9

Infrastructure

Provision of quality and efficient infrastructure services is essential to realize the full potential of the growth impulses surging through the economy. There is now a widespread consensus that exclusive dependence on government for the provision of all infrastructure services introduces difficulties concerning adequate scale of investment, technical efficiency, proper enforcement of user charges, and competitive market structure. At the same time, complete reliance on private production, particularly without appropriate regulation, is also not likely to produce optimal outcomes. India, while stepping up public investment in infrastructure, has been actively engaged in finding the appropriate policy framework, which gives the private sector adequate confidence and incentives to invest on a massive scale, but simultaneously preserves adequate checks and balances through transparency, competition and regulation.

9.2 An investment of Rs.14,50,000 crore or about US$320 billion would be required in the infrastructure sector during the Eleventh Five Year Plan. These investments are to be achieved through a combination of public investment, public-private-partnerships (PPPs) and exclusive private investments, wherever feasible. Investment requirements by 2012 estimated by the Committee on Infrastructure, headed by the Prime Minister, in some of the key sectors are: Rs.2,20,000 crore for modernization and upgradation of highways; Rs.40,000 crore for civil aviation; Rs.50,000 crore for ports; and Rs.3,00,000 crore (of which 40 per cent is expected to come from the private sector through PPP) for the Railways.

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9.3 The overall index of six core industries having a direct bearing on infrastructure and accounting for 27 per cent weight in the Index of Industrial Production (IIP), registered a growth of 8.3 per cent during April-December, 2006, which was higher than the 5.5 per cent registered during April-December, 2005 (Table 9.1). In the first nine months of 2006-07, crude petroleum, refinery products and electricity generation registered an acceleration in their growth rates, but there was a decline in the growth rates of coal, cement and finished steel.

Power

9.4 Electricity generation by power utilities during 2006-07 was targeted to go up by 6.7 per cent to 663.0 billion KWh. The growth of such power generation during April-December 2006 was 7.5 per cent (Table 9.2) as compared to 4.8 per cent in the corresponding period last year. But, while thermal generation exhibited substantial acceleration in growth during the first three quarters of 2006-07, growth in hydro and nuclear generation slowed down.

9.5 During April-December 2006, the plant load factor (PLF), an important measure of efficiency, has been higher for Central Sector Plants compared to those of State Electricity Boards (SEBs) (Table 9.3). Average PLF of private plants was higher than that of the public sector. During April-December, while PLF of SEBs increased from 64.8 per cent to 68 per cent between 2005 and 2006, the increase masked substantial variation across States with PLF for the eastern and the north-eastern states significantly lower.

Table 9.1 : Trends in growth of physical output in infrastructure sectors *(in per cent)*

Items	2002-03	2003-04	2004-05	2005-06	April-December* 2005-06	April-December* 2006-07
I. Energy						
1. Coal production	4.6	5.1	6.4	6.4	6.2	4.5
2. Electricity generated (Utilities only)	3.2	5.1	5.2	5.1	4.8	7.5
3. Petroleum						
(a) Crude oil production	3.4	0.7	1.8	-5.3	-6.0	6.0
(b) Refinery throughput	4.9	8.2	4.3	2.1	0.5	12.6
II. Steel	7.3	9.8	8.4	11.2	10.7	9.7
III. Cement	8.8	6.1	6.6	12.3	10.9	9.9
Average growth rate of I to III	**5.0**	**6.1**	**5.8**	**6.1**	**5.5**	**8.3**
IV. Transport and communications						
1. Railway revenue-earning Goods traffic	5.3	7.5	8.1	10.7	10.7	9.7
2. Cargo handled at major ports	9.0	10.0	11.3	10.3	12.6	8.3
3. Telecom: Cell phone connections	119.2	115.3	10.4	89.4	55.4	107.31
4. Civil aviation						
a. Cargo handled						
i. Exports	13.3	1.0	12.4	7.3	13.1	-1.3
ii. Imports	18.6	13.4	24.2	15.8	12.7	19.6
b. Passengers handled at						
i. International Terminals	4.8	6.5	14.0	12.8	12.7	11.8
ii. Domestic Terminals	9.6	13.1	23.6	27.1	21.9	37.0

*** Provisional**
Source : Item no. I to III Ministry of Commerce & Industry.
IV Ministry of Statistics and Programme Implementation.

Table 9.2 : Trends in the power sector (utilities only)

	2004-05	2005-06	April-December 2005	April-December 2006	Change over previous year@ 2005	Change over previous year@ 2006*
			(Billion KWh)			(per cent)
1. Power generation**	587.4	617.5	458.8	493.1	4.8	7.5
(i) Hydro-electric	84.5	101.3	80.61	91.77	19.1	13.8
(ii) Thermal	486.1	497.2	363.3	385.3	1.5	6.1
(iii) Nuclear	16.8	17.2	13.2	13.61	7.3	3.0
Memorandum item: Plant load factor (PLF), in per cent	74.8	73.6	71.5	74.2	-2.2	3.8

*** Provisional; @ April-December**

**** Excludes generation from captive and non-conventional power plants and Thermal Power Plants below 20 MW units and Hydro power plants below 2 MW.**

Table 9.3 : Thermal plant load factor

	2001-02	2002-03	2003-04	2004-05	April-December 2004	April-December 2005	April-December 2006
I. State Electricity Boards	67.0	68.7	68.4	69.6	67.1	64.8	68.0
II. Central Sector	74.3	77.1	78.7	81.7	82.1	79.8	80.8
III. Private Sector	74.7	78.9	80.5	85.1	85.4	86.7	88.1
REGIONS							
Northern	75.1	75.4	76.3	77.1	76.8	75.0	78.3
Western	74.1	75.8	75.1	78.6	76.2	74.5	74.2
Southern	82.4	86.4	83.4	84.1	78.2	75.2	80.3
Eastern	48.7	52.1	56.9	60.4	64.6	62.4	66.1
North-Eastern	16.7	14.8	14.0	15.0	16.1	16.2	16.4
All-India	**69.9**	**72.2**	**72.7**	**74.8**	**73.6**	**71.5**	**74.2**

9.6 With the rate of return of SEBs deteriorating to -27.4 per cent in 2006-07 (RE) from -24.8 per cent in 2005-06 (Table 9.4), resources forgone through such poor returns continued to be very large. In 2006-07, while the direct transfers from State Governments to SEBs was Rs.13,870 crore, an uncovered subsidy of Rs.21,201 crore remained, indicating the large reform potential for improving not only the electricity sector itself but also the fiscal position of the States.

Table 9.4 : Financial performance of the state power sector

(In Rs. crore)

	1991-92	2005-06 Provisional	2006-07 (RE)	2007-08 Plan projection
A. Gross subsidy involved				
(i) On account of sale of electricity to				
(a) Agriculture	5,938	24,472	27,333	27,089
(b) Domestic	1,310	10,839	13,014	11,841
(c) Inter-State Sales	201	1,087	-216	612
Total	**7449**	**36,398**	**40,131**	**39,542**
(ii) Subventions received from State Govts.	2,045	11,613	13,870	12,457
(iii) Net subsidy	5,404	24,784	26,261	27,085
(iv) Surplus generated by sale to other sectors	2,173	6,059	5,061	8,816
(v) Uncovered subsidy	3,231	18,725	21,201	18,269
B. Commercial Losses				
(i) Commercial Losses (excluding subsidy)@	4,117	21,110	26,150	21,391
(ii) Commercial Losses (including subsidy)	NA	9,496	12,280	8,933
C. Rate of Return (ROR %) #	-12.70	-24.84	-27.43	-18.59
D. Revenue Mobilisation				
Additional Revenue Mobilisation from achieving				
(a) 3% ROR	4,959	24,350	29,225	25,193
(b) From introducing 50 paise per unit from Agriculture/Irrigation	2,176	1,100	1,643	1,287

RE: Revised Estimates, AP: Annual Plan Projections, # for losses without subsidy.

Note:- (i) The information regarding commercial losses in case of Orissa and Delhi pertains to GRIDCO of Orissa and Transmission Company of Delhi only.(ii) Information in case of Punjab, Tamilnadu, Himachal Pradesh, Bihar, Jharkhand Chattisgarh and Madhya Pradesh is relating to there State Electricity Boards. In case of other states, the information pertains to transmission and distribution utilities formed after the reform and restructuring of the sector.

Source : Planning Commission.

9.7 Coal continued to remain the mainstay of the power sector, with 54.2 per cent (69,199 MW) of total installed power generation capacity in the country of 1,27,673 (MW) as of December, 2006 in coal-fired thermal units. With around 67 per cent of total power generation coming from coal-fired power stations, power sector is the major consumer of coal in the country absorbing around 78 per cent of the country's total coal production.

9.8 In the past, coal has been imported for blending by the power stations to maintain the environmental stipulations regarding use of coal of less than 34 per cent ash content, and also occasionally supplementing supplies from indigenous sources (Table 9.5). During the current year and the last, coal continued to be imported to bridge the gap between anticipated demand and domestic availability.

9.9 Out of the total 1,27,673 MW installed generating capacity in the country on October 31, 2006, 13,582 MW (about 10.64 per cent) is based on gas or liquid fuel (excluding diesel).

Table 9.5 : Import of coal by power stations

Year	Quantity (MT)
2001-02	3.56
2002-03	3.07
2003-04	3.37
2004-05	4.53
2005-06	10.44 *
2006-07	7.4 #

*** Out of total import of about 11.22 MT.**
 # Provisional.

The supply of gas to power stations of total 10,999 MW capacity which use gas as the primary fuel remained inadequate (Table 9.6) with supply of gas not keeping pace with the demand for gas in power sector. Even the commitments of gas allocations made earlier to power stations are not being fulfilled.

9.10 Though the gas based power stations have provision for the use of alternate fuels, such as naphtha and HSD, the prevailing high costs of such fuels prevented their utilization and resulted in generation loss.

Capacity addition programme

9.11 The Tenth Plan capacity addition target of 41,110 MW was scaled down to 36,956 MW at the time of the Mid-Term Appraisal (Tables 9.7 and 9.8). The likely achievement is expected to be around 23,250 MW, which is 57 per cent of the original target and 63 per cent of the target in the Mid-Term Appraisal. By type of ownership, the anticipated shortfall (73 per cent) is the highest in the private sector, while by type of plant, it is the highest (43 per cent) in hydro plants.

