnes per annum) from the private sector. Against the 240.96 million tonnes per annum of the projected refining capacity, the demand for products would be ranging between 132 million tonnes during the terminal year of the Eleventh Plan. Thus, the country would be in surplus of the refining capacity by almost 108 million tonnes. In view of the above, the setting of new capacity needs to be reviewed.

Research and Development (R&D)

10.128 India is spending around Rs 200–250 crore per annum on R&D efforts in the hydrocarbon sector having an annual turnover only of oil PSUs of around Rs 4 lakh crore. This is substantially lower compared to the research expenditure in developed countries that spend about 1% of the turnover towards R&D. A mission-oriented approach on co-operative basis needs to be adopted for developing technologies pertaining to exploration and exploitation of gas hydrates, UCG, conversion of coal to liquid (CTL), development of

TABLE 10.21
LNG Supply Projections during the Eleventh Plan

LNG Supply Source	2007–08	2008–09	2009–10	2010–11	2011–12
Dahej	5.00	5.00	7.5	10.00	10.00
Hazira	2.50	2.50	2.50	2.50	2.50
Dabhol	1.20	2.10	5.00	5.00	5.00
Kochi	–	–	–	2.50	5.00
Mangalore	–	–	–	–	1.25
Total LNG Supply (million tonnes per annum)	8.70	9.60	15.00	20.00	23.75
Total LNG Supply (MMSCMD)	30.45	33.60	52.50	70.00	83.12

Assumptions:
1. Hazira expansion to 5.0 million tonnes per annum is not considered in the Eleventh Plan.
2. Mangalore terminal is expected to be partially commissioned in 2011–12.
Source: Working Group Report on Petroleum and Natural Gas.

TABLE 10.22
Projected Crude Oil and Natural Gas Production from Overseas

		2007–08	2008–09	2009–10	2010–11	2011–12	Total
Crude oil production (million tonnes)	OIL	0.25	0.5	1.0	1.53	1.6	4.88
	OVL	7.02	6.53	5.97	5.76	5.35	30.63
	Total	7.27	7.03	6.97	7.29	6.95	35.51
Natural gas production (bcm)	OVL	1.75	1.82	1.93	1.97	2.2	9.67

Source: Working Group Report on Petroleum and Natural Gas.

shale oil, biofuels and hydrogen, etc. Presently, most of the funding comes from the government or the public sector. Under the present scenario the private sector is playing a significant role in the growth of the petroleum industry. Therefore, funding of R&D programmes from the private sector should also be encouraged.

Plan Outlays

10.129 A public sector tentative outlay for the Eleventh Plan is Rs 213514.59 crore at current price. This consists of Rs 150932.49 crore for exploration and production and Rs 62582.10 crore for refining and marketing sector. The PSU-wise outlays are given in Table 10.23.

10.130 In addition, during the Eleventh Plan, the government has decided to set up Rajiv Gandhi Institute of Petroleum Technology, an institute to cater to the education and training requirements of all segments of petroleum and natural gas industry. The total estimated cost of the institute is estimated to be Rs 695.58 crore, out of which Rs 285 crore is proposed to be met through the budgetary support.

TABLE 10.23
Public Sector Outlays for the Eleventh Plan

(Rs Crore)

PSUs	Eleventh Plan Outlay
A. Exploration and Production	
ONGC-OVL	45332.87
ONGC	75983.77
OIL	13439.02
GAIL	10326.83
IOC	2982.00
HPCL	2000.00
BPCL	868.00
Subtotal (A)	150932.49
B. Refining and Marketing	
HPCL	8714.00
BPCL, incl. KRL	11344.80
CPCL	3275.00
BRPL	1444.53
IOC	28567.75
IBP	0.00
NRL	593.00
MRPL	8643.02
Subtotal (B)	62582.10
Total petroleum and natural gas sector	213514.59

Source: Ministry of Petroleum and Natural Gas.

COAL SECTOR

Issues and Challenges

10.131 Coal provides 25.1% of global primary energy needs against 34.3% from oil, 20.9% from gas, 6.5% from nuclear, 2.2% from hydro, and 11% from renewable. The contribution of coal in the world's electricity generation is around 40%. Coal accounts for over 50% of India's commercial energy consumption and about 78% of domestic coal production is dedicated to power generation. The global hard coal consumption in 2005 was 4990 million tonnes. China is the largest producer of coal (2226 million tonnes) followed by the US (951 million tonnes) and India (398 million tonnes). The major coal exporters are Australia (231 million tonnes), Indonesia (108 million tonnes), Russia (76 million tonnes), South Africa (73 million tonnes), and China (72 million tonnes). The major coal importing countries are Japan (178 million tonnes), Republic of Korea (77 million tonnes), Chinese Taipei (61 million tonnes), UK (44 million tonnes), and Germany (38 million tonnes).

10.132 The growth in demand of coal in the Eleventh Plan is pegged at more than 9% per annum for enabling the power sector to attain the anticipated growth. The coal producing companies may not be able to jump from the present growth rate of less than 6% to more than 9% within a year, but there is need for aligning strategies so that the projected coal production from coal PSUs as well as captive coal mines materializes by the end of the Eleventh Plan. Under the Coal Mines (Nationalization) Act 1973, coal can be mined by public sector companies as well as designated captive users, which are steel, cement, and power at present, for their own use. An increase in the number of producers can help reach the targeted production. At the same time we will need to import more coal, which needs to be facilitated. Further, it is necessary to take required steps for addressing the need for matching the growth of infrastructure with the proposed growth in coal production. The desired expansion of the rail network and rolling stock for moving the projected quantities of coal from mines to load centres would need large investments. Coal movement should also be economical; therefore the railway freight rate for movement of coal needs to be rationalized.

A high freight rate increases coal price at a distance and distorts choice of fuels, reduces competitiveness, and results in mislocation of industries.

10.133 A competitive coal market is required for economic efficiency. Since for power plants, the major users of coal, coal cost is a pass through cost, price discovery mechanism is a challenge. We need to streamline the process of e-auction of non-coking coal and sell at least 20% of the non-coking coal production through this process for effective discovery of market price of coal.

10.134 An independent coal regulator is required to oversee the price discovery mechanism, regulate upstream allotment, and exploit available coal blocks to yield coal, coal bed methane, mine mouth methane, CTL, and for in situ coal gasification so that India, with the third largest reserves of coal in the world, becomes a long-term player in the highly liquid international market for coal. In order to deliver, coal companies must ensure that productivity of men and machines is at par with international standards. The cost of coal movement can also be reduced by washing and beneficiating coal as Indian coal has a high ash content. A change in the coal pricing system, where price of coal is fully variable based on its gross calorific value (GCV) rather than the current practice of grading coal by using wide ranges of useful heat values (UHV), is also called for.

10.135 The extractable coal reserves in the country will run out in about 45 years if domestic coal production continues to grow at 5% per year. However only about 45% of the potential coal bearing area has currently been covered by regional exploration and detailed drilling. Rapid increase of coal production requires accelerated exploration, augmentation of drilling capacity and capacity to assess coal reserves, and preparing geological reports.

Review of the Tenth Plan

Coal Demand and Production

10.136 Demand for coal in the terminal year of the Tenth Plan was projected at 460.50 million tonnes comprising 37.21 million tonnes of coking coal and 423.29 million tonnes of non-coking or thermal coal. Demand from the power sector (utilities) touched 297.37 million tonnes. The CAGR of the demand was 5.66% against 5.74% envisaged at the time of formulation of the Plan and 3% actually achieved during the Ninth Plan.

10.137 To meet the surge in the demand of coal, Emergency Coal Production Plan of CIL was approved to raise the production by advancing the production schedule in 12 existing mines/ongoing projects and by taking up four new projects with a likely capital investment of Rs 2085.05 crore. Outsourcing of coal and overburden removal activities in these projects was proposed. Though the earmarked projects did not yield additional production during the Tenth Plan, they set the pace of implementation of new projects.

10.138 Production of coal in 2006–07 touched 430.54 million tonnes against the target of 430.10 million tonnes. While there were delays in taking up new projects during the Tenth Plan, augmentation of coal production was made possible by increasing the production from existing mines and acceleration in activities to reduce production build up period of ongoing projects. CAGR of production during the Tenth Plan period was 5.6% against 4.46% envisaged at the time of formulation of the Plan and 2.5% actually achieved in the Ninth Plan. Growth in CIL's production during the Tenth Plan was 5.28%. The output of captive mines increased at a higher rate.

Demand Supply Management

10.139 It is pointed out that the demand and production numbers are not weighted for quality of coal and differences in coal quality can also impact the demand realized. Finally, use of washed coal in power generation or the use of Corex technology in the steel sector is also not well accounted in establishing the demand numbers. The physical gap of 45 million tonnes between the demand and supply in the terminal year (2006–07) of the Tenth Five Year Plan was met through import of 45 million tonnes of coal (coking coal, 22 million tonnes; thermal coal, 23 million tonnes) as envisaged. Though the import of thermal coal by the power sector helped its planned generation programme, it resulted in reduced domestic off-take, resulting in additional stock build-up at pit heads.

Lignite Consumption and Production

10.140 Demand of lignite in the terminal year (2006–07) of the Tenth Plan was projected as 57.79 million tonnes (Tamil Nadu, 35.86 million tonnes; Gujarat, 16.27 million tonnes; Rajasthan, 5.65 million tonnes) but the materialization was about 30.63 million tonnes (Tamil Nadu, 20.51 million tonnes; Gujarat, 9.65 million tonnes; Rajasthan, 0.47 million tonnes) showing a CAGR of 4.93%. Linked to 16.36 BU of Gross Power Generation, the demand for NLC in 2006–07 was projected as 21.50 million tonnes. Consequent upon the downward revision of Gross Power Generation target to 15.71 BU, the demand for lignite was lowered by 1.09 million tonnes and kept at 20.41 million tonnes. NLC produced 19.38 million tonnes of lignite and generated 14.85 BU of gross power.

Coal and Lignite Inventories (Reserves)

10.141 As on 1 January 2007, the national coal inventory stood at 255 billion tonnes, out of which 97.92 billion tonnes are in the proved category. The inventory of lignite resources stood at 38.27 billion tonnes, as on 1 April 2006, with 4.5 billion tonnes in the proved category. Table 10.24 gives accretion of coal reserves over the years.

Central Sector Plan Schemes

PROMOTIONAL EXPLORATION

10.142 An outlay of Rs 275.80 crore was provided during the Tenth Plan for plan scheme of 'Regional/ Promotional Drilling' for drilling 6 lakh metres, comprising 3.3 lakh metres for coal covering 43 blocks and 2.7 lakh metres for lignite covering 13 blocks; and for other exploratory services including creation of coal/ lignite database and CBM studies. Project-based approach was adopted for this plan scheme and 121 projects were sanctioned for implementation. Against the projection, 6.288 lakh metres (91%) of drilling was achieved during the Tenth Plan establishing 19.78 billion tonnes of coal resource and 17.53 billion tonnes of lignite resource.

DETAILED DRILLING IN NON-CIL BLOCKS

10.143 The blocks outside the purview of CIL were proposed to be explored in detail for reducing the time lag between offering the blocks to potential entrepreneurs and start of mining operations by them through the scheme of 'Detailed Drilling in Non-CIL Blocks' with budgetary support. The cost of exploration was to be recovered from the recipients of these blocks. This scheme continued from the Ninth Plan and an outlay of Rs 70.66 crore (Rs 57.86 crore for drilling and Rs 12.80 crore for other exploratory services) was provided during the Tenth Plan for drilling 2.13 lakh metre to bring 3.65 billion tonnes of resources under the proved category. Revised cost estimate of this Plan Scheme was approved in March 2006 where physical target was revised to 2.83 lakh metre of drilling with an outlay of Rs 93.84 crore. Against the projections, drilling of 2.84 lakh metre was achieved during the Tenth Plan, establishing 7.06 billion tonnes of coal resource as proved.

SCIENCE AND TECHNOLOGY (R&D)

10.144 Despite the thrust laid on coal science and technology (S&T) programme, the continuing scheme since 1975, the progress has not been satisfactory both

Table 10.24
Accretion of Coal Reserves over the Years

(In Million Tonnes)

Coal Reserves as on	Proved Category	Accretion in Proved Category	Inferred Category	Indicated Category	Total Reserve	Reserve Accretion
1 January 2002	87320	–	109377	37417	234114	–
1 January 2003	90085	2765	112613	38050	240748	6634
1 January 2004	91631	1546	116174	37888	245693	4945
1 January 2005	92960	1329	117090	37797	247847	2154
1 January 2006	95866	2906	119769	37666	253301	5454
1 January 2007	97920	2054	118992	38260	255172	1871

Source: Coal Directory of India.

in terms of taking up of new projects and utilizing the outlays provided to various ongoing projects. The cumulative expenditure during the Tenth Plan under this scheme was Rs 50.94 crore.

ENVIRONMENTAL MEASURES AND SUBSIDENCE CONTROL (EMSC)

10.145 The Ninth Plan scheme, namely, 'Rehabilitation, Control of Fire, and Subsidence in Jharia and Raniganj Coalfields' was merged in this Tenth Plan scheme. The purpose of the scheme is to improve the environmental conditions in old mined out areas, particularly, Jharia and Raniganj coalfields, through implementation of a number of projects for mitigating the damages that occurred due to unscientific mining carried out prior to nationalization of coal mines. Against an outlay of Rs 163.00 crore provided under this scheme, the cumulative expenditure in the Tenth Plan is Rs 52.57 crore. The progress of implementation has not been satisfactory due to constraints of land acquisition, agitation/frequent interruption by local people, non-finalization of site of rehabilitation by local authorities, some technical problems, etc.

INFORMATION TECHNOLOGY

10.146 The government had mandated all the ministries to formulate a plan scheme with an outlay of about 2% of the total Plan outlay in the field of information technology in order to give a boost to e-governance. Accordingly, the MoC spent Rs 4.21 crore in the Tenth Plan for improving infrastructure needed for e-governance.

COAL CONTROLLER ORGANIZATION (CCO)

10.147 CCO under Collection of Statistics Act 1953 and Rules 1959 undertakes the activity of collection of coal and lignite related data and publishes 'coal statistics' annually using an outlay of Rs 0.22 crore. The Tenth Plan expenditure under this scheme was Rs 0.93 crore.

CONSERVATION AND SAFETY IN COAL MINES AND DEVELOPMENT OF TRANSPORT AND INFRASTRUCTURE IN COAL MINES

10.148 On the directions of the Ministry of Finance, MoC in the year 2005–06 had proposed two plan schemes with an outlay of Rs 117 crore and Rs 135.79 crore, respectively. Activities under these schemes are funded as reimbursement of a portion of the stowing excise duty, which is statutorily levied as per the Coal Mines (Conservation and Development) Act 1974 and deposited in the government treasury account. Prior to 2005–06, the expenditure incurred in these schemes was shown under the non-Plan head. In spite of the fact that the Planning Commission insisted on treating activities under these schemes as non-Plan activities, matter could not be resolved with the Ministry of Finance. A token provision of Rs 0.01 crore in each of these schemes was provided in last two years of the Tenth Plan period.

Productivity of Coal and Lignite PSUs

EQUIPMENT PRODUCTIVITY

10.149 The Heavy Earth Moving Machinery (HEMM) productivity has improved significantly in the Tenth Plan. In Coal India Ltd (CIL), the increase in productivity of shovels was by 124%, dumpers by 15%, drills by 25%, and dozers by 14% over the achievements of the Ninth Plan whereas the productivity of draglines remained constant. In the case of Singareni Collieries Company Ltd (SCCL), the improvements in the productivity are to the tune of 18% in draglines, 21% in shovels, 50% in dumpers, and 6% in the performance of dozers. System capacity utilization in most of the coal companies is consistently indicated as more than 100%. However, the percentage utilization of machinery (except dragline machine) in open-cast mines remained below the standard norms of Central Mine Planning and Design Institute.

MANPOWER PRODUCTIVITY

10.150 The overall productivity in terms of the output per man-shift (OMS) has increased from 2.45 tonnes in the beginning of the Tenth Plan to 3.54 tonnes in 2006–07 in CIL and from 1.88 tonnes to 2.32 tonnes in SCCL. In NLC, the OMS has increased from 8.84 tonnes in the beginning of the Plan to 10.16 tonnes in 2006–07. Many activities have been outsourced by different coal companies during the Tenth Plan but its effect on manpower productivity has not been captured while assessing manpower productivity of respective coal companies.

Coal Movement

10.151 The Tenth Plan identified certain critical rail links in potential coalfields and the railways have taken up most of these for implementation. It was also envisaged to strengthen the infrastructure such as port capacity and backward rail linkages for higher coal imports. The movement of raw coal and coal products by rail from CIL and SCCL increased from 199.74 million tonnes (63.7% of the total coal off-take) in 2001–02 to 217.20 million tonnes (53.4% of the total coal off-take) in 2006–07. The component of merry go round movement has increased from 74.62 million tonnes (23.8% of the total coal off-take) in the beginning of the Tenth Plan to 96.35 million tonnes (23.9% of the total off-take) in the terminal year. The movement of coal by road in the beginning of the Plan was 51.35 million tonnes (16.4% of the total coal off-take) and has increased to 94.32 million tonnes (22.5% of the total coal off-take) in 2006–07. Coastal shipment (inland) of coal increased from 16.10 million tonnes in 2001–02 to 17.47 million tonnes in 2006–07.

Initiatives on Clean Coal Technologies

10.152 Higher thermal efficiency and better environmental performance are apparent benefits of Circulatory Fluidized Bed Combustion, Integrated Gas Combined Cycle (IGCC), and super-critical boiler. High ash Indian coal and high sulphur lignite have been found to be good for these technologies. Initiatives were taken in the Tenth Plan for improving efficiency of energy conversion of Pulverized Coal Combustion (PCC) boilers by giving thrust on adoption of super critical and ultra super critical technologies.

10.153 Coal India Ltd, SCCL, and NLC entered into MoU with ONGC for developing UCG technology. ONGC, in turn, tied up with Skochinsky Institute of Technology, Moscow for technical assistance. NLC took up an R&D project for gasification of lignite seams in Rajasthan but the project remained non-starter as technical consultant or adviser could not be found even after two rounds of global bid. Finally, NLC chose to enter into MoU with ONGC for consultancy in the project. A joint venture between GAIL and CIL proposed for surface gasification of coal is under active consideration.

10.154 Interaction between CIL and OIL has taken place on the business initiatives of Coal Liquefaction project by way of creating a 'Joint Task Force'. The project for converting coal from North Eastern Coalfields (NEC) to liquid would cost Rs 12600 crore including Rs 3500 crore for producing 3.5 million tonnes of coal.

10.155 A demonstration Coal Bed Methane project is under implementation with financial support from the Global Environment Facility and UNDP. Several CBM blocks have also been awarded to private companies for exploration and production during three rounds of bidding. Apart from this, exploration works on two blocks were awarded to two PSUs on nomination basis. Commercial production of CBM is expected in the beginning of the Eleventh Plan.

Safety and Welfare

10.156 Implementation of safe practices in all operations by the coal companies lowered number of serious and fatal accidents in mines. However, the number of casualty was inflated during the Plan period due to five disasters involving more than 10 deaths. The practice of monitoring mine safety through Worker's Participation in Safety in association with Internal Safety Organization of coal companies, risk assessment techniques, and safety audits was strengthened.

10.157 The wages of workmen in the CIL and SCCL were revised in 2005. In addition to enhancement in the quantum of fringe benefits and allowances, the minimum wage was increased to Rs 238.63 per day. There were substantial improvements in respect of welfare amenities such as housing satisfaction, water supply, education facilities, health care, etc.

10.158 The coal companies are committed to bear the social responsibilities in medical services, education, water supply, housing, co-operatives and banking, ecology and environment, and community development for their employees. In addition to this, community development activities were also undertaken by different coal companies of Coal India Ltd. During the Tenth Plan, CIL spent an amount of about Rs 85 crore on various community development projects.

Revival of Loss Making Companies

10.159 Three subsidiary companies of CIL, namely Eastern Coalfields Limited (ECL), Bharat Coking Coal Limited (BCCL), and Central Coalfields Limited (CCL), were loss making at the terminal year of the Ninth Plan period (2001–02). During the Ninth Plan period, efforts were made with little success to turn these companies around. Eventually, during the Tenth Plan these companies were referred to BIFR for devising strategy/measures for their revival/rehabilitation. One of the companies, CCL managed to come out of BIFR in the year 2005–06. Increased production and higher revenue earned by sale of coal through e-auction made it possible for BCCL to show profits for the first time since nationalization. CCEA approved the BIFR sanctioned rehabilitation scheme for ECL for making the net worth of the company positive by 2009–10.

Expenditure Pattern

10.160 The cumulative expenditure in the Tenth Plan in form of investment by PSUs (funded through IEBR) was Rs 9574.49 crore (at 2001–02 price) against a provision of Rs 30556.48 crore which is 31.33% of the total outlay provided. Investments in CIL, SCCL, and NLC are 44%, 60%, and 33% of the outlay proposed during the Tenth Plan, respectively (see Table 10.25). Poor performance has been attributed to the late start of projects. Outsourcing of mining activities in many projects also brought down the requirement of capital investment as envisaged earlier.

Policy Reforms

- Pending the passage of the Coal Mines Nationalization (Amendment) Bill 2000, many policy initiatives such as permitting captive block holders to sell incidental coal surpluses during development and operation of the block to CIL or directly to currently linked end users, allowing group-captive mines, etc. were taken to increase the number of players in coal mining by making more coal available for allocation to different private and public companies for captive consumption and the State Governments for commercial mining. Initiative was taken to amend

TABLE 10.25
Company-wise/Scheme-wise Expenditure during the Tenth Plan

(Rs Crore)

Company/Scheme	2002–03	2003–04	2004–05	2005–06	2006–07	Tenth Plan	
	Actual	Actual	Actual	Actual	Actual	Original	Achieved#
(A) PSUs under MoC (IEBR)							
CIL	1147.54	1072.82	1055.90	1370.68	1674.10	14310.00	6321.04
SCCL	134.27	151.55	244.24	360.85	371.82	2113.00	1262.74
NLC	418.55	146.56	194.61	322.99	908.00	14133.48	1990.71
Total IEBR	1700.36	1370.94	1494.75	2054.52	2953.92	30556.48	9574.49
(B) Central Sector Plan Schemes (GBS)							
R&D (S&T)	6.74	9.11	11.32	12.54	4.85	100.00	44.55
Regional exploration	16.84	33.57	38.21	41.23	32.32	275.80	162.17
Detailed drilling–Non-CIL block	12.06	13.97	19.99	19.36	16.95	70.66	82.34
Environmental measures and subsidence control	12.63	0.00	4.31	21.46	6.46	163.00	44.87
Conservation and safety in coal mines	0	0	0	56.24	145.45	0	201.69
Development of transportation infrastructure in coalfield areas	0	0	0	42.54	11.16	0	53.69
Others (including VRS* and North East component)	115.39	16.80	94.05	1.01	24.79	425.06	252.05
Total GBS	163.66	73.45	167.88	194.38	242.00	1034.52	841.36
Total MoC	1864.02	1444.38	1662.63	2248.90	3195.92	31591.00	10415.85

Note: # At constant price (2001–02); * GBS was provided for implementing Voluntary Retirement Scheme (VRS) in the Tenth Plan but expenditure under this scheme occurred only in 2002–03 and 2004–05.
Source: MoC.

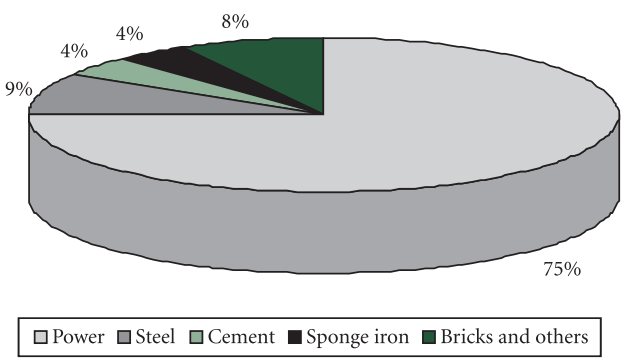
existing provisions of Mines and Minerals (Development and Regulation) Act (MMDR Act) 1957 to facilitate offering of coal blocks to potential entrepreneurs through competitive bidding.
- Coal has been removed from the list of essential commodities under the Essential Commodities Act 1956.
- System of e-auctioning of coal open to both consumers and traders was introduced.
- Existing system of calculation of the royalty on coal and lignite on the tonnage basis was revised to hybrid formula-based system comprising fixed part (tonnage basis) and variable part (ad valorem basis).
- Coal gasification and coal liquefaction has been notified as end-use under the Coal Mines (Nationalization) Act 1973 for the purpose of allocation of captive coal blocks.

THE ELEVENTH PLAN

Coal Demand and Production

10.161 Coal demand is projected to reach 731.10 million tonnes by the end of the Eleventh Plan. Cumulative Annual Growth Rate in coal demand during the Eleventh Plan is projected at 9.7%. The sector-wise break up of the requirement is shown in Figure 10.1 and Annexure 10.1.

10.162 Coal production is envisaged to reach 680 million tonnes in the terminal year of the Eleventh Plan. The incremental production is envisaged to be 247.50 million tonnes as against 104.71 million tonnes



Source: Working Group Report on Coal and Lignite.

FIGURE 10.1: Estimated Sector-wise Demand for Coal in 2011–12

added in the Tenth Plan. CIL is expected to add 156.70 million tonnes, SCCL 3.30 million tonnes, and captive blocks 86.53 million tonnes. CIL envisages taking up 114 projects with an ultimate capacity of 230 million tonnes (to contribute 70 million tonnes in 2011–12) and SCCL 38 projects with an ultimate capacity of 55.40 million tonnes (to contribute about 8 million tonnes in 2011–12). Cumulative Annual Growth Rate in coal production during the Eleventh Plan is projected at 9.47% (Annexure 10.2).

Demand Supply Management

10.163 In overall terms, the physical gap between the projected demand of 731.10 million tonnes and the projected domestic availability of 680 million tonnes works out to 51.10 million tonnes in 2011–12. This comprises 40.85 million tonnes of coking coal and 10.25 million tonnes of thermal coal. This requirement would need to be met from imports. In case production from captive blocks does not come as envisaged, the quantity of imports would be higher.

10.164 Given the fact that captive mines will take seven or eight years to ramp to full production, the end-use projects would either have to be delayed or some interim supply arrangements would have to be made. Since coal import for inland sites is not a viable option, coal PSUs would need to provide coal to those power plants that have been allotted captive mines till their captive mines achieve full production.

10.165 Coking coal production during the Eleventh Plan is projected to grow by 9.1% from the current level hovering between 17–18 million tonnes to 27.65 million tonnes in spite of the fact that no new resource of coking coal has been found.

Lignite Demand and Production

10.166 The Eleventh Plan envisages a lignite demand of 55.59 million tonnes (Tamil Nadu, 23.59 million tonnes; Gujarat, 23.73 million tonnes; Rajasthan, 8.27 million tonnes) in 2011–12. The additional lignite-based power-generation capacity in the Eleventh Plan is envisaged as 2225 MW. Lignite demand from NLC in 2011–12 has been projected to be 27.04 million tonnes implying CAGR of 6.89%. Lignite-based power generation by NLC during the Eleventh Plan is expected

to reach 26077 Million Unit (MU) implying CAGR of 11.91%. The lignite production is projected to reach 54.96 million tonnes (Tamil Nadu, 24.23 million tonnes; Gujarat, 22.26 million tonnes, Rajasthan, 8.47 million tonnes). NLC is expected to meet this level of demand growth.

Central Sector Plan Schemes

10.167 Exploration activities undertaken under two plans schemes of the Tenth Plan namely regional/promotional exploration and detailed drilling in non-CIL blocks need to be carried forward in the Eleventh Plan for enhancing the pace of exploration in coal and lignite. Jharia–Raniganj Action Plan has been proposed in the Eleventh Plan to recover remaining coal before it gets burnt or become uneconomic due to sterilization. Existing EMSC scheme is proposed to continue with the objective of implementing the action plan. Existing S&T scheme is also proposed to continue in the Eleventh Plan.

Regional/Promotional Exploration

10.168 An outlay of Rs 383.50 crore has been proposed by the MoC for undertaking exploration activities under this scheme. A projection of 4.0 lakh metre of drilling in coal and 3.5 lakh metre in lignite has been envisaged to establish about 20 billion tonnes of coal and 4.06 billion tonnes of lignite resources. This excludes the programme for regional exploration by GSI where 1.94 lakh metre of drilling in coal and 0.10 lakh metre of drilling in lignite has been projected.

Detailed Exploration in Non-CIL Blocks

10.169 About 10 lakh metre of drilling has been proposed to be undertaken in 32 non-CIL blocks during the Eleventh Plan targeting 10.75 billion tonnes of resources to be brought under proved category. Major part of the exploration activity would be outsourced by CMPDI. The total fund requirement for detailed exploration in non-CIL blocks scheme during the Eleventh Plan has been estimated at Rs 893.89 crore.

Environmental Measures and Subsidence Control

10.170 The issue of land subsidence and fire in old mined out areas of Raniganj coalfields of West Bengal and Jharia coalfields of Jharkhand has been under consideration of the government for quite some time. A scheme was formulated for mitigating adverse impacts of fire and subsidence problems caused due to unscientific mining activities by erstwhile owners before nationalization. However, the scheme did not yield desired results during previous Plan periods.

10.171 The Jharia–Raniganj Action Plan would be taken up for implementation during the Eleventh Plan under this scheme. The Action Plan proposes to deal with fires, rehabilitation of the uncontrollable subsidence prone inhabited areas, and diversion of railway lines/roads within the command area of BCCL and ECL. Total outlay proposed for the Action Plan is Rs 8638.87 crore spread over a 10-year period. The annual outgo for implementing the proposal would be of the order of Rs 860 crore as per the tentative cost estimates furnished above. It is proposed to fund Rs 350 crore per annum through accrual of cess by additional cess of Rs 6.50 per tonne under Coal Conservation and Development Act (CCDA) already being charged on all type of coal produced in the country, Rs 200 crore per annum through internal resources of CIL, and the remaining Rs 310 crore per annum through budgetary support. As accruals from cess are considered revenue to the government, the net budgetary support needed for the scheme would be Rs 660 crore per annum staring from the second year of the Eleventh Plan.

Science and Technology (S&T)

10.172 The main thrust areas in this scheme are promotion of clean coal technologies including coal beneficiation, in situ coal gasification, carbon capture and sequestration, coal bed methane/coal mine methane/abandoned mine methane, coal gasification, coal to oil, etc. Research efforts for industry-oriented projects would be promoted. Areas such as extraction of steep and thick coal seams, open-cast bench slope stability, strata control, etc. would be given special attention. An outlay of Rs 100 crore has been proposed for the implementation of this scheme.

Conservation and Safety in Coal Mines and Development of Transport Infrastructure in Coalfield Areas

10.173 Line entries were maintained under these schemes till the matter of treating them as non-Plan

schemes are settled with the Ministry of Finance. Planning Commission had not agreed with the proposal of the MoC for treating these schemes as Plan schemes as activities under these schemes are funded as reimbursement of a portion of the stowing excise duty, which is statutorily levied as per the CCDA and deposited in the government treasury account. The Ministry of Finance, now, is of the view that these schemes should be treated as Plan schemes for better monitoring. As the source of funding of these schemes is through the dedicated Subsidence Excise Duty collected under CCDA, funding would not be a problem.

Initiatives in Information and Communication Technology

10.174 In order to improve efficacy of the project monitoring system and e-governance, the thrust areas that have been identified for introduction of ICT in the Eleventh Five Year Plan are computerization of various business functions up to project level; coal and lignite resource information system; resource depletion information system; Integrated CoalNet Application Software; GPS-based truck despatch system; GIS for mapping, spatial concepts, and time/space operations technology; integrated safety, production and environment monitoring and control in underground mines; centralized mail/messaging system; employee welfare. The estimated expenditure in this scheme is Rs 10 crore in the Eleventh Plan.

Benchmarking of Productivity

10.175 The Eleventh Plan envisages achieving a productivity level of 5.54 tonnes per person shift in CIL and 2.67 tonnes in SCCL in the terminal year of the Plan. Thrust would be given on improvement of operational efficiency of the coal mining companies by establishing benchmarks for different mining operations/equipments and manpower productivity comparable with international standards and measures. The productivity norms of different HEMM benchmarked earlier for both availability and utilization in different coal companies would be revisited so that these are comparable with the international standards.

Strategies for Coal Movement

10.176 In the terminal year of the Eleventh Plan (2011–12) it is proposed to move 348 million tonnes of raw coal and products from CIL using railway network which is about 50% more than the rail movement in 2006–07. As against a Four Wheeler Wagon (FWW) requirement of 25300 per day by the end of the Tenth Plan, the Eleventh Plan envisages 36728 FWW per day in 2011–12 which is about 45% increase from the current level. It is proposed to augment rail movement of coal through independent freight corridors, matching wagon volume and matching unloading facilities at power stations, etc. Power stations will have to equip themselves for handling multiple types of wagons.

10.177 The port infrastructure needs to be strengthened in order to facilitate rise in imports as well as coastal shipment. About 110 million tonnes of coal is required to be handled at the end of the Eleventh Plan including coastal shipment implying a port capacity of about 120–130 million tonnes by 2011–12.

10.178 To ease out the load on rail infrastructure, it is equally important to develop alternative modes of transportation of coal through inland waterways and coastal movement.

Initiatives on Clean Coal Technologies

10.179 Coal fired power generation would continue to occupy center-stage of India's energy scenario. Hence, it is desirable to have continuing improvements in its environmental performance, thermal efficiency, and thereby economics. Diffusion of new high-efficiency technologies in the field of energy conversion can lead to reduction in energy intensity of the economy. The process of producing energy has a significant impact on the environment, hence pollution abatement processes also form an important part of the development in this regard. A number of technologies have emerged for improving thermal efficiency and environmental performance. Different initiatives in this field are termed as clean coal technology, which include pre-combustion processes, combustion processes, and alternative use such as gasification of coal, coal bed methane, in situ coal gasification, etc. Different clean coal technologies do not compete with each other and have distinctive advantages.

10.180 Coal beneficiation is one of the prime clean coal technologies. The effect of coal washing and

thereby ensuring a more consistent fuel supply to conventional PCC boilers may improve their efficiency by around 1%.

10.181 High ash Indian coal needs clean coal technology for improving thermal efficiency of energy conversion processes and finally environmental performances. Use of washed coal ensures consistency of coal qualities and results in boiler performance improvement by allowing the unit and auxiliaries to operate near the design (optimum efficiency) points. The projected capacity increase in the country warrants introduction of higher capacity units (in the range of 800–1000 MW) where it is desirable to use washed coal for limiting the size/number of unit and auxiliaries within the conventionally available sizes.

10.182 The use of washed thermal coal has been on the rise during the Tenth Five Year Plan from 17.12 million tonnes in 2002–03 to 55.24 million tonnes in 2006–07. It is estimated that 243 million tonnes per annum of thermal coal is required to be washed by the end of the Eleventh Plan and accordingly about 140 million tonnes of additional thermal coal washing capacity would be created. The perfect growth in coal washing may be realized if the Planning Commission's suggestion to price coal on a fully variable GCV is implemented. Such a pricing methodology will provide the right incentive to both the producer and the consumer of coal to improve quality. However, enhancing washing capacity would increase demand for raw coal, unless the fines are used productively.

10.183 First 100 MW IGCC demonstration project will be taken up by a consortium of NTPC and BHEL with part funding from the GoI.

10.184 Underground coal and lignite gasification technology utilize fuel in different form and can be beneficial when used for inaccessible resources. CBM extraction enhances energy security by tapping an additional source of fuel which would otherwise have gone waste. CBM in association with CO_2 sequestration enhances methane recovery while reducing green house gas. Coal liquefaction involved conversion of coal into oil through gasification requiring surface gasifier. CIL and NLC in association with ONGC would work towards making the technology successful.

10.185 CBM and CTL have been covered under petroleum and natural gas sector.

Mining Technology, Safety, and Welfare

10.186 Safety in coal mines is governed by the Mines Act 1952 and the rules and regulations framed hereunder. The Directorate General of Mines Safety (DGMS), under the Ministry of Labour and Employment has been empowered to enforce the statutes relating to mine safety. There is a Standing Committee on Safety in Coal Mines which is chaired by Minister in Charge of Coal. The strategies for action includes introduction of the concept of self-regulation, development of legislation, planning and technology, emergency response and disaster management, human resource development, and R&D effort including identification of areas of application of information technology in safety.

R&D in Coal Sector

10.187 R&D in coal sector is carried out under four broad areas, namely, production, productivity, and safety; coal beneficiation; coal utilization; and environment and ecology. In addition to initiatives in clean coal technologies, efforts should be made to undertake industry-oriented R&D projects which may include areas such as extraction of steep and thick coal seams, open-cast bench slope stability, strata control, etc.

Investment Needs and Financing Pattern

10.188 The proposed public sector investment for the Eleventh Plan for supporting their production plans is Rs 35774 crore (CIL, Rs 17390 crore; SCCL, Rs 3340 crore; NLC, Rs 15044 crore including Rs 176.00 crore for the ongoing projects – NLC Mines Rs 2993 crore; NLC Power Rs 12051 crore). The outlay proposed for coal PSUs for the Eleventh Plan is about 117% more than the Tenth Plan outlay of Rs 30556.48 crore.

10.189 Against the estimated IEBR availability of Rs 69926.77 crore (CIL, Rs 51542.55 crore; SCCL, Rs 3340.30 crore; NLC, Rs 15043.92 crore), the

proposed plan outlay of PSUs is Rs 35774 crore (at constant price). While the resource position of SCCL and NLC is just sufficient to meet the plan outlay, there is a huge surplus in the resource position of Coal India Ltd and CIL has to consider productive investment of the surplus resources through feasible diversification plans.

10.190 The proposed outlay for departmental schemes to be supported through domestic budgetary support including North East component is Rs 6667.76 crore (at constant price) comprising promotional exploration, Rs 383.50 crore; detailed drilling in non-CIL blocks, Rs 893.39 crore; R&D, Rs 100.00 crore; EMSC/ Jharia Action Plan, Rs 3614.07 crore; schemes under CCDA, Rs 1665.60 crore (Rs 692.95 crore for stowing and protective works and Rs. 972.65 crore for road and rail infrastructure); publication of coal statistics Rs 1.2 crore; and Rs 10 crore for e-governance. The Jharia–Raniganj Action Plan under EMSC scheme is proposed to be financed partly through the IEBR of Coal India Ltd (Rs 800 crore) and the rest Rs 1400 crore through the CCDA fund and Rs 1200 crore through budgetary support. Accordingly, the MoC would need Rs 5867.76 crore of domestic budgetary support for implementing above Plan schemes. This includes Rs 3065.72 crore coming from the accrued fund of Subsidence Excised Duty being collected under the CCDA at the rate of Rs 10 per tonne of all types of coal sold.

10.191 Thus the total plan outlay proposed for MoC for the Eleventh Five Year Plan is Rs 42442 crore (at constant price) which is 134% more than the Tenth Plan outlay of Rs 31591 crore.

Policy Reforms

10.192 Policy interventions required in the Eleventh Plan for:

- Restructuring CIL for optimizing their operations.
- Improvement in productivity of the sector by establishing benchmarks for different operations equipments comparable with international standards.
- Ensuring sale of at least 20% of coal production through e-auctions open to both consumers and traders.
- Promoting additional thermal coal imports under long-term supply contracts. Such coal imports could feed coastal power plants.
- Changing grading and pricing of non-coking coal from the existing UHV to the international practice of pricing coal based on GCV.
- Replacing coal linkages with fuel supply agreements.
- Promoting in situ coal gasification and tapping of coal bed methane/coal mine methane.
- Rationalization of rail freight rates for coal transport.
- Extending infrastructure status to the coal industry. Lower duties on capital goods imported for coal mines.
- Instituting an independent regulatory mechanism for the coal sector.
- Amending the provisions of Contract Labour (Regulation and Abolition) Act 1970 which prohibit employment of contract labour in mining activities. This will facilitate offloading of certain activities in coal mining for improved economics of operations.
- Promoting underground mining operations for extraction of deep seated deposits.
- Augmenting domestic coking coal supplies by opening up new mines and coal washeries.
- Augmenting port infrastructure capacity to facilitate envisaged rise in import.
- Exploration for CBM and detailed drilling in non-NLC lignite blocks should be included in existing Plan schemes.
- Institutional framework for maintenance of database on coal and lignite resource (net of depletion) is required which will have access to the geological data in respect of all coal/lignite blocks (whether held by public or private).
- Identifying forest areas as 'Yes' and 'No' zones for exploration, for saving energy in exploration in the area which can never be mined.
- Involving reputed domestic and international agencies in coal/lignite exploration.
- Concerted efforts for addressing the issues related to decommissioning of mines/mine closure after exhaustion of reserves are required to be made.
- Need for developing mechanism for management of occupational safety and health of coal miners and persons living in the vicinity of coal mining areas.

- Need for evolving appropriate corporate social responsibility for fulfilling the aspirations of population living in and around coalfield areas and to promote environmentally sustainable mining practices.
- Recruitment and skill upgradation of mining engineers and other professionals required for operation and statutory purposes in the coal/lignite mines need to be stressed upon. It is necessary to strengthen internal safety organization of respective coal producing companies and introduce safety audit of mines by independent auditors. Infrastructure including human resource for rescue and emergency response systems also needs reinforcement.
- Coal mining should be opened to private players without the restriction of captive use which requires passage of the Coal Mines (Nationalization) Bill 2000.
- Introduction of competitive bidding process in allocation of coal blocks by making suitable amendments in the MMDR Act. This would not only ensure optimal allocation of precious resources, but would also attract more serious players into coal sector.
- Need for a suitable Resettlement and Rehabilitation Policy which is acceptable to all concerned that is, State Governments, project-affected people (PAP), and coal and lignite producing companies.
- In order to gain confidence of the PAP, coal and lignite producing companies should return the restored/reclaimed land to PAP for appropriate use after mining operations have ceased in the area.
- Establishing standards for undertaking Energy Efficient and Conservation Programmes in all critical operations in the value chain starting from exploration to utilization and mechanisms for independent monitoring and verification of achieved energy savings and cost effectiveness of such programmes.

ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT (DSM) PROGRAMMES

10.193 Energy conservation is a multi-faceted approach with the involvement of supply side, demand side, and also T&D system. The success of the energy conservation programme depends upon the aspects such as pricing of different fuels and electricity for different categories of consumers, awareness among the users to appreciate the necessity of energy conservation, an effective institutional arrangement to coordinate energy conservation programmes, and other aspects that include mobilizing financial resources to fund energy conservation programmes. It is worthwhile to give necessary importance for energy conservation programmes in view of the fact that it is economical and wise to invest in energy conservation adequately in order to avoid creation of equivalent new capacities for generation with significant level of investment.

10.194 In India, DSM measures have a key role in eliminating power shortages to a considerable extent. The demand for electricity fluctuates within a 24-hour cycle as well as between seasons. This has important implication in planning generating capacities. In a developing country like India, where per capita availability of energy is very low, need-based demand for energy can be unlimited. But, supply side is limited by insufficiency of investible resources and the demand side by lack of purchasing power. In such a situation, it is clear that a capacity to provide additional energy is always likely to lag behind the rising demand, unless consumption of energy is also economized.

10.195 The basic problem in power generation and supply is the maintenance of the frequency of the grid and the power factor of the loads at stipulated levels. The low-frequency conditions lead to instability of the interconnected grid and thereby causing frequent tripping. Sometimes this results in cascade tripping leading to total black out. It is essential that frequency is maintained between 49.8–50.2 Hz for effective grid management as well as maximization of useful life of thermal/nuclear generating plants. At present, the situation is managed by resorting to emergency manual load shedding by switching off various feeders. However, these are only temporary measures adopted to meet exigencies, arising from time to time, without attempting any strategy to influence the basic pattern of load curves.

Barriers in Implementing DSM

10.196 One of the basic reasons for energy inefficiency in India is energy pricing. Electricity rates, kept

deliberately low for a large block of consumption, do not send correct signals to consumers to alter their consumption behaviour. A typical case relates to the low agricultural tariffs (subsidies are as high as 80%–90% in most States) that have resulted in gross misuse of both electricity and groundwater. Low tariffs for domestic consumers also do not offer any incentive to encourage efficient use of energy. There is therefore an urgent need to look into the issue of pricing and efficient operation and management of the SEBs. Other innovative pricing options, which have proved successful in managing electricity demand in several developed and developing countries such as time-of-day tariffs, interruptible tariffs, and seasonal tariffs should be initiated by the utilities on an experimental basis.

10.197 The other important constraint in the implementation of Demand side Management (DSM) programme is the information gap. Indian consumers are not fully aware of the opportunities available for improving energy efficiency.

Energy-efficiency Programmes in the Eleventh Plan

10.198 In the Eleventh Five Year Plan, Bureau of Energy Efficiency (BEE) will be strengthened as a nodal organization at the national level and will be empowered to provide direction to the energy conservation programmes in the States. An 'Energy Conservation Information Centre' will be set up within BEE to collate energy use data and analyse energy consumption trends and monitor energy conservation achievements in the country. Supporting organizational set-up will also be strengthened in the State designated agencies (SDAs) in various States and UTs. For this, a matching grant support from Central Government restricted to the contribution made by the respective States/UTs governments is proposed to establish State Energy Conservation Fund as mandated under EC Act. In the Eleventh Five Year Plan, BEE will focus energy conservation programmes in the following targeted sectors.

Targeted Sectors

Industrial Sector (Energy Intensive Industries)

10.199 BEE will develop 15 industry-specific energy efficiency manuals/guides for the following sectors: aluminium, fertilizers, iron and steel, cement, pulp and paper, chlor alkali, sugar, textile, chemicals, railways, port trust, transport sector (industries and services), petrochemical and petroleum refineries, thermal power stations and hydel power stations, electricity transmission companies and distribution companies. The manuals will cover specific energy consumption norms as required to be established under the EC Act, energy efficient processes and technologies, best practices, case studies, etc. Follow up activities will be undertaken in the States by SDAs and manuals will be disseminated to all the concerned units in the industries.

Small and Medium Enterprises (SMEs)

10.200 SDAs in consultation with BEE will initiate diagnostic studies in 25 SME clusters in the country, including four to five priority clusters in the NER, and develop cluster-specific energy-efficiency manuals/booklets and other documents to enhance energy conservation in SMEs.

