

## Infrastructure

With the rapid growth of the economy in recent years the importance and the urgency of removing infrastructure constraints have increased. Traditionally, power, railways, roads, ports, airports and telecommunications were the exclusive domain of the government. Policy has changed gradually over the past two decades under the pressure of rising gaps between demand and supply of infrastructure and deteriorating quality of assets. Government has made an effort to facilitate the entry of private enterprise into this sector through changes in the legal framework. A role for private sector participation has also been facilitated by technological change that allow unbundling of infrastructure, so that the public and the private sectors can take up the components most suited to their capacities. Government continues to invest significant sums in areas where private participation is minimal or not forthcoming. It will continue to play a lead role in infrastructure development during the Eleventh Plan.

9.2. The public good character of parts of the infrastructure makes it necessary to adopt an eclectic approach to the participation of the public and private sectors. Roads are the classic 'public good' on account of non-rivalness and non-excludability in use. However, as demand expands, and an inter city road becomes a high density highway, pricing and exclusion can become economically feasible thus changing the character of the service from 'public good' to 'private good'. Many types of infrastructure therefore have a mix of public good and private good character, with the mix generally weighted towards the former in rural and remote areas and towards the latter in the large towns and metro areas.

9.3 There is also a need to distinguish between physical infrastructure and infrastructure services.

Most infrastructure services are non-tradable in nature. For these reasons, the stock of infrastructure services may not be readily augmented through imports as in the case of other goods and services. Many infrastructure facilities have a significant component characterized by declining costs, leading to a "natural monopoly" situation. Though the extent of such monopoly may vary, such situations usually warrant the regulation of the pricing of such services. In essence, therefore, the public and private good characteristics of infrastructure may vary depending on various factors that include the size of investment, geographical location, demand and supply conditions, the stage of development and technological factors. There is a consensus that well designed infrastructure projects with good implementation can yield positive externalities and spin-offs for other sectors. Infrastructure also has backward and forward linkages with the rest of the economy.

9.4 This chapter examines the progress made in the growth of power, transport, communication and urban infrastructure in India during 2007-08 with a focus on the policy initiatives taken towards capacity augmentation through public and private investment and through public-private partnerships and on the challenges that lie ahead in developing physical infrastructure.

### Review of 2007-08

9.5 The overall performance of the infrastructure during April-December 2007-08 presents a somewhat subdued picture compared to the corresponding period of last year. Growth in electricity generation has decelerated to 6.6 per cent from 7.5 per cent in the corresponding period in 2006-07. The transport sector presents

**Table 9.1**

Infrastructure & Universal Intermediates — Output Growth (%)		
	(April-December)	
	2006-07	2007-08 <sup>a</sup>
<b>1 Power</b>		
Electricity generated	7.5	6.6
<b>2 Transport</b>		
Railway (freight)	9.7	8.2
Ports (cargo)	8.3	12.5
Air - Export cargo	-1.3	6.7
Air - Import cargo	19.6	21.5
Air - Passenger traffic (Inter.)	11.8	12.7
Air - Passenger traffic (Dom.)	37.0	24.1
<b>3 Telecom</b>		
Wireless connections	46.9	44.5
Total telephones (including Fixed)	33.7	32.6
<b>4 Universal intermediates</b>		
Coal	4.5	4.9
Steel	11.1	6.4
Cement	10.5	7.0
Petroleum - Crude	6.1	0.3
Petroleum – Refinery	13.2	7.5
Natural Gas	-1.7	2.2

<sup>a</sup> Provisional

Source: Items - 1, 2, 4: Capsule report on Infrastructure performance: Ministry of Statistics and Programme Implementation, 3 - Department of Telecommunications.

a mixed picture, with a deceleration in the growth of railway traffic and an acceleration in the growth of traffic through ports and in air cargo. The highly competitive telecom sector has maintained its phenomenal growth rates for addition of new connections. The production of universal intermediates like steel, cement and petroleum showed a distinctly weaker performance during

April-December 2007-08 as compared to the corresponding period of the previous year while the performance of coal shows a marginal improvement (Table 9.1).

## POWER

### Overall Performance during 2007-08

9.6 Electricity generation by power utilities during 2007-08 was targeted to go up by 7.2 per cent to 710 billion KWh. The growth of power generation in April-December 2007 was lower than the targeted growth rate. While growth in all three segments, that is, thermal, hydro and nuclear generation, slowed down, nuclear power generation, in particular, showed the sharpest decline during the current year in comparison to the corresponding period last year (Table 9.2).

### Power deficit

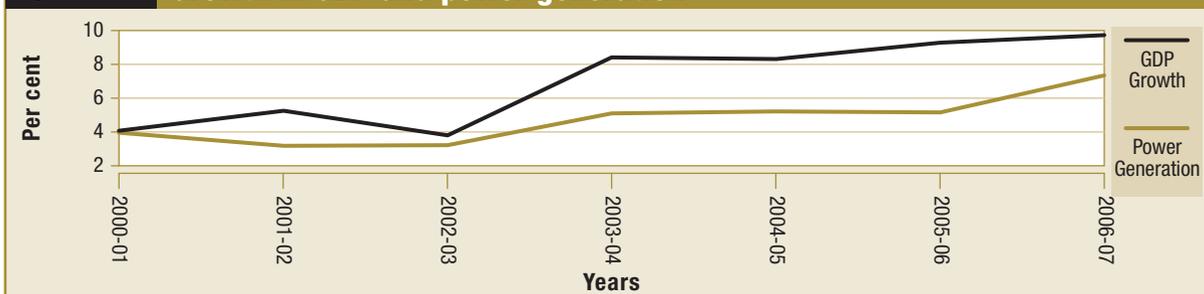
9.7 The deficit in power supply in terms of peak availability and of total energy availability during the current year was 14.8 per cent and 8.4 per cent, respectively. While shortages are being experienced by each region, they are more acute in the North-Eastern and the Western Region. (Table 9.3)

9.8 In the case of the thermal power sector, the State, Central and private sector plants reported a plant load factor (PLF), a measure of efficiency, of 70.2, 85.4 and 92.5 per cent, respectively, during April-December 2007-08. The PLF in each of these sectors as well as in every region has improved over time. However, there is a marked variation across the regions (Table 9.4).

**Table 9.2 Power Generation by Utilities (Billion kWh)**

Category	2005-06	2006-07	April-December		Growth <sup>a</sup> (%)	
			2006	2007	2006	2007
			1. Power Generation <sup>b</sup>	617.5	662.5	493.3
i) Hydro-electric	101.3	113.4	91.8	100.7	13.8	9.8
ii) Thermal	497.2	527.6	385.6	407.4	6.1	5.7
iii) Nuclear	17.2	18.6	13.6	12.8	3.0	(-) 5.7
Memorandum Item						
PLF in %	73.6	76.8	75.3	77.2		

<sup>a</sup> April-December;<sup>b</sup> Excludes generation from captive and non-conventional power plants and thermal power plants below 20 MW units and Hydro power plants below 2 MW but includes import of power from Bhutan.

**Figure 9.1 Growth in GDP and power generation****Coal and gas input for the power sector**

9.9 The power sector is a major consumer of coal using about 78 per cent of the country's

coal production. Coal-fired thermal units account for around 62.2 per cent of total power generation in the country. Thus, coal continues to be the mainstay for the power sector.

**Table 9.3 Power supply position – all-India**

Period	Peak Demand (MW)	Peak met (MW)	Peak Deficit/ Surplus (MW)	Peak Deficit Surplus (%)	Energy Requirement (MU)	Energy availability (MU)	Energy Deficit/ Surplus (MU)	Energy Deficit Surplus (%)
9th Plan end	81,555	71,262	-10,293	-12.6	5,22,537	4,83,350	-39,187	-7.5
2002-03	81,492	71,547	-9,945	-12.2	5,45,983	4,97,890	-48,093	-8.8
2003-04	84,574	75,066	-9,508	-11.2	5,59,264	5,19,398	-39,866	-7.1
2004-05	87,906	77,652	-10,254	-11.7	5,91,373	5,48,115	-43,258	-7.3
2005-06	93,255	81,792	-11,463	-12.3	6,31,757	5,78,819	-52,938	-8.4
2006-07	1,00,715	86,818	-13,897	-13.8	6,90,587	6,24,495	-66,092	-9.6
Apr-Dec 2007	1,06,624	90,793	-15,831	-14.8	5,43,394	4,97,793	-45,601	-8.4

Source: Central Electricity Authority's (CEA) Power Scenario at a Glance (January 2008)

9.10 The total consumption of coal by the power sector in 2006-07 was 302.5 million tonne (MT). Of this, about 9.7 MT was imported in 2006-07. About 7.3 MT of coal has been imported in 2007-08 (up to December 31, 2007). Apart from bridging

the demand - supply gap, blending of imported high quality coal with high ash domestic coal helps thermal power stations to adhere to the environmental stipulations of using coal with less than 34 per cent ash content (Table 9.5).