9.12 While there are shortfalls vis-à-vis the targets, these shortfalls are lower than in the earlier Plans. In the Ninth Plan, achievement was less than 50 per cent of the target. The capacity addition in the Ninth Plan was only 19,015 MW against the target of 40,245 MW.

9.13 The process of revival of the Dabhol Power Project, closed since June, 2001, was

Table 9.6 : Trends in gas availability in the power sector

(In MMSCMD)

Years	Gas in MMSCMD Required*	Gas in MMSCMD Supplied	Shortfall	Estimated Generation loss in BU
(1)	(2)	(3)	(4)=(2)-(3)	
2000-01	44.54	24.40	20.14	33.0
2001-02	46.31	24.33	21.98	36.1
2002-03	48.26	25.12	23.14	38.0
2003-04	49.25	25.62	23.63	38.9
2004-05	49.73	30.70	19.03	31.2
2005-06	53.38	35.37	18.01	23.88
April-October 2006	53.45	34.28	19.17	18.43

***Generation loss calculated by considering the demand-supply gap of gas at 90 per cent PLF, Gross Calorific Value of gas = 9000 Kcal/SCM, Station Heat Rate = 2000 Kcal/KW hr. and no generation made using liquid fuels.**
Note: MMSCMD – million metric standard cubic meter per day; BU- Billion Units

Table 9.7 : Tenth Plan targets and achievements in power sector (by ownership)

(in MW)

	Target		Additional Capacity : Status		
	Original	Mid-Term Appraisal	Commissioned	Under execution	Overall anticipated
Central	22832	19817*	11115	2610	13725
State	11157	12240	5460	2135	7595
Private	7121	4899	1931	0	1931
Total	41110	36956	18505	4745	23250

*** Including 2520 MW nuclear projects under construction**

Table 9.8 : Tenth Plan targets and achievements in power sector (by type)

(in MW)

	Target		Additional Capacity : Status		
	Original	Mid-Term Appraisal	Commissioned	Under execution	Overall anticipated
Thermal	25417	23261	10129	3535	13664
Hydro	14393	11125	7196	990	8186
Nuclear	1300	2570	1180	220	1400
Total	41110	36956	18505	4745	23250

initiated in 2005. A joint venture company by the name of Ratnagiri Gas and Power Private Limited (RGPPL), with shareholding of National Thermal Power Corporation (NTPC), Gas Authority of India Limited (GAIL), Indian Financial Institutions (IFIs) and Maharashtra State Electricity Board (MSEB) has been constituted to restart the power plant and complete the construction of Phase II and the associated LNG terminal. The Project's assets have been taken over by RGPPL with the approval of Maharashtra High Court. Block-II (740MW) of Dabhol Power Project has already been commissioned on May 15, 2006. Balance capacity of the project is expected to be commissioned by March, 2007.

9.14 Power plants using super-critical technology have a higher thermal efficiency of about 40 per cent compared to 38.6 per cent of sub-critical units of 500 MW units or less. At present all the operating thermal power units are sub-critical units. Six super-critical units of 660 MW of NTPC Ltd., at Sipat (3x660) and Barh (3x660) are at an advanced stage of construction, and the first super-critical unit is expected to be commissioned during 2009-2010. In the Eleventh Plan, NTPC and some state utilities have plans to go for adoption of 800 MW units. NTPC has already drawn up-plans to induct 800 MW units at Darlipalli, Lara and Gajmara. At the same time, Government has also invited tenders to set up Ultra Mega Power Projects in other parts of the country with large size units with an option of 800 MW.

9.15 Government is encouraging the use of hydel and wind energy sources which do not rely on fossil fuels and avoid carbon emissions. India has an estimated unutilized hydro-power potential of more than 1,50,000 MW. A study by the Central Electricity Authority (CEA) has identified 399 potential hydel projects with an aggregate capacity of 1,07,000 MW. Preparation of pre-feasibility reports (PFRs) of 162 schemes with aggregate installed capacity of 49,930 MW has already been completed by CEA. As a follow up of preparation of PFRs, action has been initiated for preparation of Detailed Project Reports (DPRs) in respect of 77 low-tariff schemes (with first year tariff being below

Rs.2.50/ KWh) by CPSUs/SPSUs/SEBs/ Independent Power Producers (IPPs).

Ultra-Mega Power Projects (UMPPs)

9.16 The Ministry of Power, Government of India has launched an initiative for development of coal-based Ultra-Mega Power Projects (UMPPs) in India, each with a capacity of 4,000 MW or above. These projects will be awarded to developers on the basis of tariff-based competitive bidding. To facilitate tie-ups of inputs and clearances, project-specific shell companies have been set up as wholly owned subsidiaries of the Power Finance Corporation (PFC) Ltd. These companies will undertake preliminary studies and obtain necessary clearances including water, land, fuel, power selling tie-up etc. prior to award of the project to the successful bidder.

9.17 Nine sites have been identified by CEA in nine States for the proposed UMPPs. These include four pithead sites, one each in Chhattisgarh, Jharkhand, Madhya Pradesh and Orissa, and five coastal sites, one each in Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Tamil Nadu. It is proposed to set up pithead projects as integrated proposals with corresponding captive coal mines. On the request of Ministry of Power, Ministry of Coal has already allocated captive coal mining block for Sasan UMPP in Madhya Pradesh and earmarked captive coal mining block for Orissa UMPP. For the coastal projects, imported coal shall be used. The projects are to be developed with a view to lower the cost of power to the consumers. These projects, adopting super-critical technology to reduce emissions, would be environment-friendly.

9.18 A time bound action plan for preparation of project report, tie-up of various inputs/ clearances, appointment of consultants, preparation of RFQ/RFP have been prepared. Lanco Infrastructure has bagged the Sasan Project at Rs. 1.19 per unit whereas Tata Power has been awarded the Mundra project at Rs. 2.26 per unit. The encouraging results achieved in these two cases has shown the way forward for capacity addition with most competitive tariff. Developers for Krishnapatnam UMPP (Andhra Pradesh) and Tilaiya (Jharkhand) UMPP are expected to be selected by April, 2007 and July 2007 respectively. Once the developers are selected, the ownership of the shell companies shall be transferred to the successful bidders. Development of merchant power plants is also on the anvil. (Box 9.1)

Power Transmission Network and National Grid

9.19 Formation of a strong national power grid has been recognized as a flagship endeavour to steer the development of the power system to cost- effective fulfillment of the objective of 'Electricity to All' at affordable prices. A strong all-India grid would enable exploitation of unevenly distributed generation resources in the country to their optimum potential.

9.20 The existing inter-regional transmission capacity of 11,450 MW connects Northern, Western, Eastern and North Eastern regions in a synchronous mode operating at the same frequency, and the Southern region asynchronously. This has enabled inter-regional energy exchanges of more than 12 billion kWh in a year, thus contributing to greater utilization of generation capacity and an improved power supply position. It is expected to achieve inter-regional capacity of 15,750 MW by the end of the Tenth Plan and 37,150 MW by the end of the Eleventh Plan. The plan also includes synchronous integration of Southern region with rest of the regions forming an all-India synchronous grid.

9.21 For encouraging competition in development of transmission projects, Ministry of Power has notified Tariff-Based Competitive Bidding Guidelines for Transmission Service under Section 63 of the Electricity Act, 2003. As per the provisions in these guidelines, an Empowered Committee under the chairmanship of Member, Central Electricity Regulatory Commission has been constituted with representatives from Ministry of Power, Planning Commission, CEA, Powergrid Corporation of India Ltd (PGCIL) and two experts from the power sector. This

Box 9.1 : Development of Merchant Power Plants

To facilitate the development of the electricity market, the Ministry of Power has issued the approach and guidelines on development of merchant power plants (MPPs). Unlike traditional utilities, MPPs compete for customers and absorb the full market risk. There is no guarantee regarding minimum off-take of their output. Typically the risk of a MPP is carried on the balance sheet of the promoter. MPPs can provide the additional generating reserves that India needs now and will need in the future. They are a modern, market-based answer – at least in part – to the energy challenges faced by the country. MPPs are a product of the restructuring of the electricity industry and they fill different niches in the market; some provide steady supplies to a power grid, while others fire up only when demand is at the highest and meet peak loads. Merchant power plants operating competitively help assure that power is produced with efficiency and supplied to locations where it is needed most. MPPs up to a capacity of 1,000 MW would be provided coal linkage, and captive coal blocks may also be provided to merchant power plants in the range of 500–1000 MW.

It would be essential that certain normative criteria are laid down for eligibility for coal blocks allotment, particularly to IPPs and merchant plans. These criteria could relate to net worth of the company, their internal resource generation and annual turn-over. The agencies being allotted the coal blocks may also be required to put in place bank guarantee of a reasonable amount which should be liable to be encashed if important milestones for development of coal mines are not achieved. The intermediate milestones may also include indicators concerning the development of power projects, such as award of Engineering Procurement and Construction (EPC) contracts, and commencement of construction. Success of this scheme would, to a great extent, depend on availability of reliable data and information for plant sites and other inputs in this capacity range so that developers then can take further appropriate action. An initiative to prepare such PFRs for various plant locations has been taken by the Ministry with CEA to provide the technical inputs for preparation of such reports and PFC, on the basis of advice of CEA, would engage various agencies to develop brief feasibility reports in a time-bound manner for about two dozen power plant locations with 500–1000 MW capacity. These reports may become available in 3-6 months time.

Committee has identified 14 transmission projects to be developed by the private sector through tariff -based competitive bidding. Rural Electrification Corporation (REC) and PFC have been entrusted the task of formulating Feasibility Report/DPR for these transmission lines and to invite bids under the supervision of the Empowered Committee.

Distribution reforms

9.22 Distribution reforms have been identified as the key area to infuse efficiency and commercial viability into the power sector. The 2002 privatization experience of Delhi has been encouraging so far (Box 9.2).

9.23 In February 2000, the Government of India introduced the Accelerated Power Development Programme (APDP), with the objective of initiating a financial turnaround in the performance of the state owned power sector, which was subsequently rechrishtened as Accelerated Power Development and Reforms Program (APDRP). There are two components under APDRP: "investment component" and "incentive component". While the investment component focuses on specific projects for up-gradation of sub-transmission and distribution network, the latter envisages incentivising State Governments up to 50 per cent of the actual total loss reduction by SEBs/ Utilities, as a grant. So far, an incentive amount of Rs 1,575 crore has been released to eight states.