Commercial Buildings and Establishments

10.201 BEE will prepare building specific energy-efficiency manuals covering specific energy consumption norms, energy-efficient technologies, best practices, etc. As a follow up, SDAs would initiate energy audits and their implementation in 10 government buildings in each State and one or two buildings at UT level. BEE will also assist SDAs in the establishment and promulgation of energy conservation building codes (ECBC) in the States, and facilitate SDAs to adapt ECBC.

Residential/Domestic Sector

10.202 BEE will enhance its ongoing energy labeling programme to include 10 other appliances, –namely, air conditioners, ceiling fans, agricultural pump-sets, electric motors (general purpose), Compact Fluorescent Lamps, Flurescent Tube Light (FTL)–61 cm, television sets, microwave ovens, set top boxes, DVD players, and desktop monitors. To facilitate this consumer awareness will also be enhanced nation wide.

Street Lighting and Municipal Water Pumping

10.203 To promote energy efficiency in municipal areas in various States, SDAs in association with State

utilities will initiate pilot energy conservation projects in selected municipal water pumping systems and street lighting to provide basis for designing State-level programmes.

Agriculture Sector

10.204 In the Eleventh Plan, SDAs will disseminate information on successful projects implemented in some States, launch awareness campaigns in all regional languages in print and electronic media, and initiate development of State-level programmes along with utilities.

Transport Sector

10.205 SDAs with assistance of concerned institutions/agencies will conduct diagnostic studies to establish the status of energy consumption and conservation in the sector. BEE will also set up labeling and/or norms for specific fuel consumption for a few automobile and transport categories (services/public transport). BEE in association with SDAs will facilitate State utilities to pursue DSM options by focusing on orientation workshops for awareness building, setting up of DSM cells in utilities to conceive and implement DSM programs, support load research and studies to rationalize the tariff structures, and initiation of DSM programmes, especially in the residential, agricultural pumping and municipal water works, and street lighting sectors.

10.206 Policy research on legislative amendments, policy interventions including fiscal and non-fiscal measures are planned to be undertaken in the Eleventh Plan.

Proposed Target of Energy Savings by the End of the Eleventh Plan

10.207 It is proposed to set a target of 5% of the anticipated energy consumption level in the beginning of the Eleventh Plan as energy savings to be achieved at the end of the Eleventh Plan. Financial provision for the same has been made in the outlay of power sector.

Conservation and Efficiency Improvement

Demand Side Management

10.208 Road transportation consumes about one-third of the total consumption of the petroleum products in India. There is a need to reduce this consumption by shifting goods and passenger traffic from roads to rails, improving the road infrastructure, streamlining of traffic signals, mandating fuel efficiency levels in transport vehicles, and developing hybrid electric vehicles (EVs).

Conservation of Petroleum Products

10.209 The major focus would be towards efficient use of petroleum products, minimizing the waste of energy sources, development of efficient equipments and their commercialization, educating and motivating the people towards conservation techniques and practices. There is a need to establish a system approach to quantify the conservation potential.

Benchmarking of Hydrocarbon Sector

10.210 To make the hydrocarbon sector globally competitive, the oil and gas industry needs to benchmark their operations against the best in the world and should upgrade their technology for improving the efficiency.

NEW AND RENEWABLE ENERGY SECTOR

Issues and Challenges

10.211 From a longer term perspective of the growing threat of climate change and keeping in mind the need to maximally develop domestic supply options as well as the need to diversify energy sources, renewables remain important to India's energy sector. Solar power could be important for attaining energy independence as well as a green house gas-free energy system in the long run. However, based on present technology with a concerted push and a 40-fold increase in their contribution to primary energy, renewables excluding hydroelectricity may account for only 5%–6% of India's energy mix by 2031–32. While this figure appears small, the distributed nature of renewables can provide many socio-economic benefits.

10.212 While there were renewable energy programmes taken up in the past to address the above challenges, the impact of these programmes were rather marginal. The lack of institutional support at the grassroots, poor focus on training and maintenance aspects, lack of awareness among rural community, subsidies acting as barrier in cost reduction, etc., were

found to be the bottlenecks for the programmes not achieving desired results. The actual benefit of the subsidies did not reach the beneficiaries but only acted as barriers in attempts for cost reduction and efficiency improvement of the renewable energy devices and gadgets.

10.213 A renewable energy source may be environment-friendly. It may be locally available thereby making it possible to supply energy earlier than in a centralized system. Grid-connected renewables could improve the quality of supply and provide system benefits by generating energy at the ends of the grid where otherwise supply would have been lax. Further, renewables may provide employment and livelihood to the poor. Hence, subsidies to renewables may be justifiable; however, they should be linked to outcomes and given for a well-defined period.

10.214 A majority of India's people especially in rural areas use traditional fuels such as dung, agricultural wastes, and firewood for cooking food. These fuels cause indoor pollution. The 1999–2000 NSS 55th Round revealed that for 86% of rural households the primary source of cooking energy was firewood and chips or dung cake. In urban areas too more than 20% households relied mainly on firewood and chips. Only 5% of the households in rural areas and 44% households in urban areas used LPG. Kerosene is used by 22% of urban households and only 2.7% of rural households for cooking. Other primary source of cooking energy used by urban and rural household covers coke and charcoal, biogas, electricity, and other fuels. The situation in rural areas calls for provision of sustainable and clean energy supplies. In this context the role of renewable energy sources such as biogas, improved cook stoves, solar energy, and biomass based systems to meet the basic needs of cooking, lighting, and water heating is important.

10.215 The total quantities of traditional fuels used to meet the basic energy needs are substantial. Table 10.26 gives the data on household energy use. The biomass-based fuels dominate particularly in rural areas.

10.216 Use of traditional fuels for cooking with the attendant pollution and the cost of gathering them impose a heavy burden on people particularly women and girls. The need to gather fuels may deprive the girl child from schooling. Use of such fuels, overtime, increases the risks of eye infections and respiratory diseases. Lack of access to clean and convenient energy impacts the health of women and the girl child more adversely as they spend more time indoors and are primarily responsible for cooking. Women's micro-enterprises (an important factor in household income, as well as in women's welfare and empowerment) are heat-intensive (food processing), labour-intensive, and/or light-intensive (home industries with work in evenings). The lack of adequate energy supplies—and other co-ordinated support—affects women's ability to use these micro-enterprises profitably and safely. Furthermore, women often face additional barriers in making best use of available opportunities and obtaining improved energy services. There are social and practical constraints related to ownership and control over productive resources—women are typically excluded/marginalized from decision-making and

TABLE 10.26
Household Energy Consumption in India (July 1999–June 2000)

Fuel Type	Physical Units			Mtoe		
	Rural	Urban	Total	Rural	Urban	Total
Fire wood and chips (million tonnes)	158.87	18.08	176.95	71.49	8.13	79.62
Electricity (BkWh)	40.76	57.26	98.02	3.51	4.92	8.43
Dung cake (million tonnes)	132.95	8.03	140.98	27.92	1.69	29.61
Kerosene (million litre)	7.38	4.51	11.89	6.25	3.82	10.07
Coal (million tonnes)	1.20	1.54	2.74	0.49	0.63	1.12
LPG (million tonnes)	1.25	4.43	5.68	1.41	5.00	6.41

Source: Derived from NSS 55th Round (July 1999–June 2000) data, NSSO, Ministry of Statistics and Programme Implementation, GoI.

suffer barriers related to illiteracy, lack of exposure to information and training. It is estimated that in rural north India 30 billion hours are spent annually in gathering fuel-wood and other traditional fuels. The economic burden of traditional biomass-based fuels, time to gather fuels, time lost in sickness, and cost of medicines is estimated to be some Rs 300 billion. An energy policy responsive to social welfare must address this fact.

10.217 National surveys have indicated that for 86% of rural households, the primary source of cooking energy was firewood and chips or dung cake. The efficiency of fuel use is of vital importance for the users of these traditional fuels. The inefficient methods of using such fuels result in low thermal efficiency and high emission products. The traditional cooking methods produce very high concentration of air pollutants such as total suspended particulates, carbon monoxide, formaldehyde, etc. This is the major cause of indoor air pollution in the rural areas. Indoor air pollution makes the women and children who spend sufficiently long time in kitchens suffer from bronchial asthma, bronchitis, TB, and chest infection. Risk from all respiratory diseases and eye diseases increases with length of use of traditional fuels. The collection of traditional fuels results in drudgery of women and children since they have to walk long distances to collect such fuels. Moreover, the time spent for this purpose is significantly long, depriving them of their additional income which they would have earned during that time. Further, deforestation and environmental degradation also results in the long run. Collection of traditional fuels is at zero private cost but at tremendous social cost. Supply of clean cooking fuels for rural households would go a long way in addressing the social aspects associated with use of traditional fuels discussed above.

10.218 The Ministry of New and Renewable Energy (MNRE) is responsible for programmes covering renewable energy sources. The mission of the MNRE is as follows:

- Reduce dependence on oil imports through development and deployment of alternate fuels (hydrogen, biofuels, and synthetic fuels) and their applications to contribute towards bridging the gap between domestic oil supply and demand and thereby improve energy security.
- Increase the share of clean power by promoting renewable electricity to supplement fossil fuel based electricity generation.
- Enlarge energy availability and improve access to meet needs for clean energy for cooking, heating, motive power and captive generation in rural, urban, industrial, and commercial sectors.
- Encourage convenient, safe, and reliable new and renewable energy supply options to be cost-competitive.

10.219 MNRE programmes include (i) grid connected and stand-alone power generation from small hydro, wind, solar, biomass, and industrial/urban wastes; (ii) rural energy programmes such as electrification of remote villages, biogas, and improved chulhas for cooking; (iii) solar energy applications such as thermal water heaters, solar photovoltaic applications for lighting and water pumping; and (iv) integrated rural energy programme (IREP). Research, development, and demonstration programmes in new technologies such as geo-thermal, hydrogen energy, fuel cells, alternative fuels for surface transport, etc., are also undertaken by MNRE. Indian Renewable Energy Development Agency (IREDA), a financial institution under the administrative control of MNRE, supports the renewable energy programmes by providing concessional funds. By the end of the Tenth Plan (as on 31 March 2007) the contribution of power generation from renewables had reached 10406.69 MW representing about 8.1% of total installed generating capacity. Of this, wind power accounted for 7092 MW followed by small hydro at 1975.60 MW and biomass (including co-generation) at 1158.63 MW. The estimated medium-term potential and achievement as on 31 March 2007 have been given in Table 10.27.

10.220 The progress in grid interactive renewable power at a glance is given in Table 10.28.

10.221 Table 10.29 gives the typical capital cost per megawatt and cost of electricity generated per kWh through different renewable energy sources.

TABLE 10.27
Estimated Medium-term (2032) Potential and Cumulative Achievements as on 31 March 2007

S. No.	Sources/Systems	Estimated Potential	Units	Cumulative Achievements
I.	Power from Renewables			
	A. Grid interactive renewable power			
	1. Bio power (agro residues and plantations)	16881*	MW	524.80
	2. Wind power	45195**	MW	7092.00
	3. Small hydro power (up to 25 MW)	15000	MW	1975.60
	4. Co-generation (bagasse)	5000	MW	615.83
	5. Waste to energy	7000	MW	43.45
	Subtotal (in MW)	133000	MW	10251.68
	B. CHP/distributed renewable power			
	6. Solar power	50000***	MW	2.92
	7 Biomass/co-generation (non-bagasse)		MW	45.80
	8. Biomass gasifier	–	MW	86.53#
	9. Energy recovery from waste	–	MW	19.76 MW
	Subtotal	50000	MW	155.01
	Total (A+B)	183000	MW	10406.69
	10. Remote village electrification	–	Nos	2821/830 (villages/hamlets)
II.	Decentralized Energy Systems			
	11. Family type biogas plants	120	Lakh Nos	38.90
	12. Solar photovoltaic programme	20	MW/sq km	
	(i) Solar street lighting system	–	Nos	61321
	(ii) Home lighting system	–	Nos	313859
	(iii) Solar lantern	–	Nos	565658
	(iv) Solar power plants	–	kWp	1870.00
	13. Solar thermal programme	–		
	(i) Solar water heating systems	140	Million sq m collector area	1.90
	(ii) Solar cookers	–	Lakh Nos	6.03
	14. Wind pumps	–	Nos	1180
	15. Aero-generator/hybrid systems	–	kW	608.27
	16. Solar photovoltaic pumps	–	Nos	7068

Note: # Progress upto 15 March 2007.

* Although potential is based on surplus agro-residues, in practice biomass power generation units prefer to use fuel-wood for techno-economic reasons. A potential of 45000 MW from around 20 MH of wastelands assumed to be yielding 10MT/ha/annum of woody biomass having 4000 k-cal/kg with system efficiency of 30% and 75% PLF has not been taken into account. In order to realize this potential a major inter-Ministerial initiative involving, among others, Environment and Forests, Agriculture, Rural Development, and Panchayat Raj would be required. Further, a Biomass atlas is under preparation which is expected to more accurately assess State-wise renewable energy potential from agro-residues.

** Potential based on areas having wind power density (wpd) greater than 200 W/m^2 assuming land availability in potential areas @ 1% and requirement of wind farms @ 12 ha/MW, all of which may not be technically feasible or economically viable for grid interactive wind power. This economically viable potential could get enhanced with higher level of land availability than what has been assumed. Areas having lower wpds might be suitable for off-grid applications. Further, preliminary surveys do not at this juncture suggest a sizeable grid interactive off-shore wind power potential.

*** Potential for solar power is dependent on future developments that might make solar technology cost-competitive for grid interactive power generation applications. However, insolation in the country varies between 4–7 kWh/m^2/day.

MW = megawatt; kW = kilowatt; kWp = kilowatt peak; sq m = square metre; sq km = square kilometre; CHP = combined heat and power.

Source: MNRE, GoI.

TABLE 10.28
Progress in Grid Interactive Renewable Power

(In MW)

Resource	By the End of the Ninth Plan	Tenth Plan Addition	Eleventh Plan#	By the End of Eleventh Plan
Wind power	1667	5415	10500	17582
Small hydro	1438	520	1400	3358
Bio-power	368	750	2100	3218
Solar power	2	1	50*	53
Total	3475	6686	14050	24211

Note: # Anticipated in the Eleventh Plan.
* Dependent on future developments to make solar technology cost competitive for grid interactive power generation.
Source: MNRE.

TABLE 10.29
Capital Costs and the Typical Cost of Generated Electricity from the Renewable Options

S. No.	Source	Capital Cost (Crore of Rs per MW)	Estimated Cost of Generation per Unit (Rs per kWh)
1.	Small hydro-power#	5.00–6.00	1.50–2.50
2.	Wind power	4.00–5.00	2.00–3.00
3.	Biomass power	4.00	2.50–3.50
4.	Bagasse co-generation	3.5	2.50–3.00
5.	Biomass gasifier	1.94	2.50–3.50
6.	Solar photovoltaic	26.5	15.00–20.00
7.	Energy from waste	2.50–10.0	2.50–7.50

Note: # Up to 25 MW station capacity is covered under small hydro power.
Source: IEPR, 2006.

Review of the Tenth Plan

10.222 The approved outlay for the Tenth Plan for New and Renewable Energy Programmes was Rs 7167 crore comprising Rs 4000 crore as GBS and Rs 3167 crore of IEBR. The likely expenditure at the end of the Tenth Plan is Rs 4000 crore.

10.223 While the overall target has been achieved there are shortfalls in some programmes especially in solar thermal power. During the Tenth Plan wind power capacity of 5415 MW has been created achieving 3.61 times of the set target (Table 10.30).

10.224 In addition to the programmes of power generation other programmes relating to rural energy, urban applications, and R&D programmes have been implemented during the Tenth Plan. Around 5000 remote villages/hamlets have been provided with electricity from renewable energy sources mainly through solar energy. Village Energy Security Projects are under implementation in 100 villages. Around 5

TABLE 10.30
Power Generation through Grid Interactive Renewable Power

Source	Tenth Plan	
	Target (MW)	Actual (MW)
Wind	1500	5415
Small hydro	600	520
Biomass power and biomass gasification	700 50	750
Waste to energy	80	25
Solar photovoltaic	5	1
Solar thermal power	140	0
Total	3075	6711

Source: MNRE.

lakh biogas plants have been installed. In the programmes catering to the requirement of urban areas under the solar water heaters progranm-mes 12.5 lakh sq m collector areas of water heating systems have been installed. R&D activities have been carried out especially in the area of alternative fuel for transport including hydrogen energy.

Eleventh Plan Programme

10.225 The various programmes of the MNRE for the Eleventh Plan have been drawn up in the light of recommendations made by Planning Commission and those made in IEPR. The five programmes proposed are:

- Grid Interactive and Distributed Renewable Power.
- Renewable Energy for Rural Applications.
- Renewable Energy for Urban, Industrial, and Commercial Applications.
- Research, Design, and Development for New and Renewable Energy.
- Information, publicity and extension, international relations, HRD and training, equity support to IREDA and spill-over liabilities.

10.226 Proposed outlay of Rs 10460 crore (at constant price) includes GBS of Rs 3537 crore. The physical targets and the financial outlays proposed by MNRE for the above programmes are given in Table 10.31 and 10.32.

TABLE 10.31
Financial Outlays Proposed for the Eleventh Plan

(Rs Crore)

Grid Interactive and Distributed Renewable Power		3925.00
Grid interactive renewable power	1800.00	
Off-grid/distributed renewable power	2100.00	
Performance testing	25.00	
Renewable energy for rural applications		2250.00
Renewable energy for urban, industrial, and commercial applications		685.00
Research, design, and development		1500.00
Programmes to support information, publicity and extension, international relations, HRD and training, equity for IREDA, and spill-over liabilities		2100.00
Plan Outlay		10460.00

Source: Working Group on New and Renewable Energy.

TABLE 10.32
Physical Targets Proposed for the Eleventh Plan

Programme Component	Physical Target for Eleventh Plan (in MW)
Wind power	10500
Small hydro power	1400
Biomass power	1200
Co-generation	500
Urban waste to energy	200
Industrial waste to energy	200
Total	14000
Off-grid renewable power	
Wind/hybrid power	950
Small hydro power	
Bio power	
Solar power (grid/off-grid)	50
Total	1000

For remote villages/hamlets	
Remote village lighting	9000 villages/hamlets
Village energy security test projects	1000 villages
Common component for cooking/ supplementary motive power	10000 villages/hamlets
For all villages	
Solar thermal systems—flat	15 lakh sq m
plate—concentrating	1 lakh sq m
Family type biogas plants	20 lakh plants
Total	
Solar thermal systems/devices	
Water heating @Rs 1550/m^2	9.50 million sq m
Drying @Rs 1250/m^2	0. 25 million sq m
Other (steam generation)	0. 25 million sq m
@Rs 2500/m^2	–
Instl./prog. support @Rs 200/m^2)	10 nos
Municipal corporations—incentive	
Energy-efficient buildings	50 lakh sq m floor area
Akshay Urja Shops	2000 nos
Cities with RPOs	100 nos
Total	

Note: RPOs = Regional Project Offices.
Source: Working Group on New and Renewable Energy.

Policy Approach

10.227 Capital subsidies that encourage investment without ensuring outcomes would be phased out. Incentives provided for grid connected power from renewable sources would be linked to generation and not to power capacities created. Thus power regulators will be asked to create alternative incentive structures such

as mandated feed-in laws or differential tariffs for grid interactive power.

10.228 Alternatively grid interactive renewable power will be promoted by mandating a renewable portfolio standard for all power distribution companies and providing a subsidy for each unit of renewable electricity purchased. The utilities would be free to meet their requirement by purchasing certificates from other utilities that may have a surplus of renewable electricity in their portfolios. Many State Electricity Regulators have stipulated RPS as required by the Electricity Act 2003.

10.229 To eliminate subsidy for other renewable system for rural, urban, industrial, and commercial applications, instead a large prize may be offered to one who sells a lakh or a million units first (for outputs sold directly to households), for example, solar water heaters, biogas plants, solar lighting systems, etc. This will promote competition, innovation, and consumer requirement oriented development.

10.230 To facilitate biofuels that require action by many different actors such as producer, processor, distributor, and consumers, a well-defined policy that provides incentives and leads to a competitive industry is needed. Also the policy has to be incentive compatible for all actors in the chain. With these in mind, the national biofuel policy has to be finalized.

10.231 To increase availability of finance for new and renewable energy, IREDA is to be restructured by broad basing its equity structure. IREDA needs low cost funds. It should be permitted to issue Capital Gains Bonds similar to those issued by REC and NHAI to the tune of Rs 300–400 crore per year during the Eleventh Plan. IREDA's role in financing renewable energy program-mes is to be enhanced.

R&D in the Energy Sector

10.232 R&D in energy sector is critical to augment our resources, meet our long-term needs, promote efficiency, attain energy independence, enhance our energy security, and ensure harmony with the environment. Energy R&D has not kept pace with the development of the energy sector in the country. There is a need to substantially augment the resources for energy R&D and to allocate these resources strategically.

10.233 The report of the EC on Integrated Energy Policy has recommended setting up of a National Energy Fund (NEF [R&D]) for supporting studies on a regular basis in a number of institutions. The studies should be commissioned by NEF (R&D) from experienced and qualified individuals. The important areas are research and analysis for energy policy leading to outlining of technology road maps; energy policy modelling; launching of technology missions for developing near-commercial technologies and rolling out new technologies in a time bound manner; coordinated R&D in all stages of the innovation chain, etc. It is further recommended that each company in the field of energy should be mandated to spend at least 0.4% of its turnover on R&D.

10.234 Keeping the need in mind, a separate working group on R&D for the energy sector was set up for the formulation of the Eleventh Five Year Plan which supported the creation of NEF (R&D). In addition to the projected needs of Atomic Energy Commission and some R&D activities already being undertaken by individual energy ministries, the Working Group has identified areas which need support through NEF (R&D) in the Eleventh Plan (Table 10.33). The NEF (R&D) would be governed by an independent board with representatives from Department of Science and Technology, Planning Commission, and energy ministries. The government would finance the fund directly and through fiscal incentives. The fund would be used for supporting inter-institutional and inter-ministerial/inter-departmental research and for setting-up of Centres of Excellence in Universities/ National Laboratories/Mission-oriented Agencies in the areas of identified energy technology.

10.235 Technology missions are the most appropriate mechanism, particularly when it requires coordinated action in a number of different areas, involving different ministries/departments, industry, academia, India's R&D infrastructure of laboratories and research institutions, and the private sector. The following National Technology Missions may be taken up in the Eleventh Plan. The list however excludes the

TABLE 10.33
Proposed R&D Initiatives in the Eleventh Plan

(in Rs Crore)

S. No.	Items	Amount Projected
1.	Development and production of new material	400.00
2.	R&D in biofuels	200.00
3.	Combustion research initiative	200.00
4.	Energy R&D in Indian railways	45.00
5.	Hydrogen as a source of clean energy	350.00
6.	Advanced coal technologies	
	(i) Setting up of first 100 MWe IGCC demonstration plant	350.00
	(ii) In situ coal gasification of coal and lignite	30.00
	(iii) Coal to oil conversion	200.00
	(iv) Coal bed methane	35.00
	(v) Carbon capture and storage (incl. climate change issues)	125.00
7.	Ultra super critical technologies	30.00
8.	Energy storage systems	400.00
9.	Futuristic energy sources	
	(i) Gas hydrates	350.00
	(ii) Oil shale	15.00
10.	Energy efficiency	205.00
11.	Technologically important crystals—facility to manufacture polysilicon for production of single crystals of silicon	1200.00
12.	Light-emitting diodes (LEDs)—a viable alternative to fluorescent lighting	1000
13.	EVs and hybrid electric vehicles—viable alternate propulsion systems	175
	Grand Total	5310.00

Source: Working Group on Energy R&D.

initiative likely to be taken up by the Atomic Energy Commission.

- In situ coal gasification.
- IGCC.
- Carbon capture and sequestration.
- Bio-energy.
- Solar energy/technologically important crystals.
- Increased/enhanced oil and gas recovery and recovery of hydrocarbons from abandoned and isolated fields.
- Fuel-efficient vehicles. The automotive industry should be asked to achieve higher fuel efficiency standards.
- Combustion research initiatives.
- Development and production of new materials.

ANNEXURE 10.1
Coal Demand/Supply—Sector-wise Break-up

(Million Tonnes)

	Sector		2001–02 (Actual)	2002–03 (Actual)	2003–04 (Actual)	2004–05 (Actual)	2005–06 (Actual)	2006–07 (Prov.)	2007–08 (BE)	2011–12 (Proj.)
I.	Coking Coal									
1.	Steel and cokeries (indigenous)		18.73	17.66	16.68	17.51	16.99	17.51	18.00	27.65
2.	Coking coal import		11.11	12.95	12.99	16.93	17.11	22.00	20.00	40.85
	Subtotal		29.84	30.61	29.67	34.43	34.10	39.51	38.00	68.50
II.	Non Coking Coal									
3.	Power (utilities)	RC	249.23	255.47	268.21	285.55	299.76	307.03	330.00	483.00
		MID	(1.86)	(1.71)	(1.44)	(1.48)	(1.48)			
4.	Power (captive)	RC	19.22	19.55	18.19	27.10	26.58	24.65	33.60	57.06
		MID	(1.36)	(1.53)	(1.74)	(1.71)	(1.71)			
5.	Cement (incl. CPPs)		15.22	16.37	16.64	18.33	18.71	18.92	26.80	31.90
6.	Sponge iron/CDI		4.40	6.17	7.59	10.99	14.73	13.07	15.10	28.96
7.	BRK/others/export/SSF/	RC	33.58	35.19	40.62	32.39	39.64	60.33	49.00	61.58
	NLW coke/loco/colly.cons	MID	(0.28)	(0.01)	(0.00)	(0.00)	(0.00)			
	Subtotal	RC	321.65	332.74	351.24	374.35	399.41	424.00	454.50	662.50
		MID	(3.50)	(3.25)	(3.18)	(3.19)	(3.19)			
	Total raw coal		351.49	363.35	380.91	408.79	433.51	463.51	492.50	731.00
	Middling		(3.50)	(3.25)	(3.18)	(3.19)	(3.19)			

Note: colly.cons = Colliery consumption.

Source: Coal Directory of India/Planning Commission.

ANNEXURE 10.2
Company-wise Coal Production Programme

(Million Tonnes)

Company	Ninth Plan	Tenth Plan					Eleventh Plan					Twelfth Plan
	2001–02 (Actual)	2002–03 (Actual)	2003–04 (Actual)	2004–05 (Actual)	2005–06 (Actual) (Prov.)	2006–07 (Actual)	2007–08 (Target/BE)	2008–09 (Proj.)	2009–10 (Proj.)	2010–11 (Proj.)	2011–12 (Proj.)	2016–17 (Proj.)
ECL	28.55	27.18	28.00	27.25	31.11	30.47	33.41	39.76	43.74	45.08	46.00	48.00
BCCL	25.25	24.15	22.68	22.31	23.31	24.20	25.20	26.50	27.50	28.50	30.00	35.00
CCL	33.81	36.98	37.33	37.39	40.51	41.35	44.00	47.00	55.00	65.00	78.00	115.00
NCL	42.46	45.10	47.03	49.95	51.52	52.16	58.00	60.50	65.00	68.00	70.00	80.50
WCL	37.01	37.82	39.53	41.41	43.20	43.21	42.40	42.95	43.65	44.50	45.00	45.00
SECL	64.12	66.60	71.01	78.55	83.02	88.50	91.50	93.65	101.10	106.30	111.00	140.00
MCL	47.81	52.23	60.05	66.08	69.60	80.00	88.00	99.00	111.00	122.00	137.00	197.00
NEC	0.64	0.63	0.73	0.63	1.10	1.05	2.00	2.00	2.50	3.00	3.50	3.50
CIL—Total	279.65	290.69	306.36	323.58	343.39	360.93	384.51	411.36	449.49	482.38	520.50	664.00
SCCL	30.81	33.16	33.85	35.30	36.14	37.71	38.04	38.30	39.00	40.00	40.80	45.00
Other Public Sector#	2.07	1.54	1.64	1.90	1.81	1.77	1.92	2.02	2.32	2.52	2.52	2.52
Private—TISCO	5.64	5.92	6.14	6.37	6.52	7.00	6.50	6.50	6.50	6.50	6.50	6.50
Captive Mining*	4.46	5.51	7.61	10.11	13.59	17.54	23.93	36.22	47.09	73.00	104.08	331.38
Meghalaya	5.02	4.41	5.44	5.35	5.57	5.57	5.60	5.60	5.60	5.60	5.60	5.60
All-India	327.64	341.23	361.04	382.62	407.01	430.52	460.50	500.00	550.00	610.00	680.00	1055.00

Note: # includes IISCO, DVC, JSMDCL, and JKML; * includes Bengal Emta, JSPL, Hindalco, Monnet, ICML, Castron, and BLA Industries.

Source: Coal Directory of India/Working Group Report on Coal and Lignite.

ANNEXURE 10.3
Calorific Values, Units and Conversion Factors

Calorific Value of Various Fuels

S. No.	Name of Fuel	Unit	Calorific Value (kilocalories)
1.	Biogas	m^3	4713
2.	Kerosene	kg	10638
3.	Firewood	kg	4500
4.	Cowdung cakes	kg	2100
5.	Coal	kg	4000
6.	Lignite	kg	2865
7.	Charcoal	kg	6930
8.	Soft coke	kg	6292
9.	Oil	kg	10000
10.	LPG	kg	11300
11.	Furnace oil	kg	9041
12.	Coal gas	m^3	4004
13.	Natural gas	m^3	9000
14.	Electricity	kWh	860

Conversion Factors

1 kilocalorie	3.96832 btu, 4186.8 joules
1 kilowatt hour	3412.14 btu, 3.6×10^6 joules
1 btu	0.252 kilo cal, 1.055 kilo joules
1 US Gallon	0.833 Imperial Gallon, 0.134 cft, 0.00378 cum
1 Imperial Gallon	1.2009 US Gallon, 0.1605 cft, 0.0045 cum
1 Cubic Metres	264.172 US Gallons, 219.969 Imperial Gallons, 35.3147 cft,
1 Cubic Feet	7.4805 US Gallons, 6.2288 Imperial Gallons, 0.0283 cum
1 BkWh hydro or wind electricity	0.086 Mtoe#
1 BkWh nuclear electricity	0.261 Mtoe
1 million tonne of coal	0.41 Mtoe
1 million tonne of lignite	0.2865 Mtoe
1 billion cubic meter of gas	0.9 Mtoe
1 million tonne of LNG	1.23 Mtoe
1 million tonne of fuel wood	0.45 Mtoe
1 million tonne of dung cake	0.21 Mtoe

Note: # Mtoe conversion factors are as per International Energy Agency (IEA) Practice.

Abbreviations

Unit	Name	Unit	Name
bcm	Billion Cubic Metre	MMBtu	Million British Thermal Unit
BkWh	Billion Kilowatt Hours	MMSCMD	Million Standard Cubic Meters per Day
Bt	Billion Tonne	Mt	Million Tonnes
btu	British Thermal Unit		
GW_e	Gigawatt Electrical	Mtoe	Million Tonne of Oil Equivalent
GW-Yr	Gigawatt Year	MVA	Million Volt Amperes
kcal	Kilocalorie	MW	Megawatt
kWh	Kilowatt Hour	MW_e	Megawatt Electrical
TCF	Trillion Cubic Feet		

11

Urban Infrastructure, Housing, Basic Services and Poverty Alleviation

OVERVIEW

Urban Scenario in the Global Context

11.1 Urbanization is a key indicator of economic development and should be seen as a positive factor for overall development. Also, as an economy grows, its towns and cities expand in size and volume and the contribution of the urban sector to the national economy increases. For instance, the contribution of urban sector to India's GDP has increased from 29% in 1950–51 to 47% in 1980–81. The urban sector presently contributes about 62%–63% of the GDP and this is expected to increase to 75% by 2021 (see Box 11.1).

Box 11.1
Vision

Indian cities will be the locus and engine of economic growth over the next two decades, and the realization of an ambitious goal of 9%–10% growth in GDP depends fundamentally on making Indian cities much more livable, inclusive, bankable, and competitive.

11.2 The trends of urbanization in India in the recent decades indicate the following key features:

- The degree of urbanization in India is one of the lowest in the world. With about 27.8% of the total population living in the urban areas, India is less urbanized compared to many countries of Asia, viz., China (32%), Indonesia (37%), Japan (78%), South Korea (83%), and Pakistan (35%).
- There is a continued concentration of the urban population in large cities and existing city agglomerations (Class I cities with population over one lakh) account for 68.9% of the urban population and this proportion has been growing. The growth of rural settlements which are acquiring urban characteristic is very slow and there is reluctance on the part of the States to notify the rural settlements as a town.
- There are large variations in the spatial patterns of urbanization across the States and cities.
- The pattern of population concentration in large cities reflects spatial polarization of the employment opportunities.

11.3 This phenomenon has led to tremendous pressure on civic infrastructure systems, water supply, sewerage and drainage, uncollected solid waste, parks and open spaces, transport, etc. It has also led to deterioration in the quality of city environments. In several cities, the problems of traffic congestion, pollution, poverty, inadequate housing, crime, and social unrest are assuming alarming proportions.

11.4 The number of urban agglomerations and towns has increased from 3768 in 1991 to 5161 in 2001. Further, this urbanization is characterized by incomplete

devolution of functions to the elected bodies, lack of adequate financial resources, unwillingness to progress towards municipal autonomy, adherence to outdated methods in property taxation, hesitation in levy of user charges, unsatisfactory role of parastatals in the provision of water supply and sanitation services. Also, the governance requirements under the 74th Constitution Amendment Act (CAA) in respect of the District Planning Committees and Metropolitan Planning Committees (MPCs) have not been met in a number of States.

11.5 The extent and magnitude of the urban population calls for extra efforts by city planners and managers to cope up with the ever-growing strain on the urban infrastructure. Special attention is needed for management and governance of urban areas which are at present fragmented between different State-level agencies and urban local bodies (ULBs), with lack of co-ordination.

11.6 The policymakers need to focus on new ways to achieve the results and on different benchmarks that capture efficiency, effectiveness, quality, and sustainability in governance, service delivery, intergovernmental municipal finances, and social development. Some of the strategic interventions are summarized in Box 11.2.

National Urbanization Policy

11.7 The time is ripe to formulate a long-term National Urbanization Policy indicating the emerging pattern of urbanization and measures to channelize future urban growth in an equitable and sustainable manner. It should encompass the changing economic scenario, reform agenda of Jawaharlal Nehru National Urban Renewal Mission (JNNURM), and the role of ULBs in the era of globalization. The objectives of balanced and sustainable development are to be achieved by reducing spatial disparities.

Regional Development Plans

11.8 The regional development plans at the State level need to be formulated as a broad policy and vision document for the development of urban and rural growth centres in an integrated manner.

Role of Government as a Facilitator

11.9 The GoI should play the role of a facilitator as is being done through JNNURM and various other reform initiatives such as property tax reforms, municipal accounting reforms, model municipal law, guidelines on private sector participation, etc. It should also come up with a policy framework for regulators in the urban sector. The State Governments should play a similar role to facilitate the ULBs in order to provide an enabling environment for the ULBs to function as effective units of self-governance at the local level. Urban poverty alleviation, slum up gradation, and basic services to the urban poor will continue to remain as functions belonging to the public domain. These functions are redistributive in nature and are best handled through redistributive taxes at the control of Central and State Governments. Thus, Central–State–ULB partnerships will be necessary as potentially effective ways to address the emerging issues of urban development.

Private Sector Participation

11.10 Private sector participation in the water supply and sanitation sector could not make significant progress till now. There is substantial need and potential for the same in the Eleventh Plan. However, without aiming at the full cost recovery, private sector participation cannot be a successful proposition.

Box 11.2
Strategy of Urban Development

- Strengthening urban local bodies through capacity building and better financial management.
- Increasing the efficiency and productivity of cities by deregulation and development of land.
- Dismantling public sector monopoly over urban infrastructure and creating conducive atmosphere for the private sector to invest.
- Establishing autonomous regulatory framework to oversee the functioning of the public and private sector.
- Reducing incidence of poverty.
- Using technology and innovation in a big way.

The Constraints

11.11 The transformation of the Indian cities faces several structural constraints. Foremost, the current urban development model starves cities of financing. Also, weak or outdated urban management practices—inappropriate planning systems, unsustainable service delivery models, and lack of focus on the urban poor—negate the benefits of agglomeration economies in Indian cities by distorting land and housing markets, rendering cities non-creditworthy, and leaving them with expensive yet poorly functioning urban services.

11.12 The current urban management techniques are also out-moded. The Master Plan concept—as currently practised in India—is not widely used elsewhere. Besides, it is not well suited to rapidly growing cities and multi-jurisdiction urban agglomerations. The Master Plan concept has also not been useful in addressing India's large and widely spread slums. By locking-in the supply of buildable land and space, the Master Plan, inter alia, inhibits the development of housing markets and contributes to the proliferation of slums. Therefore, there is an urgent need to develop new management and service delivery approaches across the board.

REVIEW OF SCHEMES OF THE TENTH PLAN

Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

11.13 Consistent with the policies of the present government, the Prime Minister of India launched JNNURM on 3 December 2005 to give focused attention to integrated development of urban infrastructure and services in select 63 cities with emphasis on provision of basic services to the urban poor, including housing, water supply, sanitation, road network, urban transport, development of inner (old) city areas, etc. A provision of Rs 50000 crore has been made as reform-linked Central assistance over the Mission period of seven years beginning from 2005–06. The provision of Central assistance is linked to the implementation of certain mandatory as well as optional reforms at the State and ULB/parastatal levels during the Mission period. Against the allocation of Rs 4900 crore for 2006–07, an amount of Rs 3906 crore was released. In 2007–08, an amount of Rs 5500 crore has been allocated. Subsequently, additional Rs 500 crore was allocated in 'Plan B'.

11.14 In its initial period, the Mission has focused on finding good urban infrastructure investments that can ultimately be undertaken on a self-sustaining basis. Now that this search process has been put in place, a more systematic perspective needs to be adopted. It has to be realized that the ability to tap India's increasingly sophisticated financial markets will remain severely circumscribed till the local bodies become credible and accountable.

Urban Reform Incentive Fund (URIF)

11.15 The Tenth Plan underlined the need for broad-based reforms to overcome the impediments of urban growth and stipulated that conformity to the reform agenda through the URIF will be made obligatory for the Central assistance. URIF called upon the States to repeal the Urban Land (Ceilings and Regulation) Act 1976, reform Rent Control Acts, strengthen property tax system, reduce stamp duty, introduce double entry accounting system, and revise user charges to cover operations and maintenance costs. An allocation of Rs 300 crore was made under URIF for allocation to different States for implementing the reform agenda. The scheme was later subsumed in JNNURM.

Mega City

11.16 A CSS for infrastructure development in the mega cities was introduced in 1993–94 to cover a wide range of projects on water supply and sewerage, roads and bridges, city transport, solid waste management, etc. The Central share released during Tenth Plan amounts to Rs 908.69 crore (anticipated expenditure) against an allocation of Rs 1050 crore. The scheme has since been subsumed in JNNURM.

Integrated Development of Small and Medium Towns (IDSMT)

11.17 IDSMT was launched in 1979–80 to improve the economic and physical infrastructure and to provide essential facilities and services in small and medium towns. Since inception, upto 31 March 2007, a total of 1854 towns, out of 5092 small and medium towns (2001 Census), were covered under the scheme. Out of an approved outlay of Rs 1304.65 crore for the

Tenth Plan, the anticipated expenditure is Rs 566.43 crore (43.4%). As the performance of the scheme was not satisfactory, an evaluation was carried out in 2002 which showed that the scheme suffered from (i) lack of capacity for implementation, (ii) non-availability of matching States share, and (iii) non-availability of unencumbered land for the projects. The scheme has since been subsumed in JNNURM as Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT).

Accelerated Urban Water Supply Programme (AUWSP)

11.18 AUWSP was launched in March 1994 to provide safe and adequate water supply to towns having population less than 20000 (as per 1991 Census), to improve environment and quality of life, and to bring about better socio-economic conditions to sustain the economy. Since its inception, 1244 towns have been covered and 639 projects have been completed at an estimated cost of Rs 1822.38 crore, including Central funds of Rs 828.06 crore. Against the approved outlay of Rs 900 crore for the Tenth Plan, an expenditure of Rs 406.50 crore was incurred which is about 45.2%. Concurrent evaluation of the scheme was made in November 2003 for 62 towns in 24 States. Major recommendations of the study included handing over of the scheme to ULBs, timely release of State funds, periodic review of tariff, and training to field engineers for effective implementation. The scheme has since been subsumed under JNNURM. However, for completion of ongoing projects, Rs 32.50 crore has been provided for 2007–08.

Pilot Project on Solid Waste Management near Airport in Few Selected Cities

11.19 A Central sector scheme on solid waste management in 10 selected air field towns was approved in 2003 as 100% grant from the GoI towards capital cost and was to be completed in three years. Subsequent to the completion of the project, the scheme was to be handed over to the concerned ULBs for day-to-day O&M. While eight projects, viz., Sirsa, Jodhpur, Pune, Gwalior, Tezpur, Adampur, Dindigul, and Ambala are being executed by National Building Construction Corporation (NBCC), projects for Hindon and Bareilly are being executed by Uttar Pradesh Jal Nigam. The approved cost of the project is Rs 99.34 crore. The projects are under various stages of execution.

NEW INITIATIVES FOR THE ELEVENTH PLAN

Pooled Finance Development Fund (PFDF)

11.20 The government had approved on 29 September 2006 a proposal for setting up of a PFDF to provide credit enhancement to the ULBs to access market borrowings based on their credit worthiness through State-level Pooled Finance mechanism. The broad objectives of PFDF are:

- Facilitate implementation of bankable urban infrastructure projects through appropriate capacity-building measures and financial structuring of projects.
- Facilitate the ULBs to access capital and financial markets for investment in critical urban infrastructure by providing credit enhancement grants to State-pooled Finance Entities for accessing capital markets through Pooled Financing Bonds on behalf of one or more identified ULBs for investment in the urban infrastructure projects.
- Reduce the cost of borrowing to local bodies with appropriate credit enhancement measures and through restructuring of existing costly debts.
- Facilitate development of Municipal Bond Market.

11.21 All State/UT governments have been requested to take necessary preparatory action for operationalization of the scheme to avail benefit from this financial year. In this connection, to sensitize the State Governments and all stakeholders for implementation of the scheme in a time-bound manner, a National Workshop was organized in Chennai on 20 November 2006 and the scheme was formally launched. During 2006–07, Rs 50.00 crore has been provided for the scheme. An amount of Rs 100 crore has been provided to the Ministry of Urban Development for 2007–08 for PFDF. For the Eleventh Plan period, a provision of Rs 2500 crore has been made.

National Urban Infrastructure Fund (NUIF)

11.22 The NUIF is proposed to be set up as a trust to provide source of funding for bankable projects/ schemes pertaining to the ULBs. The commercial

banks are hesitant to lend to ULBs due to apparent lack of capacity of the ULBs to meet their debt service obligations on the one hand and lack of expertise amongst financial institutions to lend for viable urban infrastructure projects on the other. NUIF will serve as an SPV that will create necessary comfort level amongst financial institutions with respect to repayments by avoiding direct exposure of commercial banks to the ULBs. The process of consultation for setting up of NUIF is presently in the advanced stage.

Development of Satellite Cities/Counter Magnet Cities

11.23 Metros and mega cities, which have become the centre of trade and commerce, have to cope with their own problems along with unabated in-migration from small and medium towns and vast rural hinterland. These have to be planned beyond the municipal limits and due importance may be given to integrated transport and communication. The other settlements located in the vicinity of the mother city are to be developed as satellite/counter magnets to reduce and to redistribute the population and population influx. To cope with the above problem, the government has proposed a new scheme for development of satellite towns/counter magnet cities. This will help in the development of metropolitan regions. Token provision for the scheme has been made in the Budget of the Ministry of Urban Development for 2007–08.

e-Governance in Municipalities

11.24 The key objectives of the Mission are to introduce e-governance in the municipalities to provide single window services to the citizens, to increase efficiency and productivity of the ULBs, to provide timely and reliable management information, etc.

11.25 The scheme envisages to cover all ULBs in Class I cities (423 in total having population of one lakh or more) during 2007–08 to 2011–12. A total of 35 cities with million plus population are proposed to be covered as part of JNNURM. However, a new CSS Scheme for other cities and towns other than 35 cities would wait for the present till the implementation is watched in 35 cities as a part of JNNURM. Eight services relating to birth and death certificates, property tax, building plan approval, health programme, solid waste management, accounting system, etc., will be covered under the programme.

JNNURM—An Instrument of Change

11.26 Cities and towns have a vital role in India's socio-economic transformation. The cities in India are serving as a nodal point for innovation and are playing a vital role in the Global Market. Most cities and towns are severely stressed in terms of infrastructure and service availability. In 2001, 50.3% of the urban households had no piped water within their premises and 44% of them were devoid of sanitation facilities. About 25.7% of country's urban population continues to be below the poverty line in 2004–05. According to the 2001 Census, 14.12% of the urban population lives in slums with a significant proportion of it without access to basic services.

Overview of the Mission

11.27 JNNURM rests on the postulate that cities make a meaningful contribution to India's economic growth and poverty reduction. This programme seeks to fulfil the Millennium Development Goals, and is envisaged to operate in a Mission mode by facilitating investments in the urban sector. It seeks to incentivize policy and institutional reforms, leading to sustainable socio-economic growth, service delivery, and improved governance in the Mission cities. It also aims at developing appropriate enabling frameworks to enhance the creditworthiness of the municipal bodies and integrate the poor with the service delivery systems.

Strategy of the Mission

11.28 The Mission seeks to achieve the objective of integrated development of cities, for which the cities are required to formulate a City Development Plan (CDP), bringing out long-term vision for the cities and support their efforts through funding of project proposals. A CDP is anchored on the goal of JNNURM in creating economically productive, efficient, equitable, and responsive cities. The essential requirement of the Mission is implementation of urban reforms, within the Mission period. On the basis of the satisfactory completion of the above tasks, funding support is provided in the form of ACA, ranging

from 35% to 90% of the project cost, based on the city category. The Mission also aims to leverage and incorporate private sector efficiencies in development, management, implementation, and financing of projects, through PPP arrangements, wherever appropriate.