**Table 9.4 Thermal plants load factor**

(figures in per cent)

Category	2002-03	2003-04	2004-05	2005-06	April-December		
					2005	2006	2007
i) State Electricity Boards (SEB)	68.7	68.4	69.6	67.1	64.9	69.5	70.2
ii) Central Sector	77.1	78.7	81.7	82.1	80.3	82.2	85.4
iii) Private Sector	76.9	80.5	85.1	85.4	86.7	88.2	92.5
<b>REGIONS</b>							
Northern	75.4	76.3	77.1	76.8	75.0	79.1	80.2
Western	75.8	75.1	78.6	76.2	74.5	75.8	79.5
Southern	86.4	83.4	84.1	78.2	75.3	80.8	81.8
Eastern	52.1	56.9	60.4	64.6	63.2	67.7	68.6
North-Eastern	14.8	14.0	15.0	16.1	16.2	16.1	18.6
<b>All-India</b>	<b>72.2</b>	<b>72.7</b>	<b>74.8</b>	<b>73.6</b>	<b>71.5</b>	<b>75.3</b>	<b>77.2</b>

Source : Ministry of Power

**Table 9.5 Coal consumption and imports by power stations (MT)**

Year	Consumption	Imports
2003-04	263.6	3.4
2004-05	277.7	4.5
2005-06	281.3	10.4 <sup>a</sup>
2006-07	302.5	9.7

<sup>a</sup> Out of total Import of about 11.22 MT.

9.11 Out of the total installed generating capacity in the country, about 10.5 per cent (i.e., 14,691.7 MW), is based on gas or liquid fuel (excluding diesel). The supply of gas to power stations that use gas as the primary fuel remains inadequate. Commitments of gas allocations made to power stations in the past are not being fulfilled, thereby leading to loss in generation (Table 9.6).

### Eleventh Five Year Plan Capacity Addition and Policy Framework

9.12 Electricity is in the concurrent list in the Constitution. The National Electricity Policy (NEP), 2005 recognizes electricity as a "basic human need" and targets a rise in per capita availability from 631 units to 1,000 units per annum by the end of 2012. To fulfill the objectives of the NEP, a capacity addition of 78,577 MW has been proposed for the Eleventh Five Year Plan. The power sector

**Table 9.7 Eleventh plan power capacity addition targets (MW & per cent)**

Sector	Hydro	Thermal	Nuclear	Total	Share
				(MW)	(%)
Central	9,685	26,800	3,380	39,865	50.7
State	3,605	24,347	0	27,952	35.5
Private	3,263	7,497	0	10,760	13.8
<b>Total</b>	<b>16,553</b>	<b>58,644</b>	<b>3,380</b>	<b>78,577</b>	
Share (%)	21.1	74.6	4.4	100	

is expected to grow at 9.5 per cent per annum (Table 9.7).

9.13 A number of projects envisaged for the Eleventh Five Year Plan have made steady progress, with most of these in a position to be commissioned well within the Plan period. The status of placement of orders for the main plant (thermal projects) and main civil works (for hydro projects) is given in Table 9.8.

**Table 9.8**
**Status of Eleventh Five Year Plan capacity addition (MW) (As on Jan. 31, 2008)**

Status	Central	State	Private	Total
Commissioned	2,230	4,783	250	7,263
Under Construction	27,945	14,337	8,578	50,860

**Table 9.6 Trends in gas availability in the power sector**

Year	Required <sup>a</sup> at 90% PLF (MMSCMD)	Gas supplied (MMSCMD)	Shortfall (MMSCMD)	Estimated generation loss (BU)
(1)	(2)	(3)	(4) = (2) - (3)	(5)
2001-02	46.31	24.33	21.98	36.10 <sup>b</sup>
2002-03	48.26	25.12	23.14	38.00 <sup>b</sup>
2003-04	49.25	25.62	23.63	21.69 <sup>c</sup>
2004-05	49.73	30.70	19.03	23.71 <sup>c</sup>
2005-06	53.38	35.37	18.01	23.88 <sup>c</sup>
2006-07	61.18	35.10	26.08	26.33 <sup>c</sup>
Apr.-Nov. 2007	65.69	36.31	29.38	21.79 <sup>c</sup>

<sup>a</sup> Normative gas requirement at 90 per cent PLF estimated based on GVC= 9000 Kcal/SCM (except for Ramgarh CCGT for which GCV is 4150 Kcal/SCM), station Heat Rate- 2900 Kcal/kWh for open cycle and 2000 Kcal/kWh for combined cycle.

<sup>b</sup> Generation loss calculated by considering the demand-supply gap 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.

<sup>c</sup> Generation loss due to shortage of gas based on operation of power plant at 90 per cent PLF.

BU- Billion Units

Note: MMSCMD- million metric standard cubic metre per day.

### Capacity addition during 2007-08

9.14 Based on the status of various projects, the target for 2007-08 was fixed at 12,039 MW, of which 7,263 MW has been commissioned up to January 31, 2007. It is expected that the total capacity addition during the current financial year would be 10,821.8 MW with thermal, hydro and nuclear accounting for 8,015 MW, 2,587 MW and 220 MW, respectively.

9.15 Power plants using super-critical technology have a higher thermal efficiency of about 40 per cent as compared to 38.6 per cent for 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 (3 x 660) and Barh (3 x 660) are at an advanced stage of construction, and the first super-critical unit is expected to be commissioned during 2008-09.

### Ultra Mega Power Projects

9.16 The Government of India launched an initiative for development of coal-based Ultra Mega Power Projects (UMPPs), each with a capacity of 4,000 MW or above. The projects will be awarded to developers on the basis of tariff-based competitive bidding. To facilitate tie-up 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 would undertake preliminary studies and obtain clearances relating to water, land, fuel, and power offtake tie-up prior to award of the project.

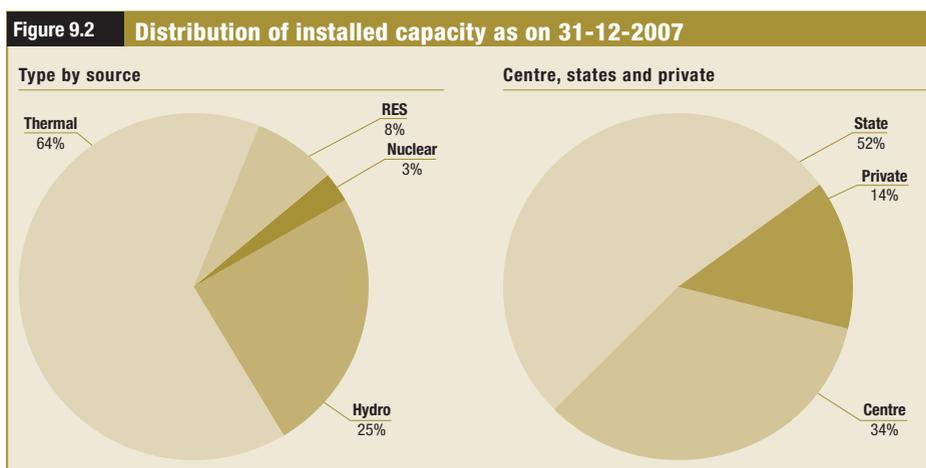
9.17 Originally, nine sites were identified by CEA in nine States for the proposed UMPPs. These include four pithead sites, one each in

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 projects with captive coal mines. The Ministry of Coal has allocated captive coal mining block(s) for Sasan UMPP in Madhya Pradesh, for Orissa UMPP (except for Chaturdhara block), for Tilaiya UMPP in Jharkhand and for Chhattisgarh UMPP. For the coastal projects usage of imported coal is envisaged. The UMPP projects would help lower the cost of power to consumers and reduce emissions.

9.18 The bidding process in respect of Sasan, Mundra and Krishnapatnam UMPPs has been completed. M/s. Tata Power has been awarded the Mundra project at Rs. 2.26 per KWh/M/s. Reliance Power Ltd. has been awarded Sasan and Krishnapatnam UMPPs at Rs. 1.196 per KWh and Rs. 2.33 per KWh, respectively. The SPVs of Sasan, Mundra and Krishnapatnam UMPPs have been transferred to the successful bidders. The bidding process in respect of Tilaiya UMPP has been initiated by the SPV, i.e., Jharkhand Integrated Power Ltd. The RFQ stage is over and over 13 bids received are under evaluation.

### Plan for development of hydro potential

9.19 India is endowed with an estimated hydro power potential of more than 1,50,000 MW. However, only 21.14 per cent of the potential has been developed till date and 9.53 per cent is being developed. The main reasons for the slow development include difficult and inaccessible potential sites, difficulties in land acquisition, rehabilitation, environmental and forest-related issues, inter-State issues, geological surprises



and long gestation period. Private sector participation is therefore negligible but has been increasing in the recent past. There are 10 Schemes with an installed capacity of 3991 MW under construction while 67 Schemes with an installed capacity of 18,030 MW have been allotted to private developers by States.

9.20 There are 45 hydro projects with an aggregate capacity of 15,000 MW under construction. Preparation of pre-feasibility reports of 162 schemes with aggregate installed capacity of 49,930 MW has been completed by CEA. Bulk of the potential which is in the Himalayan region — the hill States of Jammu & Kashmir, Himachal Pradesh, Uttarakhand and the North-East — is yet to be tapped.

### **New hydro policy**

9.21 The Electricity Tariff Policy, which was notified in January 2006, allows a special dispensation for project development by the State and Central PSUs on the basis of capital cost and norm based tariff to be determined by the Regulatory Commission.

9.22 The dispensation, allowed for PSUs, would now be available to the private sector for the same period of five years (from January 2006). This is contingent on a transparent procedure being followed by the host State in allotting projects and on timely achievement of specified milestones. The project developer would have to set apart 1 per cent of the power generated towards the development of the affected local area and provide 100 units of free power per affected family per month for a period of 10 years. A similar 1 per cent matching contribution is expected from the host State for local area development. These provisions are expected to provide a regular stream of revenue for the welfare of the project affected people.