Rural electricity initiatives under Rajiv Gandhi Grameen Vidyutikaran Yojna (RGGVY)

9.24 This scheme of Rural Electricity Infrastructure and Household Electrification was introduced in April, 2005 for achieving the NCMP objective of providing access to electricity to all rural households over a period of four years. At present, only 44 per cent of the rural households have access to electricity. REC is the nodal agency for the programme. The services of CPSUs have been offered to the State for assisting them in the execution of rural electrification projects as per their willingness and requirement. The management of rural distribution has been envisaged through franchisees to non-governmental organizations (NGOs), users'

Box 9.2 : Privatisation of the Power Sector in Delhi

The power sector in Delhi was unbundled in July, 2002 with the erstwhile Delhi Vidyut Board (DVB) being unbundled into one holding company, one generation company, one transmission company and three distribution companies. Each distribution company had 51 per cent equity participation from the private sector, with the remaining equity came from the Government of [full please] NCT of Delhi. The privatization was undertaken on the basis of bids in terms of reduction in aggregate technical and commercial (AT&C) losses. Each distribution company had to reduce the AT&C loss levels by at least 17 per cent over the five year period 2002-07. The AT&C loss levels at the beginning of the privatization process, the targets set for each year and the actual performance – in per cent – are as follows :-

	Opening levels		2002-03	2003-04	2004-05	2005-06
BSES Yamuna Power Ltd.	57.2	Target	56.45	54.7	50.7	45.05
		Achievement	61.89	54.29	50.12	43.89
BSES Rajdhani Power Ltd.	48.1	Target	47.55	45.0	42.7	36.70
		Achievement	47.40	45.06	40.64	35.53
North Delhi Power Ltd.	48.1	Target	47.60	43.35	40.85	35.35
		Achievement	47.79	44.86	33.79	26.52

Besides other benefits, the actual AT&C level for each distribution company has been better than the respective target. The Cabinet on December 18, 2006 has approved an amendment to Electricity Act 2003 making power theft a cognizable offence.

associations, cooperatives or individual entrepreneurs. Panchayat institutions would be associated with the management.

9.25 Progress of implementation of RGGVY until February 9, 2007 was as follows:

- 28,241 villages have been electrified and 5,04,141 connections to BPL households have been released.
- 27 states and their utilities have signed Memorandum of Agreement agreeing to the conditionalities for implementation of the programme as envisaged under RGGVY.
- So far 317 projects for 316 districts have been sanctioned for 27 states at the cost of Rs.11,514.22 crore covering 69,534 un-electrified villages and 1.08 crore BPL households and 1,65,124 electrified villages have been covered for intensive electrification.
- Tenders have been issued for 273 projects covering 272 districts, 69,239 un-electrified villages and 92,02,889 BPL households.
- Contracts have been placed for 200 projects covering 175 districts to electrify 61,012 un-electrified villages and 71,06,387 households.
- Four CPSUs — Power Grid Corporation (India) Ltd. (PGCIL), National Thermal Power Corporation (NTPC), National Hydro-electric Power Corporation (NHPC), Damodar Valley Corporation (DVC) — are working in 134 districts of Assam, Bihar, Chattishgarh, Gujarat, Jammu & Kashmir, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Tripura, Uttar Pradesh, and West Bengal.

Policy Initiatives

Rural electrification policy

9.26 On August 23, 2006, Government notified Rural Electrification Policy under section 4 & 5 of the Electricity Act, 2003. The policy aims at provision of access to electricity to all households by year 2009, quality and reliable power supply at reasonable rates, and minimum lifeline consumption of 1 unit per household per day as a merit good by year 2012.

Tariff policy

9.27 There exists considerable variation in the average tariff rate of electricity supply to

Table 9.9 : State-Wise average rate of electricity for domestic and industrial consumers

(As on July, 2006)

Sl. No.	Name of Utility	Tariff effective from	Domestic 4 KW Total (P/K Wh)	Large industries 500 KW 40% LF (at 11 KV) Total (P/K Wh)
1.	Andhra Pradesh	01.04.2006	396.63	415.08
2.	Assam	01.04.2005	388.60	408.79
3.	Bihar	01.06.2001	237.18	244.34
4.	Chandigarh	01.08.2005	304.00	367.55
5.	Chattisgarh	01.07.2005	277.09	528.84
6.	Delhi (BSES/NDPL)	15.07.2005	346.50	580.96
	Delhi (NDMC)		252.25	-
7.	Goa	01.04.2002	170.75	362.44
8.	Gujarat (URBAN)	25.06.2004	516.46	501.82
	Gujarat (Ahmedabad Electrical Company Ltd.)	01.08.2002	433.39	449.52
9.	Haryana	15.08.2004	379.25	419.00
10.	Himachal Pradesh	08.07.2006	242.25	342.57
11.	Jharkhand	01.04.2005	183.00	442.93
12.	Karnataka – (Bangalore Metro Area)	10.10.2005	418.29	491.69
	Karnataka – (Other local bodies)		413.04	487.46
13.	Kerala	01.04.2004	398.89	421.28
14.	Madhya Pradesh – (continuous supply area)	01.04.2006	423.60	530.67
	Madhya Pradesh – (non-continuous supply area)		411.73	
15.	Maharashtra	01.12.2003	367.94	435.53
	Maharashtra – Mumbai – (TATA's)	01.06.2004	338.05	477.81
16.	Manipur	03.09.2002	299.70	341.16
17.	Mizoram	25.07.2005	195.00	107.02
	Mizoram – District headquarters		247.50	
18.	Meghalaya	01.10.2004	246.25	265.52
19.	Orissa	01.04.2006	247.00	401.94
20.	Pondicherry	16.04.2002	113.75	331.90
21.	Punjab	01.04.2006	374.15	413.20
22.	Rajasthan	01.04.2005	396.88	475.25
23.	Tamil Nadu	01.02.2006	216.25	494.41
24.	Uttaranchal	01.04.2006	215.00	298.89
25.	Uttar Pradesh	01.12.2004	339.75	466.38
26.	West Bengal	01.04.2005	299.35	498.72
	West Bengal – Kolkata – CESC	01.04.2005	460.28	485.13
	West Bengal – DVC	01.09.2000		345.10

Average rate includes tariff and duty/taxes.

Note : The average rates of electricity supply is computed by the CEA on the basis of tariff notifications and various electricity duties/taxes and fuel cost adjustment charges levied on it. The average rates have been computed assuming the same level of energy for various categories of consumers in different States/Union Territories.

Source : Central Electricity Authority.

domestic and industrial consumers (Table 9.9). Under the provisions of the Electricity Act 2003, Central Government has notified the tariff policy, evolved in consultation with the State governments, CERC and various stakeholders. To promote competition, the policy provides that all future requirements of power should be procured competitively, except in the case of one-time expansion of existing projects, or where a state-controlled publicly owned company has been identified as the developer. A transition period of five years has been indicated for achieving the goal of developing generation and transmission projects in the public sector also through competitive bidding only. The policy lays down a timeframe for rationalization of electricity tariffs and mandates reduction of the cross

subsidies to within a band of ± 20% by the end of year 2010-11. The policy clearly states that provision of free electricity is not desirable, as it encourages wasteful consumption of electricity and, in most of the cases, depletion of the water table. To facilitate choice of supply to the consumers through open-access in distribution, the policy provides unambiguous methodology for calculating cross-subsidy surcharge and its time bound reduction. It also lays down the mechanism for arranging back-up supply for such consumers.

9.28 The overall-weighted rate of electricity tariff has gone up by a cumulative 13.4 per cent between January 25, 2003 and January 20, 2007 (Table 9.10). The differential increases among the various categories reveal a healthy trend of reduction in cross-subsidies.

New Hydro-Policy

9.29 Section 63 of the Electricity Act provides for development of projects on the basis of competitive bidding for tariff. Sections 61 and 62 allow such projects developed on the basis of tariff to be fixed by the Regulator on the basis of capital cost and norms. In fact, the Electricity Tariff Policy notified in January 2006 also allows a special dispensation for project development by State and Central PSUs on the basis of capital cost and norm-based tariff to be determined by the Regulatory Commission. This dispensation, allowed for PSUs, is now proposed to be made available for the same period of 5 years to promote hydro-power development even through the private sector route. The State would be required to follow a transparent process for selection of the developer.

9.30 This arrangement would have several advantages. While the initiative for allocation of the project would remain with the State Government (subject to the requirement of transparency in the allocation), the scrutiny of the regulator and the CEA would ensure that the project is being designed and built in the most optimal and economic manner, and that the interest of the consumers is adequately protected. From the point of view of the developer, this procedure would reduce numerous risks associated with the construction and operation and maintenance (O&M) of hydro projects

Guidelines for procurement of electricity

9.31 In compliance with section 63 of the Electricity Act, 2003, the Central Government on January 19, 2005 had notified guidelines for procurement of power by Distribution Licensees through competitive bidding. On March 31, 2006, Central Government has also issued the standard bid document containing request for qualification (RFQ), request for proposal (RFP) and model power purchase

Table 9.10 : Electricity tariffs

Effective Date	Over-all weighted rate	For domestic use	For commercial use	For agricultural use	For industry traction	For railway
Wholesale Price Index (1993-94=100)						
25-Jan-03	241.0	241.9	254.6	261.6	220.5	240.8
24-Jan-04	250.8	255.9	264.7	268.7	230.9	246.4
22-Jan-05	254.8	254.3	251.2	274.7	238.0	248.8
21-Jan-06	261.8	254.1	255.0	291.8	239.9	248.6
20-Jan-07	274.7	263.8	259.9	315.7	246.0	251.8
Rate of increase of electricity tariffs (year-on-year per cent)						
24-Jan-04	4.07	5.79	3.97	2.71	4.72	2.33
22-Jan-05	1.59	-0.63	-5.10	2.23	3.07	0.97
21-Jan-06	2.75	-0.08	1.51	6.22	0.80	-0.08
20-Jan-07	4.93	3.82	1.92	8.19	2.54	1.29
Cumulative increase since January 23, 2003	13.98	9.05	2.08	20.68	11.56	4.57

Table 9. 11 : Growth of telephones over the years

(in Million)

	March, 03	March, 04	March, 05	March, 06	December, 06
Fixed lines	41.33	40.92	41.42	40.23	40.32
CDMA	0.61	9.46	15.92	32.67	44.17
GSM	12.69	26.15	41.03	69.19	105.43
Wireless (CDMA and GSM)	13.30	35.61	56.95	101.86	149.60
Gross Total	54.63	76.53	98.37	142.09	189.92
Annual growth (in per cent)		40	29	44	45

agreement (PPA) for long term procurement of power from projects having specified site and location.