Expected Outcomes of JNNURM

- Financially sustainable cities for improved governance and service delivery.
- Universal access to basic services in urban areas.
- Transparency and accountability in governance.
- Adoption of modern transparent budgeting, accounting, and financial management systems.

11.29 There is an increased application of e-governance in service delivery and internal operations.

Operational Issues linked to JNNURM Process

11.30 Sustaining momentum of the Mission by continuous engagement with all cities and at the same time ensuring wider ownership has been a major challenge while operationalizing the Mission.

11.31 The capacity of city-level agencies to absorb the investment support and delivery on reforms is a critical bottleneck. The Mission needs to calibrate and pace its capacity-building efforts in a manner so as to ensure that all Mission cities are able to reap the benefits of the programme and meet its stated goals and objectives.

11.32 Projects hitherto being implemented by city-level agencies have been very small in size compared to those being taken up under JNNURM. The overall institutional capacity and more specifically the project implementation capacity is clearly inadequate to deal with such large projects. This calls for immediate lateral expansion of human resources with appropriate skills, backed up by good project management systems. There is also a shortfall in the contracting capacity in the private sector. Large/organized sector players in infrastructure industry have not yet seriously looked at municipal infrastructure because of uncertainty in enabling environment. The project sizes have been small, with overdependence on the government funding. Poor credibility of implementing agencies is also one of the concerned areas.

11.33 Successful implementation of reforms within the committed timeframe is critical to the success of the Mission. The challenge is to facilitate the cities to internalize the reforms. Simultaneously, the process of reporting and monitoring progress of reforms needs to be sustained throughout the Mission period. The experience of implementation of JNNURM shows that the following issues need to be addressed:

- Need for adequate attention to the priority sectors, viz., water supply, sewerage, sanitation, storm water drainage, etc., in the CDPs prepared under JNNURM. Undue focus is presently given to on-road projects and flyovers.
- Need for focus on recovery of O&M costs and possibility of involving private sector through the PPP mode in the CDPs.
- Need for synergy between the Ministries of Urban Development and HUPA in the implementation of JNNURM. Both the ministries need to work in close co-ordination and synergy.
- Need to ensure improvement in urban governance so that the ULBs/parastatal agencies become financially sound. The Central and State agencies must ensure timely implementation of the agenda of reforms.
- Need to strengthen monitoring mechanism and ensuring that milestones for reforms are achieved during the project period and not extended to the Mission period.

11.34 As the programme is in the third year of implementation, the programme needs to be evaluated by an independent agency so as to take timely appropriate remedial measures.

Measures to Strengthen JNNURM Processes

11.35 Several workshops and seminars have been organized at regional and State level, apart from day-to-day interactions to speed up the participation of low performing States in the Mission.

11.36 The government is organizing a series of workshops/seminars with the objective of dissemination of the Mission objectives among the elected representatives and municipal functionaries. These fora have been instrumental in enhancing citizen involvement and improving technical capacities for project preparation and implementation by the ULBs/other city-level agencies, in various cities and States. To enhance community participation in the planning process and in various aspects of implementing JNNURM, the sub-Mission on urban infrastructure and governance has created a Community Participation Fund. This is to enable the citizens to develop a sense of ownership on community assets and take on responsibilities for community-based projects. To improve community participation in the implementation of the Mission, a Technical Advisory Group has been set up at the national level, which is to be further supported by similar structures at the State and city levels.

11.37 The Mission is in the process of preparing a framework for capacity-building and up-scaling of all related activities in order to bridge the capacity gap in implementation of projects and reforms. It is proposing to conduct a rapid training programme for municipal functionaries in key areas such as governance and reforms, DPR preparation, and project preparation. For fulfilling the long-term requirement of human resource challenges in the ULBs, the government is in the process of establishing a network of regional institutions across the country, which will address training and capacity-building needs for the States, cities, and other related institutions.

11.38 Strengthening communication channels to facilitate institutionalization and internalization of reforms is a key to the success of the Mission. The government has also appointed independent agencies for monitoring the implementation of the reforms. A quarterly progress reporting system for the cities and States has been instituted under the Mission. Apart from this, an MIS has been developed for monitoring projects and reforms.

11.39 To address the issues of credibility and financial sustainability of the ULBs, Municipal Finance Improvement Programme has been launched. A Task Force constituted under the programme has recommended measures to synergize all financial resources at city level and improve environment to access finance. As a part of the recommendation, all the ULBs under JNNURM are being rated on the basis of their financial capacities and credit worthiness.

11.40 In order to strengthen the UIDSSMT, State Governments have been advised to get the CDP prepared for the cities covered under UIDSSMT as a Vision Document. State-level Nodal Agencies (SLNAs) should develop in-house capacity to advise and guide the ULBs in preparing viable DPRs. The State Governments should ensure adequate budgetary provisions in their Budget to meet State/ULBs' share as stipulated in the guidelines. For monitoring and implementation of the project and reforms at the local level, a Project Implementation and Monitoring Cell may be established within the respective ULBs. SLNAs may prepare a panel of consultants by following a transparent procedure for preparation of DPRs.

Preparation and Dissemination of Best Practice Documents

11.41 The best practices under the Mission are being disseminated through the websites, workshops, and seminars. Apart from this, the government has launched an initiative called Peer Experience and Reflective Learning (PEARL) to facilitate networking among JNNURM cities to encourage cross learning and knowledge sharing. The cities have organized themselves in various groups/networks having similar socio-economic profile. The city networks have selected a Knowledge Manager for the respective groups to anchor partnerships within and outside the networks for exchange of best practices in urban governance and reforms.

Issues for Future Actions

- Rapid economic growth will inevitably lead to an increase in urbanization as the cities provide large economies of agglomeration for individual activity. The biggest constraint on rapid growth in the years ahead will be the inadequacy of urban infrastructure and its poor quality compared with global scenario. We have to strive for equity and inclusiveness in urban infrastructure so as to

ensure that the city-wide infrastructure systems get linked with service networks in slums and low income settlements.
- The main challenge would be to bring about planned urbanization for the country and creation of new growth centres around existing small and medium towns.
- Urban reforms may be made essential for eligibility for assistance under all Urban Infrastructure Developments Schemes.
- Safe drinking water supply and sanitation facilities are basic needs and are crucial for achieving the goal of 'Health for All'.
- JNNURM has the potential to transform infrastructure and improve the civic amenities in selected cities greatly. It, therefore, needs to be implemented with vigour.

DETAILS OF SCHEMES/PROGRAMMES FOR THE ELEVENTH PLAN

National Capital Region Planning Board (NCRPB)

11.42 The key rationale for constituting an NCRPB in 1985 was to reduce the rate of in-migration into the National Capital as well as to develop the region at a level comparable to the best in the world. Keeping in view with its objectives, the Board has prepared regional plans, 2001 and 2021, along with complementary functional plans related to the key elements of infrastructure.

11.43 In order to implement major thrust areas of the regional plans, the Board is also arranging for and overseeing the financing of selected development projects in NCR through Central grants and contribution from the Government of National Capital Territory of Delhi, by recycling loan repayments and internal accruals. To supplement its resources, the Board has also raised resources from the capital market in the form of bonds in the past.

11.44 The Government of Delhi in its Plan document has desired that NCRPB should contribute significantly in the development process of Delhi by initiating a number of inter-state projects in the NCR in the areas of power generation, water supply, sanitation, etc. The projects identified for being financed during the Eleventh Plan involve a total cost of Rs 15000 crore. Some of these projects will be taken up in collaboration with other stakeholders. Out of the total projected cost of projects, it is expected that the loan component will be above Rs 11000 crore.

National Urban Information System (NUIS)

11.45 The major objective of the NUIS is to establish a comprehensive information system in the ULBs for planning, management, and decentralized governance in the context of implementation of the 74th CAA. The following activities have been undertaken:

- Mapping at 1:10000 scale from satellite images, 1:2000 scale from aerial photos, and 1:1000 scale utility mapping for 24 towns being taken up by Survey of India.
- Establishment of NUIS cells in State nodal agencies.
- Setting up of National Urban Databank and Indicator in each State nodal agency.
- Capacity building among town planners for use of modern automated methods.

11.46 So far, implementation of NUIS scheme has been slow and, therefore, all stakeholders of the scheme need to speed up the implementation of the scheme. States and UTs need to release their share for purchase of hardware and software for the NUIS cells in State nodal agencies and ULBs. The capacity building component under NUIS scheme has trained 160 personnel. A total of 22 programmes are proposed to be conducted to train 440 officers during 2007–08. An outlay of Rs 24 crore and Rs 9 crore has been allocated in the Annual Plan 2006–07 and 2007–08 respectively.

Commonwealth Games

11.47 Delhi Development Authority has been assigned the task of development of Games Village, Competition Venues for sports events, viz., Table Tennis, Badminton, Squash, Billiards, Snookers, etc. for the forthcoming Commonwealth Games, 2010. To develop requisite facility at sports complexes in Delhi, a provision of Rs 80 crore has been made to the Ministry of Urban Development for 2007–08.

URBAN BASIC SERVICES

Status of Urban Basic Services

11.48 The quality of water and its distribution are areas that require special attention in the Eleventh Plan. Table 11.1 gives the status of city/town-wise access to drinking water. Sewerage facilities are almost absent in a large number of unauthorized and resettlement colonies and slum and squatter settlements. At certain places, cost incurred by the poor to fetch water is much higher than for valid connection holders. Waste water and sewage treatment and its reuse for non-potable purposes and industries are also limited and need attention. Moreover, cattle menace, open defecation, dumping of solid wastes along roadsides, open dumping of medical and hazardous wastes, etc., are commonly sighted (see Box 11.3 below). Concerted efforts are required to fill these gaps and make cities clean, healthy, and livable.

TABLE 11.1
City/Town-wise Average Access to Drinking Water

City/Towns (Population)	Average Access to Drinking Water (%)
Class I cities (100000 and above)	73
Class II cities (50000–99999)	63
Class III cities (20000–49999)	61
Other cities/towns (<20000)	58

Source: Ministry of Urban Development, GoI.

Urban Water Supply

11.49 To achieve 100% coverage of population with urban water supply by the end of the Eleventh Five Year Plan, the following steps need to be taken:

- To bring out State Ground Water Legislation based on the Model Ground Water Legislation brought out by the CGWB.
- Keeping in view the NWP, the States should formulate State Water Policy to meet drinking water needs.
- Under JNNURM, special attention should be given to cities and towns which are affected by water contamination due to presence of chemicals such as iron

Box 11.3
Status of Urban Services

Water Supply

- As per 54th round of NSS, 70% of urban households reported being served by tap and 21% by tubewell or hand pump.
- 66% of urban households reported having their principal source of water within their premises while 32% had it within 0.2 km.
- 41% had sole access to their principal source of drinking water and 59% were sharing a public source.

Sewerage

- 54th round of NSS reported 26% of households having no latrines, 35% using septic tank, and 22% using sewerage system.
- In urban areas sewerage connections varied from 48% to 70%.
- According to Central Pollution Control Board, the waste water generated in 300 Class I cities is about 15800 million litres per day while the treatment facilities exist for hardly 3750 million litres per day.

Solid Waste

- It is estimated that about 115000 metric tonnes of municipal solid waste is generated daily in the country.
- Per capita waste generation in cities varies between 0.2–0.6 kg per day and it is increasing by 1.3% per annum. With the growth of urban population, the increase in solid waste is estimated at 5%.
- The solid waste generated by the million plus cities varies from 1200 metric tpd in cities like Ahmedabad and Pune to a maximum of 5000–5500 metric tpd in cities like Delhi and Mumbai.
- The per capita solid waste generation varies from 300 gm in Bangalore to 500–550 gm in Mumbai and Delhi.
- Out of total waste generated in the million plus cities, hardly 30% is treated before disposal.

and fluoride. Water Quality Testing Laboratories may be set up in all cities and towns and existing labs be strengthened to check water-borne diseases.

- Suitable strategy should be evolved by the States/ULBs for meeting O&M costs. Metering of water may be made mandatory for generating sufficient revenues. Telescopic water tariff/user charges should be formulated and levied to discourage excessive use of water.
- Need to check the leakages and unaccounted water, particularly in cities where it is as high as 50%. Such losses should be minimized or eliminated through intensive leak detection and rectification programme.
- The State Governments/ULBs should take up reform measures under JNNURM for water and energy audit, reuse and recycling, levy of realistic user charges, efficient water use and its equitable distribution, rain water harvesting, commercial accounting systems, consumer orientation, cost recovery, artificial recharge of groundwater, etc.
- To meet the requirement of funds, efforts should be made to step up the quantum of funds through institutional financing, foreign direct investment, assistance from bilateral and multi-lateral agencies, newly launched Pooled Finance Development Scheme, tax-free municipal bonds, PPPs, Member of Parliament Local Area Development Programme (MPLAD) funds, etc.

Management of Municipal Solid Waste

11.50 On an average, the collection efficiency of solid waste ranges between 70% and 90% in metro cities, whereas in several smaller cities it is below 50%. The ULBs spend Rs 500–1500 per tonne on solid waste collection, transportation, treatment, and disposal. During the Eleventh Five Year Plan, emphasis would be laid on scientific and safe disposal of waste. Waste recycle, reuse, resource recovery, adoption of advanced technological measures for effective and economical disposal will have to be followed vigorously.

11.51 Private parties have shown encouraging response and they need to be increasingly involved. With the application of modern technology, the waste can be converted into profitable products such as organic pellets, construction material, etc. To deal with the solid waste management the States should encourage the PPP mode projects.

11.52 With rapid industrialization, growth of services sector, and rise in incomes, the rate of waste generation has gone up manifold. The following steps need to be taken for its management:

- Cities and towns should be provided with appropriate solid waste management facilities with emphasis on use of low-energy consuming technologies for processing and treatment of municipal solid waste.
- Compulsory production of compost from solid waste and application of this organic manure in agriculture and horticulture to improve soil fertility.
- Implementation of the recommendations of Report of the Inter-Ministerial Task Force on the 'Integrated Plant Nutrient Management Using City Compost' in managing the city garbage in a sustainable manner.
- Segregation and storage of waste, door-to-door collection, and transportation along with appropriate plant design should be enforced as per Municipal Solid Waste Management and Handling Rules, 2000. NGOs should be encouraged to provide organizational support and identity to the ragpickers, who play an important role in recycling of the waste.
- Adequate land should be earmarked/allotted at the planning stage itself for setting up of sanitary land fills, compost plants, and other processing units including provision for future expansion.

Sewerage, Low-cost Sanitation, Storm Water Drainage

11.53 About 63% of the urban population has access to sewerage and sanitation facilities as on 31 March 2004. This includes both underground as well as sanitation through septic tanks. The access to underground sewerage facilities is very low, that is below 30% in many States, viz., Rajasthan, Orissa, Chhattisgarh, Madhya Pradesh, Andhra Pradesh, and West Bengal. According to the MTA of the Tenth Five Year Plan, nearly 46% of urban households have water toilets, but only 36% of the urban households are connected to the public sewerage system.

11.54 Underground network of sewerage has developed to a considerable extent in urbanized States where cities have developed in a planned manner, viz., Delhi, Chandigarh, Greater Noida, etc. However, within the cities, large number of unauthorized colonies, resettlement colonies, slums, and squatter settlements are often deprived of underground sewerage facilities.

11.55 To achieve 100% population coverage for sewerage, sewage treatment, and low-cost sanitation facilities in urban areas during the Eleventh Plan, the following steps need to be taken:

- Install more plants to treat, recycle, and reuse sewage.
- Industrial and commercial establishments must reuse and recycle treated sewage to reduce fresh water demand.
- The ULBs should amend their by-laws to make it mandatory for all residents to connect their toilets to the existing sewerage system.
- Fringe areas of cities and colonies of economically weaker sections and slum dwellers should be covered with low-cost sanitation facilities, either on individual household basis or community basis with 'pay and use system' with adequate maintenance arrangements. Necessary penal clause should be enforced effectively to stop open defecation practice as well as indiscriminate throwing of garbage/litter in public places.
- Targeted subsidy may be given to urban poor for taking water supply/sewerage house service connections, metering, and construction of toilets.
- Comprehensive storm water drainage system should be developed in all cities and towns in order to avoid water logging during monsoon.

Investment Needs for Urban Water Supply and Sanitation, Sewerage, Drainage, and Solid Waste Management Sectors during the Eleventh Five Year Plan

11.56 The total fund requirement for the implementation of the Eleventh Five Year Plan schemes in respect of urban water supply, sewerage and sanitation, drainage, and solid waste management is estimated as given in Table 11.2.

Availability of Funds

11.57 To improve the infrastructure relating to water supply and sanitation in the urban centres, the government is assisting the ULBs and the State Governments through various schemes and special Central assistance (SCA). Under JNNURM, water supply and sanitation have been accorded highest priority among the eligible components and almost 40% of the outlay would be spent on water supply and sanitation sector leaving a gap of Rs 89237 crore.

TABLE 11.2
Funds Requirement—Urban Basic Services

(Rs in Crore)

S. No.	Sub-Sector	Estimated Amount
1.	Urban water supply	53666
2.	Urban sewerage and sewage treatment	53168
3.	Urban drainage	20173
4.	Solid waste management	2212
5.	MIS	8
6.	R&D and PHE training	10
	Total	129237

Source: Ministry of Urban Development, GoI.

For bridging the gap, the following possible sources are identified. Table 11.3 gives the proposed flow of funds.

TABLE 11.3
Proposed Flow of Funds

Source of Funding	Amount (in Rs Crore)
Central sector outlay	70000*
State sector outlay	35000
Institutional financing	10000
Assistance from external support agencies	10000
FDI and private sector	4237
Total	129237

Note: * The actual allocation provided for JNNURM is Rs 50000 crore during 2005–12 out of which the amount available for Urban Water Supply, Sewerage, Solid Waste Management is expected to be in the range of Rs 15000 crore. The shortfall will need to be met by other sources of finance if the objective of covering 100% population with Water Supply and Sanitation facilities is to be met during the Eleventh Plan.
Source: Ministry of Urban Development, GoI.

Central Sector Outlay

11.58 The Central sector outlay may be stepped up from the present Rs 50000 crore to around Rs 70000 crore under the ongoing Central programme of JNNURM so that great thrust could be given to water supply and sanitation sector in the urban areas.

State Sector Outlay

- Likewise, the State sector outlay which stood at Rs 18749 crore during the Tenth Plan may be stepped up to around Rs 35000 crore.

Institutional Financing

- Funds may be mobilized through national financial institutions such as LIC, HUDCO, IL&FS, etc., to the tune of Rs 10000 crore.

Additional Assistance from External Support Agencies (ESA)

- Funds may be mobilized from external funding agencies viz. World Bank, JBIC, ADB, and other agencies to the tune of about Rs 10000 crore.

FDI and Private Sector

- In addition, foreign direct investment and private sector funds up to Rs 4237 crore may be mobilized to support the sector's activities.

Provision of Basic Services to the Urban Poor at their Workplace

11.59 In all stages of planning, formulation, and execution of water and sanitation projects, poor and disadvantaged sections of society and SC/ST population should be included and their needs accorded top priority. The programmes of other Central Ministries such as SC/ST Plans and Tribal Welfare Plan may be suitably dovetailed with JNNURM. CDPs should give special attention to the problems and needs of these vulnerable sections of society.

Urban Poverty Alleviation and Slum Development

11.60 The percentage of BPL population in the urban areas in India has declined from 32.3% in 1993–94 to 25.7% in 2004–05 (based on uniform recall period). The NSSO 61st Round shows that urban poverty has registered a decline in percentage terms; however, it has increased in absolute terms by 4.4 million persons. The fact is that the number of urban poor is rising continuously since 1973–74 as per the uniform recall period. A comparison of poverty estimates based on uniform recall period and mixed recall period is given in Tables 11.4 and 11.5, respectively. The number of persons below poverty line in the urban and rural areas is given in Table 11.6.

11.61 The incidence of urban poverty as well as number of the urban poor has increased in Orissa and Rajasthan over the 1993–94 to 2004–05 period. In contrast, both the incidence of urban poverty and the number of the urban poor have declined

TABLE 11.4
Comparison of Poverty Estimates Based on Uniform Recall Period

(Percentage of the Total Population)

	1993–94	2004–05
Rural	37.3	28.3
Urban	32.4	25.7
Total	36.0	27.5

Source: Planning Commission.

TABLE 11.5
Comparison of Poverty Estimates Based on Mixed Recall Period

(Percentage of the Total Population)

	1999–2000	2004–05
Rural	27.1	21.8
Urban	23.64	21.7
Total	26.1	21.8

Source: Planning Commission.

TABLE 11.6
Number of Persons below Poverty Line in Urban and Rural Areas

(Lakh)

Year	Urban	Rural	Total
	Mixed Recall Period		
1973–74	600.46	2612.90	3213.36
1977–78	646.48	2642.47	3288.95
1983	709.40	2519.57	3228.97
1987–88	751.69	2318.79	3070.49
1999–2000	670.07	1932.43	2602.50
2004–05	682.00	1702.99	2384.99
	Uniform Recall Period		
1973–74	600.46	2612.90	3213.36
1977–78	646.48	2642.47	3288.95
1983	709.40	2519.57	3228.97
1987–88	751.69	2318.79	3070.49
1999–2000	763.37	2440.31	3203.68
2004–05	807.96	2209.24	3017.20

Source: Planning Commission.

in the States of Gujarat, Kerala, Punjab, Tamil Nadu, and West Bengal during the same period. In other States, there has been a decline in the incidence of poverty but not in their total number (Boxes 11.4, 11.5, 11.6).

11.62 A large number of workers engaged in the urban economy as self-employed in the informal sector, regular low wage/salaried workers, and casual workers fall in the category of the urban poor. They play a role in wealth creation, development of infrastructure, and providing a quality of life to the urbanites. However, they have themselves been denied shelter, basic urban amenities, healthy urban environment, and a dignified life.

Box 11.4
Objectives for Urban Poverty Alleviation

The Eleventh Plan has the following objectives for the urban poor:

- To provide them affordable shelter and decent living and working conditions.
- To make adequate provision of land for the poor in the Master Plan itself.
- To help in developing self-employment enterprises and job creation for the wage employment earners.
- To protect the economic interest and safety of women and other vulnerable sections of our society.

Box 11.5
Slums

Slums are housing clusters having insufficient facilities of hygiene, toilet, drinking water, sanitation, etc.

Box 11.6
Integrated Slum Development

Some of the measures that are required to be pursued and strengthened further for integrated slum development are:

- Creating and updating database on slums.
- City-wise perspective and integrated slum development plans.
- Augmenting and facilitating access to services for slum dwellers.
- Granting tenure security to slum dwellers.
- Insitu upgradation and resettlement options for slum improvement.
- Using land as a resource for housing and shelter development for slum dwellers.

11.63 In recent decades, the gap between the urban rich and poor has widened considerably. The Eleventh Plan aspires to empower the persons engaged in the informal sector living in urban areas by providing training to them to have better skills, higher productivity, and higher incomes on the one hand and a greater voice in decision-making by implementing the 74th CAA on the other hand. In this manner, an effort would be made during the Eleventh Plan to focus the spotlight on 'inclusive growth' in the urban areas.

Slums and Slum Rehabilitation

11.64 As per estimates, the slum population in 2001 was 61.82 million out of which the reported slum population in the 640 towns and cities having population of 50000 and above is 42.58 million. The total urban population of these 640 towns is 184.35 million. Data pertaining to slum population, as per the 2001 Census and the availability of housing and other basic amenities to them, are given in Tables 11.12 and 11.13.

Housing for Slum Dwellers

11.65 Registrar General of India has for the first time collected slum data in the 2001 Census for cities having urban population of 50000 and more. Box 11.7 provides the gist of slum population data in the country.

Box 11.7
Spread of Slums

- 640 towns spread over 26 States/UTs have reported existence of slums.
- 42.6 million people consisting of 8.2 million households reside in slums of these towns.
- It is a coincidence that both Census of India in 2001 and NSSO in 2002 found that every seventh person in urban India is a slum dweller.

Review of Schemes

11.66 A number of social housing schemes for poor—as indicated in the Table 11.7—have been undertaken by the GoI over the last two decades:

TABLE 11.7
Social Housing Schemes

S.No.	Name of the Scheme	Started in
1.	Indira Awas Yojana	1990
2.	EWS Housing Scheme for beedi workers and *hamal*s	1991
3.	National Slum Development Programme	1996
4.	A two million Housing Programme for EWS/LIG	1998
5.	PM Gramin Awas Yojana	2000
6.	Valmiki Ambedkar Awas Yojana (VAMBAY)	2001
7.	JNNURM (BSUP and IHSDP)	2005

Source: Ministry of Housing and Urban Poverty Alleviation (MoHUPA), GoI.

11.67 These and other policy frameworks and subsequent development of programmes and schemes have yielded fairly positive results in the area of housing and human settlements. There has been a quantum jump in the supply of serviced land, habitable shelter, and related infrastructure, as detailed in the Box 11.8.

11.68 Effective measures are needed to stop the mushrooming of new slums. Providing affordable urban services to slum dwellers and granting them tenure rights will be the focus of the Eleventh Plan. State governments have to ensure that the ULBs earmark a part of their budget for the urban poor. Urban poverty cells have already been created at district level. Their functioning has to be made effective. A National Slum Policy needs to be formulated so as to evolve a holistic approach towards slum improvement.

11.69 To promote integrated city development and to enable the people living in slums to gain access to basic services, a number of schemes and programmes have been launched from time to time, for example Environmental Improvement of Urban Slums, National Slum Development Programme (NSDP), Integrated Low Cost Sanitation Scheme (ILCS), etc.

PROGRAMMES AND SCHEMES OF URBAN POVERTY ALLEVIATION IN THE ELEVENTH PLAN

Swarna Jayanti Shahri Rozgar Yojana (SJSRY)

11.70 This CSS, launched in 1997, was meant to provide gainful employment to the urban unemployed/under-unemployed (below the urban poverty line) through:

- encouraging setting up of self-employment ventures;
- provision of wage employment.

11.71 It relied on creation of suitable community structures and delivery of inputs through the ULBs. In the Tenth Plan, there was a target of assisting four lakh urban poor in setting up individual/group micro enterprises and imparting skill training to five lakh urban poor.

11.72 Under self-employment component of SJSRY, 891679 beneficiaries have been assisted by now and 934649 persons were provided various types of skill

Box 11.8
Housing Construction and Ownership

- Under the Valmiki Ambedkar Awas Yojana (VAMBAY) of the GoI, a subsidy of Rs 932.56 crore has been released for construction of 459728 dwelling units and 65580 toilet seats since the inception of the scheme up to 2005–06.
- Under the NSDP, a total amount of Rs 3089.64 crore has been released to the States/UTs covering 436.28 lakh urban poor since inception of the scheme up to 2005–06.
- The period 1991 to 2001 witnessed a net addition of 19.52 million dwelling units in the urban housing stock, amounting to average annual construction of 1.95 million houses.
- The share of ownership housing in urban areas has increased from 63% in 1991 to 67% in 2001 (Census 2001).
- It is important to note that households having one-room accommodation declined significantly in urban areas from 39.55% to 35.1% during the period 1991–2001. This is a result of upward shift of accommodation and accelerated supply of housing stock.

trainings. So far, 52701 Development of Women and Children in Urban Areas (DWCUA) groups have been formed and 198314 women beneficiaries have been assisted under this scheme for setting up of group enterprises. A total of 177508 Thrift and Credit Societies (T&CS) have also been formed under SJSRY. The number of beneficiaries covered under the Community Structure Component of SJSRY is 337.40 lakh and the number of man-days of work generated under the wage employment component of SJSRY is 583.06 lakh.

11.73 A comprehensive evaluation of SJSRY scheme on an all-India basis was carried out in 2005–06 by Human Settlement and Management Institute. The main findings of the evaluation are: (i) the pro-gramme is working well in some of the States; (ii) most of the beneficiaries of training are below 30 years; (iii) women groups market their products by themselves except in the eastern and North Eastern States; (iv) the formation of DWCUA groups has had a positive impact on women; (v) T&CS are very active in promoting small savings and resolving disputes; (vi) non-achievement of physical targets in some States is due to inadequate skill training, wrong choice of projects, lack of publicity, etc. (see Box 11.9).

11.74 SJSRY is being revised in terms of the following features:

Self-employment Component

- The self-employment component of the scheme will be made more market driven in terms of market surveys which will assist micro entrepreneurs to locate niche segments where there is potential demand for their products and services.
- Clusters of micro production units will be developed in keeping with the factors of localization pertaining to traditional skills and in terms of towns renowned for given products.
- Appropriate or intermediate technology inputs will be used to strengthen the technological base of selected clusters in terms of common facilities centres providing critical machinery/equipment required for common use as well as ensuring supply of quality raw materials at reasonable prices. These common facilities centres would be run by associations of micro entrepreneurs themselves related to the selected economic activity.
- High-quality Small Enterprise Advisory Services will be provided to the micro entrepreneurs.
- Resource institutions will be selected all over the country for providing upgraded technical skills combined with certification.
- Self-employment efforts will be buttressed by encouraging T&CS at the community level.
- Micro entrepreneurs will be encouraged to develop trade-based organizations.
- The mission approach of the 'Kudumbshree' model of Kerala and other best practices in different parts of the country will be adopted for suitable application under SJSRY.
- Design and development services from IITs and other institutions will be sought for development of mobile vending outlets.
- An integrated approach will be adopted with special attention to backward and forward linkages under the aegis of a designated Institute and a specific Task Force.

Box 11.9
New Focus in SJSRY

In its present form, the scheme has not succeeded in providing effective employment opportunities to the urban poor. It is now proposed to bring new focus into the scheme in keeping with the fact that urban areas have developed new skill requirements. Towards this end, 43 new trades have been identified in which it is proposed to build capacity by:

- Skill development—PPP mode.
- SHGs.
- Self-employment skills plus facilitation of credit for setting up self-employment.

11.75 Wage-employment Component

- High-quality training for proficiency in technical services will be organized with leading institutions preparing detailed training modules for specific trades.
- Training in a wide variety of trades such as construction, beauty and skincare, hair styling, hospitality, tourist guides, security, transport, and secretarial trades will be encouraged along with placement services.

- Special emphasis will be laid on construction of community assets in low-income neighbourhoods with strong involvement and participation of local communities.

11.76 Structural and Organizational Component

- Strengthening the delivery mechanism by improving the competency level and outreach of the Programme Management Units at the State level and Programme Implementation Agencies (PIAs) at the ULB level.
- There is need to earmark 25% of the budget for the urban poor in municipal budgets.
- There is need for convergence of services to the urban poor with special reference to health, education, and social security.
- The National Building Organization (NBO) needs to be strengthened for providing statistical and monitoring inputs for effective implementation of the revised SJSRY.
- Suitable networking with the UNDP-funded National Strategy for the Urban Poor Project as well as UN and other multilateral/bilateral projects is required for focused thrust on capacity building and innovative and experimental pilot projects.

11.77 Given the fact that 25.7% of the urban population as per uniform recall period lives below the poverty line, a concerted effort need be made during the Eleventh Plan for creation of at least 30 million additional jobs in the urban areas. The outlay for alleviation of urban poverty during the Eleventh Plan needs to be suitably enhanced. The revised SJSRY will be market-led combined with an integrated provision of backward and forward linkages.

11.78 The Ministry of HUPA also proposes to launch a scheme for the 'Skill Training for Employment Promotion amongst the Urban Poor' during the Eleventh Five Year Plan as a part of the National Skill Development Mission specially targeting the urban poor in the development of their skills to enable them access market-based employment opportunities or undertake self-employment to improve their living conditions and overcome poverty. This will make available skilled and semi-skilled manpower needed by the industry and service sectors in response to changing global, national, and local imperatives and opportunities. This will lead to reduction in unemployment rate among the urban poor, especially women, and will enhance their productivity and real wages making the economic growth inclusive.

11.79 Urban Statistics for HR Assessment Scheme

Aims at the development and maintenance of a national database, MIS, and knowledge repository on urban poverty, slums, housing, construction, and other urbanization-related statistics. Its key objective is to support the government with an information base and knowledge inputs for planning, policy-making, project design, formulation, implementation, monitoring, assessment, and evaluation, particularly in the context of programmes relating to urban poverty, slums, and housing. The scheme was earlier known as MIS on Housing Data, Research and Survey.

11.80 Future Approach/Strategies

- There is need to address the issue of urban poverty alleviation in a systematic, scientific, and time-bound manner by adopting the Mission approach as is being done in Kerala through the 'Kudumbshree' model. The approach has to be target-oriented with specific focus on primary issues such as skill upgradation, entrepreneurship development, wage employment, etc.
- Skill development has to be correlated to the demands of industry and service sector in and around the city. For this purpose, periodic labour market surveys have to be carried out in collaboration with the private sector by professionally competent organizations/NGOs so as to devise appropriate training modules for building skills in the relevant disciplines, where the demand exists or is projected. This exercise is likely to lead to a pool of human capital which can be appropriately utilized in the contemporary labour market.
- The 74th CAA envisages that the functions of urban poverty alleviation and improvement of slums and their upgradation, including the provisioning of urban basic amenities to the poor, are among the key functions of the municipalities. Therefore, the ULBs have to compulsorily make appropriate

provisions in their budget. ULBs have to follow a convergence approach in formulating service delivery to the urban poor by optimum utilization of both financial and manpower resources available in various Central and State sector schemes and programmes.

- Any urban poverty alleviation programme without adequate manpower equipped with the capability, capacity, and sensitivity to effectively implement such social sector programmes will not succeed. Therefore, it is absolutely necessary for Urban Poverty Alleviation Cells at the ULB/district/State level to have trained and dedicated manpower.
- City-specific urban poverty reduction plans need to be prepared by the ULBs and fund release has to be demand driven.
- Although the urban poor is the most vulnerable section of society, the delivery of health services is almost negligible to them. Therefore, there is need to work out a comprehensive health and accident insurance plan/scheme for the entire urban poor as a special package to resolve their health-related issues. There is also need to develop a social security network for this most vulnerable section, specially the single women, widows, aged, disabled, weaker, and minority sections.

Urban Housing

11.81 Role of Housing: Housing, besides being a very basic requirement for the urban settlers, also holds the key to accelerate the pace of development. Status of housing stock and basic amenities are provided in Table 11.13. Investments in housing, like any other industry, have a multiplier effect on income and employment. It is estimated that the overall employment generation in the economy due to additional investment in the housing/construction sector is eight times of the direct employment (IIM-Ahmedabad Study 2005). Construction sector employment is growing at the rate of 7% per annum. Housing provides opportunities for home-based economic activities. Housing also has a direct impact on the steel and cement, marble/ceramic tiles, electrical wiring, PVC pipes, and various types of fittings industry, which make a significant contribution to the national economy. Contribution of the housing industry to the GDP is summarized in the Box 11.10.

Box 11.10
Housing Stock

- Less than one-third of India's people live in cities and towns.
- These areas generate over two-thirds of the country's GDP and account for 90% of government revenues.
- As per CSO estimates, housing sector's contribution to GDP in the year 2003–04 was 4.5% (3.13% for urban areas) at current price.
- Housing stock in 2001 was 50.95 million (for 55.8 million urban households).

11.82 The National Urban Housing and Habitat Policy provides the basic framework for achieving the objective of 'shelter for all'. The policy was evolved in 1998 with the long-term goal of eradicating houselessness, improving the housing conditions of the inadequately housed, and providing a minimum level of basic services and amenities to all. It was formulated to address the issues of sustainable development, infrastructure development, and for strong PPPs for shelter delivery with the objective of creating surpluses in housing stock and facilitating construction of two million dwelling units each year in pursuance of the National Agenda for Governance. However, the housing sector has witnessed several changes since then. The 1998 National Housing Policy has been replaced by a National Habitat and Housing Policy, 2007 with land and the development of civic amenities to make land habitable as its two critical elements.

11.83 In order to improve the quality of life in urban areas, it is of critical significance that the housing stock is improved through urban renewal, in situ slum improvement, and development of new housing stock in existing cities as well as new townships.

Magnitude of Housing Need

11.84 Considerable efforts were made during the Tenth Plan to enlarge the resource base and initiate innovative institutional mechanisms to augment housing delivery in urban areas. Focused efforts were also initiated to cover the poor and vulnerable groups of society to enable them to access basic shelter related services. Fiscal concessions coupled with legislative measures were also initiated to encourage increased

investments in housing by individuals and corporates. However, despite many policy measures and initiatives, the coverage of urban poor with these intended benefits has not been achieved to the desired extent. Pressure on urban land has also been increasing due to market forces supported by upward trend in economic growth (see Box 11.11 below).

Box 11.11
Housing Shortage and Requirement

- According to the report of the Technical Group on estimation of housing shortage constituted in the context of formulation of the Eleventh Five-Year Plan, housing shortage is estimated to be around 24.71 million. About 99% of such households are from EWS and low income groups (LIG).
- During the Eleventh Plan period, total housing requirement, including the backlog, is estimated at 26.53 million.

Land Availability, Land Tenure, and Land Reforms

11.85 Access to land and legal security of tenure are strategic prerequisites for the provision of adequate shelter for all and for the development of sustainable human settlements affecting both urban and rural areas. The present policy of the Central Government lays stress on an enabling approach. It is for the State Governments to bring in the required institutional reforms and legislative measures to augment housing both by State agencies and the private sector.

11.86 While recognizing the existence of different national laws and/or systems of land tenure, governments at the appropriate levels, including local authorities, have to strive to remove all possible obstacles that may hamper equitable access to land and ensure that equal rights of women and men related to land and property are protected under the law. The failure to adopt, at all levels, appropriate rural and urban land policies and land management practices remains a primary cause of inequity and poverty. Urban planning tools including master planning, zoning, and regulations are not enough to make land available in pace with the rapid urbanization, resulting in insufficient land supply and increase in land prices. It is important to have flexible land policy wherein conversion from one use to another is cost effective and efficient. Computerization of land records and data and e-governance should also constitute important elements of the urban land policy.

National Land Policy

11.87 We have to evolve a National Land Policy which will allow both public and private developers to legally purchase land for conversion into urban habitats and townships through transparent rules and regulations. Inadequate availability of serviced land in the urban areas is a major constraining factor in taking up housing projects for the poor.

11.88 In the process of spatially delimiting the specific areas of urban extensions of existing towns and the areas for new townships, care needs to be taken that as far as possible, prime agricultural land is not utilized but more emphasis is laid on using degraded land for urbanization. Even today, the country is importing certain basic food items from time to time. Further, each State/UT which acquires land must put into place *a suitable resettlement and rehabilitation policy* for the displaced rural families while developing urban extensions or new townships.

11.89 Care also needs to be taken that rivers and their flood plains, other water bodies, and natural drainage systems are not disturbed during the process of urbanization. Moreover, it is also essential to enhance the green lungs of cities as well as develop green belts around urban settlements with a view to stemming indiscriminate urban sprawl. Cities and towns should invariably be surrounded by a rural hinterland so that the ecology of the sub-region is preserved. Access to micro finance has a direct correlation with the land title. Therefore, the State Governments need to facilitate security of land tenure for the urban poor. The title has to be mortgagable to access credit.

Investment Required

11.90 For estimating the investment requirements for the Eleventh Plan, the Working Group on Urban Housing made different assumptions on unit cost of construction of houses in million plus cities and other urban areas (see Box 11.12 below).

11.91 During the Eleventh Five Year Plan, integrated efforts have to be made by the Central and State/UT governments to create an integrated and holistic approach on human settlements which adequately address issues of land, finance, legal, and regulatory framework, technology support, and PPP. However, it has to be understood that there can be no one solution and various options and initiatives would be needed based on national and local priorities.

Housing Market

11.92 The government has to create an enabling framework for a well-functioning housing market. Flexible instruments for the regulation of housing markets, including the rental market, taking into account the special needs of vulnerable groups need to be developed.

Housing Finance

11.93 With the introduction of reforms in the banking sector, considerable improvement has been made in enlarging access to finance for housing by individual families and also through co-operatives as well as private developers. In this context, it is pertinent to note that the RBI requires commercial banks to lend 3% of the incremental deposits of the commercial banks to be deployed to priority sector lending including financing housing by individuals and others including co-operatives and private sector. Besides, RBI also reckons investments made by banks in the bonds issued by HUDCO under priority sector lending. Box 11.3 provides some details of financing of housing loans.

Box 11.12
Investment Requirement

The total investment requirement for meeting the housing requirement would be of the order of Rs 361318.10 crore consisting of Rs 147195 crore required for mitigating housing shortage at the beginning of the Eleventh Plan and Rs 214123.10 crore for new additions to be made during the Eleventh Plan period (this includes pucca, upgradation of semi-pucca, and kutcha housing units).

11.94 HUDCO's housing portfolio covers a wide range of target groups spread all over the country both in urban and rural areas. During the Eleventh Plan period, HUDCO proposes to extend a large quantum of assistance for supporting the housing and urban development requirements both in urban and rural areas. The proposals envisage a total sanction of Rs 74596 crore during the Eleventh Plan period for both its housing and urban development programmes. Of this, an amount of Rs 14919 crore has been tentatively identified for its housing operations.

Flow of Funds for Housing

11.95 In view of the current economic and monetary scenario, it is expected that the housing finance disbursals by banks, HFCs, and co-operative sector institutions would grow at a rate of about 15% per annum during the Eleventh Plan period. Taking this into account, it is estimated that the flow of credit disbursal from these institutions would be about Rs 7.75 lakh crore (gross flow of funds) during 2007–12. These projected fund flow figures include

Box 11.13
Financing of Housing Loans

- Most of the clients of Housing Finance Institutions/banks under retail home loans belong to MIG/HIG categories and housing loan finance still remains unaffordable in a large way to the EWS/LIG sections.
- Only 0.2% of housing loans extended by HFCs are of value less than Rs 50000 and about 7% of housing loans is of value between Rs 50000–100000.
- More than 73% of housing loans extended by HFCs is of value exceeding Rs 3 lakh and about 93% of value exceeding Rs 1 lakh.
- The fastest growing housing value bracket is between Rs 10 lakh to Rs 25 lakh.
- This highlights the need to evolve a system or a scheme for financing housing loans on a large scale for the lower income groups whose affordability for housing loans falls in the range below Rs 3 lakh, as over 90% of the housing shortage is on account of EWS/LIG.

multiple counting and resale of properties, in the sense that cross-funding/bulk borrowing is involved among the various institutions. It is, therefore, assumed that the net flow of funds to the housing sector from formal sector institutions would be 50% of the gross flow of funds for construction of new houses. This comes to approximately Rs 2.90 lakh crore, which is 80% of the total investment requirements for urban housing for the Eleventh Plan.

Resource Mobilization

11.96 Some corrective measures including legislative and regulatory, outreach related, and those related to expansion of housing finance would be required to promote larger flow of funds to accelerate supply of housing to a cross-section of households.

11.97 Liquidity of housing finance with particular reference to EWS, low-income group, and middle-income group households has to be improved so that financial institutions are in a position to supply the requisite funds. Development of Secondary Mortgage Market is important in this regard. Recognizing the role of securitization as a source of funding, initiatives for developing the secondary mortgage market have already been taken by the NHB. The government needs to also provide a conducive and supportive fiscal and regulatory framework for banks and other participants to actively engage in Residential Mortgage Backed Securitization transactions.

Role of Private Sector and FDI

11.98 The Eleventh Plan focuses on clearing the backlog in housing and infrastructure assets including up-gradation activities. Institutions such as National Real Estate Development Council (NARDCO) and the Confederation of Real Estate Developers Association of India are playing an important role in regulating the activities of private developers by accrediting them and also by rating such institutions based on their experience and capacities. The GoI has permitted 100% FDI for development of townships including construction of development projects, subject to minimum capitalization, minimum land/built up area, etc. However, to encourage larger inflow of FDI, there is need to minimize the procedural delays in sanctions and approval of projects.

Role of Co-operatives

11.99 The co-operative housing movement has received support over consecutive Five Year Plans and a strong institutional framework is getting evolved within the co-operative movement. The performance of housing co-operatives is highly influenced by the quantum of funds available to them. During the first three years of the Tenth Five Year Plan, that is, 2002–03, 2003–04, and 2004–05, the Apex Co-operative Housing Federations could raise an amount of Rs 1774.43 crore from various funding agencies such as LIC, NHB, HUDCO, Commercial and Co-operative Bank, and other sources.

11.100 Community-linked Finance Facility (CLIFF) which is a financial mechanism that facilitates access to capital by organizations of the urban poor is now in its third year of operation in India. As of December 2004, CLIFF capital funds had supported 10 community-led development projects; eight housing developments, providing safe, secure, and affordable shelter with secure tenure for 2816 households; and two sanitation projects designed to benefit over 200000 families living in slums in Mumbai and Pune, both in the State of Maharashtra.

Rental Housing

11.101 One of the major constraints in the development of housing is the rent control legislation in many States. Rental housing in the urban areas needs to be promoted through enabling legislative and administrative measures to serve a wide cross-section of population in need of housing during their stay in cities. Model Rent Control Act needs to be advocated extensively by the States with suitable variations to suit the local requirements. The State Governments need to encourage public housing institutions, corporate bodies, educational institutions, and private sector agencies, through fiscal incentives and soft loans, to take up rental housing for specific groups under their coverage and focus.

Housing Technology

11.102 The BMTPC was established in 1980 with the objective of promoting cost-effective, environment-friendly, energy-efficient, and disaster-resistant technologies and building materials for sustainable habitat development. Around 39 technologies relating to

innovative building materials have been developed and licensed to private entrepreneurs for commercial production. About 12 technologies are in various stages of development. A recently developed technology pertains to *bamboo mat corrugated sheets* for roofing and is a substitute for asbestos or iron corrugated sheets. Further, the Council has successfully completed 252 demonstration houses under Valmiki Ambedkar Awas Yojana (VAMBAY) at Bangalore using cost-effective technologies. The Council has also completed 100 demonstration houses at Dehradun (Uttarakhand) and 70 demonstration houses at Nagpur (Maharashtra) under VAMBAY. The construction of 270 demonstration houses at Bilaspur (Chhattisgarh), Trichy (Tamil Nadu), and Kodulu (Karnataka) are under progress.

11.103 The efforts made by BMTPC through an integrated approach involving simultaneous action for standardization, grading awareness, promotion through governmental recognition in terms of policy support and fiscal incentives have certainly enhanced acceptability and have demonstrated the efficacy of an integrated system of technology transfer. Use of alternative materials such as fly ash, bricks, blocks, and simple prefab systems for slabs/roofing needs to be further encouraged. Flexibility should be extended to building and construction material standards.