9.23 While the initiative for allocation of the projects would remain with the State Government, the scrutiny by the regulator and the CEA would ensure that the project is designed and built in an optimal and economic manner, and that the interest of the consumers is protected. The Project Affected Families (PAFs) are expected to get a better relief and rehabilitation (R&R) package. From the point of view of the developer, the procedure

envisaged would reduce the risks associated with the construction, operation and maintenance (O&M) of hydro projects and facilitate early financial closure.

9.24 A Task Force has been constituted for the development of hydro power under the Chairmanship of Minister of Power. It has the Deputy Chairman, Planning Commission, Member (Power), Planning Commission, and the Minister(s) of Power of various State Governments as members. The Task Force shall examine and resolve issues relating to hydro power development such as allocation of sites, clearances for hydro projects, environment and wildlife issues, compensation to host States, land acquisition, rehabilitation and resettlement, sharing costs and benefits of power generation, water storage, navigation, and flood moderation of hydro power projects with States downstream of storage projects.

### **Merchant Power Plants**

9.25 The Ministry of Power has issued guidelines for the setting up of Merchant Power Plants (MPPs) for which fuel tie-up would be facilitated. Unlike traditional utilities, Merchant Power Plants compete for customers and absorb full market risk. They are a market-based response to the growing electricity demand. There are no guarantees of minimum offtake. Merchant Power Plants fill different niches in the market; some provide steady supplies to the power grid, while others fire up to meet peak loads when the demand is at its highest.

### **Transmission, Trading, Access and Exchange**

9.26 Generation capacities and demand points are unevenly distributed across the country due to various natural and historical factors. Furthermore, demand for power, (and to some extent, even its supply), is characterized by intra-day and seasonal variations. An integrated power transmission grid helps in evening out supply-demand mismatches. In addition, mechanisms for trading and exchange and open access facility into the grid could help in making the market for electricity more competitive and cost effective.

## National grid

9.27 The existing inter-regional transmission capacity of about 17,000 MW that connects the Northern, Western, Eastern and North-Eastern Regions in a synchronous mode (at the same frequency) and the Southern Region asynchronously has enabled inter-regional energy exchange of about 38 billion kWh (January-November 2007). It is expected that the inter-regional capacity of more than 37,700 MW would be achieved by the end of the Eleventh Five Year Plan. Proposals are under way to have synchronous integration of Southern Region with the rest of the regions forming an all-India synchronous grid.

9.28 The Ministry of Power has notified Tariff-Based Competitive Bidding Guidelines for Transmission Service under Section 63 of the Electricity Act, 2003, to encourage competition in development of transmission projects. As per these guidelines, an empowered committee under the Chairmanship of Member, Central Electricity Regulatory Commission has been constituted. This committee has identified 14 transmission projects to be developed by the private sector through tariff-based competitive bidding. The Rural Electrification Corporation (REC) and Power Finance Corporation (PFC) have been entrusted with the task of formulating Feasibility Reports/Detailed Project Reports (DPRs) for these projects and to invite bids.

## Trading of electricity

9.29 Under the Electricity Act of 2003, "trading" has been recognized as a distinct licensed activity in addition to distribution and transmission. Trading helps in resource optimization by facilitating the disposal of surplus power with distribution utilities on the one hand, and in meeting short-term peak demand on the other. The Central and State

Electricity Regulatory Commissions have powers to grant inter-state and intra-state trading licences, respectively. CERC has granted 26 inter-state trading licences so far. Traders are categorized on the basis of volume of electricity to be traded and net worth of the trader (Table 9.9).

## Operationalization of open access

9.30 Open access is one of the key features of Electricity Act, 2003. Open access in inter-state transmission is fully operational. To give a fresh impetus to implementation of open access over transmission lines of State utilities and over the distribution networks, the Ministry of Power convened a conference of Chief Secretaries in April 2007 and a conference of Chief Ministers in May 2007. The Ministry of Power also convened a meeting of the forum of regulators (FOR) and the State Power Secretaries on operationalization of open access at State level. The SERCs have resolved to actively operationalize open access. The Forum has launched a website [www.forumofregulators.org](http://www.forumofregulators.org) to display the open access charges and status of open access applications in various States.

## Power exchanges

9.31 CERC has issued guidelines for setting up power exchanges. It has also given approval to one application for setting up power exchange. This would further facilitate competition in the electricity sector.

## Reforms in distribution

9.32 Reforms of the distribution system is a key area for infusing efficiency and commercial viability in the power sector. In February 2000, the Government of India introduced the Accelerated Power Development Programme (APDP), with the objective of initiating a financial turnaround in the State-owned power sector, which was subsequently

**Table 9.9 Inter-state trading in electricity**

Period	Volume of Electricity Traded	Weighted average purchase	Weighted average sale price	Trading margin (Rs./kwh)
2005-06	14,188.3	3.14	3.23	0.09
2006-07	15,022.7	4.47	4.51	0.04
April-June 07	4,716.5	4.60	4.64	0.04
July-Sept.07	7,226.5	3.33	3.37	0.04

rechristened as Accelerated Power Development and Reforms Programme (APDRP). There are two components under APDRP, viz. “investment component” and “incentive component”. While the focus of investment component has been on specific projects for upgradation of sub-transmission and distribution network, the latter envisaged incentivizing the State Governments up to 50 per cent of the actual total cash loss reduction by SEBs/utilities, as a grant.

9.33 During the Tenth Five Year Plan, the Central Government provided financial assistance under the investment component to the States for strengthening and upgradation of sub-transmission and distribution systems of high-density load centres like towns and industrial areas. So far Rs. 7,124.63 crore has been released to the States under the investment component. During the Tenth Five Year Plan Rs. 1,959.7 crore has been released to various States for cash loss reduction under the incentive component of the APDRP. In 2007-08, Rs. 183.6 crore has been released under the investment component and Rs. 210.7 crore has been released under the incentive component till December 31, 2007.

9.34 The APDRP is to be continued during the Eleventh Five Year Plan with revised terms and conditions as a Central scheme. The focus of the programme shall be on actual, demonstrable performance in terms of loss reduction. Establishment of reliable automated systems for collection of accurate baseline data and the adoption of information technology in the areas of energy accounting would be necessary preconditions for sanctioning of projects for strengthening and upgradation of sub-transmission and distribution networks.

### Guidelines for procurement of electricity

9.35 In compliance with Section 63 of the Electricity Act, 2003, the Central Government on January 19, 2005, notified guidelines for procurement of power by distribution licensees through competitive bidding. The Central Government has also issued the standard bid document containing Request For Qualification (RFQ), Request For Proposal (RFP) and model Power Purchase Agreement (PPA) for long-term procurement of power from projects having specified site and location through tariff-based competitive bidding. The Central Government has revised these standard bidding documents on September 21,

2007. This is likely to bring in larger private sector investment in the power sector and competitive tariffs.

### Rural electrification

9.36 The Central Government launched a scheme “Rajiv Gandhi Grameen Vidhyutikaran Yojana” (RGGVY) in April 2005 with the goal of electrifying all unelectrified villages and hamlets and providing access to electricity to all households in the next five years for fulfillment of the NCMP. The scheme provides for free electricity connections to below poverty line (BPL) households. Rural Electrification Corporation is the nodal agency and the management of rural distribution has been envisaged through franchisees who could be non-governmental organizations (NGOs), users’ associations, cooperatives or individual entrepreneurs. Panchayat institutions would be associated with the management.

9.37 The Government has approved the continuation of the RGGVY during the Eleventh Five Year Plan period with an initial outlay of Rs. 28,000 crore with an envisaged coverage in Phase-I of about 1.15 lakh unelectrified villages and 2.34 crore rural BPL households. A three-tier quality control mechanism under RGGVY is being set up at the State, REC and the Ministry of Power level with random inspections by independent agencies (Box 9.1).

#### Box 9.1

#### Rajiv Gandhi Grameen Vidhyuti-karan Yojana (RGGVY) : Progress

- 27 States and their utilities have signed the memorandum of agreement (MoA) agreeing to the conditionalities for implementation of the programme as envisaged under RGGVY.
- Four CPSUs—Power Grid Corporation (India) Ltd. (PGCIL), National Thermal Power Corporation (NTPC), National Hydro-electric Power Corporation (NHPC), Damodar Valley Corporation (DVC)—have been allocated 139 districts for implementation of RGGVY.
- At present 235 projects are under implementation covering 67,012 unelectrified villages and 83.1 lakh BPL households at the awarded cost of Rs. 12386.03 crore.
- 45,430 villages have been electrified and 18,25,508 connections to BPL households have been released.
- Franchisees are in place in 73,422 villages in 14 States.

### Electricity (Amendment) Act, 2007

9.38 The Electricity (Amendment) Act, 2007, enacted on May 29, 2007, and brought into force from June 15, 2007, amends certain provisions of the Electricity Act, 2003. Its main features are:

- The Central Government, jointly with the State Governments will endeavour to provide access to electricity to all areas including villages and hamlets through rural electricity infrastructure and electrification of households;
- No licence is required for sale from captive units.
- Deletion of the provision for elimination of cross subsidies. The provision for reduction of cross subsidies would continue.
- Definition of theft expanded to cover the use of tampered meters and use for unauthorized purpose. Theft is made explicitly cognizable and non-bailable.

### Financial Performance of Power Utilities

9.39 Improving financial viability of power utilities is one of the key deliverables of power sector reforms. The total commercial losses excluding subsidy of the State power sector has

been estimated at Rs. 28,824.9 crore in 2006-07. The rate of return of the State power sector which was (-) 24.01 per cent in 2006-07 (P) is estimated to have improved to (-) 18 per cent in 2007-08 (RE). Nevertheless, the gross subsidy remained substantially higher at Rs. 43,132.6 crore with the subvention estimated at Rs. 14,159.6 crore in 2007-08 (Table 9.10).