Telecommunications

9.32 India's telecom sector has been one of the biggest success stories of market-oriented reforms, and India is now amongst the fastest growing telecom markets in the world. Supportive government policies coupled with private sector participation have fuelled the unprecedented expansion of this sector (Table 9.11). The announcement of the New Telecom Policy, 1999 was a watershed event for telecommunications in India. Other policy milestones include the opening of the long-distance market in 2002, the termination of VSNL's monopoly over international traffic in the same year, and the resolution of the wireless in local loop issue. As a result, telecom tariffs which were among the highest in the world less than four years ago have now dipped to being among the lowest (Tables 9.12 and 9.13). Tele- density has also increased from 12.7 per cent in March 2006 to 16.8 per cent in December, 2006.

Table 9.12 : Tariff for national long distance (NLD) calls

(In Rupee per minute)

Distance	2001	2002	March 2003 onwards	April 10 - Sept. 09, 2004	With effect from Septmber 10, 2004	India One* Plans effective from March 1, 2006
Upto 50 Kms	1.20	1.20	1.20	1.20	1.20	1.00
Above 50 Kms and up to 200 Kms.	4.80	4.80	2.40	2.40	2.40	1.00
Above 200 Kms and up to 500 Kms.	12.00	4.80	4.80	3.60	2.40	1.00
Above 500 Kms. And upto 1000 Kms.	18.00	9.60	4.80	3.60	2.40	1.00
Above 1000 Kms.	24.00	9.60	4.80	3.60	2.40	1.00

Table 9.13 : Tariff for international long distance (ILD) calls

(In Rupee per minute)

Country	From Oct., 2003 to April 9, 2004	With effect from April 10, 2004 to Oct. 20, 2004	With Effect from Oct. 21, 2004 to May 20, 2005	With Effect from May 21, 2005 onwards	With Effect from October 1, 2006
United Kingdom	7.20	7.20	7.20	7.20	7.20
USA and Canada	9.60	7.20	7.20	7.20	7.20
Rest of Europe	9.60	9.60	9.60	9.60	9.60
South East Africa	12.00	9.60	9,60	9.60	9.60
SAARC countries	21.18	18.00	18.00	12.00	12.00
Sri Lanka	21.18	18.00	12.00	12.00	7.20
Kuwait, UAE, Oman & Qatar	24.00	18.00	18.00	12.00	9.60
Rest of the World	24.00	18.00	18.00	12.00	12.00

Table 9.14 : USO Fund : collections and disbursements						
Year	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07@**	**Total**
Collections	1653.61	2143.22	3457.73	3533.29	-	10787.85
Disbursements	300	200	1314.58	1766.85	650.76	4232.19
@ as on November 30, 2006						

9.33 The total number of telephones has increased from 54.63 million on March 31, 2003 to 142.09 million on March 31, 2006 and 189.92 million on December 31, 2006. While 43.72 million telephones were added during the twelve months of 2005-06, during the current year, about five million subscribers are being added every month. With this growth, the number of telephones is expected to reach 250 million by the end of 2007. The growth of wireless services has been phenomenal, with wireless subscribers growing at a compound annual growth rate (CAGR) of above 90 per cent per annum since 2003. Today the wireless subscribers are not only much more than the fixed subscribers in the country, but also increasing at a much faster pace. The share of wireless phones has increased from 24.3 per cent in March 2003 to 78.77 per cent in December, 2006. Improved affordability of wireless phone has made universal access objective more feasible The number of internet subscribers grew at 25 per cent, while broadband subscribers grew from a meagre 0.18 million to 1.32 million, during 2005-06. It is necessary to increase the broadband connectivity for the knowledge-based society to grow quickly and for reaping the consequent economic opportunities.

9.34 Foreign direct investment (FDI) is one of the important sources to meet the huge funds that are required for rapid network expansion. The FDI policy provides an investor-friendly environment for the growth of the telecom sector. The total FDI approved and the actual inflow up to July, 2006 were Rs. 38,923.38 crore and Rs. 11,801.46 crore, respectively.

9.35 Of the more than 23.54 lakh public call offices (PCOs) functioning in the country, two lakh are in the rural areas. Apart from this, 5.6 lakh village public telephones (VPTs) are also providing access to telecom facilities in the rural areas. The Mobile Grameen Sanchar Sewak Scheme providing telephone at the doorstep of villagers in about 12,000 villages is also in place.

9.36 The universal service obligation (USO) fund continues to be used to subsidise the development of the telecom sector in the rural areas (Table 9.14). From the USO fund, support is being provided for the following:

- Provision of VPTs in 66,822 villages and Rural Community Phones (RCPs) in 46,253 villages. Agreements for the same have been signed, and till December, 2006, 38,795 VPTs and 35,221 RCPs have been provided.
- Replacement of multi access radio relay (MARR) based VPTs — out of a total of 1.86 lakh such VPTs, 1.65 lakh have been replaced till November, 2006.
- Provision of new rural household direct exchange lines (DELs) in identified 1,685 net cost positive short distance charging areas (SDCAs) — more than 13 lakh rural DELs have been provided in these SDCAs till November, 2006.
- Mentenance of 18.65 lakh rural DELs installed between April 1, 2002 and March 31, 2005.

9.37 USO Fund is also proposed to be used for creating infrastructure for mobile and broadband services in rural areas. With this initiative, it may be expected to aid in the increase of rural tele-density. Mobile services being a key driver for increasing

tele-density in rural areas, there is a need to optimize the use of USO Fund to roll-out such services in rural areas.

Manufacture of telecom equipment

9.38 Indian telecom industry manufactures a complete range of telecom equipments using state of the art technologies designed specifically to match the diverse terrain and climate conditions. Production of telecom equipment has increased from Rs. 16,090 crore in 2004-05 to Rs.17,833 crore in 2005-06. Rising demand for a wide range of telecom equipment, particularly in the area of mobile telecommunication, has provided excellent opportunities to domestic and foreign investors in the manufacturing sector. A proposal for setting up Telecom Equipment and Services Export Promotion Council and Telecom Testing and Security Certification Centre (TETC) is in the pipe line. A large number of companies like Alcatel, Cisco etc. have also shown interest in setting up their research & development (R&D) centres in India. With the above initiatives, India is expected to become a manufacturing hub for telecom equipment.

Vision for the future

9.39 By the end of 2012, a total of 650 million telephone connections (including 66 million wired and 584 million wireless connections) are expected to be achieved. Concurrently, there is also a vision of providing 200 million rural telephone connections, which translates into a rural tele-density of 25 per cent. Broadband connectivity would be made available on demand, without limiting the speed. Each village would have at least one broad-band enabled kiosk. Broad-band connection would be provided to schools, health centers and panchayat offices. It is also envisaged that internet and broad-band subscribers will increase to 40 million and 20 million, respectively, by 2010.

Posts

9.40 The Indian postal network is amongst the largest networks in the world in terms of area covered and population served (Table 9.15).The services on offer can be broadly classified into four categories: communication services (letters, post cards, etc.), transportation services (parcel, logistic post), financial services (savings bank, money order, international money transfer service, Public-Private Partnerships for extending financial service outreach through post office network, and Postal Life Insurance) and premium value-added services (speed post, business post, retail post, etc.). It may be emphasized that the Post Office Savings Bank is the largest savings bank in India in terms of network, accounts and annual deposits.

9.41 There is a significant subsidy element in the provision of postal services (Table 9.16) with user charges roughly covering only 78 per cent of the cash costs. This deficit is likely to increase from Rs. 1,375 crore in 2003-04 to Rs.1,379 crore in 2006-07(BE). Redefining the rationale, the mechanism and the size of

Table 9.15 : Postal network – international comparisons

Country	Permanent post office	Population served	Average area served (sq.km)	Employee
China	63,555	20,521	151	0.49
India	**1,55,333***	**6,623***	**21.16***	**0.53***
Indonesia	20,073	10,954	94.88	0.11
Malaysia	1,211	20,169	272.30	0.59
Sri Lanka	4,680	4,074	14.02	1.18
U.K.	15,868	3,734	15.31	3.24
USA	37,579	7,825	256.24	2.81

Source: Department of Posts.

*** As on 31.3.2006.**

Table 9.16 : Subsidy on postal services			
Service	**Subsidy per unit (Rs.)**	**Traffic (in million)**	**Total subsidy (Rs. Crore)**
Post Card	6.39	270.68	172.83
Printed Post Card	0.92	78.00	7.15
Letter Card	4.52	280.99	127.04
Registration	15.90	192.36	305.81
Money Order	25.80	111.08	286.61
Reg. Newspaper			
(a) Single)	8.95	81.18	72.66
(b) Bundle)	15.10	8.28	12.51
Printed books	14.69	17.58	25.82
Parcel	23.78	40.99	97.46
Others	NA	NA	267.33
Total	NA	NA	1375.22
Source : Department of Posts.			

the subsidy constitutes an important policy question at this juncture.

9.42 The spread of computers and communication technology has had profound implications for the postal system. Propelled by these new technologies, postal systems the world over, including India Post, are responding to these challenges by redefining their roles, developing and expanding their core competencies and even harnessing the very technologies that have challenged them. Presently, 8,163 post offices, which include all head post offices and major sub-post offices, are computerized for both counter and back office works. A National Data Centre (NDC) will also be set up in Delhi to connect all the computerized post offices by March 2007.

9.43 As a part of the 20th anniversary celebrations of Speed Post, the Department introduced One India One Rate Scheme under which the customer pays just Rs.25 for any consignment weighing up to 50 grams for any destination in India, excepting local. In a unique partnership with Ministry of External Affairs, Department of Posts assists Indian citizens in obtaining passports in a convenient manner through the service of Speed Post Passport Service. Applications for passports are sold and accepted at 1,093 Speed Post circles and post offices in the country. The post office checks the completed application forms and forwards them to the passport office at no extra cost to the customer. Further, the issued passport is also delivered to the applicant through Speed Post. Filing of income tax returns has been made easy with the tie-up between Department of Posts and Ministry of Finance to file income tax returns through 187 Post Offices with effect from October 26, 2006. The total number of income tax returns filed through Post Offices till October 31, 2006 is 412,278. Service tax application returns are also being collected through post offices in Delhi.