11.104 A major achievement of BMTPC has been the preparation of Vulnerability Atlas of India for formulating disaster mitigation plans and establishing techno-legal raging in disaster-prone areas. This Atlas has been revised in digitized format with latest data. As an extension of the Vulnerability Atlas, it has brought out the Landslide Hazard Zonation Atlas of India. BMTPC has also formulated guidelines for construction of safer and durable houses to withstand earthquake/cyclone. During the Eleventh Plan, BMTPC proposes to focus on up-scaling and modernization of home-grown production technologies, economy and efficiency in housing/building construction projects, use of bamboo in housing and building construction and vulnerability reduction, risk assessment, and disaster resistance construction. Besides, it will take steps for improving the design and layout of EWS/LIG houses. The total requirement of funds for BMTPC for this purpose is estimated at Rs 55.19 crore.

11.105 The Hindustan Prefab Limited (HPL) was set up as the Hindustan Housing Factory Limited in 1953 and was given the status of a PSU in 1955. The company was re-titled as HPL in 1978. The objective of HPL is to develop cost-effective prefabricated building components. HPL is currently in the process of restructuring and modernizing its operations vis-à-vis prefabricated building components. It is expected that the company will continue this focus in the Eleventh Plan, while at the same time, moving into the areas of on-site supervision, project management services, turnkey construction projects, preparation of DPRs of housing and infrastructure projects, project appraisal, and training in construction trades.

Policy Measures and Strategy for Addressing the Problems of Slums

11.106 JNNURM is the single largest initiative ever launched by the GoI to address the problems of urban housing, infrastructure, and basic services to the poor in 63 cities and towns in a holistic manner. JNNURM comprises two broad segments, namely (i) the Sub-Mission on Urban Infrastructure and Governance and (ii) the Sub-Mission on Basic Services to the Urban Poor (BSUP) covering 63 identified cities. The non-Mission cities and towns are covered under the UIDSSMT and Integrated Housing and Slum Development Programme (IHSDP). The MoHUPA is the nodal ministry for BSUP and IHSDP programmes which cater to housing and basic amenities to urban poor, especially slum dwellers. These schemes/programmes will, in addition to improved housing, also cater to other basic services such as sanitation, water supply, sewerage, solid waste disposal, etc.

11.107 Interest subsidy scheme for housing the urban poor has been proposed during the Eleventh Plan so as to provide an interest subsidy of 5% per annum, for a period of five years only, to commercial lenders for lending to EWS/LIG segments of the urban areas. Interest subsidy is expected to leverage markets funds to flow into housing for poor. The scheme is expected to add 15 lakh houses to the housing stock during the Eleventh Plan.

Integrated Low-cost Sanitation Scheme

11.108 The low-cost sanitation scheme operating during the Tenth Plan, with the objective of liberating manual scavengers from the obnoxious and age old practice of manual carrying of night soil, is in the process of being revised. The current scheme involves subsidy of 45% for the EWS beneficiaries and 25% for the LIG beneficiaries for construction of two-pit pour flush units up to the plinth level. The under revised scheme subsidy for the super structure beyond the plinth level is also provided. The upper ceiling cost will be Rs 10000 to enable construction of a complete unit of two-pit pour flush latrine with super structure. Suitable additionality in cost for constructing a two-pit pour flush latrine in hilly areas would be provided. In this manner, the ILCS will be more comprehensive, and is expected to complete the process of liberation from manual scavenging in the country.

URBAN PLANNING AND MANAGEMENT

11.109 The United Nations has projected that between 2000 and 2030, India's urban population will increase from 282 million to 590 million (assuming moderate 2.5% compound annual growth rate). Looking forward, one facet of India's urban planning challenge is to accommodate an additional 10 million urban dwellers per year, provide them with adequate public services and infrastructure, create opportunities for economic development, and ensure that urbanization is environmentally sustainable.

Emerging Issues in Urban Planning and Management

11.110 The 74th CAA 1992 is a historic piece of legislation that provides for a democratic and participatory planning process so as to incorporate the needs of the people, particularly poor and socially disadvantaged groups, in the planning process. The Act stipulates the setting up of District Planning Committees and MPCs for integration of spatial and economic development as well as rural and urban planning, while keeping the needs of environmental conservation in view.

11.111 State governments need to take concrete steps to constitute and functionalize the MPCs and District Planning Committees. In this regard, Urban Development and Plan Formulation and Implementation Guidelines brought out by the Ministry of Urban Development are relevant which have, in fact, duly incorporated the provisions of the 74th CAA.

THRUST AREAS OF THE ELEVENTH PLAN

11.112 In order to make the urban planning and development process sustainable, it would be appropriate to interlink the planning framework comprising national-level spatial strategies, regional-level strategy plans, metropolitan regional strategy plans, and city- and ward-level land use and development plans.

11.113 For an effective urban planning system, there is need to have inter-related plans at three levels, namely, perspective/structure plans (20–25 years), short-term integrated infrastructure development Plans (five years) co-terminus with the National Five Year Plans, and plans of specific projects and schemes.

11.114 The national spatial strategy should incorporate policies for industrial location and development, employment generation, human settlement pattern, and structure and infrastructure development, both for rural and urban areas. The State spatial plans should be prepared by taking into account demographic and economic potentials, broad land use configurations, infrastructure requirements, and project implementation schedules including mechanism for the PPPs.

11.115 Each district should prepare a District Development Plan that integrates the plans for its constituent urban and rural areas as well as the sectoral allocations for various schemes under the purview of existing district agencies.

11.116 The Metropolitan Development Plan should be prepared on the basis of plans prepared by Municipalities and Panchayats under the metropolitan area and in the context of overall objectives and priorities set by the Central and State Governments.

11.117 The legal and institutional framework should provide the municipalities with adequate infrastructure

and manpower to undertake the preparation of these plans. Further, the process of preparation of development plans should be facilitated by developing urban and regional information system and providing access to remotely sensed data, aerial photographs, GIS, setting up MIS cells to build database at national and State level, etc. Evolving suitable mechanism for strong database for all cities/towns with regard to coverage of urban population with water supply, sewerage, drainage, and solid waste management facilities is most essential in the wake of the large number of infrastructure projects that are being considered by different States.

Public Health Engineering (PHE) Training Programme

11.118 The scope of PHE training programme needs to be widened so as to provide requisite training for increasing the skills and expertise of all personnel involved in the water supply and sanitation sector. The infrastructure being developed by various ULBs/State departments for drinking water supply, sewerage, sanitation, drainage, sewage waste management under JNNURM would require more qualified and trained manpower for better planning, designing, implementation, and O&M of water supply and sanitation schemes.

Role and Involvement of External Support Agencies

11.119 Technical and financial assistance from external support agencies such as WHO, UNDP, World Bank, ADB, and bilateral agencies needs to be explored on a case to case basis. It is also essential that the external donor agencies cut short their processing/decision-making time to less than a year, so that projects planned under JNNURM are able to get financial and technical support of the external donor agency without hampering the progress of project implementation.

Linking of Budget Provisions of Ministry of Urban Development and Ministry of DoNER meant for North Eastern States and Sikkim with JNNURM

11.120 The 10% lump sum pool of resources of Ministry of Urban Development and Non-Lapsable Central Pool of Resources (NLCPR) under Ministry of DoNER meant for North Eastern States and Sikkim provide funding for creation of urban infrastructure including water supply, sewerage, drainage, and solid waste management on the same pattern of funding as that of JNNURM, that is 90:10 basis. These programmes need to be integrated with JNNURM to avoid duplicity in projects by different ministries and adherence to projects based on City Development Plans.

Role of IT in Efficient Governance and in Provision and Management of Urban Services

11.121 With the use of modern technology there have been perceptible changes in urban governance. The advent of digital technology coupled with the availability of various modes of fast communication such as Internet, intranet, cellular phones, and menu-based software has revolutionized the concept of governance. There has also been a change in the outlook of administrators and policy makers in adopting latest technology, and go for paperless work and make governance more citizen-friendly. E-governance encompasses the strategic and systematic use of modern ICT by the government to improve the efficiency, transparency, and accountability in its functioning and interface with citizens.

MUNICIPAL GOVERNANCE AND REFORMS

The Constitution (Seventy-fourth Amendment) Act (CAA)

11.122 The Act has ensured decentralization and successfully created a set up of democratic institutions of self-government. However, despite 15 years of enactment, most of the States are yet to implement its several provisions. While the CAA envisions decentralization of functions, finances, and functionaries to enable the ULBs to function as 'institutions of self-government', in reality, fiscal and administrative decentralization have lagged behind political decentralization. The amended Municipal Acts do not specifically assign functions and financial powers to the ULBs, including town planning. To achieve the twin objectives of ambitious growth paired with inclusive growth, the country needs to functionalize the institutional framework that fosters livable, bankable, and competitive cities.

Involvement of Community and Elected Representatives in Decision-making and Implementation

11.123 The CAA has empowered elected representatives and the community leaders with decision-making powers through institutional frameworks such as Ward Committees, MPCs, and District Planning Committees. Now from a 'top-down' approach, the emphasis has thus shifted to the 'bottom-up' approach.

Skill Upgradation and Capacity Building of the ULBs

11.124 Lack of skilled manpower to undertake various additional tasks entrusted to the ULBs is a cause of concern. Many of the ULBs have only one or two engineers for preparing projects and almost no town planner for preparing City Development Plan and Project Reports. During the Eleventh Plan, emphasis would be laid on the capacity building of the functionaries of the ULBs. There is a need to set up an apex agency to co-ordinate the activities of all national- and State-level training institutions. The Administrative Reforms Commission has proposed the creation of three to five year 'urban governance capacity building programmes' to be initiated by the Central and State Governments. Deficiencies of the ULBs need to be addressed through various capacity building program-mes under JNNURM and other CSS.

Independent Regulatory Institutions

11.125 An independent regulatory institution with professional urban managers is needed at the State level to ensure that the ULBs operate with autonomy but within the framework decided by the independent regulatory institution. It can decide parameters such as framing minimum and maximum limits for various types of local taxes, fees, user charges, administrative expenditure, etc. Setting up the regulatory institution can go a long way in improving the performance of local bodies in delivery of civic services to people.

Preparation of Operating Manual for ULBs

11.126 The independent regulatory institution for the ULBs can be entrusted with the responsibility of preparing operating manuals relating to various services being provided by the ULBs. The operating manuals can definitely improve the quality of assets that are being created by the ULBs. To ensure quality control and uniformity, the manual may lay down standards for all materials that are used for creation of assets. Operating manuals need not only be for engineering aspects but can cover the whole gamut of services in which the ULBs are involved.

Municipal Finance

11.127 Municipalities have neither the responsibility nor the autonomy of fiscal powers for delivering the urban services expected from them. There is a mismatch between ULB revenue capacities and their financial requirement.

11.128 The Ministries of Urban Development and Housing and Urban Poverty Alleviation have estimated a huge resource gap of Rs 76896 crore for all States during the period 2005–10 for O&M of various civic services in urban areas (Twelfth Finance Commission, TFC report). To fill this huge gap, our strategy revolves around stricter guidelines, policy prescriptions, and stress on local revenue enhancement efforts by the ULBs. It will certainly achieve financial viability at the ULB level. Further, ULBs need to take steps for broad-basing the revenue from own sources through improving the collection of existing revenue sources, reforms in property tax, levy of new taxes and charges, enhanced cost recovery for utility charges and fees, improved information, registration, billing and collection systems of taxes and charges, reducing administrative expenses, etc. Innovative methods of service delivery and involvement of private sector will improve the financial position of municipalities.

Evolve Alternative Ways to Augment Municipal Resources

11.129 The following steps need to be initiated for augmenting revenue generation by the ULBs:

Land as a Resource

- Land is a good resource to generate revenue for the local bodies and should be explored by the ULBs to the extent possible.

New Levies

- New levies/cess should be levied to augment revenue resources such as drainage fee, parking fee, hoarding fees, vacant land tax, development impact fee, etc.

Pooled Financing

- New thrusts for mobilizing urban infrastructure finance, a State-level Pooled Financing Mechanism is working successfully in Tamil Nadu, with the financial assistance from the United States Agency for International Development (USAID). The Central Government has set up a PFDF with the objective to facilitate development of bankable urban infrastructure projects through appropriate capacity building measures and financial structuring. An amount of Rs 100 crore has been provided to the Ministry of Urban Development for 2007–08 for PFDF.

Secondary Markets

- The ULBs will have to be made credible and accountable institutions so as to tap India's increasingly sophisticated financial markets including secondary markets.

Accessing Capital Markets

- To ensure sound local government credit markets, the government will have to evolve effective financial institutions and instruments for financial market regulations and supervision. The ULBs' credit worthiness would be enhanced on a stand-alone basis so that the supply of bankable projects could be increased.

Role of Financial Intermediation for Local Governments

Municipal Development Funds

11.130 Around the world, more than 60 countries have established financial intermediaries. For example, in Brazil, individual States often have established their own municipal development funds. Both the World Bank and the ADB have announced that they intend to rely more heavily on municipal development funds as a key part of their strategy to help finance local investment needs in Asia. The goal is not merely to give municipalities access to credit, but to do so in a manner that increases the efficiency of local investment and reinforce financial sector reforms in the rest of the economy.

Municipal Bond Markets

11.131 The advantages of using municipal bonds to finance urban infrastructure are increasingly evident in India. The Indian Bond Market is becoming vibrant. Ahmedabad Municipal Corporation issued a first historical Municipal Bond in Asia to raise Rs 100 crore from the capital market for part financing a water supply project. An illustrative list of ULBs/parastatals, which have been granted permission to issue Municipal Bonds, is given Table 11.8.

TABLE 11.8
Urban Local Bodies/Parastatals which have been Granted Permission for Issue of Tax-Free Bonds

S. No.	Name	Year	Amount (Rs in Crore)
1.	Ahmedabad Municipal Corporation	2001	100.00
2.	Hyderabad Municipal Corporation	2002	82.50
3.	Nasik Municipal Corporation	2003	50.00
4.	Visakhapatnam Municipal Corporation	2003	50.00
5.	Hyderabad Metropolitan Water Supply and Sewerage Board	2003	50.00
6.	Ahmedabad Municipal Corporation	2004	58.00
7.	Chennai Metropolitan Water Supply and Sewerage Board	2004	42.00
8.	Karnataka Water and Sanitation Pooled Fund Trust	2004	100.00
9.	Chennai Metropolitan Water Supply and Sewerage Board	2005	50.00
10.	Chennai Corporation	2005	44.80
11.	Ahmedabad Municipal Corporation	2005	100.00

Source: Ministry of Urban Development, GoI.

Budgetary Support

11.132 The TFC has recommended a sum of Rs 5000 crore for the municipalities to be provided as grants-in-aid to augment the consolidated fund of the States for the years 2005–10 to be distributed with inter se shares.

Cost Efficiency and Productive Use of Resources

11.133 Projects being carried out by contractors have to be carefully supervised to ensure quality and timely completion. Cost over-runs in projects due to delay caused by contractors need to be penalized by incorporating the penalty clause in the contract itself.

Thrust of the Eleventh Five Year Plan towards Municipal Finances

11.134 India's urban areas will need to compete nationally and internationally for investments and human resources. Most of the ULBs are technically and financially ill-equipped to meet the ever-growing demand for urban services, so the capacity building exercises have to be accorded priority. The Eleventh Plan strategy would be to create a conducive environment for efficient tax administration, increasing use of non-tax sources, efficient pricing of services, PPPs in provision and maintenance of urban services, adopting alternative sources of finance including access to capital markets, involvement of community and private sector in raising revenue. The States need to ensure rating of municipalities for facilitating access to capital markets.

URBAN TRANSPORT

Urbanization Trends and Travel Needs

11.135 Urbanization has lead to corresponding increase in demand for transportation. The growth in transport infrastructure has not kept pace with the increased demand and the share of public transport vehicles has declined. The problem of congestion and its consequences are posing a severe threat to sustainability of the urban areas. Confederation of Indian Industry (CII) survey 2003 of the urban population in southern India showed that 58% of those interviewed were dissatisfied with public transport services. It also showed that 65% were willing to pay higher public transport fares for comfortable travel. The situation in other parts of the country is similar.

11.136 Managing urban expansion is a critical element towards achieving the goals set by the National Urban Transport Policy. The National Urban Transport Policy, 2006 focuses on the need to 'Move people—Not vehicles', by encouraging public transport and use of non-motorized modes. The policy suggests involvement of private sector, innovative financing mechanisms to enhance efficiency, reduction in travel demand by encouraging a better integration of and use and transport planning.

11.137 As per 2001 Census, there are 35 cities with million plus population. Except for Mumbai, Kolkata, and Delhi, none of the mega cities have a Mass Rapid Transit System (MRTS). The Delhi Metro Project is progressing as per schedule and Phase-I is fully operational. Other metropolitan cities are also in the process of preparing DPRs for a metro-rail system.

Suggestions for Urban Transport Planning for the Eleventh Plan Period

- All cities need to prepare a comprehensive mobility plan which includes a Master Plan for non-motorized transport taking into account projected growth in the next ten years.
- Proposals for preparation of DPR should be preceded by professional evaluation by technology neutral agencies.
- A comprehensive program of capacity building should be implemented.
- All cities should formulate a realistic 'hawker/vendor policy'.
- Cities may prepare a plan for traffic calming to reduce emissions and road accident rates.
- All million plus cities may prepare plans to introduce/upgrade existing bus services as also introduce BRT systems on selected arterials during the Eleventh Plan period.
- All cities may have a parking policy. State governments need to amend building by-laws so that adequate parking space is made available for all residents/users. FAR norms may be modified. Multi-level parking complexes may be made mandatory in mega cities. All cities may upgrade taxi and three-wheeler fleets.

Specific Interventions Required for Enhancing Mobility Needs in Towns

- Improvement in the quality and maintenance of roads and provision of pedestrian pavements and cycle tracks.
- De-congestion of crowded areas.
- Developing transport corridors to enable orderly flow of public transport.
- Creation of parking spaces for para-transit and other vehicles.
- Facilities for public bus services, pedestrian subways, and larger parking facilities.
- Mobility needs of 40 lakh plus population cities would generally need mass transit systems with medium to high capacity with a larger network of feeder systems.

Actions required for the Development of Integrated City Transport as per NUTP

Land-use interventions

- Encourage 'Transit Oriented Development' with high density areas.
- Either develop all new/satellite townships/SEZ along the defined major transport corridors or integrate them with mass transit system in the Master Plan itself.
- Allow land use changes from time to time, including for public/government use.
- Discourage sprawl through introduction of vacant land tax and levy of 'Transport Impact Fee' on developments in the periphery.

Transportation Interventions

- Promote non-motorized vehicles by creating facilities for safe use.
- Promote public transit systems that are cost effective and able to meet the demand levels optimally. Encourage investments in premium bus systems.
- Develop ring roads and city bypass roads as well as rail line bypasses.
- Develop freight transport terminals outside city limits.
- Shift inter-state bus terminals from the city centre to the peripheries.

Institutional/Regulatory Interventions

- Modify the enabling legislations.
- Establish fare policies and a fare regulator.
- Implement fiscal measures that encourage use of public transport.

Scheme for Preparation of DPRs and Conduct of Traffic and Transportation Studies

11.138 Under this scheme, support is provided by the government for the preparation of DPRs and in the conduct of comprehensive traffic and transportation studies to the extent of 40% of the cost. Although the scheme has resulted in many such studies being carried out, yet these have not subsequently translated into a meaningful set of projects. Table 11.9 below shows that the outlays and expenditure under the scheme have not been satisfactory during the Ninth and Tenth Plan periods. In line with the National Urban Transport Policy, the scheme is being revised to raise the GoI grant.

11.139 A Task Force has been set up to suggest institutional mechanism for better coordination in policy formulation, planning, and regulation of traffic and transportation project in all million plus cities.

Integration of Land Use and Transport Planning

11.140 Corridor development may be encouraged for inter-city movement of goods and services while deliberate attempt may be made to discourage

TABLE 11.9
Outlay and Expenditure

(Rs in Crore)

Item	Ninth Plan		Tenth Plan	
	Outlay	Expenditure	Outlay	Expenditure
Urban transport planning	24.76	3.33	91.00	12.59

Source: Ministry of Urban Development, GoI.

ribbon development, multi-modal corridors, and SEZs in close proximity to city areas need to be developed.

Pedestrianization and Non-motorized Transport (NMT)

11.141 Special consideration needs to be given to designing pedestrian and cyclist facilities along the road and at intersections and the needs of the physically challenged persons need to be taken care of. The entire road network including footpaths, road crossings, service roads, carriageways, medians, bus stops, terminals, mass transit stations, parking facilities, etc. may be considered as per disabled-friendly design principles.

Integration of Transport System

11.142 The benefits of common ticketing to the operators are reduced transactions and lower recurring costs. Despite these advantages, the system of common ticketing has not picked up in India. A necessary condition for common ticketing across operators is the creation of a mechanism that allows a fair share of the revenues earned from such common tickets. If there is only a single service provider, sharing of revenue will not be a problem while with multiple providers this is a complex task. Indore model of public transport could be replicated in other cities.

Appropriate/Cleaner Technologies for Public Transport

11.143 Vehicular emission is directly related to the fuel used, the technology employed, and the driving technique. Improvement in fuel quality can be achieved through removal/reduction of emission related constituents in the fuels such as sulphur in diesel and sulphur, lead, benzene, and other aromatics in petrol. Further reduction of emissions can be obtained through improved engine technology and exhaust treatment systems. Vehicles manufactured before First Mass Emission Norms introduced in 1991 would require to be replaced.

Role of Intelligent Transport Systems

11.144 ITS encompasses a broad range of wireless and wire line communications-based information and electronics technologies. When integrated into the transportation system's infrastructure, these technologies relieve congestion, improve safety, and enhance productivity. Applied effectively, ITS and Services can save lives, time, and money as well as reduce threats to our environment and create new business opportunities.

11.145 A large investment of Rs 38000 crore has been identified for the introduction of modern buses in the country during the Eleventh Plan. The government aims to replace all the existing urban buses with 'truck chassis body' with low floor/semi low floor ultra modern buses on PPP basis. Table 11.10 provides the financial requirement during the Eleventh Plan.

11.146 The financial requirement to cater to the growing demand in the Eleventh Plan would be Rs 132590 crore as summarized in Table 11.11.

Box 11.14
Best Practices in Public Transport

1. Indore Model
   Indore city in Madhya Pradesh has evolved a PPP model for operation of city bus services. In this model, the investment on the rolling stock is planned through private participation. The source of revenue for the private operator is from fare collection and from advertisements.
2. Revival of public transport in Bangalore
   Bangalore Metropolitan Transport Corporation (BMTC) was created in 1997 by separating Bangalore depots of the troubled Karnataka Road Transport Corporation from the mother company. It carried out a thorough internal restructuring, introduced cost and service monitoring, and sub-contracted some services to private operators on a gross-cost based scheme. In the span of two to three years, BMTC improved its services and fleet/staff productivity, and became profit making.

TABLE 11.10
Funds Requirement

Cities (Population in Lakh)	Total No. of Towns	% of Towns Proposed for Eleventh Plan	Average Requirement	Rs in Crore
1–5	370	50	40	7400
5–10	39	50	400	7800
10–40	28	100	930	26040
> 40	7	100	3000	21000
MRTS	8	100		32000
Modern buses				38000
Capacity building and transport planning				350
Total				132590

Source: Ministry of Urban Development, GoI.

TABLE 11.11
Sources of Funding

Source	Funding (in Rs crore)
*JNNURM (GoI) including UIDSSMT	15500
*Non-JNNURM (Budgetary Support)	4400
VGF	6000
Resourced from States/ULBs	19500
Loan from financial institutions	61190
Participation by private promoters	26000
Total	132590

Note: * The actual allocation provided for JNNURM is Rs 50000 crore during 2005–12 out of which the amount available for urban transport is expected to be in the range of Rs 10000 crore. As regards non-JNNURM, budgetary support is Rs 3055 crore. The shortfall will need to be met by other sources of finance.

Source: Ministry of Urban Development, GoI.

TABLE 11.12
Slum Population—Census 2001

Slum population 1991 (TCPO estimates)	46.26 million
Slum population 2001 (TCPO estimates)	61.82 million
No. of towns reporting slums in Census 2001	640#
Reported slum population in 640 towns, 2001	42.58 million
Population of towns/cities reporting slums, 2001	184.35 million
Share of slum population to population of towns/cities reporting slums, 2001	23.1%

Note: # Towns with population of 50000 or more.

11.147 The total outlay for the Eleventh Plan for Ministry of Urban Development is Rs 24600 crore at 2006–07 price (Rs 26041 crore at current price) which includes Rs 11001 crore of GBS at 2006–07 price (Rs 12443 crore at current price). Likewise, the total outlay for the Eleventh Plan for Ministry of Housing and Urban Poverty Alleviation is Rs 43480 crore at 2006–07 price (Rs 50958 crore at current price) which includes Rs 3260 crore of GBS at 2006–07 price (Rs 3687 crore at current price).

TABLE 11.13
Population, Housing and Basic Amenities

Total population of India, 2001	1028.6 million
Urban population, 2001	286.1 million
% share urban, 2001	27.8%
Total urban housing stock, 2001	52.0 million
Pucca houses	79.16%
Semi-pucca houses	15.58%
Kutcha houses	5.27%
Household with Tenure Status, Urban, 2001	
Owned	66.8%
Rented	28.5%
Others	4.7%
Households having Access to, Urban, 2001	
Safe drinking water	90.01%
Electricity	87.59%
Toilet	73.72%
Drainage	77.86%
Kitchen within the house	75.96%
LPG for cooking	47.96%
Electricity for cooking	0.31%
Biogas for cooking	0.37%

Source: MoHUPA, GoI.

12

Communications and Information Technology

12.1 TELECOMMUNICATIONS

Overview

12.1.1 The development of world-class telecommunication infrastructure is the key to rapid economic and social development of the country. Driven by various policy initiatives, which include New Telecom Policy (NTP)-1994 and later the NTP-1999, the Indian telecom sector witnessed a complete transformation in the last decade. During this period, it has achieved phenomenal growth and is poised to take a quantum leap. For bringing further accelerated growth along with modernization in line with the trends in other developed countries, the telecommunication sector demands initiation of further policy measures and induction of state-of-the-art technologies.

Present Status of Telecom Networks

12.1.2 The telecom services network has expanded from about 84000 connections (fixed line) at the time of independence to about 206.83 million working connections as on March 2007 (which in turn consists of 40.77 million fixed telephone lines and 166.05 million mobile phones). Thus India's present 206 million robust telephone network, including mobile phones, is one of the largest in the world and second largest among the emerging economies (after China) with a wide range of services such as basic, cellular, Internet, paging, Very Small Aperture Terminal (VSAT), etc. The status of the present telecom network is as shown in Table 12.1.1.

12.1.3 The National Internet Exchange of India has been set up by the Department of Information Technology (DIT) to ensure that Internet traffic, originating and destined for India, is routed within India. This is expected to substantially bring down the cost of Internet usage. This will also enable more efficient use of international bandwidth and saving of foreign exchange. It will further improve the quality of services for the customers by being able to avoid multiple international hops and thus lowering delays. All these in turn will lead to the popularization of '.in' domain name and expansion of Internet.

TABLE 12.1.1
Telecom Network Status in India as on March 2007

Number of telephone connections	206.83 million
Number of telephone exchanges	38338
Switching capacity (Public)	88.82 million (PSU)
VPTs	564610
Rural phones (Fixed + CDMA)	22655691
Wireless (CDMA & GSM) subscribers	166.05 million
Internet connections	9.21 million
Broadband subscribers	2.28 million
Optical fibre route length (Public)	519155 route km
Microwave route length (BSNL)	64506.64 km

Source: DoT.

12.1.4 The government has taken several steps to encourage participation of private players to create a competitive environment in the sector. Consequently, the private sector is now playing an important role in expansion of the telecom sector. The number of private sector licensees in telecommunications as shown in Table 12.1.2 also confirms this.

Telecom Development—International Comparison

12.1.5 Telecommunication has grown very rapidly in India. However, viewed in the context of global growth pattern and indicators, it needs to achieve more in terms of teledensity as compared to other countries. There is a positive corelation between the teledensity and the GDP of a country as the growth in the telecommunication sector has linkages to the growth of other sectors of the economy. The status of teledensity along with other indicators such as per capita GDP, Internet users, etc., at international level is given in the Table 12.1.3.

TABLE 12.1.2
Private Sector Participation (as on 31 March 2006)
(Registrations/Licenses Issues)

Purpose/Area	No. of Licenses/ LOIs/Registration
Unified Access/Cellular Mobiles	78
Basic Services	2
National Long Distance	4
Infrastructure Provider-I	105
International Long Distance	5
Internet Service	399
Voice Mail and Audiotext Service	15
Public Mobile Radio Trunk Service	37
VSAT Service	11

Source: Working Group Report for Eleventh Plan on Telecommunications Sector, DoT.

Review of the Tenth Plan

Growth during the Tenth Plan Period

12.1.6 The telecom sector has shown tremendous growth during the Tenth Plan period. It has also undergone a substantial change in terms of mobile versus fixed phones and public versus private participation. The Tenth Plan had envisaged a teledensity of 9.91% by March 2007. In order to achieve this target, about 65.0 million additional connections were needed to be provided during the Tenth Plan. However, during 2002–07, the total telephone connections increased by 161.86 million as on 31 March 2007, thereby achieving a teledensity of 18.31% by March 2007 and exceeding the Tenth Plan target by 149%. With the opening of the telecom sector to the private operators, their share in the number of subscribers has significantly increased, which is evident from the Table 12.1.4.

TABLE 12.1.3
Status of Telecom Indicators in Some Countries as on December 2005

Country	Population (Million)	GDP (per capita) US$ 2004	Telephones ('000)	Teledensity (%)	Internet Users ('000)
US	298.21	36273	360347	122.71	185000
UK	59.67	26369	94791	158.51	37600
Australia	20.16	25436	29880	148.25	14190
Brazil	186.41	3338	107987	59.78	22000
Mexico	107.03	6328	66974	62.58	18622
Sri Lanka	20.74	1031	4606	22.20	280
Korea (Rep)	48.29	14136	62087	128.56	33010
Japan	128.08	31324	153525	119.86	64160
Indonesia	222.87	1156	59682	26.79	16000
China	1315.84	1268	743861	56.53	111000
Pakistan	153.96	614	18049	11.72	10500
India#	111.59	634	142092	12.74	60000
World	6728.08	5944	3309379	49.45	964272

Note: #As on 31 March 2006.
Source: International Telecommunication Union.

TABLE 12.1.4
Expansion of Telecom Network—Public and Private Operators and Fixed and Mobile (PSUs and Private Operators) during the Tenth Plan Period (2002–07)

Year Ending 31 March	Public (in million)	Private (in million)	Fixed Lines (in million)	Wireless (in million)	Total Phones	Teledensity (%)			Rural Phones (in million)	Urban Phones (in million)
						Rural	Urban	Total		
2002	38.17	6.80	38.29	6.68	44.97	1.21	12.20	4.29	9.04	35.96
2003	43.18	11.45	41.33	13.30	54.63	1.49	14.32	5.11	11.41	43.22
2004	46.48	30.05	40.92	35.61	76.53	1.57	20.74	7.02	12.27	64.26
2005	52.08	46.29	41.42	56.95	98.37	1.73	26.88	8.95	13.57	84.80
2006	61.07	81.00	40.22	101.85	142.07	1.86	39.45	12.74	14.77	127.30
2007	71.39	135.44	40.78	166.05	206.83	2.83	55.94	18.31	22.66	184.17

Source: DoT.

Recognizing that the telecom sector is one of the prime movers of the economy, the regulatory and policy initiatives taken by the government during the Tenth Plan have been directed towards establishing a world-class telecommunications infrastructure in the country. This has led to a positive result in the sector and major objectives envisaged in the Tenth Plan were achieved to a great extent. Affordable and effective communication services could be offered as the tariff declined substantially due to intense competition among the operators.

12.1.7 During the Tenth Plan period, the Internet subscribers grew from 3.64 million in 2002–03 to 9.21 million in 2006–07. The broadband subscribers base stood at only 2.28 million connections (2006–07) from 1.8 lakh connections in 2004–05. One of the factors for such a low broadband subscriber base could be the pricing structure.

12.1.8 The number of telephones has increased from 44.97 million as on 31 March 2002 to 206.83 million as on 31 March 2007, exhibiting a CAGR of around 35.68%. The number of mobile phone/wireless subscribers increased from 6.68 million as on 31 March 2002 to 166.05 million as on 31 March 2007, exhibiting a CAGR of 90.15%. The number of Internet subscribers grew at 23%, while the broadband subscribers grew from a meager 0.18 million during the year 2004–05 to 2.28 million during the year 2006–07.

MOBILE VERSUS FIXED TELEPHONES

12.1.9 The preference for use of wireless phones has also been predominant in the sector. This is confirmed from the rising share of wireless phones, which increased from 14.85% (6.68 million telephones) in March 2002 to 80.28% (166.05 million telephones) in March 2007.

TREND IN TELEDENSITY

12.1.10 Teledensity in the country is steadily increasing from 4.29% as on 31 March 2002 to 18.31% as on 31 March 2007. However, there is a wide gap between urban teledensity (55.94%) and rural teledensity (2.83%). In fact, the rural telephony has not kept pace with the impressive growth in the urban connectivity.

RURAL TELEPHONY

12.1.11 Apart from the 14.77 million fixed and wireless in local loop (WLL) connections provided in the rural areas, 564610 VPTs have also been provided. Thus, 90% of the villages in India have been covered by the VPTs. In addition, more than 2 lakh public call offices (PCOs) are also providing community access in the rural areas. Mobile Gramin Sanchar Sewak Scheme—a mobile PCO service—is also being provided at the doorstep of villagers. At present, 2772 GSSs are covering 12043 villages. Further, in order to provide Internet services, *Sanchar Dhaba*s (Internet kiosks) have been provided in more than 3500 block headquarters out of the total 6337 blocks in the country.

12.1.12 The telecom network in the rural areas also expanded during the Tenth Plan (2002–07). The number of phones in the rural area has increased from 9.01 million in March 2002 to 22.66 million by March 2007. The rural teledensity increased from 1.21% in

March 2002 to 2.83% in March 2007. The bulk of the investment in rural telecom has been made by the public sector operator, viz., BSNL. The private operators have provided only 12665 VPTs by the end of March 2006.

REDUCTION IN TARIFF CHANGES

12.1.13 The Indian telecommunication sector has witnessed major changes in the tariff structure. The Telecommunication Tariff Order 1999, issued by Telecom Regulatory Authority of India (TRAI), started the process of tariff rebalancing with a view to bringing them closer to the costs. Further, increased competition in the telecom sector has also resulted in a substantial fall in the tariffs.

PERFORMANCE OF TELECOM EQUIPMENT MANUFACTURING SECTOR

12.1.14 Steady growth has been observed in the telecom equipment manufacturing sector during the Tenth Five Year Plan period, as may be seen from Table 12.1.5.

TABLE 12.1.5
Performance of Telecom Equipment Manufacturing Sector during Tenth Plan

(Rs Crore)

Year	Production	Export
2002–03	14400	402
2003–04	14000	250
2004–05	16090	400
2005–06	17833	1500

Source: Working Group Report for Eleventh Plan on Telecommunications sector, DoT.

12.1.15 Some of the major policy initiatives introduced in the telecom sector during the Tenth Plan period for giving a boost to the sector are as follows:

- National long distance (NLD) service was opened to operators w.e.f. 13 August 2002.
- National Frequency Allocation Policy 2002 was evolved.
- The monopoly of Videsh Sanchar Nigam Limited (VSNL) in International long distance (ILD) terminated on 31 March 2002.
- National Internet Backbone covering all States has been commissioned.
- Instruction issued to all State Governments to provide expeditious approval for right of way.
- Guidelines for Unified Access Service License regime were issued on 11 November 2003.
- Calling Party Pays (CPP) regime was implemented w.e.f. 1 May 2003, under which landline telephone users were to pay airtime charges apart from normal charges if the call was made to a cellular phone.
- Indian Telegraph Act was amended for establishment of USOF. Non-lapsable USOF was created on April 2002.
- Interconnection Usage Charge regime was introduced.
- Several directives/regulations have been issued by TRAI regarding different telecom services, their tariffs, quality and Internet services, which have contributed positively towards the growth of telecommunication sector.
- Internet Service Providers (ISPs) allowed setting up submarine cable landing stations for international gateways for Internet.
- Radio frequency (RF) spectrum management has been modernized and automated to efficiently address dynamic needs of the liberalized user.
- Broadband policy was announced on 14 October 2004.
- ISPs have been permitted to use underground copper cables for establishing last mile linkages.
- FDI ceiling has been raised to 74% for various telecom services.
- The operation of automated spectrum management was commenced in January 2005.
- Access service provider can provide Internet telephony, Internet services, and broadband services. They can use the network of NLD/ILD service.
- Prior experience in telecom sector is no more a prerequisite for grant of telecom service licenses.
- Annual license fee for NLD, ILD, Infrastructure Providers, VSAT Commercial, and ISP has been reduced to 6% of Adjusted Gross Revenue (AGR) with effect from 1 January 2006.
- Internet Protocol based Virtual Private Network service is permitted to ISPs.
- Delicensing has been done of 2.40–2.4835 GHz frequency band for indoor and outdoor use and 5.15–5.13 GHZ frequency band for indoor use.

12.1.16 In addition to the above, certain exemptions/concessions have been given on the customs duty for important equipments as well as components, besides excise duty exemptions for benefit under indirect taxes.

Investments during the Tenth Plan

12.1.17 During this period, the public sector operators, viz., BSNL and MTNL, as well as the private operators made major investments in cellular mobile segment. While PSUs account for 71.39 million connections (both fixed and mobile) as on March 2007, the private operators account for 135.44 million lines. More than 97% of the private sector lines are in the wireless category. The total estimated investments by the public sector operators during the Tenth Plan were Rs 39467.21 crore.

Broad Objectives and Thrust Areas in Telecom Sector during the Eleventh Plan

12.1.18 Keeping in view the targets for the telecom sector, the Eleventh Plan has been formulated accordingly. Basically, the approach will be towards achieving faster, broader, and inclusive growth. Further, keeping in view the digital divide, special attention will be paid to enhance the rural connectivity. The broad objectives for the telecom sector during the Eleventh Plan period (2007–12) will be as follows:

- To reach a telecom subscriber base of 600 million.
- To provide 200 million rural telephone connections by 2012, that is to reach a rural teledensity of 25%.
- To provide telephone connection on demand across the country at an affordable price.
- To reach a target of 20 million broadband connections and 40 million Internet connections by 2010 as envisaged in Broadband Policy 2004.
- To provide broadband connection on demand across the country by 2012.
- To provide Third Generation (3G) services in all cities/towns with more than 1 lakh population.
- To facilitate introduction of mobile TV.
- To provide broadband connectivity to every secondary school (SS), health centre, GP on demand in two years.
- To make India a hub for telecom equipment manufacturing by facilitating establishment of telecom specific SEZs.

12.1.19 Establishing centres of excellence in premier educational institutions and other reputed organizations in the country in PPP mode. The centres can focus on emerging areas such as Next Generation Networks (NGN), Wireless Broadband, Telecom Network Security, etc. Special intervention is required to connect rural areas for providing voice and data connectivity.

Targets in Telecom Sector during the Eleventh Five Year Plan

12.1.20 In consonance with the above objectives, the broad targets identified by the DoT for the Eleventh Plan period are given in the following paragraphs.

12.1.21 Network Expansion and Rural Telephony

- One telephone per three rural households by 2007 (about 50 million rural connections).
- One phone per two rural households by 2010 (about 100 million rural connections).
- 200 million rural connections by 2012 (i.e. a rural teledensity of 25%).
- For rural telephony network expansion the strategies will be to provide individual access: (i) through market forces for viable areas and (ii) USOF for non-viable areas.
- For providing public access in rural areas, USOF will be provided for (i) VPTs; and (ii) Rural Community Phones (RCPs).
- For rural telephony the infrastructure will be shared at least amongst three service providers.
- To support for development of general telecom infrastructure in rural areas, initially pilot projects would be undertaken for the same.

12.1.22 Broadband Coverage

- Broadband coverage for all secondary and higher secondary schools is stipulated by 2007.
- Broadband coverage for all public health care centres is stipulated by 2007.
- Broadband coverage for all GPs is stipulated by 2010.
- Linkage is to be provided between block headquarters and nearest exchange for completing State-wide area networks (SWANs) connectivity.

- Existing infrastructure of rural exchanges and OFC will be used.
- Wireless technology will be deployed.

12.1.23 Manufacturing and R&D

- Making India a hub for telecom manufacturing by facilitating more and more telecom specific SEZs.
- Providing platform for export promotion of telephone equipment and services by setting up Export Promotion Council.
- Promoting R&D in key and emerging technologies appropriate for the country as well as in the area of telecom network security.

12.1.24 The DoT has proposed to take up the following programmes/initiatives during the Eleventh Five Year Plan period:

- Identify and make available adequate spectrum for both expansion of network and introduction of new value-added services.
- Setting up of Telecom Testing and Security Certification Centre (TETC).
- Setting up of Centre for Communication Security Research and Monitoring.
- Setting up of NGN Laboratory.
- Undersea cabling between Mainland and Andaman & Nicobar (A&N) Islands.
- Modernization of Radio Spectrum Monitoring Capabilities.
- Promote induction of new technologies at Indian Telephone Industries.
- Setting up of Telecom Export Promotion Forum/ Council for promotion of export of telecom services.

Projection of Investment in Telecom Sector for the Eleventh Plan

12.1.25 The public sector investment in the telecommunication sector (through BSNL and MTNL) would be mainly funded through IEBR to the tune of Rs 80753.00 crore at 2006–07 price and Rs 89581.56 crore at current price (including Rs 337.47 crore by C-DOT as internal resources) over the Eleventh Plan period. It is assumed that the private investment in this sector will also grow substantially. The total investment in the telecommunication sector during the Eleventh Plan period is projected at about Rs 231000 crore.

Key Constraints and Challenges

12.1.26 Some of the major constraints and challenges being faced by the Indian telecom sector are:

- RF spectrum being a limited resource, with competing and increasing demands, there is a need to have optimal and efficient use with greater sharing of this resource by all stakeholders. Therefore, effective RF spectrum planning has to be carried out for short term, medium term, and long term, taking into account the emerging new technologies.
- Although a teledensity of 18.31% has been achieved, there exists a wide gap between urban teledensity (55.94%) and rural teledensity (2.83%). Considering the fact that 70% of the population lives in rural areas in India, the real challenge will be to connect rural India.
- As voice-based connectivity (telephony) alone may not be the best economically viable option. Therefore, the connectivity should predominantly be data based having killer applications to make it sustainable on which voice services can also be provided.
- For an effective roll out the rural broadband connectivity would also need support through the USOF.
- To accelerate broadband connectivity, equipments need to be made available at an affordable price. In addition, local content in local languages need to be developed.
- The transformation of traditional public telecommunications networks into Internet Protocol (IP) based NGN will require significant technical, human, as well as financial resources. Further activities relating to migration to Internet Protocol version-6 will have to be given priority, in order to spread Internet much faster.
- Communication network needs to be adequately protected for which necessary network security related initiatives need to be put in place.
- The slow growth of telecom manufacturing sector is an area of major concern. The NTP 1999 sought to promote exports of telecom equipments and services. But till date export of telecom equipment remains minimal. Most of the state-of-the-art telecom equipment including mobile phones are imported from abroad. There is thus an immense potential for indigenous manufacturing in India.

Policy Issues

12.1.27 In order to achieve the targets laid down in telecom sector for the Eleventh Five Year Plan, proper and conducive policy initiatives need to be introduced by the government in its various sub-sectors, such as Rural Network Expansion, Broadband and Internet, Telecom Equipment Manufacturing, Telecom R&D, etc. The broad policy initiatives envisaged in this regard may be as follows:

- It is absolutely essential to carry out appropriate re-farming of the RF spectrum keeping in view the needs of various sectors. Further, some amount of spectrum may have to be kept reserved for deploying new services including rural broadband, 3G, Voice over Internet Protocol (VoIP), etc. While allocating spectrum the international practices should be kept in view, so that India can take advantage of the economies of scale. Bringing in a regime of unified licensing could also be considered for most efficient utilization of the allotted spectrum.
- It is essential to promote sharing of infrastructure by the service providers and incentivizing such sharing so that overall costs can be kept down. This is also expected to accelerate the pace of rural penetration of the telecom networks.
- Special attention needs to be paid to the most backward and remote areas such as, the North East, J&K, tribal belts, and island authorities. Cost may not be a consideration, while providing connectivity to these areas.
- Suitable policy initiatives need to be introduced for promoting telecom equipment manufacturing in the country. Further, there should be a co-ordinated approach to promote PPPs for R&D activities in telecom equipment. In addition, initiatives such as formation of common product certification to International Standards and Testing Facility for Global Accreditation, setting up of Mega Fabrication Units (FAB) facility for the manufacture of Integrated Circuits (IC), Development of Hardware Manufacturing Cluster Parks (HMCPs), etc., also need to be taken up to make India a telecom equipment manufacture hub.
- Adequate and availability of international and national bandwidth at low cost also need to be ensured through appropriate technologies and policy interventions.

Special Issues in Successful Roll Out of Rural Telephony and Broadband

12.1.28 As has been observed that in spite of substantial achievements in telecom sector during the Tenth Plan period, the rural teledensity continues to be very low as compared to the present national average of 18.31%. The mobile telephony costs are one-fifth of the fixed line costs. The low penetration of cellular mobile services in the rural areas so far can be attributed to inadequate infrastructure, in the form of towers and power supply, as well as lower revenue potential. However, with mobile tariffs falling, there is a likelihood of huge demand for mobile telephones in rural areas. But for successful rural roll out of mobile telephones, unless there is adequate coverage of towers and other related infrastructure, the demand cannot be met.

12.1.29 The government has introduced a scheme for expansion of rural mobile infrastructure through creation of shared passive infrastructure under USOF. Moreover, rural telecom expansion needs to be facilitated through setting up of triple play networks (viz. 3G networks) to deliver multiple services (i.e., voice, data, and video) at viable prices and bridge the information divide in rural areas. Through such networks, a single operator would be able to deliver various services to subscribers on a single medium.