### Energy Conservation and Efficiency

9.40 While initiatives for addition to capacity to meet the growing demand for power are important in their own right, environmental considerations and the need for efficient use of resources make it imperative to pay focused attention to “demand-side management” as well. To this end, the Energy Conservation Act, 2001, empowers the Central Government (and in some instances the State Governments) to take concerted measures to reduce the energy intensity of the Indian economy. The Act enables the promotion of energy conservation measures through innovative financing and delivery. It also provides for notifying energy intensive industries, establishments and commercial buildings as “designated consumers” and to prescribe energy consumption standards for them. The Act provides for energy conservation building codes for efficient use of energy and its

**Table 9.10 Financial performance of State power sector**

	(Rs. crore)			
	2005-06 (Actual)	2006-07 (P)	2007-08(RE)	2008-09 (AP)
A Gross Subsidy on sale of electricity to	35,539.6	40,054.0	43,132.6	46,087.4
(i) Agriculture	23,833.4	26,605.7	29,299.4	30,194.2
(ii) Domestic	10,432.5	13,171.8	13,307.9	14,499.2
(iii) Inter-State Sales	1,273.8	276.5	525.4	1,394.0
B Less subvention from State Govts.	13,414.7	13,752.5	14,159.6	13,358.8
<b>C Net Subsidy</b>	<b>22,125.0</b>	<b>26,301.5</b>	<b>28,973.1</b>	<b>32,728.6</b>
D Surplus Generated by sale to other sectors	8,232.7	5,275.6	8,704.0	9,638.9
E Uncovered Subsidy	13,892.3	21,025.9	20,269.1	23,089.7
F (i) Commercial Losses (excluding subsidy)	22,733.8	28,824.9	25,701.4	26,461.8
F (ii) Commercial Losses (including subsidy)	9,319.1	15,072.4	11,541.8	13,103.0
<b>G Rate of Return (ROR %)<sup>a</sup></b>	<b>-19.7</b>	<b>-24.0</b>	<b>-18.0</b>	<b>-14.3</b>
H Revenue Mobilization - From introducing 50 paise /unit from Agriculture/Irrigation	1,541.1	1,631.9	1,768.8	1,308.6

Source: Planning Commission

P: Provisional RE: Revised Estimates AP: Annual Plan Estimates <sup>a</sup> For losses without subsidy

Note : The information on commercial losses for Orissa and Delhi pertain to GRIDCO of Orissa and Transmission Company of Delhi only. Information for Haryana, Rajasthan, U.P, Uttarakhand, Gujarat, Maharashtra, West Bengal, Andhra Pradesh and Karnataka relates to distribution companies set up after the reforms. In case of other States, the information pertains to power sector as whole.

**Box 9.2 Demand-side measures initiated by the Government**

- **CDM Based CFL Scheme:** The Government has approved a scheme of Rs. 48 crore to promote replacement of incandescent bulbs with Compact Fluorescent Lamps (CFLs) by leveraging the sale of Certified Emission Rights (CERs) under the Clean Development Mechanism (CDM) under Kyoto Protocol. The Bureau of Energy Efficiency (BEE) is coordinating voluntary efforts to provide high-quality CFLs to domestic consumers. This will reduce CO<sub>2</sub> emission and help avoid capacity of 6,000 to 10,000 MW.
- **Energy Conservation Building Code (ECBC):** The ECBC has been launched to reduce energy consumption in new commercial buildings.
- **Standards and Labeling Programme & Strengthening of SDAs:** The Government has approved a scheme for capacity building at State level (with an approved cost of Rs 49.47 crore) and a Standards labeling programme to promote Energy Efficient Equipments and Appliances with an allocation of Rs. 47.71 crore.
- **Institution Building of Energy Managers/Auditors:** The Government is taking a proactive role in establishing a proper energy management system in the country. Four National certification examinations for energy managers and energy auditors have been conducted and over 5,000 energy auditors/managers have been certified. These energy managers would oversee energy use and promote energy conservation in high energy consuming industries.
- **(e) National Energy Conservation Awards:** To promote energy conservation, the Government initiated the "Energy Conservation Awards" in 1991. At present, BEE coordinates these awards. The Awards includes 33 sub-sectors from large and medium scale industries and 3 sub-sectors from small-scale industries. Participation for these awards has been increasing. This scheme has institutionalized the energy efficiency movement by giving recognition to energy conservation efforts by industries.
- **(f) Painting competitions for schoolchildren** at various levels are being organized by the MOP to inculcate the message of energy conservation in children of Classes IV and V since 2005. The competition has been well received and more than 12 lakh children have participated.

conservation in commercial buildings. There are also provisions that enable specification of energy consumption standards for notified equipment and appliances and making their labeling mandatory. Some of the initiatives taken for energy conservation are given in Box 9.2

## RAILWAYS

9.41 The Indian Railways is the world's second largest rail network under a single management and has been contributing to the industrial and economic development of the country for more than 150 years. Freight and passenger traffic are the two major segments of the railways, of which the freight segment accounts for about 70 per cent of the revenue. Within the freight segment, bulk traffic accounts for nearly 84 per cent of revenue earning freight traffic (in physical terms), of which about 43 per cent is coal. Improved resource management, through increased wagon load, faster turnaround time and a more rational pricing policy led to a perceptible improvement in the performance of the railways during 2005-06 and 2006-07. During April-November 2007, the total revenue earning freight traffic grew at 8.2 per cent as compared to 9.19 per

cent during the corresponding period of the last year (Table 9.11 & Figure 9.3).

### Rail tariffs

9.42 The Indian Railways have been taking certain proactive initiatives in the area of tariff and fare fixation and commercial practices. The rationalization of the fare and freight structure continued during 2007-08. There has been a conscious thrust on bringing in transparency, simplification, and making rail tariff competitive to attract more traffic. Commodities are placed into different classes for the purpose of fixing tariffs. In the passenger segment, a variable fare scheme was introduced under which the Indian Railways introduced discounts in fares for the busy season (i.e., April 16 to July 14 and September 16 to January 14) and also for the lean season (balance period) (Table 9.12).

### Freight corridors

9.43 At present, the high density network, the Golden Quadrilateral, connecting the four metropolitan cities of Chennai, Delhi, Kolkata and Mumbai, has got saturated at most locations,

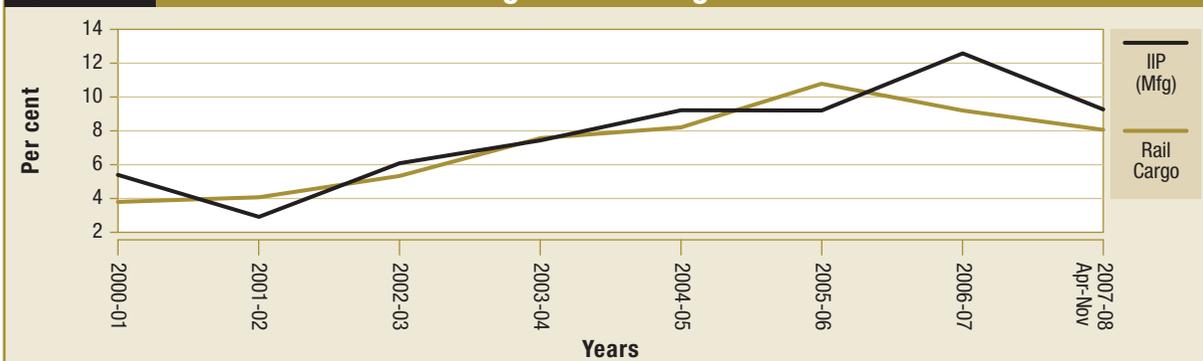
**Table 9.11 Performance of the Indian Railways**

Particulars	2005-06 <sup>b</sup>	2006-07 <sup>bc</sup>	April-December		Change overprevious year (per cent)	
			2006-07	2007-08	2006-07	2007-08 <sup>d</sup>
1. Total revenue earning freight traffic (mill.tonnes)	666.51	727.75	527.95	571.35	9.2	8.2
i) Coal	294.25	313.33	226.17	245.26	6.5	8.4
ii) Raw materials for steel plants (excl. coal)	51.35	53.22	39.12	40.35	3.6	3.1
iii) Pig iron & finished steel from steel plants	17.74	21.04	15	16.24	18.6	8.3
iv) Iron ore for export	41.24	38.84	28.57	38.28	-5.8	34.0
v) Cement	61.19	73.13	53.94	56.66	19.5	5.0
vi) Foodgrains	41.64	41.84	29.08	25.65	0.5	-11.8
vii) Fertilizers	32.65	34.26	26.61	28.01	4.9	5.3
viii) POL	33.45	31.69	25.89	26.27	-5.3	1.5
ix) Balance (other goods)	93	120.4	83.57	94.3	29.5	12.8
2. Net tonne kilometres (billion)	439.6	480.99	346.26	367.6	9.4	6.2
3. Net tonne kms./ wagon/day(BG)	2,960 <sup>a</sup>	3,242	3,075	3,266	9.5	6.2
4. Passenger traffic orig. (million) <sup>e</sup>	5,725	6,219	4,642	4,900	8.6	5.6
5. Passenger kilometres (billion)	616	695	520	551	12.8	6.0

Source: Ministry of Railways

<sup>a</sup> Revised <sup>b</sup> Excludes 0.69 MT for 2005-06 & 1.06 MT for 2006-07 Konkan Railway loading.