Roads

9.44 India has one of the largest road networks in the world, aggregating to 3.34 million kilometers. The country's road network consists of Expressways, National Highways, State Highways, Major District Roads, Other District Roads and Village Roads. The road network comprises 66,590 km of National Highways, 1,28,000 km of State Highways, 4,70,000 km of Major District Roads and about 26,50,000 km of other District and Rural Roads. National Highways comprise only about 2 per cent of the total length of roads and carry about 40 per cent of the total traffic across the length and breadth of the country. Out of the total length of National Highways, 32 per cent is single lane/intermediate lane, 56 per cent is 2-lane standard and the balance of 12 per cent is 4-lane standard or more.

9.45 The National Highways Development Project (NHDP) – the largest highway project ever undertaken by the country – which is being implemented by the National Highway Authority of India (NHAI), consists of the following components:

- NHDP Phase I & II envisage 4/6 laning of about 14,279 kilometer of National Highways, at a total estimated cost of Rs.65,000 crore (at 2004 prices) These two phases comprise of Golden Quadrilateral (GQ), North-South and

East-West Corridors, Port Connectivity and other projects. The Golden Quadrilateral (GQ-5,846 km) connects the four major cities of Delhi, Mumbai, Chennai and Kolkata. The North-South and East-West Corridors (NS-EW-7,300 km) connect Srinagar in the North to Kanyakumari in the South, including spur from Salem to Kochi and Silchar in the East to Porbandar in the West.

- Government has approved upgradation of 4,035 km under NHDP Phase III-A at an estimated cost of Rs. 22,207 crore as also to take advance action in the form of preparation of the DPRs for the balance length (7,078 km) under Phase-IIIB.
- Government on October 5, 2006 has approved six laning of 6,500 km of national highways comprising 5,700 km of GQ and balance 800 km of other sections under NHDP Phase-V at a cost of Rs.41,210 crore.
- Government on November 2, 2006 has approved construction of 1,000 km of expressways with full access control on new alignments at a cost of Rs.16,680 crore under NHDP-Phase VI.

9.46 By November 30, 2006, 6,776 km of national highways pertaining to NHDP had been completed, the bulk of which (5,475 km) lie on the GQ (Table 9.17). Constraints faced in the timely completion of NHDP include delays in land acquisition, removal of structures and shifting of utilities, law and order problem in some States, and poor performance of some contractors. Nearly 93 per cent works on GQ have been completed by November 2006, and the NS and EW corridors are expected to be completed by December 2009.

9.47 With the completion of about 93 per cent of the GQ, a substantial impact upon the economy is already visible. At this stage there is a need to focus attention on corridor management and road safety, and NHAI has already put in place a corridor management policy.

Corridor management

9.48 The substantial completion of NHDP Phase-I, i.e. GQ, has called for a shift in emphasis to corridor management, i.e. the technique of managing the highways so as to deliver maximum throughput in terms of speed and traffic volume, while minimizing operational cost and enhancing road safety. The concept of corridor management is applied on the completed sections of NHDP through O&M contracts. The scope of work, inter-alia, includes road maintenance, road property management, incident management, traffic management and engineering improvements.

Financing of NHDP

9.49 For implementation of NHDP Phases I and II, the main source of finance of NHAI is the fuel cess (Table 9.18). The present rate of

Table 9.17 : Progress of NHAI projects : status as on November 30, 2006

		NHDP					
	GQ	NS&EW Phase I & II	NHDP Phase III-A	NHDP Phase V	Port con-nectivity	Other	NHDP Total
Total length (km)	5846	7300	4035	6500	380	945	25006
Already four laned (km)	5474	853	30	-	131	287	6776
Under implementation (km)	371	5295	1090	148	228	638	7770
Contracts under implementation (No)	35	145	17	2	7	16	216
Balance length for award (km)	-	1053	2915	6352	21	-	10341

Table 9.18 : Financing of NHAI

(Rs. crore)

Year	Cess funds	External assistance		Borrowings	Budgetary Support
		Grant	Loan		
1999-2000	1032	492	-	-	-
2000-01	1800	461	120	656.62	-
2001-02	2100	887	113	804.44	-
2002-03	2000	1202	301	5592.94	-
2003-04	1993	1159	290	-	-
2004-05	1848	1239	361	-	-
2005-06	3269.74	2400	600	10.1	1400.00
2006-07	6407.45	1582.5	395.5	-	110.00

cess is Rs. 2 per litre on both petrol and diesel. A part of this cess is allocated to NHAI to fund the NHDP. This cess is leveraged to borrow additional funds from the domestic market. Besides, the Government of India has also negotiated various loans from World Bank (US$1,965 million), Asian Development Bank (US$1,605 million) and Japan Bank for International Cooperation (Jap. Yen 32,060 million) for financing various projects under NHDP. These loans from the multilateral institutions are passed on to NHAI by the Government partly in the form of grant and partly as loan. NHAI also negotiated a direct loan of US$165 million from ADB for one of its projects. The funds provided to NHAI, including its borrowings from the market, are utilized for meeting project expenditure as well as debt servicing.

Public-private partnership (PPP):

9.50 Historically, investments in infrastructure, particularly in the highways, were being made by the Government mainly because of the large volume of resources required, long gestation period, uncertain return and associated externalities. The galloping resource requirements and the concern for managerial efficiency and consumer responsiveness in recent times have led to an active involvement by the private sector also. To encourage participation of the private sector, the Department of Road Transport and Highways has laid down comprehensive policy guidelines for private sector participation in the highway sector. Government has also announced several incentives such as tax exemptions and duty-free import of road building equipments and machinery to encourage private sector participation. 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 Build Operate and Transfer (BOT) mode. The private sector participation envisaged in Phase-II of NHDP has also been increased.

Special Accelerated Road Development Programme in the North Eastern Region (SARDP-NE)

9.51 The SARDP NE envisages widening of 3,228 km of national highways, improvement including widening of 2,500 km of State roads and 2-laning of 1,888 km of roads of strategic importance in the north-eastern region. This programme will provide at least 2-lane road connectivity to all State capitals and district head-quarters of all the eight North Eastern Estates, apart from providing improved connectivity to the backward areas and neighbouring countries. This programme will be implemented in two phases as follows:

Phase A: It consists of 1,110 km of national highways and 200 km State/ general staff (GS) roads costing an estimated Rs. 4,618 crore.

Phase B: It involves improvement of 2,118 km national highways and 4,188 km State/GS Roads.

Government approved implementation of Phase A on September 22, 2005 and gave approval for preparation of DPRs for phase B on May 18, 2006.

9.52 A high-powered Inter-Ministerial Committee has been set up to approve and co-ordinate individual sub-projects under SARDP-NE. Up to December 27, 2006, the Committee has approved various sub-projects covering 452 km length at an estimated cost of Rs. 1,140 crore under Phase "A" of the programme.

Future plans

9.53 Government has set ambitious plans for upgradation of National Highways in a phased manner in the years to come. A presentation was made before the Committee on Infrastructure proposing the following projects in addition to the completion of the ongoing works included under NHDP Phase-I and Phase-II:

- 4-laning of 11,113 km (NHDP Phase-III) including 4,035 km already approved.
- Accelerated road development programme for the North Eastern region.
- 2-laning with paved shoulders of 20,000 km of national highways (NHDP Phase-IV).
- 6-laning of GQ and some other selected stretches covering 6,500 km (NHDP Phase-V).
- Development of 1,000 km of express ways (NHDP Phase-VI).
- Development of ring roads, bypasses, grade separators, service roads etc. (NHDP Phase-VII).

As a policy, Government has decided to take-up future phases of NHDP proposals mainly on a PPP basis. Implementation of projects through construction contracts will be only in exceptional cases where private sector participation is not possible at all.

Ports

9.54 Ports not only play a crucial role in facilitating international trade but also act as fulcrums of economic activity in their surroundings and hinterland. The country's coastline of 7,517 kms spread over 13 States/ UTs is studded with 12 major ports and 187 non-major ports. Of the non-major ports, around 60 are handling traffic. The total traffic carried by both the major and minor ports during 2005-06 was estimated at around 570 MT. The 12 major ports carry about three-fourths of the total traffic, with Vishakapatnam as the top traffic handler in each of the last six years. Despite having adequate capacity and modern handling facilities, average turnaround time is 3.5 days as compared with 10 hours in Hong Kong, which undermines the competitiveness of Indian ports. Congestion is due primarily to the slow evacuation of cargo rather than a lack of handling capacity, since ports are not adequately linked to the hinterland. To this end, all port trusts have set up groups with representatives from NHAI, the Railways, and State governments to prepare comprehensive plans aimed at improving road-rail connectivity of ports. An efficient multimodal system, which uses the most efficient mode of transport from origin to destination, is a prerequisite for the smooth functioning of any port. It involves coordinating rail and road networks to ensure good connectivity between port and hinterland.

9.55 Traditionally, all over the world, the ownership of ports has been dominated by the public sector. But privatization of port facilities and services has now gathered momentum and India is also following the trend and an enabling policy framework has already been put in place. Depending on the nature of facility/service, private operators can enter into a service contract, a management contract, a concession agreement or a

Table 9.19 : Trends in traffic at major ports

	2004-05	2005-06*	April – October		Change over previous year.	
			2005	2006*	2005-06	2006-07**
	In million tonnes				In per cent	
1. P.O.L.	126.4	142.1	77.7	84.6	12.4	8.9
2. Iron Ore	76.2	79.2	42.5	42.9	3.9	0.9
3. Fertiliser & Raw Materials	9.7	12.2	6.8	7.5	25.8	10.3
4. Food Grains	3.8	2.1	1.2	2.4	44.7	100.0
5. Coal	52.6	58.8	34.5	32.7	11.8	-5.2
6. Vegetable Oil	3.7	3.9	2.6	2.5	5.4	-3.8
7. Other Liquids	10.3	10.8	6.3	6.0	4.9	-4.8
8. Containerized Cargo	54.8	62.0	35.4	40.8	13.1	15.3
9. Others	46.3	52.5	30.6	34.1	13.4	11.4
TOTAL	**383.8**	**423.6**	**237.6**	**253.5**	**10.4**	**6.7**

*** Provisional**
**** April-October, 2006**
Source : Department of Shipping

divestiture to operate port services. Areas that have been opened up to the private sector on a BOT basis include construction of cargo-handling berths and dry-docks, container terminals and warehousing facilities and ship-repair facilities.