12.1.30 Thus, for the successful roll out of telephones and broadband in the rural areas the following aspects should be considered by the policy makers and other stakeholders on priority basis: (i) proper infrastructure for access to telecom network; (ii) suitable access devices; and (iii) proper and adequate content. Ultimately, for any service to be useful, it should have value for the consumer. Therefore, the rural service should have adequate and relevant content. Each category of consumers has different needs and assigns different value to the various content and services being offered. Therefore solutions regarding content and services for high-end consumers, the middle class in cities and towns, the mass market, and rural users need to be considered separately. As such, there will be a need to develop large numbers of content providers,

particularly RCPs including local language content providers, for which proper training courses may be designed and implemented through various existing institutions. Further, proper policy initiatives should be put in place to regulate the content effectively as per existing standards.

New Initiatives in Telecommunication Sector

12.1.31 It has been seen that broadband/bandwidth penetration has a multiplier effect on the economy. Experience in other countries has shown that broadband penetration has a positive correlation with the national income.

12.1.32 Bandwidth is an essential ingredient for carrying signals in today's information-based economy. It is a fact that despite nearly 850000 route km of OFC infrastructure, the geographical availability of the bandwidth remains poor in as much as the rural and remote areas which constitute bulk of the nation and continue to suffer from poor availability and expensive bandwidth. Many countries are putting in place national strategies for broadband promotion. In India, with the liberalization of telecom sector, broadband access has been driven largely by the private sector. The government has set a target for 20 million broadband and 40 million internet users (connections) by 2010. For this to happen, the PC penetration has to be substantially increased by way of suitable policy interventions both fiscal and non-fiscal.

12.1.33 India is poised with many interventions such as e-governance, rural connectivity, and e-education leading to creation of the bandwidth capacity which is also likely to increase the penetration of personal computers (PC), Internet, and broadband users. The bandwidth requirements would be in excess of 10 terabits per second (Tbps), of which at least 2000 gigabits per second (Gbps) (2 Tbps) would be the international bandwidth requirements. Keeping in view such a large bandwidth requirement there is a need to put in place appropriate policy initiatives such as:

- Pricing Policy: India is a highly price-sensitive market. If the price is right then the acceptance of a service or goods is very high, and the telecommunications market has amply proven this fact. Bandwidth, if looked at as a commodity, needs to be priced rightly for bringing in the desired off-take. Reselling of bandwidth for domestic usage should be allowed which is one of the best ways to create competition and roll out of infrastructure.
- Fiscal Policies: The following aspects need to be considered:
  - Encourage availability of low-cost access devices.
  - Decrease duties on items used in broadband networks and equalize duties on inputs for domestically manufactured goods with those on finished imports.
  - Provide appropriate tax structure to enable growth, without having to forego significant revenue.
- Co-ordination between PSUs: BSNL should be encouraged to co-ordinate with the consortium of PSUs—POWERTEL, GAILTEL, and RAILTEL—to identify clearly the additional villages that could be provided broadband connectivity by utilizing the latter's network due to the nature of coverage provided by their network. Suitable financial incentives should be worked out by the USO Administrator to facilitate this programme.

Introduction of New Value-added Services

- Over the last decade, television landscape has undergone a sea change. Now, Internet Protocol Television (IPTV) has arrived, which uses point-to-point connection as compared to broadcast connection and uses multi-casting techniques to give broadcasting effect. Since it is a point-to-point connection similar to the normal voice and data connections, it leads to converged provisioning of voice, video, and data—referred to as triple play—through a single medium. IPTV can be provided by cable TV service operators as well as telephony service operators. In fact, IPTV is widely regarded as the killer application for broadband particularly in the rural areas. This would also help in making the Common Service Centres (CSCs) more viable.
- Mobile TV is yet another technology which permits integration of mobility with TV viewing. Since the hand-held device used for mobile TV reception can also be used for normal voice and data communication, this technology represents a four-way convergence referred to as quadruple play. The use of

services such as 3G for video transmission should bring in mobile TV in the normal course. However, the alternative approach promises great advantages since it uses broadcast technology for video reception at a frequency other than the one used for voice and data applications, such as the FM radio on handsets.

- On the regulatory and pricing front, there will be a need for the down-linking guidelines to be modified to permit broadcasters/content providers to provide their content to IPTV and mobile TV service providers also. The technology enables the service providers to add their own content also on these platforms. Therefore, there will also be a need for regulatory mechanism to regulate the content on the IPTV and mobile TV.

The Path Ahead

12.1.34 In order to ensure further accelerated development in the telecom sector during the Eleventh Five Year Plan, the following aspects will have to be considered:

- The overall focus of the Eleventh Five Year Plan, in respect of telecom, would be on evolving a strategy for the development of world-class infrastructure for supporting accelerated growth of all sectors, bridging the digital divide, an optimum utilization of spectrum, focus on policy recommendations for promotion of private sector investment including FDI, and to take suitable initiatives for improving the performance of telecom equipment manufacturing sector.
- Availability of local content and applications is an important constituent for overall growth of Internet and broadband services. For achieving these goals following major steps may have to be undertaken: (i) facilitation for creation of multimedia and video content in the country; (ii) devising proper incentive for development of regional and local language content; (iii) thrust to the development of content and application for e-governance, e-education, e-health.
- Effective promotion and diversified use of shared rural broadband infrastructure to provide new opportunities, augment income, promote overall development in the areas of tele-education, telemedicine, and e-governance.
- Online retail in a broadband environment may be promoted. The role of other facilitators such as electricity authorities, Department of IT of various State Governments, department of local self-governments, Panchayats, Department of Agriculture, Department of Health and Family Welfare, Department of Education, needs to be properly co-ordinated, so that these departments/organizations/agencies can carry forward the advantages of broadband services to users particularly in rural areas.

12.1.35 The GBS for the Eleventh Five Year Plan of the DoT has been tentatively fixed at Rs 1549 crore at 2006–07 constant price (Rs 1752 crore at current price) and Rs 79204 crore of IEBR at 2006–07 price (Rs 89582 crore at current price).

12.2 INFORMATION TECHNOLOGY

Overview

12.2.1 Information Technology has contributed tremendously to the progress of our country and provided great leadership to Indian enterprise and creativity in the past decade. Breakthroughs in technology and innovative applications have brought vast benefits to various sectors and sub-sectors of the economy of the country. The entire gamut of IT-related services—including software and services, data and business processing services, and IT-enabled services—have emerged as a large knowledge-based sector of our economy. The industry has not only come into its own, both in terms of investment and employment, but is also having a positive knock-on effect on other manufacturing and services sectors. It is contributing to increased productivity and competitiveness across a wide range of activities. We have a dynamic entrepreneurial class that has gained confidence in its ability to compete, with skilled professionals and excellent management capability. Today, a majority of the companies in India have already aligned their internal processes and practices to international standards.

Review of the Tenth Plan

IT Software (Domestic Segment)

12.2.2 The domestic IT market in India was valued at approximately Rs 54000 crore in 2006. This segment

has grown at a CAGR of 19.7% over the past six years.

Policy Reforms Introduced and New Initiatives

12.2.3 Some of the major policy initiatives introduced as well as other programmatic initiatives taken by the Central and various State Governments in the IT sector during the Tenth Plan period are given in Boxes 12.2.1 and 12.2.2.

National Informatics Centre (NIC)

12.2.4 NIC is a nodal S&T organization providing e-governance network and technical support to the Central Government, State Governments, UTs, and about 600 district administrations in the country. It has been facilitating the process of e-governance in the country for the last 30 years.

IT Hardware Manufacturing

12.2.5 Hardware manufacturing has been recognized as one of the engines for economic growth and creation of wealth. India's manufacturing competitiveness is because of the factors such as low-cost labour and the talent pool of three million graduates passing out of universities every year. Also, the raw material is one of the richest sources of our country. The electronics production and electronics export of various sectors of IT hardware and software in the Tenth Five Year Plan are given in Annexures 12.2.1 and 12.2.2. The overall annual growth in electronics hardware production was 15%–16%. The exports constituted about 16% of the total production.

Human Resource Development in IT

12.2.6 India has been developing as a major hub in knowledge creation in IT and electronics in the global arena. The number of professionals employed in this sector had grown to 1.28 million by 2005–06.

Nanotechnology

12.2.7 Nanotechnology is widely regarded as the next technological revolution. It has attracted the attention of scientists, researchers, and technologists all over the world and is likely to have a profound effect on almost

Box 12.2.1
Major Government Initiatives

- NeGP: The NeGP unveiled by the government covers 27 MMPs and 8 support components which are to be implemented at Central, State, and local government levels, at an estimated cost of Rs 23000 crore.
- SWANs: The scheme envisages establishment of SWANs across the country in all 29 States and 6 UTs from State headquarters up to the block level with a minimum bandwidth capacity of 2 Mbps, at a total cost of Rs 3334 crore.
- Community Information Centres (CICs): CICs numbering 487 in the North Eastern States, 135 in Jammu and Kashmir, 41 in A&N Islands, and 30 in Lakshadweep Islands have been established at a total cost of Rs 305 crore and are providing e-governance services and training to the local populace effectively.
- Common Service Centres (CSCs): The scheme envisages establishment of more than 100000 CSCs across the country at a total cost of Rs 5742 crore. The CSCs will be established in a honeycomb pattern covering all the 600000 villages in the country for delivery of content and services such as e-governance, education, entertainment, telemedicine, agriculture, etc.
- Project Relating to Spatial Data Infrastructure for Multi-Layered GIS for Planning: Starting with village as a unit, multi-layered databases would be developed in stand-alone GIS, distributed GIS, and web-based network-centric GIS environments to demonstrate the benefits of GIS at various levels of planning and decision making.
- Computer-aided Digital Mapping Project for Six Cities—Ahmedabad, Bangalore, Chennai, Hyderabad, Kolkata, and Mumbai: The benefits of the project include better services to citizens at large and better preparedness for disaster management. This project involves preparation of digital maps along with the digital mapping of utilities such as water, sewage, electricity, roads, communications, gas, pipelines, etc.
- Semiconductor Industry/FAB: The time is ripe to make India a preferred destination for the manufacture of semiconductors and associated devices. The government has issued a notification in March 2007 relating to the Special Incentive Package for setting up of semiconductor fabrication and other micro and nanotechnology manufacture industries in India.

Box 12.2.2
Indicative List of Successful Initiatives in the States

Project	Initiative of Government of
Computerization of the Registration Department: CARD, HIMRIS, STAR, PRENA, SCORE, SARITA, KAVERI, TRIS, DASTAVAZ, ORCHID, PRISM	AP, Himachal Pradesh, TN, UP, Bihar, Maharashtra, Karnataka, Tripura , Delhi, Sikkim, Punjab
Computerization of Transport Department: SARATHI AND VAHAN	About 500 RTOs/DTOs in various States
Computerization of district administration and Citizen Centric Services: PRAGATI, AKSHAYA, LOKVANI, NAIDISHA, SUWIDHA	Assam, Meghalaya, Kerala, UP, Haryana, Punjab
Back-end PRI Solutions: INFOGRAM, e-gram, e-Panchayat, Asthi, Panchlekha, etc. (village Panchayat)	Goa, Gujarat, AP, Karnataka, MP, etc.
Computerization of Land Records: BHOOMI, TAMILNILAM, BHULEKH, DHARITRI, BHUMI, APNAKHATA, BHUYAN, DEVBHUMI, HIMBHOOMI	Karnataka, TN, MP, Assam, WB, Rajasthan, Chhattisgarh, Uttrakhand, Manipur, Haryana
HALRIS (Integration of property registration and land records administration)	Haryana
NREGSoft (Online Monitoring of NREGS)	All States
Computerization of Treasuries: e-KOSH, Koshvahini	Rajasthan, Chhattisgarh, Maharashtra, UP, Manipur, Haryana, Kerala, Himachal Pradesh
e-Municipality	Maharashtra
Monitoring of Construction of Permanent Shelters for Earthquake and Tsunami Victims	A&N Islands
Employment Exchange	Lakshadweep, Gujarat
Common Integrated Police Application	Around 1800 police stations across States
e-Courts (court orders, cause list, e-filing in Supreme Court)	Supreme Court, 21 High Courts; being extended to 13000 subordinate courts in States
Passport System	Passport offices in States
VAT (Value-added Tax Computerization)	WB, Sikkim, Haryana
AGMARKNET	2800 Agricultural *Mandi*s in various States
National Panchayat Portal	Portals of all PRIs across the States
PRIASoft (PRI accounting software)	Orissa, MP, etc.
RuralBazar (Web store to promote marketing of Rural Products)	TN, Goa, Tripura, etc.
RuralSoft (Information systems for Poverty Alleviation Schemes)	UP, Orissa, AP, etc.
Rural Water Supply & Sanitation/PHED Computerization	Arunachal Pradesh, UP, MP, AP, Rajasthan, TN, etc.—20 States
Open e-NRICH (Community Software Solution Framework and Content Management System)	Kerala, North Eastern States, Bihar, etc.
e-post	Post Offices in States
Instant Money Order	Post Offices in States
COIN (Co-operative Bank Information Network)	Bihar
CONFONET-Computerization and Networking of Consumer Forums	All States
Integrated Information System for food grains management	All States

all industry sectors and application areas. India started R&D funding in the area of nanotechnology during the Tenth Plan and projects relating to nano-electronics with a total outlay of about Rs 127 crore have been initiated.

Vision and Strategy for the Eleventh Five Year Plan

12.2.8 The Eleventh Plan Vision for the Information Technology sector envisages newer technology development, entrepreneurship, and innovation. Building on the existing strengths and base in the software sector, we need to address the shortage of trained human resource, bridging the digital divide, and strengthening the IT hardware manufacturing base in the country so that India emerges as a regional hub for hardware manufacturing and exports. Our software industry needs to move up in the value chain from services to product development and create IPR.

12.2.9 Appropriate strategies encompassing fiscal and non-fiscal initiatives would need to be introduced in a co-ordinated manner to enable India to become world leader in IT software and services including ITES and become a regional hub for IT and electronics hardware manufacturing. Taking advantage of the demographic dividend, we need to create a bank of highly trained manpower not only to meet the domestic requirement but also for the rest of the world.

Policy Issues, Programme Reforms, and New Initiatives in the Eleventh Plan

12.2.10 The Eleventh Plan objective of faster and inclusive growth calls for many new initiatives, namely, creation of integrated modern townships across the country for IT industries, formulation of proactive IT-electronics hardware manufacturing policy, development of trained manpower to meet the requirement of the industries on a continuous basis, and promoting R&D in few selected niche areas wherein we have the ability to become global leaders. Another important area which needs acceleration is the NeGp for providing all government services to the common man in his locality through common service delivery outlets and ensuring efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man. Issues of re-engineering and management of change are of paramount importance in comparison to technical issues associated with e-governance.

12.2.11 The demand for hardware is expected to grow at a rate of 30%, as against 18% at present. This would be fuelled by the aspirations of the younger generation and the large middle class with increasing disposable incomes in India. By the year 2010, the hardware market is expected to be of the order of US$ 85 billion. If the hardware production continues to grow at the present growth rate, there would be a large gap between demand and supply, which will have to be met through imports. In this scenario, we will approach a situation wherein foreign exchange outgo on account of import of hardware could be more than the foreign exchange earned by the country through export of software and services. In addition, this sector has the potential of generating large employment opportunities. Keeping this in view, electronics/IT hardware manufacturing has been identified as a thrust area. Major policy intervention on priority basis is required to promote the growth of Electronics/IT Hardware Manufacturing Industry so as to meet the growing demand.

12.2.12 Semiconductor Manufacturing Industry: With increasing demand for domestic electronic goods and the availability of a pool of talented engineers, India is fast creating a footprint in the semiconductor area. The Indian semiconductor industry is currently dominated by players engaged in chip designing activities. India must compete aggressively by adopting a coherent strategy for building up a semiconductor fabrication facility. The electronic goods manufacturers would create a substantial demand for IC in the country. The fabrication facility would help reap benefits for the nanotechnology industries in the coming years. FAB would cater not only to the domestic market, but the country would also be able to reach out to the global semiconductor market in specific product categories. A special incentive package has been announced for setting up of semiconductor fabrication and other micro-technology and nanotechnology manufacturing industries in India which is expected to fuel further growth of semiconductor manufacturing in India.

SETTING-UP OF INTEGRATED MODERN TOWNSHIPS FOR SUNRISE INDUSTRIES INCLUDING IT AND BPO

12.2.13 IT industry lends itself for easy mobility, and with the large number of educational institutions coming up across the country, there is a need to move the IT-ITES/BPO industries to tier-2 and tier-3 cities for promoting inclusive growth. In addition, it is also important to create 'Information Technology Investment Regions' for setting-up Integrated Modern Townships for Sunrise Industries including IT/ITES/electronic hardware in the country.

CYBER SECURITY

12.2.14 As IT infrastructure is increasingly becoming a substratum of all economic activities, the operational stability and security of critical information infrastructure has become vital for economic security of the country. This calls for concerted efforts from the government, the industry as well as the service providers to secure their IT infrastructure. Following organizations are presently dealing with the cyber security issues in the country.

INDIAN COMPUTER EMERGENCY RESPONSE TEAM (CERT-IN)

- CERT-In is a functional organization with the objective of securing Indian cyber space. It provides incident prevention and response services as well as security and quality management services, and creates awareness on security issues through dissemination of information on its website and operates 24 × 7 Incident Response Help Desk. Its activities comprise handling of security incidents, issuing of e-security alerts, publishing of advisories, vulnerability notes; and security guidelines, tracking of Indian website defacements, etc.

GOVERNMENT DEPARTMENTS SECURITY

- NIC, the e-governance support organization for government departments, has been taking various security measures for providing secure IT environment. These include data centre security, user systems security, security polices and procedure, and regular security audits for compliance checking. The data centre security comprises network firewall, intrusion prevention systems, application firewalls, Secure Sockets Layer (SSL)/Virtual Private Network (VPN) security, etc. The application security audit is conducted on any new application before it can be hosted. Besides, antivirus and software patch management is ensured for the servers and desktop systems all over National Informatics Centre Network (NICNET). Continuous security monitoring of network is done.

REGIONAL CYBER SECURITY RESEARCH CENTRE (RCSRC)

- NASSCOM in association with Chandigarh Administration has established an RCSRC to deal with all cyber security issues in collaboration with the IT industry. The Centre will aid and advise organizations in cyber security policy enforcements, conduct of security audits and incident handling. It will also provide various IT organizations and the police department, consultancy for design of secure networks, including deployment of security administration software such as intrusion detection, management of security software, and vulnerability checking, protection against port scanners, password crackers, and other issues.

HIGH PERFORMANCE COMPUTING

12.2.15 High performance and grid computing is the next generation of computing facilities which would be widely used in a number of areas such as solving newer class of mathematical problems of various complexities, high energy physics, nuclear physics, climate science, structural biology, enzyme catalysis, genomics, bioinformatics, etc. The objective of grid application is to share the computational power across the grid by the members for enhanced service delivery and enable fast data access. There is a need for developing high-speed backbone connecting the computers on the grid, development of application software, and capacity building through R&D and training of required human resources.

TECHNOLOGY DEVELOPMENT IN INDIAN LANGUAGES

12.2.16 India is a multilingual country. There is, therefore, a need to provide user-friendly and cost-effective tools, applications, and content that enable access to ICT infrastructure in Indian languages. The issues relating to linguistic data resource, content

creation, language processing tools, and such technologies as optical character recognition, text-to-speech, speech recognition, cross-lingual information retrieval, and machine translation in multilingual environment are being addressed. To make available the fruits of IT development to the common man, fonts and software tools for some of the Indian languages such as Hindi, Tamil, Telugu, Assamese, Kannada, Malayalam, Marathi, Oriya, Punjabi, and Urdu have been released in public domains. There is need for developing similar software tools and fonts for other languages in the coming years.

DIGITAL LIBRARY OF INDIA

12.2.17 Digital library offers many advantages over the traditional libraries. Having no physical boundaries and space constraints, the digital libraries are available round the clock with multiple accesses at multiple locations in a most cost-effective way.

12.2.18 The Digital Library of India, hosted by the Indian Institute of Science, Bangalore, provides free access to many books in English and Indian languages and has digitized more than 2.97 lakh books containing a total of approximately 80.7 million pages till September 2007. Similarly, other digital libraries, which are mostly accessible to their own members, have been in existence at many locations in India as well as in many other countries. Therefore, the main initiative, in addition to digitization and preservation of data available in physical form, should be the integration of all the digital libraries all over the world so that all significant literary, artistic, and scientific works of mankind will be made available in every corner of the world for the education, study, and appreciation of our generation as well as that of all our future generations.

OPEN TECHNOLOGY CENTRE (OTC)

12.2.19 To facilitate use of open technologies in e-governance and strategic applications and services, OTC has been set up at Chennai. It has provided DSpace, an open-source archival solution, for archival of speeches, video, and audio speeches of Members of Rajya Sabha. It has enabled to archive documents of speeches in Urdu and Hindi in addition to English.

LIBRARY AUTOMATION

12.2.20 e-Granthalaya has been developed by NIC as standardized and robust library automation software. Already implemented in about 1000 libraries, it is going to be rolled out to a large number of libraries in the country.

CREATION OF A NATIONAL KNOWLEDGE NETWORK

12.2.21 A National Knowledge Network can go a long way in bringing India in the forefront of education, S&T, innovation, etc. National Research and Education Networks are driving the pace of collaboration, innovation, and discovery amongst scientists. Some of the major initiatives required in this direction include:

- Creation of a suitable mechanism for setting up and operating a National Knowledge Network.
- Connecting all major R&D establishments, Central institutions, universities, colleges, and libraries by using a dynamically configurable national multi-gigabit backbone network.
- Empowering campuses through wireless network.
- Having a Central Data Centre with 30 terabyte storage, capable of expanding to petabyte storage in future.
- Create a National educational portal which could host free educational content for e-learning.

SCHOOL CONNECTIVITY

12.2.22 Education infrastructure needs to be strengthened and upgraded. In the first phase, broadband access needs to be provided to every school. There are 108000 government and government-aided schools in India. All these schools need to be put on the network progressively.

INCREASING EFFICIENCY OF E-GOVERNANCE INVESTMENTS

12.2.23 The following initiatives would need to be taken up for accelerating the National e-governance programme:

- Encourage the Central and State Governments to procure e-governance services.
- Fast replication of already successful e-governance programmes.

- Make digital signatures mandatory for e-commerce, e-government, and e-banking initiatives.
- Identify and develop 'Killer Applications'—Online auctions, e-voting, home banking, etc.
- Speedy and effective implementation of various MMPs under the NEGP.
- Promotion of technologies such as Digital Subscriber Lines (xDSL), Wireless Fidelity (WiFi), and Worldwide Inter-operability for Microwave Access (WiMAX) for providing the last mile connectivity to the places where copper wiring is not possible.
- Technologies such as Broadband on Power Lines should also be explored.

THRUST AREAS FOR R&D IN IT SECTOR IN THE ELEVENTH PLAN

12.2.24 R&D in identified thrust areas is one of the major functions of the DIT. This support has helped in building infrastructure and competencies at a large number of academic and research institutions, and has produced the required manpower to take up R&D in the industry besides development of various products and packages. Some of the major thrust areas for R&D in the Eleventh Plan include: ubiquitous computing, RFI, high performance computing, grid computing, high performance networking, bio-informatics, open source software, software engineering, web technologies, and electronics— nanotechnology, photonics, microelectronics, industrial electronics, automation electronics, embedded systems, and electronics material development program.

CONVERGENCE OF BIO-INFO-NANO TECHNOLOGIES AND COGNITIVE SCIENCE

12.2.25 Information technology and communication technology have already converged leading to ICT. Information technology combined with bio-technology has led to bio-informatics. Now, nanotechnology is knocking at our doors. It is the field of the future that will replace microelectronics and many other fields with tremendous application potential in the areas of medicine, electronics, material science, etc. Convergence of bio-nano-info technologies can lead to the development of nano-robots. Likewise, a new revolution is also expected to be ushered in by the convergence of bio-info-nano technologies with the cognitive science in the coming years.

ICT Measurement for Knowledge Economy

12.2.26 The GoI has set up the National Statistical Commission with a wide ranging mandate to serve as a nodal and empowered body for all core statistical activities in the country and to evolve, monitor, and enforce statistical priorities and standards and to ensure statistical co-ordination among the different agencies involved. The Commission was formally constituted in July 2006.

12.2.27 This has enhanced the need for credible and timely data on ICT. The ultimate aim of collecting ICT statistics and indicators is to inform policy makers about the impact of ICT on the economy and the society. For this to be possible, data need to be collected not only on the ICT industry but also on how ICT is used by people, business, and the public administration. Therefore, there is a need to shift the emphasis a bit from measurement of the ICT industry to measuring the use of ICT across the economy in the Eleventh Plan.

12.2.28 In order to address this emerging need in the Eleventh Plan following course of action may be considered:

- Conduct model surveys of ICT usage by households, individuals, and businesses, including e-commerce and e-business.
- Study impact of ICT: What does ICT do for the economy?
- Pursue international co-operation and the partnership on measuring ICT for development.

Constraints and Challenges

12.2.29 Some of the key constraints and challenges being faced by the IT and hardware manufacturing sector in the country are as follows:

SMALL SIZE/SCALE OF OPERATIONS

- The size and scale of operation of most manufacturing plants are very small compared to the global market leaders. This leads to poor economies of scales for manufacturing as well as for sourcing. Lower capacities translate to higher per unit overheads. Even though the cost of labour in India is low, it fails to offset the adverse impact of poor economies of scale.

HIGH RATE OF TECHNOLOGICAL OBSOLESCENCE

- Due to the changes in technology, newer methods get introduced, calling for modern processes and equipment, which give a competitive advantage in terms of cost, speed, and quality. Yet, Indian companies find it unviable to upgrade before the investments in earlier equipment are recovered.

UNIFICATION OF MANUFACTURING

- With rapid convergence of consumer electronics, IT, and telecom and fast introduction of newer products in the market, new vistas for the manufacture of accessories to support the new gadgets are emerging. Therefore, unification of product categories has to be attempted for manufacturing.
- There appears to be lack of credible and timely data on ICT usage (e-Stat) and its impact on the economy.

The Path Ahead

12.2.30 The future of IT industry in India looks extremely positive. The government aims to start many new initiatives in this Eleventh Five Year Plan and strengthen the already running schemes. Some of the important initiatives in addition to those enumerated above that would help in reaching the goal of faster and inclusive growth are as follows:

- Encourage the adoption of e-procurement model in all government procurements.
- Encourage State Governments to initiate major citizen-centric mission projects under NeGP, preferably in the PPP mode.
- Promote electronics/IT hardware manufacturing industry as it is one of the thrust areas of the GoI.
- Policy needs to be put in place to set up HMCPs in private sector or public sector or PPP and to co-locate the inter-dependent units in the same complex.
- Policy need to be drafted to address the different issues related to the National Digital Library.
- Operationalize the Unique Identification Project to create a core database (using the most reliable pre-existing digitized database) which is then regularly updated and is easily accessible to and used by all departments for identification of residents in the country for various purposes.
- Initiate MMPs and projects for developing quality human resource which is industry ready.
- Initiate programmes for development of quality faculty.

12.2.31 The GBS for the Eleventh Five Year Plan of the DIT has been tentatively fixed at Rs 11048 crore at 2006–07 constant price and Rs 12496 crore at current price.

12.3 INDIA POST

Overview

12.3.1 Post office is the only institution in the country which touches every person's life. A prompt and efficient postal system is very important for the development of a country. On one hand it provides personal services to the people, and on the other it also provides service to businesses which is crucial for the growth of the economy. The importance of Postal Services becomes all the more important when a USO Fund is created by the government.

12.3.2 With the emergence of private sector as a player in the areas of courier service and express service and with the development of information technology applications in every field, the posts stand to face competition. The basic profile of the sector is given in Box 12.3.1.

Review of the Tenth Plan

12.3.3 The Tenth Plan basically aimed at making the postal services self-sufficient. The major objectives envisaged for the Tenth Plan were (i) provision of universal postal services at affordable prices, (ii) ensuring quality of services at par with international standards, (iii) modernization, and (iv) process re-engineering with a view to achieving better administrative efficiency, financial management, and satisfaction. The technology upgradation component constituted nearly 80% of the Tenth Plan outlay. The policy of opening of post offices was reviewed and it was decided that in order to rationalize the postal network, new post offices should be set up only through the redeployment of staff or relocation of the existing post offices.

Box 12.3.1
Basic Profile of the Postal Sector

- Except for courier services, postal operations are still a government monopoly.
- Postal services in India have been highly subsidized as part of the government policy.
- Indian postal system is the largest in the world in terms of number of post offices/outlets numbering about 1.55 lakh, out of which nearly 90% post offices are in rural areas and remaining 10% post offices are in urban areas. In addition, 5405 Panchayat Sanchar Sewa Kendras are also providing basic postal facilities in rural areas.
- India Post is presently being served by as many as 5.4 lakh employees including 2.47 lakh departmental and 2.93 lakh extra-departmental employees to run its operations all over the country.
- The total expenditure in percentage of receipts for Posts was 123% in India as compared to 101% in the UK and 102% in the US.

Targets and Performance of the Tenth Plan

12.3.4 As against a target of opening of 450 extra-departmental post offices, the department has been able to open 440 extra-departmental post offices. As regards the opening of Postal Sanchar Seva Kendras against a target set for 2400, the achievement has been 2371. The department has also been able to achieve fully its target of opening 45 post offices. As many as 8263 post offices were computerized against a target of 7700 post offices. In addition, 19 postal accounts offices were computerized as against a target of 22. All the 245 administrative post offices have also been computerized. There has been 100% achievement in computerization of 48 head record offices.

12.3.5 In the area of modernization, as against a target of 811, as many as 822 post offices have been modernized. The department has been able to modernize 338 speed post centres as against a target of 350. Modernization has also been done of mail motor depots as per the target. The department has set up 290 postal finance marts (PFMs) as against a target of 300.

12.3.6 In the field of philately upgradation, the department has performed well. Human resource development, which is the crucial element for supporting the whole process of modernization and induction of technology, has also been taken up by the department. As many as 303769 persons from different cadres were trained in their respective fields as against a target of 315700 persons. The department also established the National Data Centre that would help them in providing various services across their network similar to anywhere banking.

Vision and Strategy for the Eleventh Five Year Plan

12.3.7 The vision statement of India Post reaffirms its social commitment and its focus on technology induction, entrepreneurial management, and achieving financial self-sufficiency. Taking into consideration the internal and external opportunities and challenges, the Eleventh Plan would focus on an all-round development of the DoP with a number of policy initiatives and building a brand image. The department would also aim to effectively utilize its network and reach for providing value-added services by developing appropriate linkages with various agencies/organizations.

Key Constraints and Challenges

12.3.8 Owing to increasing competition and availability of other means of affordable communication including telephone, Internet, etc., India Post needs to become commercially viable by increasing revenue, while fulfilling the rising expectations of the customers through adoption of competitive and customer-friendly business strategies. This calls for an urgent need to redefine and reposition the department in the changed scenario. There is a need to improve quality of services and adapting them to the needs of the rapidly evolving and increasingly technology driven world. Besides, India Post also needs to focus its efforts on non-core activities based on information technology by leveraging its network and the last mile reach through partnerships.

12.3.9 The domestic postal market faces a number of opportunities and threats:

COMMUNICATION MARKET

- Electronics alternatives as well as organized and ad hoc couriers are both competing with India Post.

LOGISTICS MARKET

- National and international players are entering the logistics and express markets for providing better value-added services aimed at business customers.

MASS MEDIA MARKET

- Opportunities exist to develop direct mail and target the growing middle class community with targeted marketing.

RETAIL AND FINANCIAL MARKET

- With its extensive network, India Post is well placed to partner with banks, insurance companies, and other financial service providers for extending financial services to the rural and hitherto unreached population.

Policy Issues for the Eleventh Five Year Plan

12.3.10 Taking into consideration the internal and external opportunities and challenges, the Eleventh Five Year Plan would focus on an all-round development and repositioning of the DoP. A few but important policy issues for the Eleventh Five Year Plan are mentioned below:

- Reorganize the DoP around the emerging technological and market realities and expand into newer business potential areas such as Global Business, Financial Services, Retail, Rural Business, etc.
- Widespread induction of technology aimed at computerizing and networking of all post offices using Central server-based system. Induction of other state-of-art processing systems including mail processing systems so as to provide service on par with global industry standards.
- Greater focus on human resource development with the objective of transformation of the human resource of the department into a technology-savvy, business-oriented workforce led by world-class managers.
- Transforming Postal Life Insurance into a commercial business entity making its own investment decisions and competing on a level playing field with other insurance entities, while conforming to requirements of Insurance Regulatory and Development Authority (IRDA) norms.
- Adoption of PPP model for development of postal estates by setting up a SPV for their commercial exploitation and revenue generation.
- Utilizing the widespread network and reach of India Post to act as an interface for the Central and State Governments with beneficiaries for delivery of various social sector schemes, and also for trade, business, and banking sectors.
- A new division is to be created to specifically target rural postal network with a view to utilizing the rural network and delivery strengths for revenue generation and extension of services/amenities to the rural areas.

SCHEMES/PROGRAMMES TO BE IMPLEMENTED IN THE ELEVENTH FIVE YEAR PLAN

Network

12.3.11 The programme for the expansion of the postal network will be carried out in the Eleventh Five Year Plan, keeping in view the requirement of the customers, USO, accessibility, standards, and business potential through adoption of alternate/innovative means of providing access to the postal network, such as opening of franchisee outlets through induction of latest technology, apart from opening of new post offices.

12.3.12 There is an urgent need to utilize this unparalleled network to support various retail services through tie-ups with the Central and State Governments and private organizations and also support e-governance initiatives of the Central and State Governments. Post offices can function as retail outlets and as an interface between the customer and the governments, both Central and State, particularly in rural areas for the social sector schemes.

Mail Operations

12.3.13 Mail operations, viz., collection, transmission, and delivery would require focus. There is need to

resort to automation in mail handling at the important centres where substantial amount of load is there. Mail operations require prompt and efficient multimodal transport system, which could be met by hiring/leasing of fast moving transport system, conveyors, transport for delivery and pick up of postal articles and wet-leasing of freighter air craft, etc. Mechanization of runner lines in rural areas is also needed for faster movement of mail in these areas.

12.3.14 There is a need to introduce and streamline proper track and trace systems for all the varieties of articles such as parcels, registered items, money orders, etc. Mail Business Centres (MBCs) are being set up as front line business wing of India Post offering one-stop solutions for varied mailing needs of the customers. MBCs will act as integrated mail business hub, undertaking the task of collection, processing, and delivery of mails. A total of 300 MBCs are proposed to be opened during the current Plan. MBCs will fulfil the objective of improvement in quality of service, reduction in cost of operations, and growth in mail business. The establishment of parcel post as a major strategic business unit of India Post has also been envisaged in the Eleventh Plan, as this business is expected to become a major source of revenue. Major parcel hubs will be provided with automatic parcel sorting systems, RFI systems, hydraulic pallet trucks, fork lifts, taper rollers, and other parcel handling equipments. It is also proposed to develop and establish a commercial system for parcel post for providing end-to-end solutions, covering booking, tracking, billing, and customer information system.

12.3.15 The objective during the Eleventh Five Year Plan is to work towards making India Post a major player in the logistics and supply chain management arena by providing distribution channels, inventory management, packaging services, warehousing, transportation, and time-definite distribution programmes. It is proposed to establish logistics centres in metro cities and major business towns and a logistics centre for international operations. India Post also needs to enter the international parcel and logistics business and function as the logistics partner for providing event-specific services for trade fairs, Commonwealth games, and State-sponsored events.

12.3.16 It is proposed to offer e-commerce solutions through tie-ups with suppliers which will provide various products to the customers to be delivered through posts. International mail segment has become highly competitive with the emergence of private operators in the sector and cross border posting of mails. Therefore, the Offices of Exchange in India, that is Airmail Offices, International Express Mail Service, and Foreign Post Offices at Delhi, Mumbai, Kolkata, Chennai, and Kochi, which process the international mail, would require capacity augmentation for high speed processing of mails and security during the Eleventh Plan in order to meet the challenges of competitive market.

Financial Services

Postal Finance Marts (PFMs)

12.3.17 PFMs are one-stop shops for financial services such as mutual funds and other financial instruments. The PFMs would help in creating a distinct identity and branding of postal financial outlets, which can serve as a front end for the tie-ups with financial institutions and banks for vending their retail services. The success of these marts will depend on the kind of results they produce for the customers, which in turn will depend upon the expertise of the financial adviser.

Banking

12.3.18 Post office saving bank is the single largest source of revenue for the department. It has been able to make a business of Rs 3500 crore as on 30 June 2007 With a customer base of 17.5 crore account holders, a branch network double the size of all the banks in the country put together, and with a diverse product range, the Post Office Savings Bank is the largest retail banking network in the country. This network and the depth of reach should be utilized to implement the 'Sampoorna Dak Khana Bachat Yojana Gram' Scheme.

12.3.19 Since any time anywhere banking, is the need of the hour, it is proposed to switch over computerization programme of Savings Bank and allied functions from local area network in individual post offices to central server-based technology. For this, investment on technology infrastructure, hardware and software requirements, and networking would be needed. This also includes tele-banking, ATM, etc. Post office can

also have tie-ups with existing banks for providing services to the customers.

Money Transfer

12.3.20 Instant money-order (iMO) service was initiated during the Tenth Plan. There is a need to expand this service and extend its scope to interface the iMO with international payment gateways. We are tying up with other countries having large population of Indian origin through bilateral/multilateral agreements for International Financial Service. The existing money-order services will be progressively replaced by an electronic, IT-based money-order service which will offer many new service features and differential tariff structure.

Insurance

12.3.21 Transforming Postal Life Insurance into a commercial business entity making its own investment decisions and competing on level playing field with other insurance entities, while conforming to requirements of IRDA norms is essential. In this direction, investment would be required for customization of products, improvement of after sale service, and modernization of customer interaction points. Funds would also be required for hardware and software support. There is also a need to develop internal expertise for fund management to enable investment of Post Office Life Insurance Fund/Rural Post Office Life Insurance Fund as per the investment pattern of IRDA.

Philately

12.3.22 The focus on philately would continue to have its place during the Eleventh Five Year Plan as well. The following initiatives would need to be undertaken for promotion, product innovation, and quality/technology induction.

- Initiate online trading of philatelic items through the internet-based trading portals such as e-Bay, etc.
- Introduce new products like personalized stamps which have been very successful abroad.
- Introduce new postal stamps based on the different themes of national importance with emphasis on using postal stamps as medium of advertisement to generate additional revenue.

Global Business Division

12.3.23 A Global Business Division has been set up in India Post to capitalize on the liberalized economy and also to exploit the business opportunities by opening of the postal sector as a result of WTO/GATT agreements. The Global Business Division would provide a single window solution for international business requirements of its customers. The Global Business Division projects India Post as a strategic partner for value addition to international business in mail, express, logistics, and remittance sectors. Besides this, the Global Business Division would provide an avenue for tapping new markets around the world for India Post.

Support Systems

Technology Induction

12.3.24 It is proposed to undertake an extensive technology induction/upgradation programme during the Eleventh Five Year Plan with a view to achieving the goal of financial self-sufficiency for the department. During the Tenth Five Year Plan the department has been able to computerize about 8263 large departmental post offices. Now in the Eleventh Five Year Plan efforts would be made to computerize and network 17878 departmental post offices for providing effective and satisfactory service to its customers. In addition, 64000 selected branch post offices located in block/*tehsil* headquarters or in remote areas also will be computerized. Further, remaining administrative offices (up to sub-divisional level) including Postal Directorate, PSD/CSDs, Civil Wing offices, etc. will also be taken up for computerization. The proposed networking would enable the department to start various online services, viz., any time, any-where savings bank and other financial services, improve delivery thereby getting additional revenue. Networked hand-held digital devices could be developed to be carried by postmen/postal staff to enable not only delivery of articles and intimation of their status in real time, but also for booking of articles and offering other services such as accepting deposits, bill payment, other e-enabled services, etc. The same device could also be used to create franchise network.

Human Resource Management

12.3.25 The objective is a greater focus on human resource development with the objective of transfor-

mation of the human resource into a technology-savvy, business-oriented workforce led by world-class managers. Behavioural training is also essential to enable effective customer interaction. This would require restructuring of the Postal Staff College India (PSCI) and the postal training center network. It is also envisaged to evaluate the role of PSCI from a training institution to a nodal training policy institute with international linkages.

Marketing, Research, and Development

12.3.26 For the wide range of activities planned to augment business and garner additional revenue, it is necessary to have a professional marketing, research, and product development organization to support the implementation of the plans. This plan scheme envisages setting up of marketing, research, and product development centre after carrying out feasibility study. The programme proposed to be implemented includes the development of a National Address Management System which will add to the professional strength of the department and creation of a brand identity for India Post.

Estate Management

12.3.27 In order to fulfil the USO for providing easy access to postal services, construction of buildings is essential to provide the vital infrastructure for efficient postal operations, while simultaneously focusing on revenue generation from estates in commercial locations. The strategy for construction would be to construct buildings in identified highly commercial locations in PPP mode through an SPV set up for this purpose. The existing programme for construction of buildings with government funding would also be continued on plots with low commercial value.

12.3.28 Departmental buildings in remote and inaccessible areas are proposed to be provided with solar panels for easy access to power using environment-friendly technology. Attention is also proposed to be given to improvement of the working environment and ergonomics and branding of operative offices, with particular emphasis on post offices.

Material Management

12.3.29 Setting up of an efficient material management system through upgradation of technology and provision of required equipment facilities is essential, since the Postal Store Depots and post offices handle a very large volume of stationery, including forms for use in operative offices and equipment which is essential for the smooth functioning of the postal system.

SUPPLY OF EQUIPMENTS

12.3.30 All the necessary and the other modern equipments for packing, unpacking, binding, moving, stapling, cash counting, etc. would need to be procured and supplied in time.

QUALITY

12.3.31 There is a need to develop an R&D centre under marketing and to encourage development of indigenous franking machines, mail processing equipment, vending machines, etc.

PROCESS IMPROVEMENT

12.3.32 It also proposed to set up call centres all over the country based on Interactive Voice Response System, starting initially with eight locations.

The Path Ahead

12.3.33 The Eleventh Five Year Plan would endeavour to transform India Post into a modern, efficient, and self-sufficient organization responsive to market conditions and fully utilizing its potential for service and revenue generation, while maintaining its commitment to deliver on its USO. To achieve this, the major initiatives/action points envisaged for the Eleventh Five Year Plan are the following:

- Preparing an action plan for restructuring the DoP in order to reaffirm its vision statement on its social commitment to the people of our country.
- Focus on utilizing the unparalleled network of the DoP to support e-governance initiatives of the Central and State Governments and as a retail outlet/interface between the customer and the governments both at Centre and State, particularly in rural areas.
- Focus on providing technological support for an extensive computerization of the network using integrated software and central–server technology.
- With a view to further reducing the deficit, the DoP

needs to define its USO, introduce suitable legislative amendments in the IPO Act 1898, and set-up a regulatory mechanism for the postal sector to ensure a level playing field.
- Transforming Postal Life Insurance into a commercial business entity making its own investment decisions and competing on level playing field with other insurance entities, while conforming to requirements of IRDA norms.
- Action plan needs to be put in place for postal estates management.
- Action plan needs to be prepared to set up and maintain MBCs as frontline business wing of India Post offering one-stop solutions for varied mailing needs of the customers.
- Action plan needs to be prepared to set up and maintain prompt and efficient multi-modal transport system incorporating wet-leasing of aircraft, road transport, etc.
- Action plan needs to be prepared to set up and maintain a grid of automated mail processing centres for various hubs in the country to support the mail sorting processes.
- Make efforts to expand the Plan programme for setting up PFMs.
- Focus on human resource management, particularly training, to support the delivery of services to customers, induction of new technology, specializing in banking and insurance sectors.
- Develop a professional organization to support marketing, research, and product development initiatives to various services offered by the department.
- For all-round development of Ladhakh, Andaman and Nicobar Islands, and Lakshadweep Island, SCPs would be made operative particularly for opening branch offices, construction of buildings, and other needs.
- Focus on special needs of the North East circle as per the comprehensive sub-plan which includes mail operations, banking and money transfer, computerization and training as well as construction of buildings.

12.3.34 The GBS for the Eleventh Five Year Plan of the DoP has been tentatively fixed at Rs 3536 crore at 2006–07 constant price and Rs 4000 crore at current price.

[1] The figures in bracket refer to CAGR.

12.4 INFORMATION AND BROADCASTING

Overview

12.4.1 One of the sectors which has consistently outperformed the GDP growth year after year is the Entertainment and Media Services Sector which is expected to grow at a CAGR of 18% till 2010 and beyond during the Eleventh Plan period. This sector comprises television (CAGR, 22%),[1] films (16%), radio (28%), music (4%), print media (13%), live entertainment (16%), out-of-home advertisement (17%), and Internet advertising (43%). Its existing as well as annual turnover and its CAGR are given in Table 12.4.1.

12.4.2 It is one sector which responds to extraordinary GDP growth with a multiplier. When incomes rise, more resources get spent on leisure. The contribution of each media sub-sector to the overall revenues as in 2006 and as projected for 2011 clearly brings out growing preponderance of electronic media over print media as depicted in Figures 12.4.1(a) and (b).

12.4.3 Growth in infrastructure, technology, and institutional support in the information and broadcasting (I&B) sector was in consonance with overall national development perspective. Film, information, and broadcasting sectors of the economy have achieved formidable strength. The share of I&B sector in total employment, income, and investment has gone up significantly. Issues in the national scenario of this sector revolved around foreign investment, regulation, intellectual property rights, content enrichment, restructuring of Prasar Bharati, digitalization and maintaining archives of the entire spectrum of I&B media unit.