<sup>c</sup> Provisional <sup>d</sup> April-December <sup>e</sup> Excluding Metro Kolkata,

**Figure 9.3 Growth of manufacturing and rail freight traffic**

including, its diagonals. With the present growth rate in GDP of over 8 per cent, the Indian Railways expect to carry 95 million tonnes of incremental traffic per year and about 1,100 million tonnes revenue earning freight traffic by the end of the Eleventh Five Year Plan. It has become necessary

**Table 9.12 Discounts in rail fares**

Class	Busy Season	Lean Season
AC First	3%	6%
AC 2- Tier	2%	4%
AC 3-Tier (81 berths)	4%	8%
AC CC (102 seats)	4%	8%
New Sleeper Coaches (84 berth)	4%	4%

to augment the freight carrying capacity of the railways to handle the increase in the volume of traffic in the coming years. This is sought to be achieved by constructing Dedicated Freight Corridors (DFC). The railways has proposed a 2,700-kilometre-long railway line project at an investment of more than Rs. 28,000 crore which consist of 1,232-km-long Eastern Corridor (from Ludhiana to Sonnagar) in Phase-I and 1,469-km-long Western Corridor from Jawaharlal Nehru Port area (Mumbai to Dadri/Tughlakabad) in Phase-II. The Eastern Corridor would be extended to the proposed Deep Sea Water Port near Kolkata as and when the traffic builds up.

9.44 Both Eastern and Western Corridors will be made suitable for running of longer and heavier trains of 25-tonne axle load with maximum moving dimensions comparable to world standards. Bridges and fixed structures, which have long life, would have to be laid on this route for 30-tonne axle load. The loops provided on the DFC will need to accommodate double trains (1,500 metres). Logistics Parks are also proposed to be developed on DFC. An SPV called Dedicated Freight Corridor Corporation of India Limited

(DFCCIL) has been formed to implement the project.

### Rail safety

9.45 Rail safety is an important consideration for the Indian Railways from the point of its responsibility as carrier of passengers and goods, as also in terms of its operational reliability. In this regard, the index for accidents per million train kilometre has come down progressively from 0.55 in 2001-02 to 0.29 in 2004-05 to 0.28 in

#### Box 9.3 Strategy of Indian Railways during Eleventh Five Year Plan

Objective	Strategy	Expected measurable outcome
1 Capacity enhancement in the short term	<ul style="list-style-type: none"> <li>● Maximum utilization of existing capacity by addressing directional and seasonal variations in demand.</li> <li>● Investment in automated signaling</li> </ul>	Increase in capacity utilization
2 Significant enhancement of capacity	<ul style="list-style-type: none"> <li>● Construction of Dedicated Freight Corridors (DFCs) and separating freight from passenger traffic</li> <li>● Increase in capacity utilization</li> <li>● Route-wise planning and capacity augmentation on the high density network</li> <li>● Augmenting production capacity for locomotives, coaches and wagons</li> </ul>	Provide premium service to freight and passenger traffic
3 Achieving higher maintenance standards	<ul style="list-style-type: none"> <li>● Renewal, rehabilitation and replacement</li> </ul>	Increase throughput of existing assets
4 Technology upgradation	<ul style="list-style-type: none"> <li>● Extending the Freight Operation Information System to all loading points</li> <li>● Interface with customer information system</li> <li>● Switch over to 22.9-tonne axle load wagons and special wagons for movement of automobiles and bulk commodities, etc.</li> </ul>	Increased reliability in freight services
5 Safety and passenger amenities	<ul style="list-style-type: none"> <li>● Upgrading technology by use of Anti Collision Devices, adoption of fire proof coaches, crash worthy coaches, reducing level crossings, Enhanced training and efforts to empower Railway Protection force;</li> <li>● 22 stations identified to be developed as world class;</li> <li>● All mail and express trains to be provided with specially designed coaches suited for the physically challenged.</li> </ul>	Improvement in the safety record and passenger satisfaction

Source: Based on Chapter 12, Eleventh Five Year Plan Document.

2005-06 and further to 0.23 in 2006-07. The number of consequential train accidents also came down from 415 in 2001-02 to 195 in 2006-07.

9.46 To wipe out the arrears in renewal and replacement of overaged assets, viz., track, bridges, rolling stock, signaling gear and some safety enhancement works within a fixed time frame of six years, a Special Railway Safety Fund (SRSF) of Rs. 17,000 crore was set up in 2001-02. The expenditure under SRSF till 2006-07 was Rs. 14,920.88 crore. The operation of the fund was extended by one year up to 2007-08. All works to be funded through SRSF are likely to be completed by the terminal year 2007-08. Adequate contribution is also being made to the Depreciation Reserve Fund (DRF) to take care of asset renewals in future.

### **Rail stations and passenger amenities**

9.47 The Government has identified 22 stations located in the metropolitan cities and major tourist centres for development of world class stations through PPP route by leveraging a part of the real-estate development potential. The preparatory work for New Delhi and Patna stations through appointment of consultants has already been taken on hand.

9.48 The Indian Railway Catering and Tourism Corporation (IRCTC) is presently managing majority of catering units for the Indian Railways. So far IRCTC has commissioned 52 Multi-Cuisine Multi Outlet Food Plaza/Fast Food Units and 454 Automatic Vending Machines (AVM) for dispensing hot and cold beverages. IRCTC is presently producing and supplying "Rail Neer" brand of packaged drinking water for the consumption of passengers of the Indian Railways. It has been decided to augment the capacity of the existing two Rail Neer plants at Nangloi (Delhi) and Danapur (Bihar). It has also been decided to set up two more Rail Neer plants at Chennai and Mumbai. Out of 100 proposed budget hotels, tenders for 20 locations have already been awarded to the successful bidders. IRCTC is in the process of setting up the state-of-the-art cell kitchens on 20 major depot stations with private participation to supply quality food and beverages.

### **Human resources**

9.49 Human resource is critical for the efficient functioning of the railways. At present, the railways

has a total staff strength of 1.4 million. They are being equipped to cope with the changing environment, with the induction of better technology, work practices, automation and computerization to ensure safe, reliable train operations and services. An amount of Rs. 10 crore has been sanctioned for implementation of an Enterprise Resource Planning covering all functions of the Human Resource Management System prevalent in the Indian Railways. This would not only provide adequate transparency to the employees through prompt, user-friendly self-service, but is also expected to implement the best practices in the HR field and enable detailed analysis of the human resource deployment.

9.50 The Eleventh Five Year Plan Document observes that the infrastructure deficit for the railways is reflected in a saturation of routes, slow speeds for freight and passenger traffic and low payload to tare ratio. To address these shortcomings the strategies envisaged for the Eleventh Five Year Plan for the Indian Railways are summarized in Box 9.3. The total projected outlay for the Eleventh Five Year Plan for the Ministry of Railways is Rs. 1,94,263 crore at 2006-07 prices which is to be financed through gross budgetary support to the extent of 23 per cent.

## **ROADS**

9.51 India has one of the largest road networks in the world, aggregating to about 3.34 million kilometres at present. The country's road network consists of National Highways, State Highways, Major District Roads, Other District Roads and Village Roads. The road network comprises 66,754 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. Out of the total length of National Highways, about 32 per cent is single lane/intermediate lane, about 55 per cent is standard 2-lane and balance 13 per cent is 4-lane width or more. Though National Highways account for only 2 per cent of the total length of roads, they account for about 40 per cent of the total traffic.

### **The National Highways Development Project (NHDP)**

9.52 The largest highway project ever undertaken in the country is being implemented by the National Highways Authority of India (NHAI).

**Table 9.13 NHDP & other NHA projects(as on November 30, 2007)**

Sr. No.	NHDP Component	Total Length	Completed 4-lane	Under implementation		Balance for award of civil works
				Length(km)	No. of contracts	
1	GQ	5,846	5629(96%)	217	25	-
2	NS-EW	7,300	1,559	4,762	148	821
3	Port connectivity	380	163	211	8	6
4	Other NHs	962	337	605	16	20
5	NHDP Phase-III	12,109	274	1,801	32	10,034
6	NHDP Phase-V	6,500	-	148	2	6352
<b>Total</b>		<b>33,097</b>	<b>7962</b>	<b>7944</b>	<b>231</b>	<b>17233</b>

Phase-I and II of the NHDP envisaged 4/6 laning of about 14,279 kilometres of National Highways at a total estimated cost of Rs. 65,000 crore (at 2004 prices). These two phases consist of the Golden Quadrilateral, the North-South & 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) connects 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, respectively. Under the Port Connectivity Project, roads connecting 12 major ports (380 km) and Other Projects (962 km) will be improved.

9.53 As of November 30, 2007, 7,962 km of National Highways under NHDP project has been completed, the bulk of which (5,629 km) lies on the GQ. About 7,744 km of National Highways are under construction. Nearly 96 per cent works on GQ have been completed by November 2007 and the NS and EW Corridors are expected to be completed by December 2009. A summary of progress under different phases of NHDP is given in Table 9.13.

9.54 The upgradation of 12,109 km has been approved by the Government under NHDP Phase-III at an estimated cost of Rs. 80,626 crore. In addition to the above-mentioned approved projects, there is a proposal for two-laning with paved shoulder for 20,000 km of National Highways under NHDP Phase-IV. The Government has also approved six-laning of 6,500 km of NHs comprising 5,700 km of GQ and balance 800 km of other sections of NHs under NHDP Phase-V at a cost of Rs. 41,210 crore. The Government 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 and the construction of ring roads including improvement of NH Links in City, grade separated intersections, flyovers, elevated highways, ROBs, underpasses and service roads at a cost of Rs. 16,680 crore under NHDP Phase-VII.