9.56 In 2006-07, up to October 2006, cargo handled by major ports registered growth of 6.6 per cent, down from 10.4 per cent observed in the corresponding seven months of 2005-06 (Table 9.19). About 80 per cent of total volume of ports' traffic handled was in the form of dry and liquid bulk, with the residual consisting of general cargo, including containerised cargo.

9.57 There was an impressive growth of 13.6 per cent per annum in container traffic during the five years ending in 2005-06. Half of the world's traded goods are containersied, and this proportion is expected to increase further. The largest container port in the world in 2005, Singapore, processed 23.19 million TEUs (twenty foot equivalent units). The 10th largest port, Los Angeles in the USA processed 7.49 million TEUs. In contrast, Jawaharlal Nehru Port (JNPT), India's largest container port, handled roughly 2.67 million TEUs in 2005-06.

9.58 The annual aggregate cargo handling capacity of major ports increased from 397.5 MT per annum (MTPA) in 2004-05 to 456.20 MTPA in 2005-06, with the average turnaround time increasing marginally from 3.4 days to 3.5 days in 2005-06. The average output per ship berth-day improved from 9,240 in 2004-05 to 9,267 tonnes in 2005-06. The pre-berthing waiting time at major ports on port account, however, increased from 6.03 hours in 2004-05 to 8.77 hours in 2005-06. Significant inter-port variations in pre-berthing waiting time continued to persist. (Table 9.20).

Civil Aviation

Airports

9.59 The operations, management and development of the airports at Delhi and Mumbai were handed over to the joint venture companies namely Delhi International Airport (P) Ltd. (DIAL) and Mumbai International Airport (P) Ltd. (MIAL). The strategic joint venture partners in DIAL are a consortium led by M/s GMR Group along with Fraport as the Airport Operator, and Malaysian Airports and India Development Fund as the other members. The joint venture partners together hold 74 per cent equity with the balance 26 per cent being held by Airports Authority of India (AAI).

Table 9.20 : Selected performance indicators for major ports

Sl. No.	Name of the Port	Average pre-berthing waiting time (hours) – on Port A/c			Average turnaround time (days)		
		2004-05	2005-06	April-October 2006	2004-05	2005-06	April-October 2006
1.	(a) Kolkata (Kolkata Dock Systems)	0.00	0.09	0.04	4.17	4.12	3.98
1.	(b) Kolkata (Haldia Dock Complex)	7.42	30.37	27.60	3.00	4.00	4.02
2.	Mumbai	6.00	4.80	5.06	4.21	4.09	4.70
3.	Jawaharlal Nehru	8.35	7.40	6.24	1.84	1.96	1.85
4.	Chennai	0.90	0.90	0.80	3.90	3.30	3.40
5.	Cochin	4.16	2.94	0.44	2.33	2.13	2.18
6.	Vizag	1.11	1.54	0.96	3.20	3.80	3.51
7.	Kandla	16.56	19.68	36.00	4.62	4.39	5.49
8.	Mormugao	25.25	17.58	19.52	4.35	4.08	4.88
9.	Paradip	1.62	1.48	1.35	3.41	3.55	3.40
10.	New Mangalore	2.64	0.96	1.92	2.96	3.00	3.30
11.	Tuticorin	1.68	3.06	4.56	2.66	2.83	3.63
12.	Ennore	0.42	0.36	0.32	1.68	2.23	1.93
All Major Ports		**6.03**	**8.77**	**9.96**	**3.41**	**3.50**	**3.63**

Similarly, in case of MIAL, the strategic joint venture partners are a consortium comprising of M/s GVK Group along with Airport Company South Africa as the Airport Operator, and Bidest, South Africa as the other member. Various agreements/contracts for handing over the control of the two airports to DIAL and MIAL were executed in April 2006; and with effect from May 3, 2006, the transactions have become effective. The companies have since finalized their master plans for a 20 year period.

9.60 Construction work at greenfield airports of international standards at Hyderabad and Bangalore is in progress. The two airports are likely to be operational by the middle of 2008. State Governments are encouraged to set up greenfield airports with private sector participation. Proposals to set up greenfield airports in Navi Mumbai, Kannur in Kerala, Goa and Pakyong near Gangtok in Sikkim are in the pipeline. A greenfield international airport is already operational in Kochi.

9.61 Airports Authority of India (AAI) has decided to develop and modernize 35 non-metro airports in the country: Agati, Agartala, Agra, Ahmedabad, Amritsar, Aurangabad, Bhopal, Bhubaneshwar, Chandigarh, Coimbatore, Dehradun, Dimapur, Goa, Guwahati, Imphal, Indore, Jaipur, Jammu Khajurao, Lucknow, Madurai, Mangalore, Nagpur, Patna, Port Blair, Pune, Raipur, Rajkot, Ranchi, Trichy, Thiruvananthapuram, Udaipur, Vadodara, Varanasi, and Vishakapatnam. The Committee on Infrastructure has approved the report of the task force for the development of 35 non-metro airports. Development of airports in NE Region will be taken up by AAI on a priority basis.

9.62 Through an Act of Parliament, Airport Economic Regulatory Authority (AERA) is proposed to be set up to fix, review and approve tariff structure for the aeronautical services and monitor pre-set performance standards at Indian airports. The Authority will ensure a level playing field for all categories of airport operators and also oversee and deal with natural monopoly and common user/ carrier segments of airports. Government has adopted an overall liberal approach in the matter of grant of traffic rights under bilateral agreements with various foreign countries. A revised air services agreement was signed with USA that led to increased co-operation in

the aviation sector. Under this agreement, both sides can designate any number of services to any point in the territory of the other country with full intermediate and beyond traffic rights. Similarly, traffic rights were enhanced with 19 other countries — Australia, Belgium, Canada, China, Egypt, France, Germany, Italy, Japan, Kuwait, Mauritius, the Netherlands, New Zealand, Oman, Scandinavian countries, Singapore, Spain, UAE (Sharjah), UK — to provide for more flights and better connectivity with these countries and also more commercial opportunity to all operating carriers.

9.63 The signing of a new Air Services Agreement is the first milestone for the purpose of establishing air connectivity with new destinations. During the recent past, a number of new Air Services Agreements were initialled/signed based on modern practices in the civil aviation sector. Air Services Agreement with some countries were signed a long time ago and needed updating in view of the changed circumstances and developments in the international civil aviation scenario, and with respect to newer standards and recommended practices. Some of these countries are Australia, Brazil, Finland, Iceland, New Zealand, Qatar, Tunisia, UK and USA. The tourist charter guidelines were significantly liberalized in 2004. All airports in the country were opened for international tourist charters flights and Indian passport holders were also allowed to travel on the tourist charter flights. Recently, Government has decided to liberalise the tourist charter guidelines further.

Augmentation of fleet by airlines

9.64 A major fleet acquisition is underway by the national carriers, namely Indian Airlines, Air India and Air India Charters' Limited. The project of Indian Airlines for acquisition of 43 Airbus aircraft has been approved by the Government. The first A-319 from this batch of new aircraft joined the fleet of Indian Airlines Limited in October, 2006 and the remaining 42 aircraft will arrive in batches by March, 2010. After receiving Government approval, Air India signed an agreement with M/s Boeing Company on December 30, 2005 for the acquisition of 8 B777-200 LR, 15 B777-300 ER, 27 B787 Dreamliner aircraft for itself, and 18 B737-800 aircraft for its subsidiary company Air India Charters Limited, which operates a low cost airline under the brand name Air India Express. These aircraft would be delivered to Air India between end of November, 2006 and December, 2011. Up to December, 2006, Ministry of Civil Aviation has issued no objection certificate for import/ acquisition of 42 aircraft for scheduled operators, 62 aircraft for non-scheduled operators and 31 aircraft for private operators. Besides this, in principle approval for 135 aircraft was also granted to scheduled operators.

Commencement of new air services

9.65 During 2006, Air India Express started operations in the sectors Mangalore-Delhi-Amritsar-Dubai and Dubai-Chennai. Air India Express also took over Air India's Singapore operations from Chennai with effect from October 29, 2006. While Indian Airlines commenced operation in the sectors Bangalore-Bhubaneshwar-Bangalore and Delhi-Khajurao-Varanasi and return, Alliance Air started operation in the sector Chennai-Bhubneshwar-Chennai. Several private sector airlines started new services both on metro and non-metro routes. Go Air and IndiGo were among the new airlines that started operations during the year. During 2006, private airlines have introduced 22 new routes.

Air traffic

9.66 Policy initiatives have had a marked impact upon airline traffic. The years 2004-05, 2005-06 and 2006-07 have been years of record growth in air traffic. During the period April-September, 2006, international and domestic passengers recorded growth of 15.8 per cent and 44.6 per cent, respectively, leading to an overall growth of 35.5 per cent. During the same period, international and domestic cargo recorded growth of 13.8 per cent and 8.7 per cent, respectively, resulting in an overall growth of 12.0 per cent.

Railways

9.67 Indian railways, world's second largest rail network under a single management, has been contributing to the development of the country's industrial and economic landscape for over 150 years. Of the two main segments of the Indian Railways — freight and passenger — the freight segment accounts for roughly two-thirds of revenues. Within the freight segment, bulk traffic accounts for nearly 95 percent, of which more than 44 percent is coal. Improved resource management, *inter alia*, through increased wagon load, faster turnaround time and a more rational pricing policy has led to an improvement in the performance of the railways during the last two years (Table 9.21).

9.68 In the process of rationalizing passenger and freight tariff structures since 2002-03, the relative index of AC First Class was reduced from 1400 to 1150 and AC 2-Tier from 720 to 650. There was a reduction of about 18 per cent in the fares of AC First Class and 10 per cent in that of AC 2-Tier. It is expected that sustained rationalization measures over the coming years will sharpen the competitive edge of the Railways.

9.69 Rationalization of classification is aimed at securing eventual elimination of cross-subsidies in fares and freight, and evolving a more transparent and cost-based tariff regime. This process necessarily requires increase in freight rates for commodities being transported below cost and lowering the freight charges for commodities being moved at abnormally high rates.

9.70 In the freight segment, the number of commodities in goods tariff has been reduced from 4,000 commodities to 80 main commodity groups in 2005-06, and further to 27 groups in 2006-07. The total number of classes for charging freight has been reduced from 59 to 17.