Review of the Tenth Plan

Information Sector

12.4.4 During the Tenth Plan, information sector of the Ministry of I&B focused on the following:

- Directorate of Advertisement and Visual Publicity, with its function of providing multi-media publicity to government's development programmes and

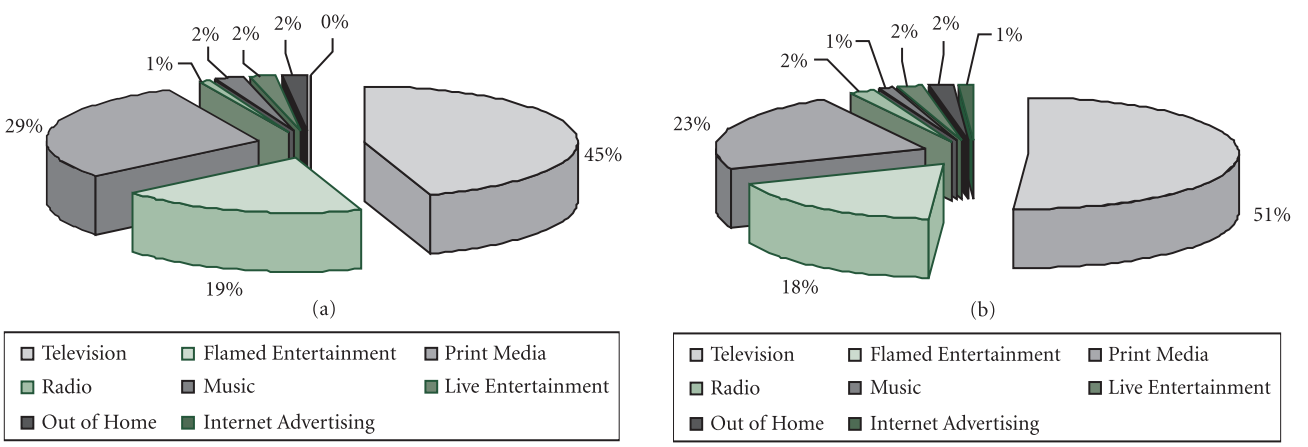
TABLE 12.4.1
Annual Growth of Indian Entertainment and Media Industry

(Rs Million)

	2004	2005	2006E	2007F	2008F	2009F	2010F	2011F	CAGR
Television	128700	158000	191200	219900	266000	331000	431000	519000	
Annual growth		23%	21%	15%	21%	24%	30%	20%	22%
Filmed entertainment	59900	68100	84500	96800	112000	126450	146000	175000	
Annual growth		14%	24%	15%	16%	13%	15%	20%	16%
Radio	2400	3200	5000	6500	8500	11000	14000	17000	
Annual growth		33%	56%	30%	31%	29%	27%	21%	28%
Music	6700	7000	7200	7400	7500	7600	8000	8700	
Annual growth		4%	3%	3%	1%	1%	5%	9%	4%
Live entertainment	7000	8000	9000	11000	13000	16000	18000	19000	
Annual growth		14%	13%	22%	18%	23%	13%	6%	16%
Entertainment industry#	204700	244300	296900	341600	407000	492050	617000	738700	
Annual growth		19%	22%	15%	19%	21%	25%	20%	
Print media	87800	109500	127900	144000	162200	182300	206500	232000	
Annual growth		25%	17%	13%	12%	13%	12%	13%	13%
OOH advertisement	8500	9000	10000	12500	14500	16500	19000	21500	
Annual growth		6%	11%	25%	16%	14%	15%	13%	17%
Internet advertising	600	1000	1600	2700	4200	6000	8200	9500	
Annual growth		67%	60%	69%	56%	43%	37%	16%	43%
Total entertainment and media industry#	301600	363800	436400	500800	587900	696850	850700	1001700	
Annual growth rate (%)		21%	20%	15%	17%	19%	22%	18%	18%

Note: # The figures taken above include only the legitimate revenues in each segment. Revenues from the Animation and Gaming segments have not been included in the industry size as these are traditionally included in the Indian IT and Software Revenues; E = Estimates; F = Forecasted

Source: Industry estimates and PwC analysis/Federation of Indian Chambers of Commerce and Industry (FICCI): Indian Entertainment and Media Industry, March 2007.



Source: Industry estimates and PWC analysis/FICCI: Indian Entertainment and Media Industry, March 2007.

FIGURE 12.4.1: Indian Entertainment and Media industry—Status and Projections

policies in various fields, and achievement in these areas, focused on the need for technological upgradation of its communication equipments and modernization of its programme designs.

- Song and Drama Division (SDD)—being related to publicity, education, and entertainment through the traditional media of folk music, dance, theatre, and puppetry—targeted at extensive use of traditional

media for communication and modernizing its facilities for programme and designs.

- Directorate of Field Publicity (DFP) set goals for increasing its coverage, computerization of regional offices, creation of local software for effective communication, and streaming of its feedback mechanism.
- Some of the major policy initiatives taken include:
  - Indian editions of foreign scientific, technical, and specialty magazines, periodicals, and journals were allowed.
  - Foreign investment up to 100% in publishing companies publishing specialty magazines was allowed.
  - 26% foreign equity in Indian firms publishing newspapers and news and current affairs periodicals should be allowed.
- New Advertisement Policy came into effect from 1 January 2006. Audio-Visual Advertisement Policy was also approved by the government on 8 November 2006 and guidelines were also issued for empanelment of Audio and Video Producers on 21 June 2006.

Film Sector

12.4.5 The main objectives of the film sector were to produce, collect, display good quality films, children's films, documentaries, short films, animation films for internal and external publicity, and capacity building in film producing, directing, acting, editing, etc. Certification of films for exhibition is a continuous regulatory work pertaining to this sector. Maintenance and enforcement of National Film Archive of India and of the Archives of the Films Division enables preservation of the film wealth for posterity. It acts as a facilitator for the industry to organize film festivals and provide marketing support including import and export of films. Indian films are important tools for cultural diplomacy. The I&B Ministry participates in various international fairs and organizes festivals in collaboration with Indian Embassies abroad. Although the Indian film industry produces over a 1000 films a year, it has a negligible share in the global film industry revenues. Therefore, it requires a strong policy support to achieve a place of prominence in the world market. Piracy menace had been a major cause of loss of revenue to film industry. The activities of the film institutes, such as Satyajit Ray Film and Television Institute (SRFTI), Kolkata; Film and Television Institute of India (FTII), Pune; and IIMC were focused on modernization of training infrastructure and improvement in quality of training. IIMC has introduced TV journalism in its curriculum in response to growing demand for this discipline from the student community.

Broadcasting Sector

12.4.6 The broadcasting sector has already achieved major milestones on its growth journey, beginning with All-India Radio (AIR) and Doordarshan (DD). The scale of its operation, technological up-datedness, and timeliness in the move towards excellence in content and transmission make it a vibrant sector. Radio broadcasting infrastructure consists of 229 AIR analogue terrestrial radio Medium Wave and Short Wave stations, 264 analogue private terrestrial stations, and one private satellite radio, that is, World Space. The television broadcasting setup consists of 1398 analogue terrestrial transmitters and 4 digital transmitters in public sector, 6000 Multi-System Operators, and 65000 Local Cable Operators in private sector, 3 digital DTH satellite television operators in public and private sector.

12.4.7 Out of 210 million houses, by 2001 Census figure, television has reached 108 million, with cable and satellite in 68 million homes. The DTH subscription is around 5.6 million (DD DTH share 4.0 million, and private DTH 1.6 million). Similarly, number of radio sets was 132 million. Total radio coverage by population has reached 99.13%. There are in all 229 AIR channels and 42 private FM stations.

12.4.8 The creation of excellent content has become a vital need for survival of public service broadcaster to achieve its three-some objective of entertainment, education, and information in every single programme produced. During the Tenth Five Year Plan, first time high-quality content creation gathered serious attention to provide public service broadcaster a competitive edge vis-à-vis rapidly flourishing private broadcasting firms and rising broadcasting standards. In response to this, an alternative mechanism for creating rich content was devised by providing funds

to institutions and individuals, known for professional excellence and high standards.

12.4.9 DD completed the J&K Special Package Phase I, and North East Package Phase I. This has enhanced coverage of television in these areas. The national channel coverage, both terrestrial as well as satellite, has reached a 90.7% population. News channel coverage has reached 48% of the population. DD also started the nation-wide DTH Ku band telecasting through 35 TV and 20 AIR Audio channels free of cost.

12.4.10 There were significant shortfalls during the Tenth Plan period both in terms of extending coverage and enhancing digitalization. Broadcasting in High Definition Television (HDTV) and interactive multimedia TV services have not yet started. The Conditional Access System (CAS) is being implemented in four metros only. As regards radio broadcasting, Digital Radio Mondiale (DRM) transmission has not yet started, and FM services did not reach the Tenth Plan target of 60% coverage. Internet radio broadcasting also did not take off as envisaged. The Tenth Plan strategy of content creation through alternative mechanism of funding did not go beyond signing an MoU between the Prasar Bharati and Public Service Broadcasting Trust.

Vision and Strategy in the Eleventh Five Year Plan

12.4.11 The growth potential of various media units needs to be harnessed fully to place broadcasting economy on a high growth path during the Eleventh Five Year Plan. The media units have an immense role to play in education, entertainment, and information dissemination. For a sustained growth in these areas, appropriate content, technology, and policy initiatives have to be evolved. Competitiveness and cost-effectiveness comes on the wings of appropriate technology and compatible manpower in all segments. In rapidly changing information and broadcasting sector, adopting new technologies and conceiving new technological solutions are crucial. PPP is the one of the most plausible solution for funding new technological interventions and bringing in competitiveness.

12.4.12 The Public Service Broadcaster in India, namely, the Prasar Bharati, enjoyed monopoly in broadcasting till recently. There was near absence of private sector broadcasters. Now in the liberalized information and broadcasting sector with global and domestic private players, public service broad-casting no more plays that dominant role in reach and technology. This new reality required government to assume simultaneously the role of facilitator and promoter of the information and broadcasting sector.

Policy Issues, Programme Reforms, and New Initiatives in the Eleventh Five Year Plan

12.4.13 Information

- In recognition of the importance of traditional media units, emphasis should be on the use of IT-enabled applications and other technological advancement for increasing their reach.
- There is a need for promoting partnership with the private sector in the field of traditional media units for bridging the information gap.
- The issues pertaining to Intellectual Property Rights in the information sector need to be addressed.
- Press and Registration of Books Act 1867 needs to be revisited to make it in tune with contemporary needs.
- Modernization of SDD's infrastructure in view of its importance needs to be emphasized.
- Redefining the objectives of the DFP and repositioning its network to reach remote, inaccessible, and strategic areas for effective reach and publicity.
- Strengthening the organizational set up of the Registrar of Newspaper for India (RNI) in North East and Central Zones.
- Completion of National Media Centre, a project of Press Information Bureau.
- Transformation of the IIMC into a global school in journalism.

12.4.14 Films

- Formulation of a National Digital Policy for entertainment sector.
- Revamping of Cinematograph Act of 1952 to address the emerging technologies and new challenges.
- Need to encourage film tourism for targeting the opportunities in global film sector.
- Building up a Centre of Excellence for animation, gaming, and special effects through PPP mode projects.

- Transforming FTII and SRFTI into global film and television schools.
- Encouraging the industry in creating new markets abroad and developing existing markets by supporting participation in film markets and festivals.

12.4.15 Broadcasting Content

- Public Service Broadcasting should focus on developmental programmes of the government and bringing in social awareness.
- Reorganization of Prasar Bharati.
- With the re-emergence of radio as a medium of profound reach and impact, especially FM radio, AIR needs to forge partnerships with private FM players to expand and effectively utilize this medium.
- Establish an International Channel through PPP.
- Facilitating emergence of India as an important source for high-quality animation-based content.

12.4.16 Expansion of Transmission Network, Digitalization, and Mobile Media

- The DTH market has matured and the arrival of IPTV and mobile broadcasting is imminent and need to be nurtured.
- With the convergence of technologies and availability of single gadgets with multiple applications, there are issues relating to policies, standardization of infrastructure, practices, and convergence which will need to be dealt with. One issue dominating the mind of telecom companies entering the area of IPTV is whether this will be regulated by Telecom FDI norms or Broadcasting FDI norms. A Joint Group of Ministry of Information and Broadcasting (MoI&B) and Department of Telecom has recommended that IPTV be governed as per licenses issued by Ministry of Communication and IT. Recommendations of the Joint Group are under consideration of the government.
- Digitization of content, phasing out analogue broadcasting, and creating an enabling environment for promotion of audio/video on demand.
- Digital archiving of films acquired by National Films archives and produced by Films Division.
- Introduction of HDTV Broadcasting and removal of barriers for spread of Digital Terrestrial Transmission (DTT), DTH, IPTV, and Mobile Broadcasting.
- Articulation of an effective IPR protection regime for film, music, and home-video.
- FM coverage to be enhanced from 35% to 45% by using DRM+ compatible transmitters.
- Border areas, rural areas, and semi-urban areas to be accorded priority for FM coverage.
- No further expansion of DD terrestrial network. However, emphasis should be on digitization. Very Low Power Transmission to go out of service on completion of their life. Border and uncovered areas to be covered through technologies like DTH.
- Private players' entry in the DD transmission network for providing mobile solutions and terrestrial transmission should be preferred through PPP route.

12.4.17 Miscellaneous Broadcasting Initiatives

- Mobile media solutions on a fast track basis should be implemented to provide variety in entertainment platforms.
- Digital transmission to be encouraged through Headend in the Sky.
- Common Regulator for Information, Communication, and Entertainment (ICE) Sector. The earlier initiative to create a 'Convergence Commission' with a 'carriage bureau' and a 'content bureau' needs to be revisited. In the context of the general movement of technology in the direction of convergence, that is (i) convergence of network platforms (viz., broadcast, satellite, cable, telecom) carrying similar kinds of services and (ii) merging of consumer devices such as telephones, televisions, PCs, all capable of triple-play, is a pointer that increasingly all carriage networks and devices will be able to carry all kinds of contents. It, therefore, makes sense to have a single regulator. At least this issue of a single regulator for telecom and broadcasting sectors deserves to be revisited.
- Early setting up of a Broadcast Regulator for resolution of legal and regulatory issues.
- Committee on ICE in its report on Going Digital recommended a stepwise migration path from the present analogue broadcasting economy to the digital one.

The Path Ahead

12.4.18 The Eleventh Five Year Plan would aim at transforming the information and broadcasting sector, as well as the media and entertainment sector,

into a modern, efficient, and responsive entity. To achieve this objective, in addition to putting in place necessary policy interventions, the barriers to investment in entertainment and media industry, which is spearheaded by the private sector, need to be effectively addressed. These include:

- Lack of uniformity in media policy for foreign investment FDI limits vary in different sectors—DTH (49%), cable (49%), and content (26%) for news on television and print; 100% for non-news in TV and print; 20% in radio; and 100% in film industry. This needs harmonization. In addition, there is a need to rationalize tax-treatment of foreign companies.
- Cross-media ownership: While policy enunciation imposes an obligation to observe cross-media ownership rules on media companies, these rules have not been formalized so far. As a result of this print and electronic media integration is taking place, which could result in emergence of media behemoths acquiring a mind-share disproportionate to what is permissible in a competitive market environment. Some boundary limits need to be laid down and this issue that needs to be revisited for the sake of long-term health of the industry.

12.4.19 There is need for incentivizing the consumer and equipment manufacturers for successful roll out of CAS and DTH across the country and timelines need to be fixed so that all the stakeholders could put their acts together.

12.4.20 Digitization of satellite transmission, production centres/studios, and terrestrial transmission needs to be undertaken in a mission mode along with introduction of HDTV, IPTV, mobile TV, and other value-added services. For the entire broadcasting sector 'Going Digital' and 'Farming out Excess Bandwidth' need to be taken up expediently to ensure switching over to digital transmission by 2015 and optimal use of scarce bandwidth.

12.4.21 The GBS for the Eleventh Five Year Plan of the MoI&B has been tentatively fixed at Rs 4809 crore at 2006–07 constant price and Rs 5439 crore at current price.

12.4.22 The progress of the plan outlays/expenditure during the Tenth Five Year Plan and the Eleventh Plan outlays of the communication and information technology sector as a whole are given at Annexure 12.4.1.

ANNEXURE 12.2.1
Performance of IT Hardware and Software during the Tenth Five Year Plan

Electronics Production (Financial Year) (Rs Crore)

Item	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07#
1. Consumer electronics	12700	13800	15200	16800	18000	20000
2. Industrial electronics	4500	5550	6100	8300	8800	10400
3. Computers	3550	4250	6800	8800	10800	12800
4 Communication and broadcast equipment	4500	4800	5350	4800	7000	9500
5. Strategic electronics	1800	2500	2750	3000	3200	4500
6. Components	5700	6600	7600	8800	8800	8800
Subtotal	32750	37500	43800	50500	56600	66000
7. Software for exports	36500	46100	58240	80180	104100	141800
8. Domestic software	10874	13400	16250	21740	29600	37800
Total	80124	97000	118290	152420	190300	245600

Note: # Estimated.

Source: DIT Annual Report 2006–07.

ANNEXURE 12.2.2
Performance of Export Segment of IT Hardware and Software during the Tenth Five Year Plan

Electronics Export (Financial Year) (Rs Crore)

Item	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07#*
1. Consumer electronics	700	750	825	1150	2000	
2. Industrial electronics	950	1400	1515	1500	2300	
3. Computers	1800	550	1440	1200	1025	
4. Communication and broadcast equipment	150	500	165	350	500	
5. Components	2200	2400	3755	3800	3800	
Subtotal	5800	5600	7700	8000	9625	11500
6. Computer software	36500	46100	58240	80180	104100	141800
Total	42300	51700	65940	88180	113725	153300

Note: # Estimated.

Source: DIT Annual Report 2006–07.

ANNEXURE 12.4.1
Progress of the Plan Expenditure of Communication and Information Sector

(Rs Crore)

S. No.	Communication and Information Sector	Tenth Plan (2002–07) Outlay	Annual Plan (2002–03)		Annual Plan (2003–04)		Annual Plan (2004–05)		Annual Plan (2005–06)		Annual Plan (2006–07)		Tenth Plan (2002–07)		Eleventh Plan (2007–12) Projected GBS (At Current Price)
			BE	Actual	BE	Actual	BE	Actual	BE	Actual	BE	RE	Total BE	Anticipated Expenditure	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	Department of Telecommunication#	80607.44	19277.79	11610.43	14955.00	7423.14	11660.00	6707.67	11801.01	8000.25	19509.31	17468.22	77203.11	51209.71	1752.00 (89581.56)
2.	Department of Information Technology#	5492.00	593.58	465.07	577.45	494.63	889.27	644.85	1087.56	879.85	1268.27	1273.27	4444.13	3757.67	12496.00 (2163.18)
3.	Department of Posts	1350.00	50.00	45.91	150.00	63.00	200.00	142.16	354.00	301.11	419.00	419.00	1173.00	874.51	4000.00
4.	Ministry of Information and Broadcasting	5130.00	878.00	693.20	890.00	524.23	955.00	421.24	1120.00	859.42	538.00	310.13	4381.00	2808.22	5439.00
	Grand Total	92579.44	20799.37	12814.61	16572.45	8505.00	13704.27	7915.92	14362.57	10040.63	21734.58	19470.62	87201.24	58650.11	23687.00 (91744.74)

Note: # includes IEBR; figures in parenthesis indicate projected IEBR.
Source: Documents of 'Annual Plan' and 'Demand for Grants' of DIT, DoP, DoT and Mo I&B.

Appendix

APPENDIX
Projected GBS for the Eleventh Plan

S. No.		Schemes/Programmes	Eleventh Plan Projections (Rs Crore)		ZBB Remarks
			at 2006–07 Price	at Current Price	
1	2	3	4	5	6
1		**Department of Agriculture and Co-operation**			Subject to further ZBB exercise
	A	Centrally Sponsored Schemes			
	1	National Food Security Mission	4317.31	4883.00	
	2	Technology Mission on Cotton (TMC)	397.87	450.00	
	3	Enhancing Sustainability of Dryland Rainfed Farming Systems (to be merged with Rainfed Area Dev. Prog.)	0.00	0.00	
	4	Integrated Scheme of Oilseeds, Pulses, Oilpalm, and Maize (ISOPOM)	1326.23	1500.00	
	5	Technology Mission on Horticulture for NER including Sikkim, Uttarrkhand, HP, and J&K	1326.23	1500.00	
	6	Micro Irrigation	3006.11	3400.00	
	7	National Bamboo Techonology and Trade Mission	353.66	400.00	
	8	National Horticulture Mission	7788.48	8809.00	
	9	Support to State Extension Programmes for Extension Reforms	1768.30	2000.00	
	10	Rainfed Area Development Programmes (New)	3094.53	3500.00	
	11	Macro Management of Agriculture (MMA) Scheme	4862.83	5500.00	
	13	Others	0.00		
		Subtotal A	28241.54	31942.00	
	B	Central Sector Schemes			
	1	Agriculture Census	70.73	80.00	
	2	Improvement of Agricultural Statistics	132.62	150.00	
	3	Jute Technology Mission—Mini Mission II	35.37	40.00	
	4	National Oilseeds and Vegetable Oils Development Board (NOVOD) including Tree Borne Oilseeds and Biodiesel (Jetropha Plantation)	61.89	70.00	
	5	National Horticulture Board (including Cold Chain)	558.78	632.00	
	6	Coconut Development Board including Technology Mission on Coconut	176.83	200.00	
	7	Central Institute of Horticulture, Nagaland	22.10	25.00	
	8	Strengthening of Central Fertilizer Quality Control & Training Institute & Regional Fertilizer Control Laboratories	22.10	25.00	
	8a	National Project on Promotion of Balanced Use of Fertilizers	397.87	450.00	
	9	National Project on Promotion of Organic Farming	101.68	115.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	10	Scheme for Implementation of Protection of Plant Varieties and Farmers' Rights' Act 2001	106.10	120.00	
	11	Restructuring/Loan to National Seed Corporation and State Farm Corporation of India (NSC & SFCI)	33.60	38.00	
	12	Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds	397.87	450.00	
	13	Strengthening and Modernization of Pest Management in Country	79.57	90.00	
	14	National Scheme on Integrated Pest Management (New Scheme)	88.42	100.00	
	15	Strengthening and Modernization of Plant Quarantine Facilities in India	70.73	80.00	
	16	Monitoring of Pesticide Residues at National Level	48.63	55.00	
	17	Post Harvest Technology and Management (New Scheme)	35.37	40.00	
	18	Watershed Development Council	0.00		
	19	National Rainfed Area Authority (New Scheme)	15.91	18.00	
	20	Investment in Debenture of State Land Development Banks (SLDBs)	353.66	400.00	
	21	National Agricultural Insurance Scheme (NAIS)	3094.53	3500.00	
	22	Co-operative Education and Training	132.62	150.00	
	23	Assistance to NCDC for Development of Co-operatives	282.93	320.00	
	24	Extension Support to Central Institutes/Directorate of Extension (DOE)	61.89	70.00	
	25	Agri-Clinics/Agri-Business Centres	132.62	150.00	
	26	Mass Media Support to Agriculture Extension	397.87	450.00	
	27	Studies in Agricultural Economic Policy & Development	132.62	150.00	
	28	Forecasting and Remote Sensing Application in Crop Husbandry	0.00		
	29	Forecasting Agricultural Output using Space, Agro-Meteorology, and Land Based Observation (FASAL)	44.21	50.00	
	30	Marketing Research Surveys and Information Network (MRIN)	13.26	15.00	
	31	Strengthening Agmark Grading and Export Quality Controls	5.30	6.00	
	32	Development of Market Infrastructure, Grading, and Standardization	335.98	380.00	
	33	Gramin Bhandran Yojana	353.66	400.00	
	34	Small Farmers' Agri Business Consortium (SFAC)	106.10	120.00	
	35	Strengthening/Promoting Agricultural Information System + DAC IT apparatus	309.45	350.00	
	36	Capacity Building to Enhance Competitiveness of Indian Agriculture and Registration of Organic Products Aboard	4.42	5.00	
	37	Natural Disaster Management	0.00	0.00	
	38	Secretariat Economic Service	4.42	5.00	
	39	National Commission on Farmers	0.00	0.00	
	40	Promotion and Strengthening of Agricultural Mechanization through Training, Testing, and Demonstration	31.83	36.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	41	All India Soil and Land Use Survey	39.79	45.00	
	42	Grant-in-aid to National Institute of Agricultural Marketing (NIAM)	13.26	15.00	
	43	Restrutured Scheme for Institutions (including the schemes mentioned at S. No. 21, 23, 40, 41)	0.00	0.00	
		Subtotal B	8306.60	9395.00	
		Subtotal (A+B)	36548.13	41337.00	
	C	State Plan Scheme			
	1	Control of Shifting Cultivation (Watershed Development in Shifting Cultivation Area in NE States)	212.20	240.00	
	2	Rashtriya Krishi Vikas Yojana	22103.77	25000.00	
		Subtotal C	22312.41	25240.00	
		Grand Total (A+B+C)	58860.55	66577.00	
2		**Department of Animal Husbandry, Dairying, and Fisheries (DAHD&F)**			
	I	ANIMAL HUSBANDRY	3645.35	4123.00	
	A	Centrally Sponsored Schemes			
	1	National Project for Livestock Development**	1211.29	1370.00	
	2	Project for Feed and Fodder	125.02	141.40	
	3	Livestock Insurance	45.09	51.00	
	4	National Livestock Disease Control Programme (NLDCP)	1149.40	1300.00	
	5	Livestock Extension & Delivery Services*$	13.26	15.00	
		Total CSS (A&H)	2256.71	2552.40	
	B	Central Sector Schemes			
	1	Livestock Census	397.87	450.00	
	2	Integrated Sample Survey	70.73	80.00	
	3	Central Cattle Development Organization	92.84	105.00	
	4	Central Sheep Breeding Farm	11.49	13.00	
	5	Central Fodder Development Organization	70.73	80.00	
	6	Central Poultry Development Organization	44.21	50.00	

Notes: **Project for Cattle & Buffalo Breeding, Poultry Development (Assistance to State Poultry/Duck Farms, Rural Backyard Development, Establishment of Poultry Estates), Project for Slaughter Houses and CU Plants, Establishment/Modernization of rural slaughter houses, including mobile slaughter plants (New Scheme)*, Utilization of Fallen Animals (New Scheme)*, Consevation of Threatened Livestock Breeds.

*$ Support for Private Veterinary Clinics and AI Centres, Strengthening Livestock Extension System.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	7	Directorate of Animal Health	81.87	92.60	
	8	Small Ruminant Development	176.83	200.00	
	9	Piggery Development	132.62	150.00	
	10	Salvaging and Rearing of Male Buffalo Calves	265.25	300.00	
	11	Food Safety and Traceability	44.21	50.00	
		Total CS (A&H)	1388.65	1570.60	
	II	DAIRY DEVELOPMENT	689.64	780.00	
	A	Centrally Sponsored Schemes			
	1	Dairy Development Projects*#	198.94	225.01	
	B	Central Sector Schemes	0.00	0.00	
	1	Assistance to Co-operatives	44.21	50.00	
	2	Delhi Milk Scheme	4.42	5.00	
	3	Venture Capital Fund*^	442.08	500.00	
		Total CS (DD)	490.70	555.00	
	III	FISHERIES	2454.40	2776.00	
	A	Centrally Sponsored Schemes			
	1	Development of Inland Fisheries & Aquaculture (including new components)	265.25	300.00	
	2	Development of Marine Fisheries, Infrastructure, & Post Harvest Operations (including new components)	309.45	350.00	
	3	National Scheme of Welfare of Fishermen, Fisheries Training, and Extension (including new components)	159.15	180.00	
		Total CSS (Fisheries)	733.85	830.00	
	B	Central Sector Schemes			
	1	Strengthening of Database & Information Networking for Fisheries & Animal Husbandry	22.10	25.00	
	2	Assistance to Fisheries Institutes (CIFNET, CICEF, IFP, & FSI)	328.02	371.00	
	3	National Fisheries Development Board	1370.43	1550.00	
		Total CS (Fisheries)	1720.56	1946.00	

Note: *# Project for Dairy Development (DAHD for Non-potential districts), National Dairy Plan (By Consortium in 325 Milk Potential Districts).
*^ Dairy Venture Capital Fund, Poultry Venture Capital Fund.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	IV	SECRETARIAT & ECONOMIC SERVICES	30.95	35.00	
	V	SPECIAL PACKAGE FOR 31 SUICIDE PRONE DISTRICTS OF ANDHRA PRADESH, KARNATAKA, KERALA, & MAHARASHTRA	300.61	340.00	
		Total Centrally Sponsored Schemes	3490.10	3947.40	
		Total Central Sector Schemes	3630.85	4106.60	
		Total	7120.95	8054.00	
	VI	EXTERNALLY AIDED PROJECTS (EAP)			
		Control & Containment of Avian Influenza—EAP	106.10	120.00	
3		**Department of Agriculture Research and Education (DARE)**			
	1	Assistance to Research Institutes in Crop Sciences	1679.96	1900.08	
	2	Assistance to Research Institutes in Horticulture	621.18	702.57	
	3	Assistance to Research Institutes in Natural Resources Management (Soil and Water Nutrition)	645.54	730.12	
	4	Assistance to Research Institutes in Agricultural Engineering	231.82	262.20	
	5	Assistance to Research Institutes in Animal Science	858.50	970.99	
	6	Assistance to Research Institutes in Fisheries	310.25	350.90	
	7	Assistance to Research Institutes in Agri. Econ. & Statistics	23.03	26.05	
	8	Assistance to Research Institutes in Agri. Extension (included Rs 500 crore for new KVKs)	1989.34	2250.00	
	9	Assistance to Research Institutes in Agriculture Education + Centre of Excellence—support to SAUs	2785.96	3151.00	
	10	Assistance to Research Institutes in DARE + CAU, Manipur	671.31	759.27	
	11	MIS/ICAR Hq. including IPR Management	105.95	119.83	
	12	National Fund for Basic and Strategic Research	111.40	126.00	
	13	National Agricultural Innovation Project (WB Project)	963.72	1089.99	
	14	Indo-US Knowledge Initiative	44.21	50.00	
	15	New Initiatives	88.42	100.00	
		Total	11130.57	12589.00	
4		**Department of Atomic Energy**			
		Central Sector Schemes			
		Research & Development (R&D) Sector			
	1	AERB	17.97	20.33	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	2	AMD	329.63	372.82	
	3	BARC	3232.45	3656.00	
	4	RRCAT	557.15	630.15	
	5	DAE Projects	65.61	74.21	
	6	DCS&EM	166.37	188.17	
	7	Grant-in-aid Support to Research and Education	2314.05	2617.26	
	8	IGCAR	596.05	674.15	
	9	IPR	404.06	457.00	
	10	International Thermo Nuclear Experimental Reactor	1317.05	1489.62	
	11	TMC	198.05	224.00	
	12	VECC	527.22	596.30	
		Industries Sector			
	1	BARC	2846.97	3220.00	
	2	BRIT	36.25	41.00	
	3	DAE Project	207.78	235.00	
	4	ECIL	0.00	0.00	
	5	HWB	442.08	500.00	
	6	IGCAR	751.53	850.00	
	7	NFC	530.49	600.00	
		Minerals Sector			
	1	AMD	150.31	170.00	
	2	DAE Projects	0.00	0.00	
	3	UCIL	1131.71	1280.00	
	4	IREL	0.00	0.00	
		Power Sector			
	1	BARC	265.25	300.00	
	2	IGCAR	17.68	20.00	
	3	DAE Projects	30.06	34.00	
	4	NPCIL			
		(i) Investment	0.00	0.00	
		(ii) Russian Credit	2212.14	2502.00	
	5	KKNP	201.59	228.00	
	6	BHAVINI	1768.30	2000.00	
		Grand Total	22529.93	22980.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
5		**Department of AYUSH**			
	A	Central Sector Schemes			
	1	Systems Strengthening	249.99	282.75	
		(i) Strengthening of Department of AYUSH	41.56	47.00	
		(ii) Statutory Institutions	2.61	2.95	
		(iii) Hospitals and Dispensaries	143.94	162.80	
		(iv) Strengthening of Pharmacopeial Laboratories	22.10	25.00	
		(v) Information, Education, and Communication	22.10	25.00	
		(vi) AYUSH & Public Health	17.68	20.00	
	2	Educational Institutions	363.10	410.68	
	3	R&D including Medicinal Plants	636.21	719.57	
		(i) Research Councils	317.85	359.50	
		(ii) Medicinal Plants	318.36	360.07	
	4	HRD (Training Programme/Fellowship/Exposure Visit/Upgradation of Skills etc.)	26.52	30.00	
	5	Cataloguing, Digitization of Manuscripts and AYUSH IT Network	35.37	40.00	
	6	International Co-operation	35.37	40.00	
	7	Development of AYUSH Industry	446.50	505.00	
	8	Funding of NGOs Engaged in Local Health Traditions/Midwifery Practices etc., under AYUSH.	22.10	25.00	
		Total A	1815.16	2053.00	
	B	Centrally Sponsored Schemes			
	1	Promotion of AYUSH	1237.81	1400.00	
		(i) Development of Institutions	486.28	550.00	
		(ii) Hospitals and Dispensaries (under NRHM)	552.59	625.00	
		(iii) Drugs Quality Control	198.93	225.00	
		New Initiatives	473.02	535.00	
	2	Public–Private Partnership for Setting up of Specialty Clinics/IPDs	44.21	50.00	
	3	Medicinal Plants Processing Zones	428.81	485.00	
		Total B	1710.83	1935.00	
		Grand Total (A+B)	3525.99	3988.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
6		**Department of Biotechnology**			
	1	Human Resource Development	221.04	250.00	(1) SC/ST and gender budgeting should not be universal and S&T department should be particularly exempted from it. (2) DBT should draw up a crash programme for pulses and oilseeds in consultation with Ministry of Agriculture for improving their productivity in the country. (3) DBT needs to have a close interaction with the ICAR to avoid duplication and insure synergy and also accelerate transfer of technologies to the farmers. (4) Efforts should be made to create CoEs within the existing institutions and creation of new institutions may be taken up only in areas in which nucleating facilities do not exist. (5) DBT may prioritize its activities, do careful annual physical and financial phasing so that most important programme could be fully provided in the Eleventh Plan.
	2	Programmes for Promotion of Excellence and Innovation	309.45	350.00	
	3	Biotech Facilities	221.04	250.00	
	4	Bioinformatics	110.52	125.00	
	5	R&D	1382.81	1564.00	
	6	Grand Challenge Programmes	353.66	400.00	
	7	International Co-operation	88.42	100.00	
	8	Biotechnology for Societal Development	88.42	100.00	
	9	Support to Autonomous R&D institutions	2210.38	2500.00	
		I&M Sector	663.11	750.00	
	1	Assistance for Technology Incubators, Pilot Projects, Biotechnology Parks and Biotech Development Fund			
	2	PPP (Small Business Innovative Research Initiative, SBIRI; Biotechnology Industry Partnership Programme, BIPP; Establishment of Biotechnology Industrial Research Assistance Council, BIRAC			
		Total	5648.84	6389.00	
7		**Department of Chemicals & Petrochemicals**			
		Ongoing Schemes			
	1	Support of Existing PSUs on Project Basis (i) Hindustan Organics Chemicals Limited (HOCL) (ii) Hindustan Insecticides Limited (HIL) (iii) Indian Drug and Pharmaceuticals Limited (IDPL) (iv) Bengal Chemicals and Pharmaceuticals Limited (BCPL) (v) Hindustan Antibiotics Limited (HAL) (vi) KAPL/RDPL	318.29	360.00	Routine AMRs for PSUs should be on non-Plan or IEBR side. Outlays proposed for individual PSUs be merged into one scheme under the name 'Project Based Support to PSUs'. Future support to PSUs would be project based and on commercial justification.
	2	Support to Autonomous Bodies on Project Basis (i) Central Institute of Plastics Engineering and Technology (CIPET) (ii) National Institute of Pharmaceutical Education and Research (NIPER) (iii) Institute of Pesticides Formulation Technology (IPFT) (iv) National Pharmaceutical Pricing Authority (NPPA)	169.76	192.00	Further funding depnds on in-depth evaluation by independent agency. Instead of outlay to each institution, there would be one scheme of Project Based Support to Autonomous Institutions.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	3	Assam Gas Cracker Project	176.83	200.00	
	4	Chemical Promotion & Development Scheme (CPDS)—restructured as Pharma & Chemical Promotion & Development Scheme (PCPDS)	13.26	15.00	This scheme has been merged with Pharma Export Promotion Scheme under S. No. 12 and restructured as Pharma & Chemical Promotion & Development Scheme.
	5	Chemical Weapons Convention (CWC)			
	6	IT/Secretariat	3.54	4.00	
			0.88	1.00	
		New Schemes			
	7	New Scheme of CIPET	61.89	70.00	This scheme be clubbed with provision for autonomous institution in S. No. 2 subject to evaluation of autonomous institute.
	8	Other New Schemes of Petrochemicals	44.21	50.00	Specific schemes to be identified and further provision only after receiving specific proposal.
	9	New Scheme of NIPER, Mohali	61.01	69.00	This scheme be clubbed with provision for autonomous institution in S. No. 2 subject to evaluation.
	10	New NIPER-like Institutes	454.45	514.00	
	11	Interest Subsidy for Scheduled M Compliance	300.61	340.00	
	12	Pharma Export Promotion Scheme			
		(i) PPP Schemes for Drug Banks			These scheme should be in the domain of M/o Health instead of DCPC.
		(ii) PPP Schemes for Cancer Medicines			
	13	Strengthening of NPPA	53.05	60.00	
	14	Creation of IPR Facilitation Centre at Pharmaexcil	4.42	5.00	
	15	ERP, R&D Parks	4.42	5.00	
	16	Critical Assistance for WHO pre-qualification for Pharma PSUs/R&D	66.31	75.00	
		Apex Body for Re-positioning of Pharma PSUs	0.00	0.00	No need for such body.
		Grand Total	1732.94	1960.00	
8		**Ministry of Civil Aviation**			
	1	Airports Authority of India	1301.27	1471.68	
	2	Indira Gandhi Rashtriya Uran Akademi	113.06	127.87	Revision in funding pattern for airport projects in NER. Funds should directly flow to MoCA instead of being routed through NEC. Modernization of Kolkata Airport through IR of AAI.
	3	Directorate General of Civil Aviation	128.43	145.25	
	4	Aero Club of India	72.68	82.20	
	5	Bureau of Civil Aviation Security	64.55	73.00	
		Grand Total	1680.00	1900.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
9		**Ministry of Coal**			
	1	R&D	75.35	85.24	All the ongoing schemes be evaluated through professional agency and findings be used for restructuring/weeding of the same.
	2	Regional Exploration	164.02	185.54	
	3	Detailed Drilling in Non-CIL Blocks	472.94	535.00	
	4	Environment Measures & Subsidence Control	155.34	175.72	It could be done in a PPP mode.
	5	Conservation & Safety in Coal Mines	170.67	193.06	
	6	Development of Transportation Infrastructure in Coal fields	277.63	314.06	
	7	Coal Controller Organization	1.22	1.38	
	8	Information Technology	8.84	10.00	
		Grand Total	1326.00	1500.00	
10		**Ministry of Culture**			
	A	Central Sector Schemes			
	1	Modernization & Computerization	4.42	5.00	Dropping or Restructuring for 2008–09 is subject to evaluation.
	2	Promotion & Dissemination	689.64	780.00	
	3	Archaeology	548.17	620.00	Dropping or Restructuring for 2008–09 is subject to evaluation; to be merged together under 'Scheme for Archaeology, Archives, & Museums' in consultation with M/o Culture.
	4	Archives & Records	61.89	70.00	
	5	Museums	540.98	611.86	
	6	Anthropology & Ethnology	46.09	52.13	
	7	Public Libraries	416.07	470.59	
	8	IGNCA	90.80	102.70	
	9	Inst. of Buddhist & Tibetan Studies	50.69	57.33	Dropping or Restructuring for 2008–09 is subject to evaluation.
	10	Memorials	114.94	130.00	
	11	Activities for NER	347.47	393.00	
	12	Building Project of Subordinate Offices	204.68	231.50	
		Grand Total	3115.84	3524.11	
11		**Department Of Commerce**			
	A	Central Sector Schemes			
	1	National Export Insurance Account (NEIA)	884.15	1000.00	ECGC, NEIA, MAI should be evaluated in-depth through independent agencies before further GBS is provided. Subsidies should form part of non-Plan expenditure.
	2	Investment in ECGC	707.32	800.00	
	3	Export Promotion, Quality Control, and Inspection			All schemes with more than Rs 50 crore outlay be evaluated and findings incorporated.
		(i) Export Inspection Council (EIC)	44.21	50.00	Project based support should be given to EIC.
		(ii) Market Access Initiatives	486.28	550.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	4	R&D Institutes			
		(i) Indian Institute of Foreign Trade (IIFT)	35.37	40.00	One composite scheme as 'Project Based Support to Autonomous Institutions' for all autonomous institutions (IIFT, IIP, IIPM, FDDI, Centre for WTO Studies). All the autonomous institutions to be evaluated in-depth through independent agencies before futher GBS is provided.
		(ii) Indian Institute of Packaging (IIP)	26.52	30.00	
		(iii) Footwear Design and Development Institute (FDDI)	88.42	100.00	
		(iv) Center for WTO Studies	17.68	20.00	
		(v) Indian Institute of Plantation Management (IIPM)	0.44	0.50	
	5	Modernization and Upgradation			
		(i) Secretariat—Economic Services	15.03	17.00	
		(ii) DGFT	22.10	25.00	
		(iii) DGCIS	15.03	17.00	
		(iv) Computerization DGS&D	20.34	23.00	
		Agricultural Sector			
	6	APEDA	637.03	720.50	Schemes of APEDA/MPEDA should be restructured in a way not to duplicate the efforts of M/o Agriculture, Food Processing, and Health.
	7	MPEDA	397.87	450.00	Concrete Action Plan to be submitted before providing enhanced allocation.
	8	Cashew Export Promotion Council	0.00	0.00	GBS allocation depends on approval by competent authority.
	9	Tea Board	707.32	800.00	Plantation Boards should focus on export-oriented production in synergy with M/o Agriculture.
	10	Coffee Board	530.49	600.00	
	11	Rubber Board	512.81	580.00	
	12	Spices Board	265.25	300.00	
		Total A	5413.65	6123.00	
	B	Centrally Sponsored Scheme			
		Industry & Mineral Sector			
	13	ASIDE	3353.58	3793.00	
		Total B	3353.58	3793.00	
		Grand Total (A+B)	8767.23	9916.00	
12		**Department of Consumer Affairs**			
		Central Sector Schemes			
	1	Consumer Awareness	361.62	409.00	
	2	Consumer Protection (Confonet, integrated project NCDRC, NCPA, State Consumer Helpline)	162.95	184.30	

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(*Appendix contd.*)

1	2	3	4	5	6
	3	Consumer Education and Training, HRD/Capacity Building	13.26	15.00	
	4	Forward Market Commission	83.29	94.20	
	5	Weights & Measures	165.34	187.00	To be merged with scheme at S. No. 6 (National Test House) from 2008–09. Existing schemes and new initiatives concerning standards, conformity assessment, and testing activities/ programmes would be merged into one single scheme under the name 'Measures for Standards & Testing'.
	6	National Test House	77.81	88.00	Further funding would be in project mode and subject to in-depth evaluation.
	7	National System for Standardization, Database, Assessment, and Quality Campaign including Bureau of Indian Standards	83.99	95.00	Further funding would be in project mode and subject to in-depth evaluation.
	8	Gold Hallmarking	9.28	10.50	
		Grand Total	957.54	1083.00	
13		**Ministry of Corporate Affairs**			
	1	Indian Institute of Corporate affairs	186.56	211.00	
		Grand Total	186.56	211.00	
14		**Department Of Drinking Water**			
		Centrally Sponsored Schemes			
	1	Rural Drinking Water	34915.52	39490.47	
	2	Central Rural Sanitation Campaign	6910.22	7815.66	
		Grand Total	41825.75	47306.13	
15		**Ministry of Development of North East Region (DoNER)**			
	1	NEDFI	339.61	384.43	Impact assessment of the activities be carried out for NEDFI.
	2	Advocacy	36.32	41.11	Evaluation of the scheme for continuation in the next year.
	3	Capacity Building	69.70	78.90	Evaluation of the scheme indicating numbers targeted and achievement for further funding.
	4	Development of Inland Water Transport in the NE	1.32	1.49	The scheme be transferred to D/o Shipping as CS.
	5	Development of Cities/Roads (EAP)	0.06	0.06	NEUDP be transferred to MoUD. For NESRDP, state share be provided throgh NLCPR route.
		Grand Total	447.00	506.00	
16		**Department of Expenditure**			
	1	Central Plan scheme for funding 15 Seats to a high level Professional Course covering basic elements of MBA (Finance) for the Officers of	4.42	5.00	(1) Training scheme would target officers of all States/UTs and Central govt. (2) Training capacity to be increased from 15 to

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		North Eastern/Special Category States/BIMARU States dealing with Accounts & Finance Matters to be offered by the National Institute of Financial Management (NIFM) Society			100 (80 for States and 20 for Central). (3) Deptt. of Expenditure with NIFM to work out additional infrastructure requirement (4) Evaluation and feedback mechanism to be instituted at once. At least 3 Finance Secretaries of the States and Adviser (FR) Planning Commission to be included in NIFM Board. (5) Deptt. of Expenditure in consultation with CGA would formulate a scheme, in the project mode, for modification of accounting system for effective monitoring of entire range of Plan Schemes implemented by Central and State Governments.
		Grand Total	4.42	5.00	
17		**Ministry of Environment & Forest**			
	A	Central Sector Scheme			
	I	ENVIRONMENT	960.19	1086.00	
	1	Environmental Monitoring and Governance	190.98	216.00	
	2	Pollution Abatement	207.78	235.00	
	3	R&D for Conservation & Development	265.25	300.00	
	4	Environment Information, Education, & Awareness	216.62	245.00	
	5	International Co-operation Activities	70.73	80.00	
	6	National Coastal Management Programme (EAP)	8.84	10.00	
	II	FORESTRY & WILDLIFE	1043.30	1180.00	
	7	Grants-in-aid to F&WL Institutions	397.87	450.00	
	8	Capacity Building in Forestry Sector	97.26	110.00	
	9	Strengthening Forestry Divisions	88.42	100.00	
	10	Strengthening of Wildlife Divisions	132.62	150.00	
	11	National Afforestation & Eco-development Board (NAEB)	221.04	250.00	
	12	Animal Welfare	106.10	120.00	
		Total A	2003.49	2266.00	
	B	Centrally Sponsored Schemes			
	I	ENVIRONMENT	530.50	600.01	
	1	Conservation of Natural Resources and Ecosystems	530.49	600.00	
	2	Environmental Management in Heritage, Pilgrimage, and Tourist Centres Including Taj Protection	0.01	0.01	

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(*Appendix contd.*)