9.55 The implementation of NHDP has been faced with a number of constraints that include delays in land acquisition and removal of structures, shifting of utilities, law and order problem in some States and poor performance of some contractors. Regardless of these constraints, the impact on the economy due to completion of about 96 per cent of the GQ is already visible.

### Corridor management

9.56 The substantial completion of NHDP Phase-I, i.e., Golden Quadrilateral, has necessitated greater emphasis on corridor management, that is, on managing highways in such a manner as to deliver maximum throughput in terms of speed and traffic volume while minimizing the cost of operation and enhancing road safety. The concept of corridor management is being applied on completed sections of NHDP through operation and maintenance contracts. The scope of work, among other things, includes road maintenance, road property management, incident management, traffic management, toll fee collection, wayside amenities and engineering improvements.

### Financing of NHDP

9.57 The main source of finance of NHA for the implementation of various phase of NHDP is the fuel cess. The present rate of cess is Rs. 2 per litre on both petrol and diesel, a part of which is allocated to NHA to fund implementation of NHDP. During 2007-08, an amount of Rs. 8,106.39

crore has been provided for the National Highways and for State roads out of the same. Of this amount, Rs. 6,541.07 crore is for National Highways and Rs. 1,565.32 crore for State roads. An amount of Rs. 173.93 crore has also been allocated during 2007-08 for the development of State Roads.

9.58 The funds allocated from the cess is leveraged by NHAI to borrow additional funds from the domestic market. The Government of India has also taken loans from the World Bank (US\$ 1,965 million), Asian Development Bank (US\$ 1,605 million) and the Japan Bank for International Cooperation (JBIC) (Yen 32,060 million) for financing the projects under NHDP. These loans are passed on to NHAI by the Government partly in the form of grant and partly as loan. NHAI has also negotiated a direct loan of US\$ 165 million from the ADB for one of its projects. The funds provided to NHAI including the borrowings from the market are utilized for the projects and for servicing and repayment of borrowings from the domestic market. The year-wise funds received from the Government and funds borrowed by NHAI are given in Table 9.14.

### Public-Private Partnership (PPP)

9.59 Historically, investments in the infrastructure, particularly in the highways, were being made by the Government mainly because of the large volume of resources required, long gestation, uncertain returns and associated externalities. The galloping resource requirements, concern for managerial efficiency and consumer responsiveness have led in recent times to an active involvement of the private sector.

9.60 It has been decided that all the sub-projects in NHDP Phase-III to Phase-VII would be taken up on the basis of Public-Private Partnership (PPP) on Build Operate and Transfer (BOT) mode. To this end, and to encourage participation of private sector, the Department of Road Transport and Highways has laid down comprehensive policy guidelines for private sector participation in the highway sector. The private sector participation envisaged in Phase-II of NHDP has also been increased.

9.61 The 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. Implementation of projects through construction contracts is to be done in exceptional cases where private sector participation is not possible at all. Preparatory work has begun in consultation with the Planning Commission for seeking the Government approvals for the enhanced scope of NHDP.

### Special Accelerated Road Development Programme in the North-Eastern Region

9.62 The Special Accelerated Road Development Programme for the North-Eastern region (SARDP-NE) aims at improving the road connectivity to State capitals, district headquarters and remote places of the NE region. It envisages two-/four-laning of about 3,846 km of National Highways and two-laning/improvement of about 4,891 km of State roads. This would provide connectivity to 85 district headquarters in the North-Eastern States, to National Highways and State Roads. The programme has been divided into the following two phases:

**Table 9.14** Financial structure of NHAI

Year	Cess Funds	External Assistance		Borrowings	Budgetary Support
		Grant	Loan		
1999-2000	1,032.0	492.0	—	656.6	-
2000-01	1,800.0	461.0	120.0	804.4	-
2001-02	2,100.0	887.0	113.0	5,592.9	-
2002-03	2,000.0	1,202.0	301.0	-	-
2003-04	1,993.0	1,159.0	290.0	-	-
2004-05	1,848.0	1,239.0	361.0	-	-
2005-06	3,269.7	2,400.0	500.0	1,289.0	700.0
2006-07	6,407.5	1,582.5	395.5	1,500.0	110.0
2007-08	6,541.5	1,788.8	447.2	2,000.0	265.0

(Rs. in crore)

9.63 *Phase A* would include improving 2,304 km of roads consisting of 1,889 km of National Highways and 415 km of State roads at an estimated cost of Rs. 12,793 crore. Out of 2,304 km, the Border Roads Organization (BRO) and State PWDs have been assigned the development of 1,386 km of roads at an estimated cost of Rs. 4,085 crore. Improvement of remaining 918 km of National Highways is to be done by NHAI. Out of this works on 330 km will be done by inviting bids for construction works and the balance 588 km will be taken up on BOT basis. Out of 1,386 km roads assigned to State PWDs, projects covering a length of 664 km at a cost of Rs. 1,613 crore have been approved till date and works are in different stages of progress. The likely target date of completion for Phase A is 2012-13. Phase B involves two-laning of 1,957 km of National Highways and two-laning/ improvements of State roads. Phase B is approved only for DPR preparation and investment decision is yet to be taken by the Government.

9.64 The Ministry of Road Transport and Highways has set up a high-powered Inter-Ministerial Committee to appraise and coordinate individual sub-projects under SARDP-NE. The Committee has approved various sub-projects covering 664 km length at an estimated cost of Rs. 1,613 crore under Phase A of the programme (up to December 31, 2007).

### Legal framework for road transport, some recent initiatives

9.65 Transportation by road has steadily expanded over the years. The share of road transport was 87 per cent for passenger movement and 61 per cent for freight movement in 2004-05 as compared to 15 and 14 per cent, respectively, in 1950-51. The expansion of the road network through further investment needs to be accompanied with appropriate changes in related laws and regulations. In this regard, some of the important changes carried out or initiated during the year are as follows:

- **Carriage by Road Act, 2007:** The rights and liabilities of the common carrier in India are governed by the Carriers Act, 1865. The road transport industry has undergone a sea change since its enactment. It had become necessary to redefine the scope and

applicability of the Carriers Act, 1865. Hence, the Carriage by Road Act, 2007, was gazetted on October 1, 2007. It will replace the Carriers Act, 1865 and is expected to make the transport system transparent and facilitate modernization of systems and procedures of the transportation trade through registration of common carriers. It would also provide scope for apportionment of liability between the common carrier and the consignor. A working group has been constituted to frame rules under the Act so that the Act could be brought into force.

- **Amendment in the Motor Vehicles Act, 1988:** The Motor Vehicles Act, 1988 (MVA), has been the principal instrument for regulating motor vehicles. Since its enactment, the Act was amended thrice in view of the technological changes in road transport. In response to suggestions received from various stakeholders like State Governments, transport associations, NGOs and citizens, the process of further amending the MVA was initiated. A proposal for amendment of the Act was approved by the Union Cabinet on March 1, 2007, and a Bill was introduced in the Rajya Sabha on May 15, 2007, which has since been referred to the Department-related Parliamentary Standing Committee for further examination.
- **Accreditation of bus body builders:** The Department of Road Transport and Highways has notified the rules for accreditation of bus body builders on March 23, 2007, to bring in uniformity in bus body design and to enhance safety and comfort to passengers. Bus body builders in the country would thus be accredited through the system of Zonal and National Level Accreditation Board and only such approved builders would undertake bus body building activities as per the specifications laid down by the Government. It is expected that these rules would come into effect from March 23, 2008.

### Strengthening of public transport system

9.66 While the country has seen a rapid expansion in personalized modes of transport, there is a large unmet demand for public transport

that needs to be addressed. The public transport system in India mostly comprises of passenger bus transport service offered by the State-owned road transport undertakings and private operators plying their buses under stage carriage permits. As the passenger road transport service has not achieved the desired growth both in terms of quality and numbers, despite growing demand, it has resulted in exponential growth of personalized mode of transport leading to enormous problems of traffic congestion, pollution, etc. Keeping in view the financial position of various States, the Central Government proposes to assist them through the viability gap funding mechanism to improve their public transport system. The assistance would be provided subject to certain reforms to be undertaken by the State Governments. A scheme in this regard is being worked out.

### Investment projected for the Eleventh Five Year Plan

9.67 The Eleventh Five Year Plan places high priority to the expeditious completion of works approved under the different phases of the NHDP. For the roads and bridges sector, the Eleventh Five Year Plan envisages a total investment of Rs. 3,14,152 crore (approximately US\$ 78.5 billion @ Rs. 40/\$) over the five-year period starting from 2007-08. Of this the shares of the Centre, the States and the private sector are expected to be 34.2, 31.8 and 34 per cent, respectively.