Table 9.21 : Performance of the Indian Railways

			April-December		Change over previous year	
	2004-05	2005-06**	2005	2006	2005-06	2006-07@
					(per cent)	
1. Revenue earning freight traffic (million tonnes)						
Total	602.10	666.51	481.09	527.95	10.70	9.74
i) Coal	271.40	294.25	213.61	226.18	8.42	5.88
ii) Raw materials for steel plant (excl. coal)	44.26	51.35	38.77	38.98	16.02	0.54
iii) Pig iron & finished steel from steel plants	15.24	17.74	11.90	14.94	16.40	25.55
iv) Iron ore for export	36.41	41.24	31.11	28.57	13.27	-8.16
v) Cement	53.77	61.19	41.46	53.93	13.80	30.08
vi) Foodgrains	46.52	41.74	29.67	29.47	-10.28	-0.67
vii) Fertilizers	28.75	32.65	24.50	26.23	13.57	7.06
viii) POL	32.00	33.45	25.04	26.19	4.53	4.61
ix) Balance (other goods)	73.75	92.90	65.03	83.46	25.97	28.34
2. Net tonne kilometres (billion)	407.40	439.60	317.26	346.24	7.90	9.14
3. Net tonne kms./wagon/day(BG) (broad gauge)	2677*	2872	2815	3075	7.28	9.24
4. Passenger traffic orig. (million)#	5378	5725	4327	4644	6.45	7.32
5. Passenger kilometres (billion)	576	616	472	514	6.94	8.90

*** Revised** **@ April-December** **# Excluding Metro Kolkata**

Source : Ministry of Railways.

9.71 The high-density network connecting the four metropolitan cities of Chennai, Delhi, Kolkata and Mumbai, including its diagonals, popularly called the Golden Quadrilateral has got saturated at most of the locations. Given the present growth scenario, the Railways expect to carry 95 million tonnes incremental traffic per year and about 1,100 million tonnes revenue earning freight traffic by the end of the Eleventh Plan. This entails large investment for capacity augmentation. Development of dedicated freight corridors (DFCs) for carrying additional traffic is essential in view of the high growth in demand. Therefore, the Railways have proposed a 2700-kilometer long railway line project (Eastern Corridor from Ludhiana to Sonnagar as Phase-I – 1,279 Kms. and Western Corridor from Jawaharlal Nehru Port near Mumbai to Dadri/Tughlakabad – 1,483 Kms). These DFCs along with the feeder routes of Indian Railways will ensure availability of sufficient capacity in the face of rising demand for transport. The Eastern Corridor will be extended to the proposed Deep Sea Water Port near Kolkata as and when traffic builds up. Both the Eastern and Western Corridors will be made suitable for running of longer and heavier trains of 25 tonne axle load. While the Eastern Corridor will be electrified, the Western Corridor will operate on diesel traction in order to permit Double Stack Container operation. Logistics parks are proposed to be developed on DFC. An SPV called Dedicated Freight Corridor Corporation of India Limited (DFC-CIL) has been formed to implement the project.

9.72 Accident per million train kilometer, an important index of rail safety, came down progressively from 0.55 in 2001-02 to 0.29 in 2004-05 and further to 0.28 in 2005-06 (Provisional). A Special Railway Safety Fund (SRSF) of Rs. 17,000 crore was set up in 2001-02 to wipe out the arrears in renewal/ replacement of over-aged assets of track, bridges, rolling stock, signaling gear and some safety enhancement works within a fixed time frame of six years. The expenditure under SRSF in the first four and a half years was Rs. 12,965 crore. For the year 2006-07 (BE), the allocation (net) for SRSF is Rs. 2,240 crore, with Rs. 1,365 crore from the general exchequer and Rs. 875 crore from the Ministry of Railways.

9.73 Indian Railway/Indian Railway Catering and Tourism Corporation (IRCTC) are developing facilities to meet the pressing requirements of good quality food to the traveling public and simultaneously enhancing railway revenue by introducing the concept of food plazas at stations. By the end of 2005-06, 36 food plazas have been operationalised. It has been decided to set up 100 budget hotels, adjoining the railway stations for the benefit of railway passengers and tourists, in general. The IRCTC would set up these hotels through private participation.

9.74 Although both passenger and freight traffic continues to increase every year, the manpower employed has been steadily reducing. The staff strength came down from 14.22 lakh to 14.11 lakh (provisional) between end-March, 2005 and end-March, 2006. In order to meet the rising expectations of customers, staff is being trained in customer care with special emphasis on the behavioral aspects.

Urban Infrastructure

9.75 Urban infrastructure consists of drinking water, sanitation, sewage systems, electricity and gas distribution, urban transport, primary health services and environmental regulation. The process of urbanization has gathered considerable momentum in recent times and this has put urban infrastructure and services under severe strain. For example, several cities in India have only two to four hours of water supply during the entire day. Smaller cities, because of inadequate financial resources, have found it particularly difficult to cope with the increasing demands on services.

Financing pattern

9.76 In terms of financing patterns, the foundation of urban infrastructure has to be user charges. It is possible for urban institutions to access funds from the capital

markets to finance a large portion of capital expenditure on urban infrastructure, which can be serviced by user charges in the future. While municipal bond issues have indeed taken place, the magnitude of resources raised is as yet insignificant. The user-charge financed approach can facilitate a massive increase in capital expenditure on urban infrastructure without worsening the fiscal problem. In addition, the tariff restructuring or subsidy design allows for more efficient and targeted impact on the poor.

9.77 In 2000-01, the Government inserted a new clause (vii) in Section 10(15) of the Income Tax Act, 1961, exempting interest income from bonds issued by local authorities. Funds raised from Tax Free Municipal Bonds are to be used only for capital investments in urban infrastructure. Ministry of Urban Development is the nodal agency for processing applications for issue of tax free bonds. Recently guidelines for issue of municipal tax-free bonds have been revised in consultation with the Ministry of Finance and circulated to all the State and UT Governments on March 7, 2006.

Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

9.78 Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched to encourage cities to initiate steps to bring about improvement in the existing service levels in a financially sustainable manner. The objectives of the mission, *inter alia*, include planned development of identified cities including semi-urban areas, outgrowths and urban corridors and improved provision of basic services to the urban poor. It embraces two sub-missions: one on urban infrastructure and governance, and the other on basic services for the urban poor. Cities/Urban Agglomerations/Parastatals will be required to prepare detailed project reports for undertaking projects under identified areas. Funds for the identified cities would be released to the designated State Nodal Agency, which in turn would leverage, to the extent feasible, additional resources from the financial institutions/private sector/capital market. Private sector participation in development, management and financing of urban infrastructure would be clearly delineated.

9.79 The admissible components under the sub-mission on urban infrastructure and governance include urban renewal, water supply (including de-salination plants) and sanitation, sewerage and solid waste management, urban transport, development of heritage areas, preservation of water bodies etc. A provision of Rs.50,000 crore has been agreed to as Central Assistance for JNNURM for a period of 7 years beginning from 2005-06.

9.80 An amount of Rs. 2,500 crore has been provided for in the year 2006-07 for the sub-mission on Urban Infrastructure and Governance. From April 2006 to February 2007 (i.e. as on February 12, 2007), City Development Plans have been submitted in respect of 39 cities of which 33 have appraised. The Memorandum of Agreement in respect of the reforms agenda have been negotiated and signed in respect of 32 cities. 315 DPRs have been submitted under the Mission of which 146 have been approved by the Central Sanctioning and Monitoring Committee of the Ministry of Urban Development. Projects worth Rs. 11,648 crore have been sanctioned and the additional central assistance committed is Rs. 5,583 crore.

Urban transport

9.81 Urban transport is one of the key elements of urban infrastructure. An effective urban transportation system enhances productivity and growth in the economy. Urban transportation covers two broad modes, viz. private transport and public transport. Public transport is energy-efficient and less polluting. Public transport system also helps to maximize urban–rural linkage and improves access of the rural/semi-urban population in the periphery to the city centres for the movement of labour without proliferation of slums within and around cities.

9.82 The major objective of urban transport initiative is to provide efficient and affordable public transport. A National Urban Transport Policy (NUTP) has been formulated with the objective of ensuring easily accessible, safe, affordable, quick, comfortable, reliable and sustainable mobility for all.

9.83 Revised guidelines for preparation of comprehensive city transport plans and DPRs have been prepared and circulated to all State Governments/UTs for availing of financial assistance to the extent of 40 per cent of cost as Central assistance under the present scheme of Urban Transport Planning. Detailed guidelines have also been formulated for the guidance of the States and cities and preparation of DPRs for both rail-based and road-based public transport.

9.84 Delhi and Kolkata have introduced Metro Rail system in their cities. Delhi Mass Rapid Transit System (MRTS), a joint venture between the Government of India and the Govt. of National Capital Territory of Delhi, is being implemented by the Delhi Metro Rail Corporation (DMRC). (Box 9.3)

9.85 For better connectivity within the National Capital Region (NCR) a commuter rail system, namely, Integrated Rail cum Bus Transit (IRBT) System, which constitutes Phase-I of the Regional Rapid Transit System (RRTS) for the NCR, is contemplated. The Planning Commission has set up a Task Force under the chairmanship of Secretary (UD) on May 22, 2006. The NCR Planning Board is in the process of awarding a consultancy study on an "Integrated Transportation Plan for National Capital Region". Based on the said study, the Regional Rapid Transit System (RRTS) Project is likely to be taken up during the Eleventh Plan.

9.86 The Bangalore Mass Rapid Transit System (MRTS) contemplates construction of metro corridors along East-West (18.1 km.) and North-South (14.9 km.) in Bangalore. The Government of Karnataka has got financial appraisal of the project conducted recently. The estimated completion cost of the project is Rs.5,605 crore. Bangalore Metro Rail Corporation (BMRC), a joint venture company, is executing the project, which is scheduled

Box 9.3 : Delhi Metro Rail System

Delhi Metro Rail System, technically known as Delhi Mass Rapid Transit System (MRTS) and popularly called Delhi Metro, has two phases.

Delhi MRTS Project Phase I, already completed, consists of the following corridors:

Line 1: Shahdara–Rithala;

Line 2: Vishwavidyalaya-Central Secretariat ;

Line 3: Barakhamba Road–Dwarka, and Extension of Line 3 to Dwarka sub-city and Barakhamba Road-Indraprastha.