1	2	3	4	5	6
	II	RIVER AND LAKE CONSERVATION	1856.72	2100.00	
	3	National River Conservation Plan (NRCP)	1856.72	2100.00	
	III	FORESTRY & WILDLIFE	3655.07	4133.99	
	4	Gregarious Flowering of Muli (*Melacanna baccifera*) Bamboos	32.71	37.00	
	5	Intensification of Forest Management (former Integrated Forest Protection Scheme)	530.49	600.00	
	6	Integrated Development of Wild Life Habitats	707.32	800.00	
	7	Project Tiger	543.75	615.00	
	8	Project Elephant	72.49	81.99	
	9	National Afforestation Programme	1768.30	2000.00	
		New Scheme in CSS	795.74	900.00	
	10	Social Forestry with Communities (Panchayat Van Yojana)	795.74	900.00	
		Total B	6838.02	7734.00	
		Grand Total (A+B)	8841.51	10000.00	
18		**Department of Economic Affairs**			
	A	Central Sector Schemes			
	1	Assistance for Infrastructure Development—VGF	196.28	222.00	
	2	Contribution for Railways Safety Works against Additional Levies on Motor Spirit and High Speed Diesel (Cess to Railways) (i) Central Road Fund—MH 3054 (ii) Umbrella Support Project under CCF II—MH 2075 (iii) National Equity Fund (NEF) Scheme—MH 2885 (iv) Additional Budgetary Support to NABARD for Water Harvesting Scheme—MH 2416	3749.68	4241.00	
		Total A	3945.96	4463.00	
19		**Department of School Education & Literacy**			
	A	Central Sector Schemes			
	I	ELEMENTARY EDUCATION			
	1	Bal Bhavan	30.95	35.00	
	2	NCTE	4.42	5.00	

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(*Appendix contd.*)

1	2	3	4	5	6
	II	ADULT EDUCATION			
	3	Directorate of Adult Education	44.21	50.00	
	4	NLMA	17.68	20.00	To be evaluated.
	5	Grants to NGOs			
		(i) SRC	176.83	200.00	
		(ii) Field Innovative Projects (Support to NGO + SRC + NIAE + Pop. Edn)	64.54	73.00	
		(iii) Jan Shikshan Sansthan (+ Skill Development Mission Rs 140)	353.66	400.00	
	6	Projects for Removal of Illiteracy	884.15	1000.00	
	7	Support to NER	23.87	27.00	
	8	Adult Education Studies by University Department of Adult Education	26.52	30.00	
	III	SECONDARY EDUCATION			
	9	NCERT	224.57	254.00	To be evaluated.
	10	National Open School	88.42	100.00	To be evaluated. The admission, transfer procedures, and other
	11	Navodya Vidyalayas	4067.09	4600.00	guidelines, utilization of funds for transparency should be on
	12	Kendriya Vidayalas	1326.23	1500.00	the website.
	13	Central Tibetan School Admn (CTSA)	36.25	41.00	
	14	Joint Indo-Mongolian School at Mongolia	4.42	5.00	
		Total A	7373.82	8340.00	
	B	Centrally Sponsored Schemes			
		Elementary Education			
	1	Sarva Shiksha Abhiyan (SSA)	62774.69	71000.00	To be evaluated on priority.
	2	DPEP	114.94	130.00	
	3	Mid-day Meal	42439.23	48000.00	To be evaluated on priority.
	4	Teacher Education	3536.60	4000.00	
	5	Mahila Samakhya	185.67	210.00	
		New Scheme			
	6	Pre Primary Schooling (1 year)	1768.30	2000.00	To be launched in 2008–09.
	7	Revamped Lifelong Education and Awareness Programme (LEAP) (TLC + PLP + CEP)	3359.77	3800.00	
	8	Literacy Programmes for 35+ age group illiterates	353.66	400.00	

(*Appendix contd.*)

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1	2	3	4	5	6
		Secondary Education			
	9	SUCCESS			
		(i) Infrastructure Support for Secondary Schools			
		(a) 15000 UPS upgraded to SS @ 60 lakh per School (75:25)	5968.02	6750.00	
		(b) Strengthening of existing 44000 SS @ Rs 40 lakh per school (75:25)	10167.73	11500.00	
		(ii) ICT in Schools	5304.90	6000.00	Universalization of ICT in schools & institutions on a single portal.
		(iii) Girl Child Incentive	1326.23	1500.00	
		(iv) IEDSS	884.15	1000.00	
		(v) In service training to teachers @ Rs1000/teacher/annum for 17 lakh	1768.30	2000.00	
		(vi) Support for Science Labs and Library @ Rs 4 lakh/Lab—25000 Schools	769.21	870.00	
		(vii) New Model Schools (6000)	884.15	1000.00	
		(viii) Vocational Education	11272.92	12750.00	To be launched in 2008–09.
	10	Upgrading 2000 KGBVs (Residential Schools/Hostels)	1768.30	2000.00	
	11	OSC Merit/National Means cum Merit Scholarship	1485.37	1680.00	
		Total B	156132.16	176590.00	
		Grand Total (A+B)	163505.98	184930.00	
20		**Ministry of External Affairs**			
		Central Sector Schemes			
	1	Tala Power Project	44.21	50.00	Complition in 2007–08.
	2	Dungsum Cement Project	274.09	310.00	MEA's total commitment is Rs 300 Crore for plant.
	3	Punatsangchu Hydroelectric Project (for DPR-07–08)	1.47	1.66	
	4	Pul-e-Khumri Project in Afghanistan	265.25	300.00	
		New Schemes			
	1	Kaladan Multi-modal Transit Transport Project—Myanmar	265.25	300.00	Project is absolutely unviable and EFC has made a number of observations which need to be rectified.
	2	Punatsangchu-I Hydroelectric Project	1060.98	1200.00	
	3	Pre-Construction Activities for Punatsangchu-I Hydroelectric Project	11.27	12.75	
	4	Integrated Development of Selected Border Checkposts (5)	70.73	80.00	Either MEA or MHA should build the checkposts to avoid duplication/overlapping and be completed in 3 years instead of 5 years. A meeting be held with MHA and MEA to sort out this aspect.
	5	Development of Road Infrastructure in the Terai Region of Nepal	61.89	70.00	
	6	Naumure Hydel Project in Nepal	145.00	164.00	
		Cross Border Raillink between India and Nepal	0.00	0.00	

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1	2	3	4	5	6
		New Schemes—from 2008–09	0.00	0.00	
		Construction of Embankment on Kamla River	0.00	0.00	
		5600 MW Pancheshwar Multipurpose Project (MPP)	0.00	0.00	Projects under consideration for Eleventh Plan Estimates not
		330 MW Sun Koshi Sapta Koshi Multipurpose Project	0.00	0.00	available yet.
		10800 MW Karnali Chisapani Multipurpose Project	0.00	0.00	
		Grand Total	2200.13	2488.41	
21		**Department of Earth Sciences**			
	1	Polar Science	241.37	273.00	Polar and Ocean Science Programme (New Merged Scheme).
	2	Polymetallic Nodules (PMN) Programme	282.04	319.00	Ocean Resource Suveys (New Merged Scheme).
	3	Ocean Observation and Information System (OOIS)	88.42	100.00	Information and Advisory Services (New Merged Scheme).
	4	Marine Research and Technology Development (MRTD)	284.70	322.00	Technology Development/Demonstration Programmes (New Merged Scheme).
	5	Delineation of the Outer Limits of Continental Shelf	5.30	6.00	
	6	Coastal Research Vessels and Other Research vessels	68.96	78.00	Research Vessels/Platforms (New Merged Scheme).
	7	National Institute of Ocean Technology (NIOT)	239.60	271.00	Technology Development/Demonstration Programmes (New Merged Scheme).
	8	Information Technology	17.68	20.00	Information and Advisory Services (New Merged Scheme).
	9	Comprehensive Topography Surveys	45.98	52.00	
	10	Gas Hydrates	49.51	56.00	Ocean Resource Suveys (New Merged Scheme).
	11	Acquisition of Research Vessel 'Sagar Nidhi'	154.73	175.00	Research Vessels/Platforms (New Merged Scheme).
	12	Data Buoy Programme/Integrated Sustain Ocean Observation	50.40	57.00	Information and Advisory Services (New Merged Scheme).
	13	Tsunami & Storm Surge Warning System	87.53	99.00	Information and Advisory Services (New Merged Scheme).
	14	National Centre for Antarctic and Ocean Research (NCAOR)	59.24	67.00	Polar and Ocean Science Programme (New Merged Scheme).
	15	Indian National Centre for Ocean Information Services (INCOIS)	100.79	114.00	Information and Advisory Services (New Merged Scheme).
	16	Seafront facilities	92.84	105.00	
	17	National Centre for Medium Range Weather Forecast (NCMRWF)	61.01	69.00	Atmospheric Science Programme (New Merged Scheme).
	18	Indian Institute of Tropical Meteorology (IITM)	211.31	239.00	
	19	Indian Meteorological Department (IMD)			Meteorological Services (New Merged Scheme).
		(i) Space Meteorology	44.21	50.00	
		(ii) Agro Met Advisory Services	38.90	44.00	
		(iii) Seismic Hazard and Risk Evaluation	329.79	373.00	
		(iv) Operation & Maintenance	83.11	94.00	
		(v) Aviation Meteorology	130.85	148.00	
		(vi) Modernization of IMD (Communication, Observation, Cyclone warning, Forecasting, Aviation Services, Instrumentation, Infrastructural Development)	2219.22	2510.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	20	Development of Manned Submersible	83.99	95.00	Technology Development/Demonstration Programmes (New Merged Scheme).
	21	Multichannel Seismic System onboard ORV Sagar Kanya	62.77	71.00	
	22	Expeditions to the Arctic Region	40.67	46.00	Polar and Ocean Science Programme (New Merged Scheme)
	23	Desalination Plant	115.82	131.00	Technology Development/Demonstration Programmes (New Merged Scheme).
	24	National Oceanarium	88.42	100.00	
	25	Demonstration of Shoreline Protection Measures	30.95	35.00	Technology Development/Demonstration Programmes (New Merged Scheme).
	26	Integrated Ocean Drilling Prog. & Geotechnoic Studies (IODP)	53.93	61.00	Polar and Ocean Science Programme (New Merged Scheme)
	27	Ice-Class Research Vessel	389.03	440.00	Research Vessels/Platforms (New Merged Scheme).
	28	Headquarters Building	44.21	50.00	
	29	Multi-hazards Early Warning Support System	17.68	20.00	
	30	Centre for Climate Change	142.35	161.00	
	31	Dedicated Weather Channel & Commonwealth Games	75.15	85.00	
	32	NIOT Extension Centre West Bengal	28.29	32.00	
	33	R&D in Earth & Atmopsheric Sciences	31.83	36.00	
		Grand Total	6192.59	7004.00	
22		**Department of Fertilizers**			
		Central Sector Schemes			
	1	Revival of Sick CPSEs	537.00	607.36	(1) Regarding the conversion of FO/LSHS based plants to gas besed, D/o Fertilizer would explore various possibilities including setting up of large ammonia unit at Panipat (2) Revival of CPSEs will depend upon proper and bankable study and timely submission of DPRs.
	2	Capital Subsidy for Conversion of 4 Existing FO/LSHS Plants to NG/LNG	782.58	885.12	
		Grand Total	1319.58	1492.48	
23		**Department of Food & Public Distribution**			
	1	Construction of Godowns by Food Corporation of India etc.	147.26	166.56	PFPD would propose a new modified scheme for creating storage capacity for the Eleventh Plan.
	2	Integrated Information System for Foodgrains Management (IISFM)	180.47	204.12	Evaluation, Monitoring, & Research for food grain management & strengthening of PDS.
	3	Strengthening of PDS	129.94	146.96	
	4	NSI, Kanpur	10.83	12.25	Govt. should support its modernization which should be funded through PPP.
	5	Consultancies, Training, and Research	23.10	26.13	Various schemes of training, evaluation, and consultancy may be merged under a single scheme—'Training, Evaluation, and Consultancy'.

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(*Appendix contd.*)

1	2	3	4	5	6
		Training, Research, Monitoring, and Concurrent Evaluation (06–07)	0.00	0.00	
		Research, Development, and Modernization of Labs of VVO&F (operational in 2006–07)	0.00	0.00	DFPD to submit a DPR for modernization of the laboratory of Directorate of VVO & Fats.
		Technical Studies & Consultancies (06–07)	0.00	0.00	
	6	Village Grain Bank	122.00	137.98	Evaluation should be done and further funding to be based on this evaluation.
		Computerization of PDS Operations	0.00	0.00	DPR should be prepared. A National Portal of DFPD should provide in modules, all information online & on real-time basis for PDS, FPS, FCI Godowns, Warehouses, and Ministry itself.
		Grand Total	613.60	694.00	
24		**Ministry of Food Processing Industries**			
	1	Scheme for Infrastructure Development	2310.29	2613.00	
	2	Scheme for Technology Upgradation/Establishment/Modernization of Food Processing	530.49	600.00	
	3	Scheme for Upgradation of Quality of Street Food	157.38	178.00	
	4	Scheme for Quality Assurance, Codex Standards, and R&D	221.04	250.00	
	5	Scheme for Human Resource Development	57.47	65.00	
	6	Scheme for Stregthening of Institution	287.35	325.00	
		Grand Total	3564.01	4031.00	
25		**Department of Health & Family Welfare**			
	A	Central Sector Scheme			
	1	National Rural Health Mission	2481.81	2807.00	
	2	Oversight Committee	1615.34	1827.00	
	3	Strengthening of the Institutes for Control of Communicable Diseases	469.69	531.23	
	4	Strengthening of Hospitals and Dispensaries	1027.68	1162.34	
	5	Strengthening of the Institutes for Medical Education, Training, and Research	5876.98	6647.03	Department of Health Research to get from this.
	6	System Strengthening including Emergency Medical Relief/Disaster Management	978.38	1106.58	
	7	Pradhan Mantri Swasthya Suraksha Yojana	3496.82	3955.00	PPP to be encouraged in facilitating tertiary health care.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		New Initiatives under CS	6151.32	6957.32	
	8	Forward Linkages to NRHM in NE*	795.74*	900*	
	9	National Centre for Disease Control	397.87	450.00	Redevelopment of NICD as World Class 'National Centre for Disease Control'.
	10	Advisory Board for Standards	19.45	22.00	
	11	Programme for Blood and Blood Products	397.87	450.00	
	12	Redevelopment of Hospitals/Institutions	5336.13	6035.32	
		Total A	22098.02	24993.50	
	B	Centrally Sponsored Schemes			
	1	NRHM	76630.22	86671.00	Salary component to be transferred to Non-Plan. Time bound financial and physical targets to be fixed.
	2	National AIDS Control Programme including STD Control	5064.41	5728.00	Composite lab facility for all diseases and PPP should be encouraged.
	3	(i) National Cancer Control Programme	2121.96	2400.00	The Programme for Control of Cancer and Tobacco can be taken as two components. Convergence with communicable disease programme should be attempted.
		(ii) Tobacco Control	417.25	471.92	
	4	National Mental Health Programme	884.15	1000.00	
	5	Assistance to States for Drug & PFA Control	229.88	260.00	
	6	Assistance to States for Capacity Building in Trauma Care	648.04	732.95	
		New initiatives under CSS	12280.52	13889.63	
	7	e-Health (including Telemedicine)	161.80	183.00	
	8	National Programme for Prevention and Control of Diabetes, Cardiovascular Disease, and Stroke	1468.13	1660.50	
	9	Health Care of Older Persons	353.66	400.00	
	10	District Hospitals	2457.94	2780.00	
	11	Human Resources for Health#	3536.60	4000.00	

Note: * Through earmarked 10% allocation for NE—to come from different schemes.
#Additional requirement for Oversight Committee can be covered under this.

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1	2	3	4	5	6
	12	Health Insurance based National Urban Health Mission	3974.26	4495.00	Not launched in 2007–08. It may be taken up for Eleventh Plan.
	13	Pilot Projects:			
		(i) Sports Medicine	79.57	90.00	A few pilot projects would be taken up which will be eventually, depending on the success and experience gained, upscaled and put under NRHM/NUHM.
		(ii) Deafness	88.42	100.00	
		(iii) Leptospirosis Control	3.96	4.48	
		(iv) Control of Human Rabies	7.65	8.65	
		(v) Medical Rehabilitation	44.21	50.00	
		(vi) Oral Health	22.10	25.00	
		(vii) Fluorosis	60.12	68.00	
		(viii) Organ Transplant	22.10	25.00	
		Total B	21646.21	111153.50	
		Grand Total (A+B)	120374.45	136147.00	
26		**Department of Heavy Industry**			
	1	(i) National Automative Testing and R&D Infrastructure Project (NATRIP) and (ii) FID	1149.40	1300.00	NATRIP & FID, Secretariat expenditure of DHI would continue in the Eleventh Plan.
	2	Restructuring of PSEs under DHI (lumpsum provision for pending proposals)			CPSEs/Autonomous Institutes other than CPSEs which are yet to be considered for restructuring be brought under one composite scheme namely 'Project Based Support to CPSEs/ Autonomous Institutes' for meeting budgetary support for approved restructuring,approved schemes, and project based scheme.
	3	Project based Support to CPSEs/Autonomous Institutes	2147.87	2429.30	
	4	Modernization fund for Capital Goods Sector	265.25	300.00	Experience of similar parks under other Ministries needs to be considered in this case.
	5	Additions Modifications and Replacements (AMR)	44.21	50.00	Crucial Balancing Investment should be dropped. AMR to continue in Eleventh Plan. Some component such as professional & special services, other administrative expenses and advertisement and publicity be merged as 'Professional & Special Services as One Single Scheme'.
	6	Professional and Special Services	8.84	10.00	
	7	Secretariat Expenditure (Computerization)	3.27	3.70	The project should be supported fully through IEBR of CPSUs.
		Coal Gasification Demonstration Project			
		Grand Total	3618.83	4093.00	
27		**Ministry of Home Affairs**			
	1	Police Housing	2210.38	2500.00	Police infrastructure scheme should be on non-Plan side and sufficient justification for taking up some component under Plan budget.
	2	Critical Infrastructure in Extremist Affected Areas	442.08	500.00	

(*Appendix contd.*)

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1	2	3	4	5	6
		Police Education & Training			
	3	Police Education & Training	66.31	75.00	Functions like Research, Education, and Training be treated as one continuum for all such institutions. A comprehensive project for upgradation of capacities in existing training institutions be prepared not only for Delhi but also for other states. Expansion of communication infrastructure should be a part of crime reporting/detection system. All activities wth financial implications be categorized as Plan and non-Plan. All police buildings should be modern, functional, eco friendly, IT-friendlly and approvals subject to their being so.
	4	BPR&D	132.62	150.00	
	5	Strengthening of North Eastern Police Academy (NEPA)	44.21	50.00	
	6	Upgradation of NPA into NPU	1.77	2.00	
	7	Modernization of Delhi Police	424.39	480.00	
		Scheme of Forensic Science			
	8	Directorate of Forensic Science—CFSLs & GEQD	265.25	300.00	All institutions & major ongoing schemes to be evaluated in-depth through professional agencies on priority. Schemes to be designed and implemented in project mode with well defined outcomes and targets. DPRs to be prepared for every scheme/project. Project preparation and implementation should be separated. Whole crime detection and forensic system be evaluated by an IIM for major increase in funding. One composite scheme as Modernization of Forensic Science Applications for better design and implementation. Nomenclature and nature of schemes for Eleventh Plan need to be rationalized.
	9	Directorate of CFSL—CFSL (CBI), New Delhi	7.07	8.00	
	10	National Institute of Criminology and Forensic Sciences (NICFS)	13.26	15.00	
	11	Crime and Criminal Tracking Network and Systems	1768.30	2000.00	
	12	NCRB	8.84	10.00	
	13	Official Language	35.37	40.00	There should be no overlap of schemes of Department of OL with that of schems of HRD. Focus should be on few major areas and rest should be subjected to ZBB.
		Registrar General of India			Schemes of RGI to be reorganized in to few composite schemes.
	14	Improvement in Vital Statistics System & Other Schemes	132.62	150.00	
	15	National Population Register	265.25	300.00	
	16	NE Division	4.42	5.00	New innovative scheme for this division and proposed objective should be pursued by DoNER.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		Human Rights Division			
	17	Construction of Manav Adhikar Bhavan	4.42	5.00	
	18	Complaints Handling Management System	8.84	10.00	The cost of MAB and its phasing need to be reviewed. CHMS to be supported on submission of DPR.
		National Disaster Management			Functions of NDMA & M/o Earth Sciences needs to be synergized and integrated.
	19	Strengthening of Fire and Emergency Services	176.83	200.00	
	20	All Other Disaster Management Schemes/Projects (Development of Advance Warning Systems, Capacity Building, Protocol for Disasters, National Portal on Disasters, etc.)	88.42	100.00	
	21	Revamping of Civil Defence	88.42	100.00	
		Grand Total	6189.05	7000.00	
28		**Department of Industrial Policy and Promotion**			
		Central Sector Scheme			
	1	Transport Subsidy scheme	0.88	1.00	Further allocation would be subject to an in-depth evaluation.
	2	IC&JV and Asia Enterprise in India & Undertaking Investment Promotion Activities	85.76	97.00	Merge IC&JV with Investment Promotion Activities and e-Biz pilot project should be a part of this scheme.
	3	D/o Explosives	10.61	12.00	All autonomous institutions and major schemes (annual outlay over Rs 50 cr) would be evaluated before further GBS disbursal.
	4	Modernization and Strengthening of Patent Office (Revenue)	282.93	320.00	
	5	Project Based Support to Autonomous Institutions	493.36	558.00	
		(i) CMTI			Venturing into nanotechnolgy application be done by D/o S&T and DIPP need not duplicate this.
		(ii) CPPRI			Instead of providing outlay to each autonomous body, an integrated scheme of Project Based Support to Autonomous Institutions be put in place. In-depth evaluation by independent agency to justify continuation of budgetary support.
		(iii) Quality Council of India(QCI)			
		(iv) National Institute of Design (NID)			
		(v) NCCBM			
		(vi) IRMRA			
		(vii) NPC			
		(viii) NMCC			
	6	Indian Leather Development Programme (ILDP)	1149.40	1300.00	Detailed analysis of the expenditure to be provided before enhancing the outlays.
	7	Salt Commissioner (for NMAY)	4.42	5.00	NMAY to be merged with IAY as per the fesibility of operation.

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1	2	3	4	5	6
	8	Industrial Infrastructure Upgradation Scheme (IIUS)			New version of IIUS under the name 'IIUS for NE States only'. Rapid assessment of the scheme for ensuring appropriate regional spread.
	9	Technology Upgradation (New Initiative)*	928.36	1050.00	Sufficient justification to be provided for this new scheme.
	10	Delhi Mumbai Industrial Corridor Development Corporation	291.77	330.00	
		Total	3247.49	3673.00	
		Centrally Sponsored Scheme			
	11	NEIP Package (including Integrated Infrastructure Development Scheme)	265.25	300.00	Close scrutiny of Regional Developemnt Scheme.
	12	Package for (Other than North East) Special Category States	176.83	200.00	
	13	Growth Centre Scheme (other than NE)	8.84	10.00	
		Total	450.92	510.00	
		Grand Total (A+B)	3698.40	4183.00	
29		**Department of Information & Technology**			
	A	Central Sector Schemes			
	I	R&D PROGRAMME			
	1	SAMEER	130.85	148.00	
	2	Microelectronics and Nanotech Dev. Prog.	221.04	250.00	
	3	Technology Dev. Council (Including IPR)	309.45	350.00	
	4	Convergence, Comm., and Strategic Electronics	176.83	200.00	
	5	Components, Material and Photonics Dev. Prog.	88.42	100.00	
	6	C-DAC	795.74	900.00	
	7	Electronics in Health and Telemedicine	88.42	100.00	
	8	Technology Dev. for Indian Languages	88.42	100.00	
	9	IT for Masses (Gender, SC/ST)	137.93	156.00	
	10	Media Lab. In Asia	265.25	300.00	
		R&D Subtotal	2302.33	2604.00	
	II	INFRASTRUCTURE DEVELOPMENT			
	1	STQC	291.77	330.00	
	2	STPI/EHTP	39.79	45.00	
	3	Digital DNA Park	8.84	10.00	
	4	Electronic Governance	4413.68	4992.00	

Note: * Not yet decided

(*Appendix contd.*)

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1	2	3	4	5	6
	5	Cyber Security including Cert-in IT Act	530.49	600.00	
	6	ERNET	8.84	10.00	
	7	Promotion of Electronics/IT Hardware Manufacturing	972.57	1100.00	
		Infrastructure Subtotal	6265.98	7087.00	
	III	HUMAN RESOURCE DEVELOPMENT			
	1	DOEACC	8.84	10.00	
	2	Manpower Development	296.19	335.00	
	3	Facilitation of Setting up of Integrated Townships	53.05	60.00	
		HRD Subtotal	358.08	405.00	
	IV	OTHERS			
	4	Others—Headquarter (Secretariat & Bld.)	88.42	100.00	
	5	NIC	2033.55	2300.00	
		HRD Subtotal	2121.96	2400.00	
		Grand Total	11048.35	12496.00	
30		**Ministry of Information & Broadcasting**			
	A	Information	277.63	314.00	
	1	PIB	74.23	83.95	
	2	Publications Division	2.20	2.49	
	3	DAVP	50.35	56.95	
	4	IIMC	38.93	44.03	
	5	Photo Division	2.92	3.30	
	6	DFP	6.01	6.80	
	7	Song & Drama Division	19.81	22.40	
	8	RRTD	6.63	7.50	
	9	RNI	1.36	1.54	
	10	Main Secretariat Scheme (Information Wing)	75.19	85.04	
	B	Film	397.88	450.00	
	1	Films Division	62.64	70.85	
	2	NFAI	26.53	30.00	
	3	Directorate of Film Festivals	4.42	5.00	
	4	CFSI	18.36	20.77	
	5	CBFC	11.05	12.50	
	6	NFDC	40.88	46.23	

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1	2	3	4	5	6
	7	FTII	84.27	95.31	
	8	SRFTI	53.05	60.00	
	9	Main Secretariat Scheme (Film Wing)	61.01	69.00	
	C	Broadcasting	4133.49	4675.00	
	1	AIR (Including Expansion of FM Services)	1430.59	1618.00	
	2	Doordarshan	2680.80	3032.00	
	3	Main Secretariat Scheme (Broadcasting Wing)	22.10	25.00	
		Grand Total (A+B+C)	4809.00	5439.00	
31		**Department of Justice**			
	A	Central Sector Schemes			
	1	Domestic Resources for 'Indian Administration of Justice' Project in Collaboration with the ADB (EAP) (New Scheme)	3.60	4.07	
	2	Admn. of Justice India Project (ADB) (New Scheme)	1.45	1.64	
		Total A	5.05	5.71	
	B	Centrally Sponsored Schemes			
	1	Computerization of District and Subordinate Courts	654.80	740.60	
	2	Capacity building and Infrastructure facilities for Judiciary (i) To UTs without Legislature (ii) To State Governments (iii) To UTs with Legislature	619.86	701.08	
	3	Study of Justice Reforms & Assessment Status (New Scheme)	20.00	22.62	
		Total B	1294.66	1464.30	
		Grand Total (A+B)	1299.71	1470.01	
32		**Ministry of Labour & Employment**			
	A	Central Sector Schemes			
	I	DGE&T (EMPLOYMENT)	29.53	33.40	
	1	Construction of Office Building, Staff Quarters, and Skill Training Institutes	19.45	22.00	
	2	Continuation and Setting up of New Vocational Rehabilitation Centres for Handicapped persons including Skill Training Workshops and Rural Rehabilitation Extension Centres.	5.66	6.40	

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(*Appendix contd.*)

1	2	3	4	5	6
	3	Welfare of SC/ST Job Seekers through Coaching, Guidance, and Vocational Trg. and Intro. of New Courses in Existing CGCs & Estt of New CGCs in States not Covered so far	4.42	5.00	
	II	DGE&T (TRAINING)	102.52	115.95	
	4	National Instructional Media Institute, Chennai	12.11	13.70	
	5	Upgradation of Apprenticeship Training	9.73	11.00	
	6	Diversification, Upgradation, and Expansion of Training to Women	15.47	17.50	
	7	Foremen Trg Inst. at Jamshedpur & Bangalore	5.30	6.00	
	8	Model Industrial Training Institutes (MITIs)	8.84	10.00	
	9	Diversification, Upgradation, and Expansion of Advanced/Central Trg. Inst. and Intro. of Hi-tech Trg.	22.10	25.00	
	10	Strengthening of Trainers' Skills and MIS	4.64	5.25	
	11	Upgradation of Training Infrastructure in DGE&T Institutes including CSTARI	7.96	9.00	
	12	Project Impl. And Trade Testing in DGE&T HQ	3.09	3.50	
	13	Building equipment & Establishment for RVTIs (Calcutta, Hissar, Allahabad, Indore, Bubhaneswar, Vadodara, Jaipur, and Tura)	13.26	15.00	
	III	INDUSTRIAL RELATIONS	41.38	46.80	
	14	Strengthening of Adjudication Machinery & Holding Lok Adalats	11.32	12.80	Two schemes (i) Strengthening of Adjudication Machinery and (ii) Holding of Lok Adalats in the CGIT-cum-Labour Courts as an Alternative Grievance Redressal Mechanism have been merged under it.
	15	Machinery for Better Conciliation and Upgradation of Office Infrastructure at CLC's and RLC's	28.29	32.00	Two schemes (i) Upgradation of Office Infrastructure at CLC(C) & RLC(C), ND, and (ii) Machinery for better conciliation and preventive mediation and more effective enforcement of labour laws have been merged under it.
	16	Improvement and Strengthening of Training Wing of Central Labour Service Officers	1.77	2.00	
	IV	CENTRAL BOARD FOR WORKERS' EDUCATION (CBWE)	44.21	50.00	
	17	Central Board for Workers' Education (CBWE)	44.21	50.00	
	V	CHILD LABOUR	579.16	655.05	
	18	Child Labour Cell	0.04	0.05	To be transferred to Non-Plan.
	19	National Child Labour Project (including Grants-in-aid to Voluntary Agencies)	552.59	625.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	20	Indo-American CLP (INDUS) with matching US grant	26.52	30.00	
	VI	WOMEN LABOUR	2.40	2.71	
	21	Women Cell	0.01	0.01	To be transferred to Non-Plan.
	22	Grants-in-Aid to Voluntary Agencies	2.39	2.70	
	VII	LABOUR BUREAU	38.02	43.00	
	23	Consumer Price Index for Industrial Workers 2001 Series and Rural Labour Enquiry	7.07	8.00	To be merged together under 'Labour Statistics'.
	24	Labour Statistics	13.26	15.00	Emerged after merging (i) Socio-economic Surveys of different segments of Labour, (ii) Collection of Labour Statistics under the Annual Survey of Industries (Extension to Sample Sector), (iii) Occupational Wage Survey (Sixth) Round, (iv) Modernization of Machine Tabulation Unit, and (v) Rural Labour Enquiry including CPI for Agricultural & Rural Labour.
	25	Improvement in the Labour and Employment Statistical System	17.68	20.00	
	VIII	DIRECTOR GENERAL OF MINES SAFETY (DGMS)	34.35	38.85	
	26	Mine Accident Analysis and Modernization of Information Database (MAMID)	10.61	12.00	Schemes (i) Study of Mine Accidents (SOMA) and Development of Information System and (ii) Modernization of Survey capabilities in DGMS through Digitization of mines plan and automated survey system (MSC) and Modernization of Information database relating to Mines Management have been merged.
	27	Strengthening of Core Functions of DGMS (SOCFOD)	14.68	16.60	Schemes (i) Augmentation of Science & Techonology Capabilities, Mine Rescue Services, and Human Resource Development (S&T) and (ii) Strengthening of Machinery for Conduct of Statutory Examinations (SSEX) have been merged together.
	28	Improving Efficiency by Providing Infrastructural Facilities in DGMS (PIF)	9.06	10.25	
	IX	DIRECTOR GENERAL, FACTORY ADVICE SERVICE, AND LABOUR INSTITUTE (DGFASLI)	22.10	25.00	
	29	Establishment of a New Regional Labour Institute	8.84	10.00	
	30	Strengthening of DGFASLI Organization and Occupational Safety and Health in Factories, Ports, and Docks	13.26	15.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	X	NATIONAL LABOUR INSTITUTE (NLI)	22.10	25.00	
	31	National Labour Institute	22.10	25.00	
		Other Schemes	10.17	11.50	
	32	Scheme on Information Technology	8.84	10.00	
	33	Grants-in-aid to Research/Academic Institutions & Non-governmental Voluntary Organizations for Undertaking Research in Labour Related Subjects	1.33	1.50	
		New Scheme under CS	4.43	5.01	
	34	Skill Development (Mission Mode)	4.43	5.01	
		Total A	930.37	1052.27	
	B	Centrally Sponsored Schemes			
	I	DGE&T (TRAINING)	117.00	132.33	
	1	Establishment of New ITIs in NE States, Sikkim and Strengthening and Modernization of ITIs in the State of J&K.	55.11	62.33	
	2	Upgradation of 100 ITIs into Centres of Excellence.	61.89	70.00	
	3	Testing & Certification of Skills for Workers in the Informal Sector			To be dropped as activities are taken under Skill Development Initiatives.
	II	DGLW	13.26	15.00	
	4	Rehabilitation of Bonded Labour	13.26	15.00	
		New Schemes under CSS	1149.40	1300.00	
	III	DGE&T (TRAINING)	574.70	650.00	
	5	Skill Development Initiative through PPP	486.28	550.00	
	6	Externally Aided Project for Reforms & Improvement in Vocational Training Services Rendered by Central & State Governments	88.42	100.00	
	IV	DGLW	574.70	650.00	
	7	Social Security for Unorganized Sector Workers	265.25	300.00	
	8	Health Insurance for Unorganized Sector Workers	309.45	350.00	
		Total B	1279.66	1447.33	
		Grand Total (A+B)	2210.02	2499.60	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
33		**Department of Land Resources**			
	A	Central Sector Schemes			
	1	Professional Support, Capacity Building, M&E, IEC & Related Activities, TDET, Implementation/Monitoring of National Rehabilitation Policy etc.	428.25	484.36	(1) Comprehensive & result oriented master plan be prepared for better watershed management. (2) Computerization of Land Records, Strengthening of Revenue Machinery, and Updating of Land Records, Comprehensive Modernization of Land Records be integrated under the head 'National Programme for Comprehensive Land Resource Management'. (3) M&E, Capacity-building and Professional Support be merged in one Integrated programme—'Monitoring and Capacity Building'. (4) In-depth evaluation of ongoing programme to be done through independent agency on top priority.
	2	Others	39.67	44.87	
		Total A	467.92	529.23	
	B	Centrally Sponsored Schemes			
	1	Integrated Watershed Development Programme (i) DPAP, (ii) DDP, (iii) IWDP	15359.46	17372.00	
	2	National Programme for Comprehensive Resource Management (i) CLR, (ii) SRA & ULR, (iii) CMLR	513.69	581.00	
	3	Biofuels	403.17	456.00	Biodiesel Programme to be merged with IWMP.
	4	EAP	461.24	521.67	
		Total B	16737.57	18930.67	
		Grand Total (A+B)	17205.49	19459.90	
34		**Ministry of Mines**			
	1	MECL	44.19	50.00	
	2	GSI	901.58	1020.00	
	3	IBM	79.55	90.00	
	4	S&T	17.68	20.00	
		Grand Total	1043.00	1180.00	
35		**Ministry of Minority Affairs**			
	A	Central Sector Schemes			
	1	Grant-in-aid to Maulana Azad Education Foundation	442.08	500.00	
	2	National Minorities Development & Finance Corporation (NMDFC)	442.08	500.00	Scheme 'Additional Equity Contribution to NMDFC for Development of Wakfs' has been merged with Grant-in-aid to NMDFC.
	3	Free Coaching & Allied Scheme for Minorities	39.79	45.00	
	4	Research/Studies, Monitoring, and Evaluation of Development Schemes for Minorities including Publicity	30.95	35.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		New Schemes in CS			
	5	Grant-in-aid to State Channelizing Agency	17.68	20.00	
		Total A	972.57	1100.00	
	B	Centrally Sponsored Schemes			
	1	Merit-cum-Means Scholarship for Professional and Technical Courses	530.49	600.00	
		New Schemes in CSS			
	2	Pre-Matric Scholarships for Minorities	1237.81	1400.00	
	3	Post-Matric Scholarships for Minorities	1016.77	1150.00	
	4	Multi Sectoral Development Programme for Minorities in Selected Minority Concentration Districts	2431.41	2750.00	
		Total B	5216.49	5900.00	
		Grand Total (A+B)	6189.05	7000.00	
36		**Ministry of Micro, Small, and Medium Enterprises**			
	A	Micro, Small, and Medium Enterprises			
	1	Quality of Technology Support Institutions and Programmes (Tool Room), (CLCSS, ISO)	1374.85	1555	Enhanced allocation for existing tool rooms and for setting up new tool rooms.
	2	Promotional Services Institutions and Programmes	306.80	347	
	3	MSME Clusters Development Programmes and MSME Growth Poles	583.54	660	
	4	Credit Support Programme (Credit Guarantee, Micro Finance, Women Enterprise Promotion, SC, SP, PSP, Minority Component)	919.52	1040	
	5	Market Development Assistance	42.44	48	
	6	Upgradation of Data base	88.42	100	
		Subtotal of DC (MSME)	3315.56	3750	
		National Small Industries Corporation			
	7	Marketing Assistance Schemes	53.93	61	
	8	Performance and Credit Rating Scheme	46.86	53	
	9	Incubator/SEs Establishment Programme	17.68	20	
		Subtotal of (NSIC)	118.48	134	
		Other Schemes			
	10	Survey, Studies, and Policies Research	3.09	3.5	
	11	Promotion and Hand Holding of Micro and Small Enterprises	61.01	69	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	12	Training Institutions	22.99	26	All autonomous bodies/institutions should be evaluated and findings to be incorporated. All training centres/institutes will be supported for revamping of existing courses and introduction of new courses as per industry requirement. Support to existing training centres/institutes for upgradation of infrastructure and setting of new centres/institutes.
	13	International Cooperations	8.84	10	
	14	National Commission on Enterprises in the Unorganized Sector	6.63	7.5	
		Subtotal of Other Schemes	102.56	116	
		Total of MSME	3536.60	4000	
	B	Agro and Rural Industries			
		Khadi & Village Industries Commission (KVIC)			
		(i) Khadi			
	1	Khadi Grant (including MDA of Rs 10.00 crore for Khadi)	761.13	860.86	
	2	Khadi R&D, Scheme for Enhancing Productivity & Competitiveness of Khadi Industries and Artisans and Khadi Interest Subsidy and Loan	110.52	125	
		Subtotal of Khadi	871.65	985.86	
		(ii) Village Industries			
	3	Village Industries—Grant, Loan, Interest Subsidy, HRD, Marketing	327.68	370.62	
	4	Restructured Rural Employment Generation Programme (REGP)*	2873.49	3250	
	5	Setting up of Mahatma Gandhi Institute for Rural Industrialization (MGIRI), Wardha	14.44	16.33	
	6	Workshed-cum-Housing Scheme for Khadi Weavers	83.99	95	
	7	Package for Developing Infrastructure for Khadi Institutions and including Nursing Fund for Weak Institutions	44.21	50	
	8	Scheme for Enhancing Productivity of Khadi Industries	79.57	90	
		Subtotal of Village Industries	3423.39	3871.95	
		Total of KVIC	4295.04	4857.81	
		Coir Board			
	9	Research & Development and Rejuvenation, Modernization, and Technology Upgradation for Coir Industry	125.55	142	

Note: * PMRY and REGP will be merged into a new scheme called Prime Minister's Employment Generation Programme (PMEGP) once it is approved by the competent authority.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	10	Training, Extension, Quality Improvement, Mahila Coir Yojana, and Welfare Measures	124.14	140.41	
		Total of Coir Board	249.69	282.41	
		Prime Minister's Rozgar Yojana (PMRY)*			
	11	Subsidy for PMRY and EDP	2024.70	2290	
		SFURTI			
	12	Scheme of Fund for Regeneration of Traditional Industries (SFURTI)	61.70	69.78	
		Total of A&RI	6631.13	7500	
		Grand Total of MSME	10167.73	11500	
37		**Ministry of New & Renewable Energy**			
	1	Grid Interactive Power and Distributed Renewable Power	442.08	500.00	Bifurcation of establishment including salary component into Plan and non-Plan from next year under various schemes. Independent evaluation of major schemes with emphasis on small hydro power in NE, wind power & biomass/cogeneration. Enhanced funding depends on evaluation & incorporation of findings.
	2	Renewable Energy for Rural Aplications	1105.19	1250.00	
	3	Renewable Energy for Urban, Industrial, and Commercial Applications	442.08	500.00	
	4	R&D	1060.98	1200.00	Three technical institutions uder umbrella programme on R&D. Project based support to R&D institutions. R&D should be on top priority with higher allocation. GBS should be for R&D and not for subsidies.
	5	Supporting Programmes (Awareness Generation, International Relation, HRD & Training, M&E, IREDA, Support to State Govt. & Industry)	397.87	450.00	Schemes relating to International Co-operation, HRD, Training & Seminars to be retained under Plan head.
	6	Spill over liabilities of Tenth Plan (IREP)	88.42	100.00	
		Grand Total	3536.60	4000.00	
38		**Department of Public Enterprises**			
	1	Retraining & Redeployment of rationalized workers of CPSUs	42.00	47.50	Survey of present/intended activity status of VRS optees for last two year for restructuring/reorienting the scheme. Revival packages should be on commercial viability. Cleaning balance sheet will not serve the purpose and manpower rationalization is important.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		New Scheme (08–09)	5.75	6.50	
	2	Research Development and Consultancy (i) Support to IPE, Hyderabad (ii) Annual Survey on SLPEs by IPE (iii) Contribution to Corpus Fund of NFCG (iv) Thematic Consultancy & Studies (v) Seminars, Workshops etc., on Generic Issues of CPSEs			For annual survey of SLPEs on regular basis, these two schemes proposed for Eleventh Plan. A new scheme as Research Development & Consultancy has been undertaken to initiate new activities by DPE.
		Grand Total	47.74	54.00	
39		**Ministry of Personnel, Public Grievances, and Pensions**			
		Central Sector Schemes			
	1	Training for all-Support for Training Activities & Capacity Building for Project Appraisal	59.68	67.50	(1) Need to upgrade ATIs especially in lagging States like Bihar and UP after in-depth evaluation. DoPT to formulate a new CSS for strengthening State ATIs, in consultation with the State Governments. (2) The amount spent in 06–07 on Domestic Funded Foreign Training is much higher than domestic training under the scheme 'Training for All'. This needs to be rationalized. (3) EAP schemes would be consolidated and made wide spread. (4) LBSNAA needed to be upgraded to a centre of global excellence for global quality 'Mid Career Training Programme for IAS and other Apex Civil Services'. (5) Each Plan schemes of DoPT need evaluation. (6) 'e-Procurement' to be universalized in a time bound manner. (7) DoPT would submit a Plan Scheme for strengthening of State Vigilance Departments (8) The Scheme 'Public Library' implemented by the Departmrnt of Culture, may be transferred to Ministry of Human Resource Development. D/o ARPG would submit a note on setting up of public libraries network in the rural areas.
	2	Domestic Funding of Foreign Training	60.30	68.20	
	3	Grant to IIPA	8.84	10.00	
	4	Augmentation of Training facilities in ISTM	3.82	4.32	
	5	UNDP—(i) Strengthening of STIs, (ii) Citizen's Access to Information, (iii) Capacity Building for Access to Information	31.03	35.10	
	6	DFID Project for Capacity Building for Poverty Reduction (Training Component)	30.95	35.00	
	7	Improvement of Infrastructure & Upgradation of Essential Facilities at LBSNAA	0.00	0.00	
		(i) Upgradation of LBSNAA to a Centre of Excellence	95.49	108.00	
		(ii) Setting up of National Centre for Good Governance	38.02	43.00	
	8	Plan Schemes for Administrative Reforms	62.60	70.80	
	9	Setting up of Administrative Reforms Commission	14.32	16.20	
	10	Plan Scheme of CBI	0.00	0.00	
		(i) Modernization of Training Centre of CBI	4.77	5.40	
		(ii) Construction of CBI HQ Office building	52.52	59.40	
		(iii) CBI e-goverance	3.34	3.78	
	11	Plan Scheme of CIC	0.00	0.00	
		(i) Other Plan Schemes of CIC	7.16	8.10	
		(ii) New Sch. Construction of CIC Office Building	16.36	18.50	
	12	Pensioners' Portal	2.39	2.70	
		Grand Total	491.59	556.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
40		**Department of Posts**			
	1	Access to Postal network	48.73	55.11	
	2	Mail Operations	416.33	470.88	
	3	Banking and Money Transfer Operations	125.99	142.50	
	4	Insurance Operations	30.95	35.00	This business needs to be expanded. Adequate initial Plan funding could be provided subject to operations being corporatized.
	5	Philately Operations	13.26	15.00	
	6	Estate management	112.12	126.81	
	7	IT Induction—Postal Operations	2387.21	2700.00	
	8	Material Management	44.21	50.00	
	9	Human Resource Management	88.81	100.45	Training programmes need to be strengthened and training facilities expanded for ensuring training for all, particularly on best practices.
	10	Marketing, Research and Product Development	263.37	297.88	
	11	Quality Management	5.63	6.37	
		Grand Total	3536.60	4000.00	
41		**Ministry of Power**			
	1	NHPC	0.88	1.00	No GBS for NHPC except Rs 1 crore provided during 2007–08.
	2	THDC	263.44	297.96	
	3	SJVN	291.77	330.00	
	4	NEEPCO	1821.26	2059.90	
	5	MoP (Others)			
		(i) Central Electricity Authority	115.91	131.10	
		(ii) National Power Training Institute	49.41	55.89	
		(iii) Central Power Research Institute	110.52	125.00	
		(iv) Interest Subsidy for REC-RGGVY	23432.64	26503.00	RGGVY to continue in Eleventh Plan with more focus and regular flow of funds.
		(v) Consultancy Charges & Enabling Activities for APDRP-II Project	383.72	434.00	APDRP-support to programme with 100% loan funding and depending on performance, it would be converted into grant. No GBS for APDRP-II as the amount will be raised by CPSUs (PFC & REC). APDRP to continue in Eleventh Plan with some restructuring.
		(vi) Comprehensive Award Scheme for Power Sector	1.14	1.29	
		(vii) Future Generation Project	44.21	50.00	
		(viii) BEE	149.31	168.87	
		(ix) Energy Conservation			To be merged with BEE as both are serving similar purpose.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		(x) Computerization & Office Equipment (xi) Funds for Evaluation Studies & Consultancy (xii) Setting up of Joint SERC (xiii) Assistance for Capacity Building	4.33	4.90	Bifurcation of establishment including salary component into Plan and non-Plan from next year. Some of these components of MoP (other) may be weeded out in 2008–09 as the activities under Plan budget is over.
		(xiv) Scheme for Equity Gap Funding	255.52	289.00	
		Grand Total	26924.08	30451.91	
42		**Ministry of Panchayati Raj**			
	A	Central Sector Schemes			
	1	Panchayat Empowerment and Accountability Incentive Scheme	101.68	115.00	
	2	Management Cell	6.19	7.00	To be transferred to non-Plan from 2008–09.
	3	Contribution to International Organization	0.09	0.10	This can be reconstructed into non-Plan.
	4	Allocation for NER and Sikkim	77.47	87.62	
	5	External Assistance under Projects Assisted by UN Agencies	38.02	43.00	
		Total A	223.44	252.72	
	B	Centrally Sponsored Schemes			
	1	Rashtriya Gram Swaraj Yojana including Media Publicity and Advocacy	551.40	623.65	Media Publicity & Advocacy has been merged with RGSY.
		Total B	551.40	623.65	
		Grand Total (A+B)	774.84	876.37	
43		**Ministry of Planning**			
		Central Sector Schemes			
	A	Planning			
	1	Tsunami Rehabilitation Programme	14.35	16.23	
	2	Renovation & Alteration	21.53	24.35	
	3	Information Technology	4.78	5.41	
	4	Economic Advisory Council to Prime Minister	9.57	10.82	
	5	National Knowledge Commission	14.35	16.23	
	6	50th Year Initiative for Planning	57.41	64.93	
	7	Strengthening Evaluation Capacity in Government	124.39	140.69	
	8	Other General Economic Services	0.00	0.00	
		(i) Grant-in-aid to IAMR for Taking up Studies on Topics of Current Interest to Planning Commission.	14.35	16.23	
		(ii) Grant-in-aid to Universities & Research Institutions for Training, Research, Institutional Development etc.	9.57	10.82	
		(iii) Expertise for Planning Process (Payments for Professionals etc.)	4.78	5.41	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		(iv) UNDP Assistance for Capacity Building for State Human Development Reports	90.90	102.81	
		(v) UNDP Assistance for Rural Decentralization and Participatory Planning for Poverty Reduction	28.71	32.47	
		(vi) Other Expenditure (Modernization and IT etc.)	35.88	40.58	
		Total A	430.58	487.00	
	B	Energy R&D	2210.38	2500.00	
	C	Skill Development	20158.63	22800.00	
		Total (A+B+C)	22799.59	25787.00	
44		**Ministry of Petroleum & Natural Gas**			
		Rajiv Gandhi Institute of Petroleum Technology	174.18	197.00	
		Total	174.18	197.00	
45		**Ministry of Rural Development**			
		Central Sector Schemes			
	1	Assistance to CAPART	221.04	250.00	Establishment charges to be transferred to non-Plan and indepth evaluation of the organization.
	2	Grants to National Institute of Rural Development	92.84	105.00	Establishment charges to be transferred to non-Plan and indepth evaluation of the organization.
	3	Management Support to RD Programmes and Strengthening of District Planning Process in lieu of Programmes	486.28	550.00	Training under MoRD & MoPR to be integrated.
	4	EGOM on SC Welfare-Model Villages			Yet to be approved.
		Total A	800.16	905.00	
		Centrally Sponsored Schemes			
	1	NREGS	88415.06	100000.00	To be continued.
	2	Rural Housing/IAY	23767.92	26882.21	To be continued.
	3	PMGSY	38240.46	43251.07	To be continued.
	4	SGRY	4951.24	5600.00	To be phased out.
	5	SGSY	15740.53	17803.00	To be continued.
	6	DRDA Administration	187.44	212.00	To be dropped during 2007–08. To be transferred to non-Plan side under State Government.
	7	Provision for Urban Amenities in Rural Areas (PURA)	247.56	280.00	
		Total B	171550.22	194028.28	
		Grand Total (A+B)	172350.38	194933.28	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
46		**Department of Road Transport & Highways**			
	A	Central Sector Schemes			
	1	Externally Aided Projects—NHAI	4454	5037.57	
		(i) Grant to NHAI	3563.2	4030.06	
		(ii) Loan to NHAI	890.8	1007.51	
	2	NH (Original) including Machinery & Equipment and Travel Expenses	16500	18662	
	3	Works under BRDB	2500	2827.55	
	4	Strategic Roads under BRDB	500	565.51	
	5	NHAI (Investment)	36238	40985.95	
	6	Special Accelerated Road Development Programme for NE	9562	10814.83	
	7	Kaladan Multi Modal Project	315.65	357.01	
	8	Rail-cum-Road Bridge at Ganga, Munger	392	443.36	
	9	Rail-cum-Road Bridge at Bogibeel, Assam	700	791.71	
	10	Other Charges & IT			
	11	R&D and Training			
	12	Charged Expenditure	200	226.2	
		Subtotal A	71361.65	80711.69	
	B	Road Transport			
	13	Road Safety$ (Model Driving Training School dropped w.e.f. 2007–08)	363.3	448	
	14	National Database Network	113.5	127	
	15	Inspection & Maintenance Centre, Strengthening of Public Transport, Creation of National Road Safety Board	523.2	556	
		Subtotal B	1000	1131	
		Total (A+B)	72361.65	81842.69	
	C	Centrally Sponsored Scheme			
	16	E&I from CRF#			
		(i) States			
		(ii) UTs	1168.35	1321.43	
		Subtotal C	1168.35	1321.43	
		Total (A+B+C)	73530.00	83164.12	