## CIVIL AVIATION

9.68 The Civil Aviation sector has undergone dramatic expansion during the Tenth Five Year Plan period. The rapid growth of the economy especially during the last four years has been accompanied by a sharp increase in the volume

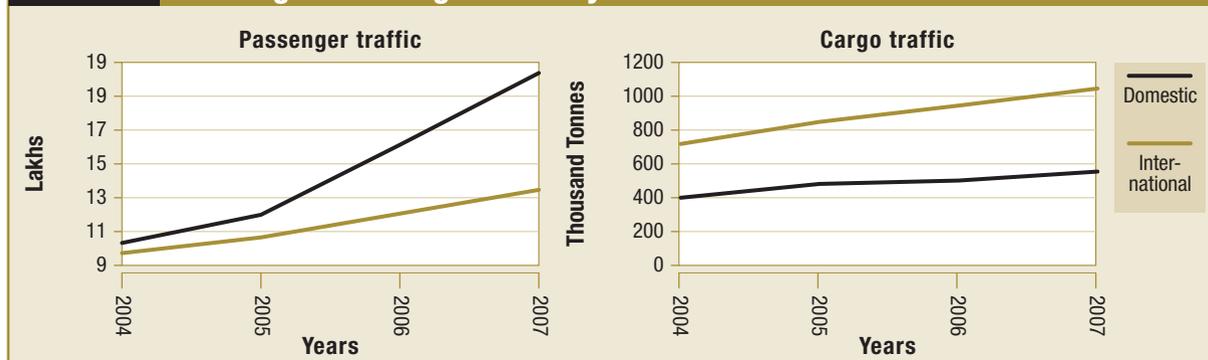
of air traffic. The number of domestic and international air passengers (combined) has almost doubled between 2004 and 2007. Cargo traffic has increased by more than 45 per cent between 2003-04 and 2006-07 (Figure 9.4). As per the provisional figures available, international and domestic passengers recorded growth of 15.6 per cent and 32.51 per cent, respectively, during 2007. During April-October 2007, international and domestic cargo recorded growth of 13 per cent and 9.8 per cent, respectively.

9.69 As of now, there are 14 scheduled airline operators having 334 aircraft. During 2007, the scheduled operators have been given permission for import of 72 aircraft. The Ministry of Civil Aviation has given "in-principle" approval for import of 496 aircraft and, in the next five years, more than 250 aircraft are likely to be acquired by the scheduled operators. There are also 65 non-scheduled airlines operators who have 201 aircraft in their inventory. The explosive growth in air traffic has made it imperative to rapidly expand the air infrastructure to ensure safe and efficient handling of air traffic.

### Airports

9.70 The Kolkata and Chennai airports are proposed to be substantially upgraded by the Airports Authority of India (AAI) pursuant to a decision of the Committee on Infrastructure. An Inter-Ministerial Group (IMG), has approved the action plan for the development of Kolkata airport. The proposal involves construction of an integrated terminal building to handle 20 million passengers per annum and airside works at a total cost of Rs. 1,942.51 crore for completion in June 2010. In respect of Chennai Airport, an Inter-Ministerial Group has approved an action plan involving expansion of international and domestic terminal

Figure 9.4 Passenger and cargo traffic by air



building to handle additional 13 million passengers per annum and major airside works including extension of secondary runway at a total estimated cost of Rs. 1,808 crore, for completion in June 2010.

9.71 The Airports Authority of India (AAI) has undertaken an ambitious project of modernization of 35 non-metro airports. Airside works, including construction of terminal buildings, would be undertaken by AAI. Work on most of these airports has been taken up. The work at Agra airport (Civil Enclave) has been completed and major works at 7 other airports viz. Agatti, Ahmedabad (Domestic), Amritsar, Jaipur, Nagpur, Tiruchirappalli and Udaipur are scheduled to be completed within the current financial year. It is expected that terminal buildings and associated airside works in respect of 24 airports will be completed by end-March 2009, whereas the remaining 11 airports would be completed by March 2010. Separately, city side development of 24 select non-metro airports would be taken up through PPP. The city side development includes commercial exploitation and maintenance of terminal buildings.

### Airport Economic Regulation

9.72 It has been decided to set up an Airport Economic Regulatory Authority (AERA). An Appellate Tribunal is also proposed to adjudicate any dispute between two or more service providers; between a service provider and a group of consumers; and hear and dispose of appeal(s) against any direction, decision, or order of the

#### Box 9.4

#### Functions of the proposed Airport Economic Regulatory Authority

- (i) To fix, review and approve tariff structure for the aeronautical services taking into consideration the capital expenditure incurred, the service provided, its quality and other relevant factors.
- (ii) to fix, review and approve users development fees which may be levied by the service provider for development of an airport.
- (iii) to monitor the performance standards relating to quality, continuity and reliability of service as prescribed by the Central Government or its authorized agencies through concession agreement or such other agreement.

AERA. It is expected that a proper regulatory framework as envisaged would help in fostering healthy competition among airports by creating a level-playing field and encourage investment in airport facilities. It would enable the regulation of tariffs of aeronautical services, protection of reasonable interest of users and operation of airports in an efficient and economically viable manner (Box 9.4).

### Financial Health of the Civil Aviation Industry

9.73 With the liberalization of the Indian skies, the airlines market in India has witnessed several new players which has made it necessary for the players to build on their competitive strength. The profitability of the domestic airline industry is under tremendous pressure as almost all airline operators in the country are reported to be making losses. Given the intense competition between the airlines and the declining margins, a process of consolidation is perhaps inevitable. The process has already commenced and the recent mergers and acquisitions that have occurred in the public and in the private sectors are expected to enable the airlines to increase revenues through synergies in operations and by ensuring optimal utilization of resources in this capital-intensive sector.

### Merger of national carriers

9.74 The Government of India decided on March 1, 2007, to merge the two national carriers, i.e. Indian Airlines Limited (IAL) and Air India Limited (AIL), into a new 100 per cent Government of India-owned company. This move was aimed at building a strong and sustainable business entity. Under this arrangement, the National Aviation Company of India Limited (NACIL) was incorporated under the Companies Act, 1956, on March 30, 2007. After registration of the order dated August 22, 2007, with the Registrar of Companies on August 27, 2007, the legal process of merger was completed. The Board of Directors of NACIL has since been reconstituted.

9.75 The merger is expected to provide an integrated international/domestic footprint, which will significantly enhance options and alternatives to the customer; allow easy entry into one of the three global airline alliances; and enable optimal utilization of existing resources through improvement in load factors and yields on

commonly serviced routes. It would also enable deployment of “freed up” aircraft capacity on alternate routes and provide an opportunity to fully leverage the assets, capabilities and infrastructure to launch high growth and profitable businesses in Ground Handling Services (GHS), Maintenance, Repair & Overhaul (MRO), etc., and provide maximum flexibility to achieve financial and capital restructuring through revaluation of assets and cleaning up of financial books. The merger process is expected to be completed in the next 18 to 20 months.

### **Fleet augmentation by NACIL**

9.76 With a combined fleet strength of more than 110 aircraft, NACIL is the largest airline in India and compares favourably with other airlines in the Asian region such as Emirates (93), Singapore (118), and Malaysia (110). The company is in the process of a major fleet expansion and is acquiring 111 state-of-the-art aircraft for its fleet. Out of these, 3 Boeing 777-200LRs, 3 Boeing 777-300ER, 10 Boeing 737-800, 6 A319 and 5 A321 aircrafts have already been received. The remaining aircraft from Boeing and Airbus would be received between 2008 and 2011.

### **International operation by private scheduled airlines on India-Gulf sectors**

9.77 The Government decided to open up the India-Gulf route to eligible private schedule carriers from January 1, 2008, and under this decision Jet Airways has been permitted to operate international services in certain India-Gulf sectors.

### **Liberalization of air services**

9.78 The Government has adopted a liberal approach in the matter of grant of traffic rights under bilateral agreements with various foreign countries. The Indo-U.S. aviation market has registered a significant growth under the new revised Air Services Agreement signed between the two countries in 2005. Similarly traffic rights were enhanced with other countries to enable greater connectivity to/from India. These countries include Australia, U.K., Germany, China, France, the Netherlands, Belgium, Canada, Singapore, Mauritius, New Zealand, UAE, Thailand, Italy, Russia, Taiwan, Finland, Maldives, Tanzania, Japan, Sri Lanka, UAE (Sharjah, Dubai & Abu Dhabi), Kuwait, Italy, Japan, Spain, Oman, the

Scandinavian countries, Egypt, Qatar, Jordan, Uzbekistan, Malaysia and Hong Kong. This would not only lead to more flights and better connectivity from these countries to India but also provide more commercial opportunities to all operating carriers.

9.79 The main objectives of the aviation sector as set out in the Eleventh Five Year Plan would be to provide world class infrastructure facilities, safe, reliable and affordable air services so as to encourage growth in passenger and cargo traffic, and air connectivity to remote and inaccessible parts of the country. Apart from developing major and green field airports, the modernization of Air Traffic Management is also envisaged.

## **PORTS**

9.80 Ports not only play a crucial role in facilitating international trade but also act as fulcrum of economic activity in their surroundings and hinterland. The country's coastline of 7,517 km, spread over 13 States/Uts, is studded with 12 major ports and 200 (as per latest information from Maritime States) non-major ports. Of the non-major ports, about 60 are handling traffic. The total traffic carried by both the major and minor ports during 2006-07 was estimated at around 650 MT. The 12 major ports carry about three-fourths of the total traffic, with Visakhapatnam as the top traffic handler in each of the last six years.

9.81 In 2007-08, up to October 2007, the cargo handled by major ports registered growth of 13.9 per cent against 9.5 per cent in the corresponding seven months of 2006-07. About 80 per cent of the total volume of ports' traffic handled was in the form of dry and liquid bulk, with the residual consisting of general cargo, including containerized cargo (Table 9.15).

9.82 There was an impressive growth of 13.9 per cent per annum in container traffic during the five years ending 2006-07. Half of the world's traded goods are containerized, and this proportion is expected to increase further. The Jawaharlal Nehru Port (JNPT), India's largest container port, handled roughly 3.3 million TEUs in 2006-07.