Delhi MRTS Project Phase II (50.07 kms.), at an estimated cost of Rs.8,118 crore, approved by the Government with necessary sanction for implementation issued on March 30, 2006, consists of the following alignments:

1. Vishwavidyalaya–Jahangir Puri;
2. Central Secretariat–All India Institute of Medical Sciences (AIIMS);
3. AIIMS–Qutab Minar;
4. Shahdara–Dilshad Garden;
5. Indraprastha–New Ashok Nagar;
6. Yamuna Bank–Anand Vihar Inter-State Bus Terminus (ISBT); and
7. Kirti Nagar–Mundka.

As per decision of Group of Ministers (GoM), the proposals in respect of Indian Institute of Technology (IIT)–Qutab Minar portion (2.88 kms.) of the proposed Central Secretariat to Qutab Minar line was reviewed by DMRC and cost-benefit analysis of alternative proposals carried out in the context of its impact on the Qutab Minar. The revised alignment from Green Park to Ambedkar Colony via Hauz Khas, Sarvapriya Vihar, Malviya Nagar and Saket has been approved by the GoM on October 17, 2006.

Extension of Delhi Metro Phase-II to Gurgaon and NOIDA has been approved by the Government subject to certain conditions.

to be completed by 2011. The first section of 7 kms will be completed in 2009.

9.87 The Government of Maharashtra has proposed a MRTS for Versova-Andheri-Ghatkopar on the basis of Mumbai Metro Master Plan. The project — Mumabi Metro Rail Project — consists of two corridors. First corridor is of a total length of 11.07 kms. – Versova-Andheri-Ghatkopar. Completion cost is estimated at Rs. 2,356 crore and it is proposed to be funded through Viability Gap Funding (VGF). The second corridor is Colaba-Bandra-Charkop line of 38.23 kms length. Estimated cost is Rs. 8,825 crore (at June 2005 prices). While giving in-principle approval for the project, the Government of Maharashtra has been asked to exhaust the VGF route first.

9.88 To provide better public transport and ease congestion, proposals for Bus Rapid Transit System (BRTS) have been approved for Ahmedabad, Bhopal, Indore and Pune under JNNURM. These approved BRTSs covering a total length of more than 156 kms., have total estimated cost of Rs.1,408 crore, of which Central assistance is around Rs.670 crore. Considering the low cost, ease of implementation, wide area coverage and overall sustainability, a lot of cities are coming up with BRTS proposals to be funded under JNNURM.

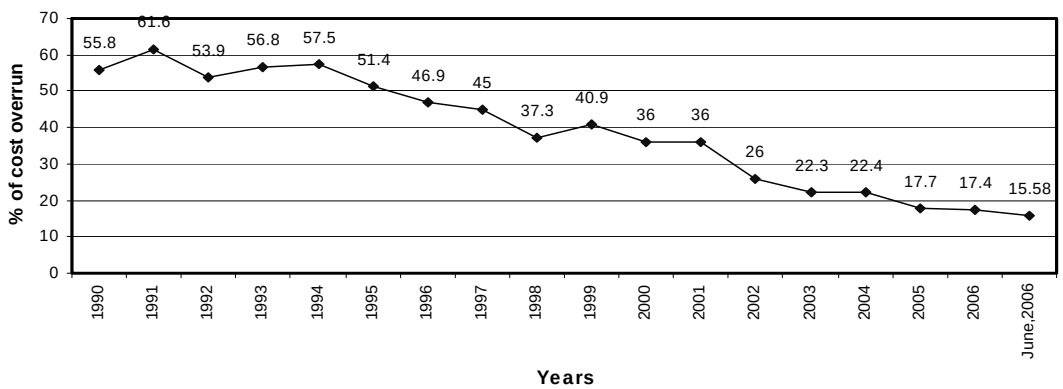
Implementation of Central Sector Projects

9.89 At the end of June 2006, there were 837 projects (each costing Rs. 20 crore and above) with an estimated investment of about Rs.3,69,499 crore spread over 16 sectors: atomic energy, civil aviation, coal, fertilizers, mines, information and broadcasting, steel, petroleum, power, railways, road transport and highways, shipping and ports, telecommunications, urban development, water resources, and health and family welfare. Of these, 190 projects were having cost overrun to the tune of 43.3 per cent as compared to their latest approved estimates. There were 257 projects which had a time overrun, ranging from 1 to 159 months.

9.90 An analysis of the cost overrun of the projects shows that it is 15.6 per cent of the overall cost of the projects. The main sectors accounting for the cost overrun are railways, water resources, petroleum, atomic energy, civil aviation, power, health and family welfare, and urban development. Out of the total 837 projects, 233 projects accounted for nearly 65 per cent of the total cost overrun with respect to the original sanctioned estimates.

9.91 Time and cost overruns have declined because of close monitoring, policy changes and systemic improvement brought out by the administrative ministries concerned, with support from the Ministry of Statistics and Programme Implementation (MOS&PI). An analysis of the trend in the last 15 years shows that the cost overruns have come down from 61.6 per cent in March 1991 to 15.6 per cent in June 2006 (Figure 9.2).

Fig 9.2 **Trend of cost overrun**



9.92 An analysis of 476 projects each costing Rs. 100 crore and above at the end of September, 2006 shows that there was cost overrun of 10.2 per cent with anticipated cost of Rs. 3,44,830 crore as compared to the original sanctioned cost of Rs. 3,12,878 crore for these projects. The expenditure incurred on these projects at the end of September, 2006 was Rs. 1,18,779 crore, which is 34 per cent of the total anticipated cost.

9.93 In 2005-06, 91 projects costing Rs. 27,730 crore spread over 13 sectors were completed. The expenditure reported for these projects was Rs. 22,579 crore. These completed ones included projects in road transport and highways (28), power (12), coal (11), petroleum (9), telecommunication (7). railways (7), shipping and ports (5), urban development (3), steel (3), fertilisers (2), civil aviation (2), information and broadcasting (1), and health and family welfare (1) sectors.

9.94 During the current financial year, up to the end of September, 2006, 31 projects with an estimated cost of Rs. 23,817 crore were completed. The expenditure reported for these completed projects was Rs. 20,739 crore.

Public Private Partnership (PPPs) in Infrastructure

9.95 Government is actively pursuing PPPs to bridge the infrastructure deficit in the country. Several initiatives have been taken during the last three years to promote PPPs in sectors like power, ports, highways, airports, tourism and urban infrastructure. Under the overall guidance of the Committee of Infrastructure headed by the Prime Minister, the PPP programme has been finalized and the implementation of the various schemes is being closely monitored by the constituent Ministries/Departments under this programme.

9.96 The appraisal mechanism for the PPP projects has been streamlined to ensure speedy appraisal of projects, remove red tape, adopt international best practices and have uniformity in guidelines. An appraisal mechanism has been notified including the setting up of the Public Private Partnership Appraisal Committee (PPPAC) responsible for the appraisal of PPP projects in the central sector. The committee has mandated detailed guidelines for submitting proposals and follows a pre-determined time frame for according approval to proposals submitted in a time bound manner. 29 proposals have so far been received from different central ministries for clearance by PPPAC, out of which 15 proposals involving a capital cost of Rs. 8,280 crore have been approved.

9.97 PPP projects involve long-term detailed contracts between Government and private parties spelling out the rights and obligations of both the contracting parties. Given the complex issues involved and the exposure of Government in such contracts, Committee on Infrastructure has mandated issue of model documents. Government has decided to create standardized frameworks based on due diligence rather than evolving agreements on a project-by-project basis. The agreements will be based on international practices and will create a framework with the right matrix of risk allocation obligations and returns. The Model Concession Agreement (MCA) for National Highways has been issued by the Committee on Infrastructure. Planning Commission has also issued MCAs for ports, state highways and operation and maintenance agreements for highways, though these are only for guidance and have not been approved by the Committee on Infrastructure. Guidelines for pre-qualification of bidders for PPP projects are also under finalisation and are expected to be issued shortly.

9.98 PPP is still a nascent concept in India, and expertise at the level of project authorities, both at the central and state levels, is limited. The awareness of concerns and issues relating to PPPs is still lacking and not evenly spread across the different States. A need was felt to provide capacity building in State Governments to enable them to prepare PPP proposals. To promote the PPP programme, all State Governments and Central Ministries have been advised to set up a PPP Cell with a senior level officer deputed as PPP nodal officer. It is proposed to provide assistance to states in this regard. Technical assistance

(TA) from the Asian Development Bank has been received for overall capacity building in State Governments for PPPs. The TA would fund strengthening of the PPP Cell of the respective State governments, including hiring of consultants and training of personnel.

9.99 A website on the PPPs in India has been set up by the Department of Economic Affairs. The updated status of the above programmes is available on the website *www.pppinindia.com.* A database on PPP projects in India is also being developed and the task has been outsourced to a private firm that will be responsible for collection, compilation and maintenance of the database.

Outlook

9.100 The drumbeats of infrastructure are gradually getting louder and in the next few years their rumble will be felt and heard all over the country. There exist strong, well recognized linkages between infrastructure on the one hand and economic growth and poverty alleviation on the other. Not only will infrastructure give a fillip to economic growth, but robust economic growth, in turn, by enhancing willingness to pay appropriate user charges, will promote investment in infrastructure. The outlook for infrastructural improvement looks promising. With experience gained in PPPs, formulation of model PPP and concession agreements, infrastructure investments should gain momentum over the coming months and year.

9.101 Short-term problems, however, are unlikely to disappear rapidly without resolute action. In power, for example, enough generation capacity will get added to wipe out the shortages only over the medium term. Improving the short-term power outlook will critically depend on how fast success in slashing transmission and distribution losses from the near 40 per cent to 15 per cent is achieved. The successful financial turnaround of the railways has demonstrated that, given the will, the leakages in the power sector can also be plugged.

9.102 Outlook in infrastructure will depend on how investment in infrastructure is facilitated. Such investment requires long-term funds with long pay back periods, for example, from insurance and pension funds. Thus, success on the infrastructure front will be facilitated by the development of a vibrant bond market, and pension and insurance reforms. A single, unified exchange-traded market for corporate bonds would help create a mature debt market for financing infrastructure.

9.103 Progress on the roads and highways front will depend on how rapidly constraints such as delays in land acquisition, removal of structures and shifting of utilities, law and order problem in some States, and poor performance of some contractors are removed.

9.104 Urban infrastructure is a vital element of the Indian infrastructure scenario. The JNNURM is a significant move to address the creaking urban infrastructure, but comprehensive planning and effective monitoring are essential to take this scheme successfully to its logical conclusion. Outlook on urban infrastructure, however, will depend critically on how fast the finances and functional efficiency of urban local bodies are improved.