Note: $ This also includes past liabilities for 'Model Driving Training Schools'.
Includes Rs 140.85 crore for Harichandanpur-Naranpur (Rs 159.30 crore at current price) & Rs 127.50 crore (Rs 144.21 crore at current price) for Mughal Road.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
47		**Ministry of Railways**			
	1	New Lines	11493.96	13000.00	Priority would be DFC, High Density Corridors of national importance & Development of rail network in NE. GBS should be given against specific projects only and as per national priorities.
	2	Gauge Conversion	3095.00	3500.00	
	3	Traffic Facilities	1655.13	1872.00	
	4	Computerization	618.91	700.00	
	5	Bridge Works	119.36	135.00	
	6	Signalling & Telecom	2033.55	2300.00	
	7	Electrification Projects (for Tracks)	2608.24	2950.00	
	8	Other Electrical Works (Contribution towards JV with NTPC)	1679.89	1900.00	
	9	Workshops incldg. Production Units	3094.53	3500.00	
	10	Staff Quarters*	190.09	215.00	
	11	Staff Amenities	132.62	150.00	
	12	Other Specified Works*	300.00	340.00	
	13	Metropolitan Transport Project	1282.02	1450.00	
	14	Rolling Stock	4451.70	5035.00	
	15	Machinery & Plant	574.70	650.00	
	16	Investment in PSUs	5304.90	6000.00	
	17	Inventories	1878.82	2125.00	
		Total GBS for M/o Railway	40513.41	45822.00	
	18	Road Safety—LC/ROB (CESS) (Under Department of Economic Affairs)	3749.68	4241.00	
		Grand Total	44263.09	50063.00	
48		**Department of Scientific & Industrial Research (DSIR) Including CSIR**			
		CSIR			
	1	National Laboratories	5658.56	6400.00	Prioritization:—(1) Refocus outlays according to Plan objective & priorities. (2) Clear prioritization, annual financial and physical phasing, and earmarking a percentage of outlay for each scheme be done to refocus the outlays. (3) Establishment expenditure should be identified for transfer to non-Plan. Evaluation:—(1) In-depth evaluation of all ongoing schemes/programmes involving substantial outlays so that if need be, the schemes coulld be restructured/redesigned accordingly. (2) In-depth evaluation of organizational structure, management practices and functioning of all institutions should also be done for refocussing efforts in a highly competitive scientific world.
	2	National S&T Human Resource Development	707.32	800.00	
	3	Intellectual Property & Technology Development	212.20	240.00	
	4	R&D Management Support	141.46	160.00	
	5	New Millenium Indian Technology Leadership Initiative	618.91	700.00	

Note: *M/o Railways should use Plan GBS for National Projects rather than for Staff Quarters and Other specified works.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	6	Setting up of Institute of Translational Research	88.42	100.00	
		Total CSIR	7426.87	8400.00	
		DSIR			
	1	Technology Promotion, Development, and Utilization	358.08	405.00	Prioritization:—(1) Refocus outlays according to Plan objective & priorities. (2) Clear prioritization, annual financial and physical phasing, and earmarking a percentage of outlay for each scheme be done to refocus the outlays. (3) Establishment expenditure should be identified for transfer to non-Plan. Evaluation:—(1) In-depth evaluation of all ongoing schemes/programmes involving substantial outlays so that if need be, the schemes coulld be restructured/redesigned accordingly. (2) In-depth evaluation of organizational structure, management practices and functioning of all institutions should also be done for refocussing efforts in a highly competitive scientific world.
	2	Central Electronics Limited	44.21	50.00	
	3	National Research and Development	88.42	100.00	
	4	Consultancy Development Centre	8.84	10.00	
	5	DSIR Building & Infrastructure	30.95	35.00	
		Total DSIR	530.49	600.00	
		Grand Total (CSIR + DSIR)	7957.36	9000.00	
49		**Department of Higher Education**			
	A	Central Sector Schemes			
	I	ONGOING SCHEMES			
	1	University and Higher Education (including OSC)	12492.78	14129.70	
	2	Distance Learning	582.96	659.35	
	3	Rashtriya Sanskrit Sansthan	154.73	175.00	
	4	Book Promotion	61.89	70.00	
	5	Planning & Administration	69.06	78.11	
	6	Technical Education (including OSC)	11391.07	12883.63	
		New Schemes			
	1	IGNOU—Skill Dev. Mission (Vocational Education and Training)	44.21	50.00	
	2	New 210 Community Colleges (NGOs) Skill Dev. Mission	88.42	100.00	
	3	Inter Universities Research Institute for Policy & Evaluation (UGC)	88.42	100.00	
	4	Expansion and upgradation of 200 State Engineering Insitutions	804.58	910.00	
	5	Upgrading 7 technical institutions	618.91	700.00	
	6	2 IISERs (Pune & Kolkata)	707.32	800.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	7	Setting up of 2 New SPAs	212.20	240.00	
	8	Establishing 50 Centres for Training and Research in Frontier Areas	132.62	150.00	
	9	Faculty Development (AICTE)	839.94	950.00	
	II	SPECIAL PLAN FOR HIGHER EDUCATION			
	1	16 New Central Universities in uncovered States	1768.30	2000.00	
	2	5 Medical and Engineering Colleges in New CU	884.15	1000.00	
	3	14 World Class Central Universities (WCCU)	2475.62	2800.00	
	4	5 Medical and Engineering Colleges in WCCU	1503.06	1700.00	
	5	Setting up of 370 Degree Colleges	691.41	782.00	
	6	Incentivizing States for Expansion, Inclusion, and Excellence	5481.73	6200.00	
	7	Supporting uncovered State Universities (150) and Colleges (6000)	6189.05	7000.00	
	8	Addl. Assistance to already covered Universities (160)/colleges (5500)	2652.45	3000.00	
	9	Strengthening Science-based Higher Education & Research in Universities.	1060.98	1200.00	
	10	National Education Mission through ICT (including OSC)	4420.75	5000.00	
	III	TECHNICAL EDUCATION			
	1	Expansion of National level/Advanced Institutes:			
		(i) Setting up of 8 New IITs	1768.30	2000.00	
		(ii) Setting up of 20 New NITs	442.08	500.00	
		(iii) Setting up of 20 New IIITs	831.10	940.00	
		(iv) Setting up of 3 IISERs (Mohali, TVN, Bhopal)	795.74	900.00	
		(v) Setting up of 7 New IIMs	583.54	660.00	
	2	Increase of fellowship amounts for MTech Students	884.15	1000.00	
	IV	SKILL DEVELOPMENT THROUGH VOCATIONAL TRAINING			
	3	580 New Community Polytechnics	512.81	580.00	
	4	Support to Engineering Colleges for Diploma Courses	884.15	1000.00	
	5	Women's Hostel in 500 Polytechnics	442.08	500.00	
	V	OTHERS			
	1	Increase Research Fellowship for NET Qualified and non-NET Qualified PhD Students	2033.55	2300.00	
	2	Educational Loan Interest Subsidy	3536.60	4000.00	
	3	Scholarship for 2% of the Total Students	884.15	1000.00	
	4	Construction of Girls' Hostels	884.15	1000.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	5	Reduction of Regional Imbalances/Social Gaps & Promotion of Inclusiveness			
		(i) Higher Education	1892.97	2141.00	
		(ii) Technical Education	884.15	1000.00	
		Total A	72676.11	82198.79	
	B	Centrally Sponsored Schemes			
	1	Setting up of new Polytechnics & Strengthening of Existing Polytechnics			
		(i) Establishment of New Polytechnics in unserved Districts, Establishment of 300 Polytechnics in PPP and 400 in Private Sector	1167.08	1320.00	
		(ii) Strengtheing of 400 Polytechnics	884.15	1000.00	
	2	Area Intensive & Madarsa Modernization Programme	308.57	349.00	
	3	Appointment of Language Teachers	66.31	75.00	
		Total B	2426.11	2744.00	
		Total (A+B)	75102.22	84942.79	
50		**Department of Shipping**			
	1	DG (Shipping)	58.35	66.00	Further allocation depends on in-depth evaluation of all on-going schemes by professional agencies. Scheme of maritime development-professional services involving Rs 0.27 crore for 2007–08 should go to non-Plan.
	2	Indian Maritime University	265.25	300.00	
	3	DG (Light house and Light ships)	132.62	150.00	
	4	IWT Sector	543.75	615.00	Allocation for three new national waterways should be limited to development and should not include maintenance.
	5	Ship Building and Repairs	150.31	170.00	
	6	Major Ports (KoPT, MbPT, JNPT, ChPT, CoPT, VPT, KPT, MoPT, PPT, NMPT, TPT, EPL)	1818.68	2056.98	All 12 individual schemes for major ports be merged into one composite scheme as 'Investment in Infrastructure Development in Major Ports' and allocation to individual ports should be project based. GBS requirement of Rs 100 crore for VGF for infrastructure development under PPP projects be provided in case it could not be made available out of DoEA budget.
	7	ALHW	235.51	266.37	
	8	Others*	1260.49	1425.65	Post Tsunami Works requires close monitoring by DoS. Survey Vessels should be transferred to M/o Defence.
		Grand Total	4464.96	5050.00	

Note: *Includes Post-Tsunami Works, Development of Deep Sea Ports, Survey Vessels, R&D, Sethusamudram Project, Assistance to Minor Ports, and Web-based EDI.

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
51		**Ministry of Social Justice & Empowerment**			
	A	Central Sector Schemes			
	I	BACKWARD CLASSES SECTOR (SCs & OBC)			
	1	Special Central Assistance (SCA) to Special Component Plan (SCP)	2714.09	3069.71	
	2	National Finance Development Corporations for Weaker Sections	381.07	431.00	
	3	GIA to NGOs for SCs, OBCs & Research & Training	221.04	250.00	To be merged with 'GIA for Research, Training, Information, and Miscellaneous' and to be rechristened as 'GIA for Research, Training, Information, and Miscellaneous'.
	4	Rajiv Gandhi National Fellowship for SCs	508.17	574.75	
	5	Top Class Education for SCs	180.81	204.50	
	6	Dr. B.R. Ambedkar Foundation	5.53	6.25	
	7	Self-Employment Scheme for Rehabilitation of Manual Scavengers	309.45	350.00	
		New Schemes under CS			
	8	National Overseas Scholarships Scheme for SCs.	110.52	125.00	
	II	SOCIAL WELFARE			
	9	Scheme for Funding to National Institutes	317.41	359.00	
	10	Artificial Limbs Manufacturing Corporation, Kanpur (ALIMCO)	10.61	12.00	
	11	Scheme of Assistance to Disabled Person for Purchasing/Fitting of Aids & Appliances	442.08	500.00	
	12	Scheme to Promote Voluntary Action for Persons with Disabilities (Deen Dayal Disabled Rehabilitation Scheme)	442.08	500.00	
	13	Implementation of the Persons with Disabilities (PWD) Act, 1995.	22.10	25.00	
	14	Assistance to Voluntary Organizations for providing Social Defence Services including Prevention of Alcoholism & Drug Abuse	243.14	275.00	
	15	Assistance to Voluntary Organizations for Programmes related to Aged			To be merged together as 'Assistance to Panchayati Raj Institutions/Voluntary Organizations/Self Help Group for Programmes related to Aged' and construction of old age home can be taken as one component of it.
	16	Assistance to Panchayati Raj Institutions/Voluntary Organizations/ SHGs for construction of Old Age Homes/Multi Services Centres for Older Persons	181.25	205.00	
	17	Grant-in-aid for Research, Training, Information and Miscellaneous	66.31	75.00	To be merged with GIA to NGO for SCs, OBCs, & Research & Training and rechristened as 'GIA for Research, Training, Information and Miscellaneous'.
		Total A	6155.65	6962.21	

(*Appendix contd.*)

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1	2	3	4	5	6
	B	Centrally Sponsored Schemes			
	1	Post-Matric Scholarships & Book Banks for SC students	3609.10	4082.00	
	2	Pre-Matric Scholarship for Children of those Families Engaged in Unclean Occupation	176.83	200.00	
	3	Hostels for SC and OBC	512.81	580.00	
	4	Scheduled Caste Development Corporation (SCDCs)	77.81	88.00	
	5	National Handicapped Finance and Development Corporation (NHFDC)	27.23	30.80	
	6	Coaching and Allied Scheme for SCs/OBCs & other Weaker Sections	101.68	115.00	
	7	Upgradation of Merit of SC Students	8.84	10.00	
	8	Implementation of PCR Act,1955 & the SC/ST(POA) Act,1989	8.84	10.00	To be transferred to States.
	9	Merit based Scholarships for OBC	853.21	965.00	
		(i) Post-Matric Scholarship for OBCs	618.91	700.00	
		(ii) Pre-Matric Scholarship for OBCs	234.30	265.00	
	10	Setting up of Residential Schools for SCs for Pursuing Studying in Class VI to XII			
		Total B	5376.34	6080.80	
		Grand Total (A+B)	11531.99	13043.01	
52		**Ministry of Statistics and Programme Implementation**			
	A	Central Sector Schemes			
	1	India Statistical Strenthening Project (Modernization of Statistical System of India)	79.57	90.00	
	2	Addition/Alteration and Modernization of Office Building	0.35	0.40	May be transferred to non-Plan.
	3	Capacity Development of CSO	59.48	67.27	To be merged with scheme at S. No. 4, i.e., Capacity Development of NSSO and renamed as 'Capacity Development' having different components.
	4	Improvement of National Accounts Statistics			
	5	Development of Social, Environment, and Price Statistics			
	6	Improvement of Informal Sector Statistics			
	7	Capacity Development of NSSO	216.62	245.00	
	8	Strengthening of Field Operations of NSSO	0.00	0.00	
	9	Strengthening of Data Processing Capacity of NSSO	0.00	0.00	
	10	Strengthening of Survey Design and Research Capabilities of NSSO	0.00	0.00	
	11	Grants-in-aid to States for Carrying Out NSS Survey Work in NER	0.00	0.00	
	12	Strengthening of Data Processing, Storage, and Dissemination of Computer Centre	9.40	10.63	To be renamed as 'Strengthening of Computer Centre'.
	13	Grants-in-aid to Indian Statistical Institute, Kolkata	79.57	90.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	14	Institutional Development and Capacity Building for Project Planning, Implementation, Monitoring, and Performance Management of Infrastructure in Public Sector	8.84	10.00	To be renamed as 'Monitoring & Evaluation and Information, Education, and Communication'.
	15	Institutional Development and Capacity Building (PI Wing)			Ministry to expeditiously conduct in-depth and independent evaluation of its schemes and institutions and use findings for restructuring/reorientation of the same and Plan funding in 2008–09 for these scheme would depend on this.
	16	Institutional Development and Capacity Building (Statistics Wing)			
	17	Fifth Economic Census	69.85	79.00	
	18	Basic Statistics			
		Total A	523.68	592.30	
	B	Centrally Sponsored Schemes			
	1	Basic Statistics for Local Level Development MPLADS	6.81	7.70	
		Total B	6.81	7.70	
		Grand Total (A+B)	530.49	600.00	
53		**Ministry of Steel**			
	1	Hindustan Steelworks Construction Ltd (for AMR)	30.95	35.00	AMR is for a manufacturing unit and not for a servicing unit. HSCL is a servicing unit.
	2	MECON Ltd (for Approved Restructuring Package)	55.70	63.00	CPSEs should meet their AMR requirement from internal resources (IR) and only project based support would be provided. Restructuring package should be on commercial viability.
	3	Bird Group of Companies	0.88	1.00	
	4	Scheme for Promotion of Research & Development in Iron and Steel Sector	104.33	118.00	
		Grand Total	191.86	217.00	
54		**Department of Science & Technology**			
	1	Research & Development Support	2829.28	3200.00	
	2	Technology Development Programme	265.25	300.00	
	3	S&T Programme For Socio-economic Development	353.66	400.00	
	4	International Co-operation	221.04	250.00	
	5	State Science & Technology Programme	88.42	100.00	
	6	Modernization of Mapping Professional Bodies (SOI & NATMO)	176.83	200.00	
	7	Autonomous Institutions & Professional Bodies	2046.81	2315.00	
	8	Vocational Employment Generation	2.65	3.00	
	9	Technology For Bamboo Products (Mission Mode Project)	70.73	80.00	
	10	Synergy Projects (O/O Principal Scientific Adviser)	30.95	35.00	
	11	Information Technology	13.26	15.00	
	12	National Training Programme For Scientists/Technologist Working with GoI	26.52	30.00	

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(*Appendix contd.*)

1	2	3	4	5	6
	13	Drugs & Pharmaceuticals Research	442.08	500.00	
	14	National Mission For Nano-Science & Nanotechnology	884.15	1000.00	
	15	Science & Engineering Research Board*			
	16	Scholarships For Science In Higher Education (Oversight Committee Recommendation)	1326.23	1500.00	
	17	Water Technology Initiative	44.21	50.00	
	18	INSPIRE	663.11	750.00	
	19	Innovation Clusters	44.21	50.00	
	20	Security Technology Initiative	44.21	50.00	
	21	Mega Facilities For Basic Research	176.83	200.00	
		Grand Total	9750.41	11028.00	
55		**Department of Space**			
	1	Launch Vehicle Missions			
		(i) GSLV MKI	17.68	20.00	
		(ii) GSLV Operational	1998.18	2260.00	
		(iii) Cryogenic Upper Stage Project (CUSP)	4.42	5.00	
		(iv) GSLV MK III Development	1198.91	1356.00	
		(v) GSLV MK III Operational	499.55	565.00	
		(vi) PSLV-C	1628.61	1842.00	
		Subtotal 1	5347.34	6048.00	
	2	Earth Observation Mission			
		(i) Oceansat-2 & 3	199.82	226.00	
		(ii) Radar Imaging Satellite	150.31	170.00	
		(iii) Resourcesat-2 & 3	199.82	226.00	
		(iv) GEO HR Imager	274.97	311.00	
		(v) Cartosat-3	299.73	339.00	
		(vi) Altika-Argoes	99.91	113.00	
		(vii) Technology Experiment Satellites	299.73	339.00	
		(viii) Disaster Management Satellite (DM-SAR)	299.73	339.00	
		(ix) E O Followon Satellites	299.73	339.00	
		Subtotal 2	2123.73	2402.00	
	3	Space Science Mission			
		(i) Chandrayan-1 & 2	449.15	508.00	
		(ii) Megha Trpiques	60.12	68.00	
		(iii) Astrosat 1 & 2	199.82	226.00	
		(iv) Advanced Planetary Missions	299.73	339.00	
		(v) Small Satellites for Atmospheric Research & Astronomy	199.82	226.00	
		Subtotal 3	1208.63	1367.00	

Note: *Included in S. No. 1.

(*Appendix contd.*)

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1	2	3	4	5	6
	4	INSAT Satellites			
		(i) INSAT-3 satellite	53.05	60.00	
		(ii) GSAT-4	26.52	30.00	
		(iii) GSAT-5/INSAT-4D	70.73	80.00	
		(iv) GSAT-6/INSAT-4E	176.83	200.00	A clear prioritization, annual financial and physical phasing and earmarking a percentage of the total outlay for each scheme be done so as to refocus the outlays according to the Plan objectives and priorities and use available resources in the most judicious and economically efficient manner, rather than spreading it thin and not achieving the main objectives Other decisions:—(i) DOS would undertake in-depth evaluation and impact assessment study of its ongoing plans/programmes. (ii) For developing application oriented programmes, more concerted efforts are needed to strengthen the organic linkage with the related ministries and State Governments. (iii) Application of Space Sciences needs to be upscaled in the States and DOS would prepare a comprehensive action plan for the Eleventh Plan. (iv)Concerted efforts to be made for integration of indigenous development of satellites, launch vehicles, and associated ground segments. (v) utilization of EDUSAT to be maximized and modernized. (vi) A presentation to be made by DOS on full application of remote sensing in agriculture and urban planning in the presence of concerned stakeholders. (vii) The Disaster Management Initiatives, prepared by the Disaster Management Authority need to be integrated with DOS programmes.
		(v) GSAT-8/INSAT-4G	599.45	678.00	
		(vi) INSAT-4CR	49.51	56.00	
		(vii) INSAT-4/GSAT Satellites (GSAT-9 to GSAT-14)	1498.64	1695.00	
		(viii) Advanced Communication Technology Satellites	804.58	910.00	
		(ix) INSAT Capacity Augmentation (Short Term)	99.91	113.00	
		(x) INSAT/GSAT Followon Satellites	199.82	226.00	
		Subtotal 4	3579.04	4048.00	
	5	Satellite Navigation	2397.82	2712.00	
	6	Advanced Launch Vehicle Development	0.00	0.00	
		(i) Semi Cryogenic Engine/Stage Development	499.55	565.00	
		(ii) Human Space Flight	1591.47	1800.00	
		(iii) Space capsure Recovery experiment-SRE	79.57	90.00	
		(iv) Reusable Launch Vehicle Technologies	199.82	226.00	
		Subtotal 5	2370.41	2681.00	
	7	Major Space Applications and Space Science Research			
		(i) Remote sensing application (inc. NNRMS, NR CENSUS, RSAM, NRSA, NESAC etc.)	649.85	735.00	
		(ii) Disaster Management Support	199.82	226.00	
		(iii) SATCOM Application Programme	299.73	339.00	
		(iv) Space Science & Environment (inc. PRL, NARL)	599.45	678.00	
		Subtotal 6	1748.85	1978.00	
	8	Information Technology Related Applications			
		(i) National Natural Resources Database	35.37	40.00	
		(ii) Village Resource Centres	249.33	282.00	
		(iii) EDUSAT IT Network	141.46	160.00	
		(iv) Telemedicine Network	88.42	100.00	
		Subtotal 7	514.58	582.00	
	9	R&D, Technology, and Process Development			
		(i) Technology Development Programme/R&D/Small Satellites/ Development of Semiconductor Technology	799.27	904.00	
		(ii) Development of Space Material & Component & Advance Actions	799.27	904.00	
		(iii) Sponsored Research	99.91	113.00	
		Subtotal 8	1698.45	1921.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
	10	Infrastructure/Auxilliary Facilities/Capacity Building for Space Programme			
		(i) Indian Institute of Space Science & Technology/HRD	399.64	452.00	
		(ii) Technical Facilities Replacement/Augmenation	1998.18	2260.00	
		(iii) Industry Interface and Productionization	299.73	339.00	
		(iv) International Co-operation Programme	22.10	25.00	
		(v) Technical & Auxiliary Facilities Support	2997.27	3390.00	
		(vi) General Civil Works & Housing	599.45	678.00	
		Subtotal 9	6316.37	7144.00	
		Grand Total	27305.22	30883.00	
56		**Department of Telecommunications**			
	1	Indian Telephone Industry (ITI)—Residual Commitment towards sanctioned revival	93.60	105.87	ITI to prepare bankable business plan for Eleventh Plan proposal through a professional agency. ITI to explore possibility for selling some real estate assets to meet its revival needs.
	2	Wireless Monitoring Organization (WMO)	110.00	124.42	
	3	Wireless Planning & Co-ordination (WPC) Wing	11.40	12.89	
	4	Telecom Regulatory Authority of India (TRAI)	15.00	16.97	
	5	Telecom Disputes Settlement & Appellate Tribunal (TDSAT)	8.00	9.05	
	6	Telecom Engineering Centre (TEC)	50.00	56.55	
	7	Centre for Development of Telematics (C-DOT) and Telecom Security Certification Centre (TETC)	655.01	740.84	TETC has been made part of C-DOT.
	8	Undersea Cabling between Mainland and Andaman & Nicobar (A&N) Islands (UMA&N)	181.00	204.72	
	9	Technical assistance in Telecom Sector (TAT)	25.00	28.28	TAT should be renamed suitably to reflect its function.
	10	Optical Fibre Cable Network for Defense Services	400.01	452.42	
		Grand Total	1549.03	1752.00	
57		**Ministry of Textiles**			
	A	Central Sector Schemes			
	1	Handlooms	1211.48	1370.45	All the schemes have been merged into 5 major components of this sector.
	2	Handicrafts	861.97	975.07	
	3	Sericulture	417.72	472.54	Only 4 major schemes would be under operation in this sector. The Catalytic Development Programme would be implemented as CSS.
	4	Powerlooms	101.46	114.78	
	5	Wool Development Board	59.37	67.16	
		Total VSE	2652.00	3000.00	

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1	2	3	4	5	6
	1	NIFT	44.21	50.00	Provision for Rai Bareili centre upto 2008–09 and beyond would be restricted to one centre only.
	2	R&D including TRAs	8.84	10.00	
	3	Technology Upgradation Fund (TUFS)	7073.21	8000.00	TUFS might continue up to 31.03.09 and commitments have to be calibrated to avoid any spillover liability. It could be considered for 2008–09 and subsequently only after in depth evaluation.
	4	Scheme for Integrated Textile Park	1768.30	2000.00	Rapid assessment study through an independent agency of at least 5–6 park before further disbursal of GBS.
	5	Jute Technology Mission	314.76	356.00	
	6	Export Promotion Studies	4.42	5.00	Further funding is subject to independent and in-depth evaluation of institutions/schemes.
	7	SVPITM—Coimbatore	11.49	13.00	
	8	Brand Promotion (New Scheme from 07–08)			Regarding new scheme, due procedure has to be followed as prescribed by Planning Commission and D/o Expenditure.
	9	Foreign Promotin Scheme FDI CELL (New Scheme from 07–08)	202.47	229.00	FDI Cell could be merged with Export Promotion Studies at S. No. 6.
	10	Textilpolis (New Scheme from 07–08)			It would be appropriate to have one composite scheme for
	11	Fashion Hub (New Scheme from 07–08)			Textilpolis & Fashion Hub.
	12	Common Compliance Code (New Scheme from 07–08)			
	13	HRD (New Scheme from 07–08)			
	14	Textile engineering (New Scheme from 07–08)			MoT to formulate the scheme in consultation with DHI.
	15	Technical Textiles (New Scheme from 07–08)	84.88	96.00	
		Total A	12164.58	13759.00	
	B	Centrally Sponsored Schemes			
	16	Cotton Technology Mission	213.08	241.00	
		Total B	213.08	241.00	
		Grand Total (A+B)	12377.66	14000.00	
58		**Ministry of Tourism**			
		Central Sector Schemes			
	1	Externally Aided Projects			
		(i) Buddhist Centres	32.71	37.00	
		(ii) UNDP Endogenous Projects	1.77	2.00	
	2	Assistance to IHMs/FCIs/etc.	437.65	495.00	
	3	Capacity Building for Service Providers	83.99	95.00	

(*Appendix contd.*)

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1	2	3	4	5	6
	4	Overseas Promotion & Publicity including Market Development Assistance	892.99	1010.00	(1) Ministry would restructure its scheme of Assistance to Central Agencies for Tourism Infrastructure Development. (2) In-depth evaluation of Domestic and Overseas Promotion and Publicity should be done on priority and findings incorporated for more effective campaign. (3) The scheme of Large Revenue Generating Project and Incentive to accommodation infrastructure are not justified since the private sector should create these as commercial ventures. (4) Scheme of Capacity Building for Service Providers to be restructured to include NGOs for conducting the programmes. The scheme is to train persons engaged in tourism services. (5) The scheme Infrastructure Development for Destinations and Circuits is justified only in PPP mode. (6) MoT would create an interactive tourist portal for both domestic and international tourists.
	5	Domestic Promotion & Publicity including Hospitality	376.65	426.00	
	6	Incentives to Accommodation Infrastructure	207.78	235.00	
	7	Construction of Buildings for IISM at Gulmarg, Kashmir (J&K Package)	11.49	13.00	
	8	Computerization & Information Technology	106.98	121.00	
	9	Market Research including 20 Years Perspective Plan	25.64	29.00	
	10	Assistance for Large Revenue Generating Projects	176.83	200.00	
	11	Creation of Lead Bank Hotels	12.38	14.00	
	12	Equity Contribution to ITDC (Equity up to 07–08 only)	64.54	73.00	
	13	Assitance to Central Agencies for Tourism Infrastructure Development	22.10	25.00	
		Total A	2453.52	2775.00	
		Centrally Sponsored Schemes			
	1	Product/Infrastructure Development for Destinations and Circuits	2105.16	2381.00	
		Total B	2105.16	2381.00	
		Grand Total (A+B)	4558.68	5156.00	
59		**Ministry of Tribal Affairs**			
		Central Sector Schemes			
	1	Grant-in-aid to NGOs for Coaching ST Students for Competitive Exams	265.25	300.00	
	2	Vocational Training Centres in Tribal Areas	88.03	99.56	
	3	Educational Complexes in Low Literacy Pockets	264.18	298.79	
	4	Investment in TRIFED and Price support	61.53	69.59	
	5	Grant-in-aid to STDCs for MFP Village Grain Banks	153.84	174.00	
	6	Development of Primitive Tribal Groups (PTGs)	592.38	670.00	
	7	Support to National ST Finance & Development Corporation and GIA to State ST Dev. & Finance Corporations	229.88	260.00	
	8	Construction of Adivasi Bhavan in New Delhi			
	9	Fellowship programme for ST students	139.17	157.41	
		(i) Rajiv Gandhi Fellowship	132.62	150.00	
		(ii) National Overseas Scholarships Scheme (New Scheme)	6.55	7.41	
		New Schemes under CS			
	10	National Institute of Tribal Affairs (NITA)			Yet to be approved.
	11	Scheme of Institute of Excellence/Top Class Education	65.25	73.80	
		Total A	1859.50	2103.15	

(*Appendix contd.*)

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1	2	3	4	5	6
	B	Centrally Sponsored Schemes			
	1	Scheme of PMS, Book Banks, and Upgradation of Merit of ST Students	1322.95	1496.29	
	2	Scheme of Hostels for ST Students	241.34	272.96	
	3	Ashram Schools in TSP Areas	130.50	147.60	This scheme should be evaluated and should be merged with 'Educational Complexes in Low Literacy Pockets'.
	4	Research & Mass Education, Tribal Festivals, and Others	78.35	88.62	
		Total B	1773.14	2005.47	
		Grand Total (A+B)	3632.64	4108.62	
60		**Ministry of Urban Development**			
	A	Central Sector Schemes			
	1	Contribution to NCR Planning Board	795.74	900.00	
	2	Research, Development, and Capacity Building and Upgradation of Institutions + UNDP Programme + CPWD training	110.52	125.00	
	3	Global Environment Facility	4.42	5.00	
	4	National Mission Mode Project on e-Governance	515.46	583.00	
	5	Urban Transport Planning and Capacity Building	134.39	152.00	
	6	Urban Transport under Metro Head	1856.72	2100.00	
	7	Passthrough Assistance from JBIC	1063.63	1203.00	
	8	Equity to HUDCO for Urban Infrastructure and Water Supply	0.00		
	9	Computerization	8.84	10.00	
	10	Pilot Project on Solid Waste Management near Airport in few Selected Cities	17.68	20.00	To be completed during 2007–08.
	11	General Pool Accommodation (Residential)	1564.95	1770.00	
	12	General Pool Accommodation (Non-residential)	972.57	1100.00	
	13	Modernization of CPWD/Computerization	44.21	50.00	
	14	CPWD Training Institute	23.87	27.00	
	15	NE Lumpsum Provision	707.32	800.00	
	16	Commonwealth Games/Games Village	287.35	325.00	
	17	National Urban Infrastrudture Fund	0.88	1.00	
	18	Assisance for ULBs Capacity Building from UNDP	26.52	30.00	
	19	City Challenge Fund			
	20	Pooled Finance Development Fund	2210.38	2500.00	
	21	National Urban Information System	7.96	9.00	To be completed during 2007–08.
	22	Adminstrative Expenses for JNNURM	176.83	200.00	

(*Appendix contd.*)

(*Appendix contd.*)

1	2	3	4	5	6
		New Schemes			
	23	Urban Infrastructure Dev. in Satellite Cities/Counter-Magnet Cities (Non-NCR)	442.08	500.00	
		Total A	10972.31	12410.00	
	B	Centrally Sponsored Schemes			
	1	Mega City Scheme			
	2	IDSMT (Including CUISS)			Subsumed under JNNURM.
	3	AUWSP	28.73	32.50	To be completed during 2007–08.
		Total B	28.73	32.50	
		Grand Total (A+B)	11001.04	12442.50	
61		**Ministry of Housing and Urban Poverty Alleviation**			
		Central Sector Schemes			
	A	BMTPC	31.83	36.00	
	1	Grant to NCHF	2.65	3.00	
	2	UNDP Assistance for National Strategy for Urban Poor	4.42	5.00	
	3	NE Lumpsum Provision	176.83	200.00	
	4	Computerization	4.42	5.00	
	5	Building Centres Scheme	4.42	5.00	
	6	Administrative Expenses for JNNURM	61.89	70.00	
	7	MIS on Housing, Data, Research & Survey	30.95	35.00	
	8	HUDCO Equity for Housing			
		Total A	317.41	359.00	
	B	Centrally Sponsored Schemes			
	1	Integrated Low Cost sanitation	176.83	200.00	
	2	SJSRY	1547.26	1750.00	
	3	Interest Subsidy Scheme for Housing to Urban Poor	1218.36	1378.00	
		Total B	2942.45	3328.00	
		Grand Total (A+B)	3259.86	3687.00	
62		**Ministry of Water Resources**			
		Central Sector Schemes			
	1	Development of Water Resource Management System	154.73	175.00	
	2	Hydrology Project	159.15	180.00	
	3	Groundwater Management and Regulation	349.24	395.00	

(*Appendix contd.*)

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1	2	3	4	5	6
	4	Investigation for WR Development Scheme	194.51	220.00	
	5	Research And Development	260.82	295.00	
	6	National Water Academy	13.26	15.00	
	7	Rajiv Gandhi National Institute of Training and Research	22.10	25.00	
	8	Information, Education, and Communication (New Scheme)	44.21	50.00	
	9	Pagladiya Dam Project	486.28	550.00	
	10	Farakka Barrage Project	145.88	165.00	MOWR would prepare and continuously update water availability and quality maps in consultation with the MoE&F and share the same with all stakeholders.
	11	Dam Safety Studies And Planning	44.21	50.00	
	12	River Basin Organization/Authority (New Scheme)	8.84	10.00	
	13	Flood Forecasting	110.52	125.00	
	14	River Management Activities and Works related to Border Areas	787.78	891.00	
	15	Infrastructure Development	88.42	100.00	
		Total A	2869.95	3246.00	
		Grand Total	2869.95	3246.00	
63		**Department of Women and Child Development**			
	A	Central Sector Schemes			
	I	CHILD DEVELOPMENT	645.43	730.00	
	1	Rajeev Gandhi National Creche Scheme for Children of Working Mothers	486.28	550.00	To be revamped and converted to Centrally Sponsored Scheme.
	2	National Commission for Protection of Child Rights (NCPCR)	30.95	35.00	All GIA schemes to be merged under one heading and institute/organization under CS can be taken as component.
	3	NIPCCD	30.95	35.00	Its function and acheivement to be evaluated by independent agency. All GIA schemes to be merged under one heading and institute/organization under CS can be taken as component.
	4	Conditional Cash Transfer Scheme for the Girl Child with Insurance Cover (New Scheme)	70.73	80.00	
	5	Comprehensive Scheme on Combating Trafficking of Women & Children (New Scheme)	26.52	30.00	
	II	WOMEN EMPOWERMENT	637.47	721.00	
	6	Hostel for Working Women	66.31	75.00	Operation and maintainance cost to be met through user charges.
	7	STEP	88.42	100.00	To be converted to Centrally Sponsored Scheme and merged with Swayamsidha.
	8	NCW	22.10	25.00	Its function and acheivement to be evaluated by independent agency. All GIA schemes to be merged under one heading and institute/organization under CS can be taken as component.

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(*Appendix contd.*)

1	2	3	4	5	6
	9	RMK	95.49	108.00	To be integrated with Swayamsidha.
	10	Swadhar	95.49	108.00	
	11	GIA to CSWB	229.88	260.00	Its function and acheivement to be evaluated by independent agency. All GIA schemes to be merged under one heading and institute/organization under CS can be taken as component.
	12	Scheme for Relief and Rehabilitation of Victims of Rape (New Scheme)	22.10	25.00	
	13	Gender Budgeting (New Scheme)	17.68	20.00	
		Other Grants-in-aid	145.88	165.00	
	14	GIA to Research, Publication, and Monitoring	13.26	15.00	
	15	Inovative Work on Women & Children	17.68	20.00	All GIA schemes to be merged together.
	16	Information, Mass Edu., and Publication	66.31	75.00	
	17	Information Technology	4.42	5.00	To be merged under 'Information, Education, and Communication'.
	18	Nutrition Education (FNB)	44.21	50.00	Its function and acheivement to be evaluated by independent agency. All GIA schemes to be merged under one heading and institute/organisation under CS can be taken as component.
		Total A	1428.79	1616.00	
	B	Centrally Sponsored Schemes			
	I	CHILD DEVELOPMENT	46394.92	52474.00	
	1	Integrated Child Development Services (ICDS) including Training			
		(i) Restructured ICDS	37487.99	42400.00	
		(ii) Conditional Maternity Benefit for Pregnant and Lactating Mothers	7957.36	9000.00	
	2	National Nutrition Mission (NNM)	0.88	1.00	
	3	Integrated Child Protection Scheme (ICPS)	948.69	1073.00	
	II	WOMEN'S EMPOWERMENT	543.75	615.00	
	4	Integrated Women's Empowerment Programme (Swayamsiddha)	442.08	500.00	STEP to be merged with Swayamsidha.
	5	Priyadarshini Scheme	83.99	95.00	
	6	Scheme for Leadership Development of Minority Women (New Scheme)	17.68	20.00	
	III	SCHEMES TRANSFERRED FROM THE MINISTRY OF SOCIAL JUSTICE & EMPOWERMENT	53.05	60.00	
	7	Scheme for the Welfare of Working Children in need of Care & Protection	8.84	10.00	To be integrated with ICPS.
	8	Integrated Scheme for Street Children	13.26	15.00	To be merged with ICPS.

(*Appendix contd.*)

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1	2	3	4	5	6
	9	Shishu Greh Scheme	4.42	5.00	
	10	Scheme for Prevention and Control of Juvenile Social Maladjustment	22.10	25.00	
	11	Central Adoption Resource Agency (CARA)	4.42	5.00	
		Total B	46991.72	53149.00	
		Grand Total (A+B)	48420.51	54765.00	
64		**Ministry of Youth and Sports Affairs**			
	A	Youth Affairs			
	1	National Service Scheme—a CSS	375.76	425.00	
	2	Nehru Yuva Kendra Sangathan (NYKS)	397.87	450.00	
	3	Rajeev Gandhi National Institute of Youth Dev.	35.37	40.00	
	4	Youth Hostels	10.61	12.00	To be discontinued after completion of ongoing projects.
	5	Volunters' Scheme			
		(i) National Service Volunteer Scheme (NSVS)	69.85	79.00	
		(ii) Rashtriya Sadbhavana Yojana (RSY)	42.44	48.00	To be merged with Nehru Yuva Kendra Sangathan.
	6	Fin. Assist. for Prom. of Adolescents & Youth Development			
		(i) Promotion of Youth Activities & Trg.	30.95	35.00	
		(ii) Promotion of National Integration	70.73	80.00	To be merged together under 'National Programme for Youth
		(iii) Dev. & Empowerment of Adolescents	123.78	140.00	& Adolescent's Development'.
		(iv) Promotion of adventure	17.68	20.00	
	7	Promotion of Scouting & Guiding	13.26	15.00	
	8	International Co-operation	17.68	20.00	
		Total A	1205.98	1364.00	
	B	Sports & Physical Education			
	10	GIA to Institutions	979.64	1108.00	
		(i) Sports Authority of India	928.36	1050.00	
		(ii) Laxmi Bai National Institute of Phy. Edn. (LNIPE)	48.63	55.00	
		(iii) National Physical Fitness Prog. (under LNIPE)	2.65	3.00	
	11	Panchayat Yuva Krida aur Khel Abhiyan (Incl. existing Rural Sports Prog.)	1326.23	1500.00	
	12	Assistance to National Sports Federations	327.14	370.00	
	13	Incentives to Sports Persons and for Promotion of Sports Trg. Acivities	141.46	160.00	
	14	Prom. of Sports among Persons with Disability	30.95	35.00	
	15	Anti-Doping (Incl. WADA contribution)	17.68	20.00	
	16	Mega/Multi-Sporting Event	2.65	3.00	
	17	Commonwealth Games—2010 (Incl. GYG-2008, Pune)	1096.35	1240.00	
	18	Other New Initiatives	176.83	200.00	
		Total B	4098.92	4636.00	
		Grand Total (A+B)	5304.90	6000.00	