9.83 The annual aggregate cargo handling capacity of major ports increased from 456.20 MT per annum (MTPA) in 2005-06 to 504.75 MTPA in 2006-07, with the average turnaround time increasing marginally from 3.5 days to 3.6 days in

**Table 9.15 Trends in traffic at major ports**

Commodity	2005-06	2006-07	April-October		Growth (%)	
	M.T.	M.T.	2006	2007 <sup>a</sup>	2006	2007 <sup>b</sup>
POL	142.1	154.3	84.6	95.9	8.6	13.4
Iron Ore	79.2	80.6	42.9	47.7	1.8	11.2
Fertilizer & Raw Materials	12.2	14.9	7.5	9.4	22.1	25.3
Foodgrains	2.1	5.0	2.5	1.1	138.1	(-)0.56
Coal	58.8	60.0	32.8	36.8	2.0	12.2
Vegetable Oil	3.9	3.6	2.5	2.5	7.7	-
Other Liquids	10.8	10.9	6.0	7.0	0.9	16.6
Containerized Cargo	62.0	73.4	40.8	50.9	18.4	24.8
Others	52.5	61.1	33.9	37.3	16.4	10.0
<b>Total</b>	<b>423.6</b>	<b>463.8</b>	<b>253.5</b>	<b>288.6</b>	<b>9.5</b>	<b>13.9</b>

<sup>a</sup> Provisional<sup>b</sup> April-October 2007 Source: Department of Shipping

2006-07. The average output per ship berth-day improved from 9,267 tonnes in 2005-06 to 9,745 tonnes in 2006-07. The pre-berthing waiting time at major ports on port account, however, increased from 8.77 hours in 2005-06 to 10.05 hours in 2006-07. Significant inter-port variations in pre-berthing waiting time continued to persist (Table 9.16).

9.84 Despite having adequate capacity and modern handling facilities, the average turnaround time of 3.6 days, compared with 10 hours in Hong Kong, undermines the competitiveness of Indian ports. Since ports are not adequately linked to the hinterland the evacuation of cargo is slow leading to congestion. To this end, all port trusts

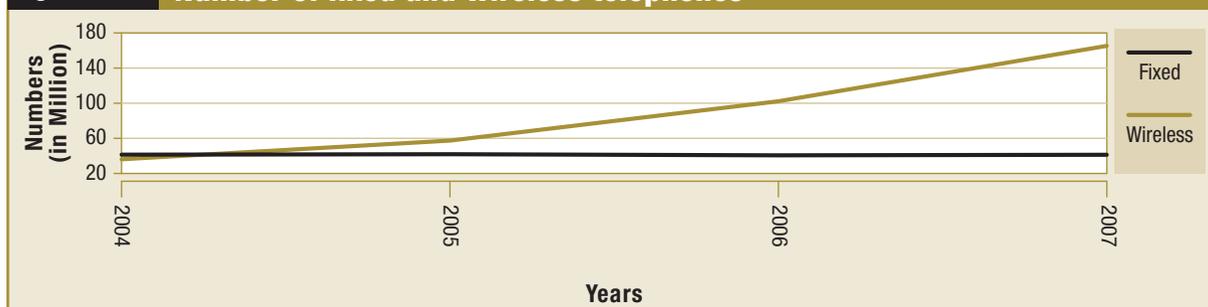
have set up groups with representatives from NHAI, the railways and State Governments to prepare comprehensive plans aimed at improving road-rail connectivity of ports. The NHAI has taken up port connectivity as a major component of NHDP. An efficient multi-modal system, which uses the most efficient 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 ports and the hinterland.

9.85 Traditionally, most ports in the world are owned by the public sector. But privatization of port facilities and services has now gathered

**Table 9.16 Selected performance indicators for major ports**

Name of Port	Average pre-berthing waiting time hours - on port A/c			Average turnaround time (days)		
	2005-06	2006-07	April-Oct. 2007	2005-06	2006-07	April-Oct. 2007
Kolkata (KDS)	0.09	0.13	-	4.12	3.89	4.51
Kolkata (Haldia Dock Complex)	30.37	26.05	27.82	4.00	3.97	4.24
Mumbai	4.80	5.22	5.47	4.09	4.63	4.30
JNPT	7.40	5.45	8.88	1.96	1.67	1.79
Chennai	0.90	0.80	1.00	3.30	3.40	3.80
Cochin	2.94	0.29	1.46	2.13	2.19	2.08
Visakhapatnam	1.54	4.78	7.83	3.80	3.65	4.08
Kandla	19.68	35.28	21.12	4.39	5.46	4.62
Mormugao	17.58	19.34	22.60	4.08	4.46	3.74
Paradip	1.48	1.41	23.22	3.55	3.54	6.04
New Mangalore	0.96	1.87	5.52	3.00	3.14	3.69
Tuticorin	3.06	3.22	3.60	2.83	3.67	3.57
Ennore	0.36	0.31	0.91	2.23	1.89	2.08
<b>All Major Ports</b>	<b>8.77</b>	<b>10.05</b>	<b>11.17</b>	<b>3.50</b>	<b>3.62</b>	<b>3.79</b>

Source: Department of Shipping

**Figure 9.5** Number of fixed and wireless telephones

momentum and India is also following the global trend. To meet this requirement, an enabling policy framework has already been put in place by the Government. Depending on the nature of facility/service, private operators can enter into a service contract, a management contract, a concession agreement or a 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.

## TELECOMMUNICATIONS

9.86 With more than 270 million connections, India's telecommunication network is the third largest in the world and the second largest among the emerging economies of Asia. The telecom sector continued to register significant growth during the year and has emerged as one of the key sectors responsible for India's resurgent economic growth. This has been possible due to the supportive Government policies coupled with the private sector initiative. The focus of the policy has been on network expansion, rural telephony, broadband coverage and R&D and on providing an enabling environment for the competitive growth of the sector. Opening of the sector has created an

impressive forward momentum in India resulting in massive investment and expansion with technological changes and improvement in quality of the telecom services.

### Growth of telecom sector

9.87 The targeted growth of 250 million by the end of 2007 has been achieved in the month of October 2007. The total number of telephones has increased from 76.53 million on March 31, 2004, to 272.88 million on December 31, 2007 (Figure 9.5). While 63.8 million telephone connections were added during the 12 months of 2006-07, more than 7 million telephone connections are being added every month during the current fiscal year. The tele-density has also increased from 12.7 per cent in March 2006 to 23.9 per cent in December 2007. Rural tele-density has increased to 7.9 per cent with 63.68 million rural telephone connections whereas urban tele-density was 60.04 per cent at the end of November 2007.

9.88 The liberalization efforts of the Government are evident in the growing share of private sector in total telephone connections, which has increased from 39.2 per cent in 2004 to 72.4 per cent in December 2007. The growth of wireless services, in particular, has been phenomenal, with

**Table 9.17** Number of telephones (end of month)

	Mar. 2004	Mar. 2005	Mar. 2006	Mar. 2007	Dec. 07
Fixed lines	40.92	41.42	40.23	40.77	39.25
CDMA	9.46	15.92	32.67	44.62	61.40
GSM	26.15	41.03	69.19	120.47	172.23
Wireless (CDMA & GSM)	35.61	56.95	101.86	165.09	233.63
Gross Total	76.53	98.37	142.09	205.86	272.88
Annual growth (%) <sup>a</sup>	40.0	28.5	44.4	44.8	

Source : Department of Telecommunications.

<sup>a</sup> point to point.

number of wireless subscribers growing at a compound annual growth rate (CAGR) of 87.7 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 85.6 per cent in December 2007. Improved affordability of wireless phone has made the universal access objective more feasible (Table 9.17).

9.89 A critical dimension of growth of the telecom sector is the extent of rural tele-connectivity. Out of more than 22.71 lakh Public Call Offices (PCOs) functioning in the country, two lakh are in the rural areas. The Mobile Grameen Sanchar Sewak Scheme, which is providing telephone at the doorstep of villagers in about 12,000 villages, is also in place. More than 5.64 lakh villages have been covered with Village Public Telephones (VPTs) to provide universal access to telecom facilities in the rural areas. Efforts are also being made under the Universal Service Obligation Fund (USOF) to provide support for increasing wireless network in rural and remote areas.

9.90 Broadband connectivity is critical for moving the country towards a knowledge-based society. The number of Internet subscribers stood at 9.7 million as on September 30, 2007. As a result of various measures taken to promote broadband in the country the number of broadband subscribers grew from 2.28 million as on March 31, 2007 to 2.8 million as on December 31, 2007.

### Tariff changes

9.91 As a result of the rapid growth in telephones, the telecom tariffs, which were among the highest in the world less than four years ago, have now dipped to being among the lowest. The National Long Distance (NLD) tariffs that ranged between Rs. 1.20 and Rs. 4.80 per minute in 2003 for different distances are now as low as Re. 1 per minute under One India Plan from March 1, 2006. Similarly, tariff rates for International Long Distance (ILD) have shown a significant decline.

For instance, tariff rates for an ILD call were Rs. 7.20 per minute for U.K.; Rs. 9.60 per minute for Europe (other than U.K.), U.S. and Canada; and Rs. 24 per minute for some of the Middle East countries in 2003. From November 1, 2006, the tariffs have declined to Rs. 6 per minute for U.K., U.S. & Canada and Rs. 8 per minute for Europe (other than U.K.) and Middle East countries like Kuwait, Bahrain, UAE, Oman & Qatar.

### Foreign direct investment

9.92 Foreign direct investment (FDI) is an important source to meet the demand for 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 equity inflows in the telecom sector from August 1991 up to July 2007 have been Rs. 20,718 crore which is 8.1 per cent of the total FDI equity inflows into India during the period.

### Activities under Universal Service Obligation Fund

9.93 The Universal Service Obligation Fund (USFO) continues to be used to subsidize the developments in the telecom sector in the rural areas. The details of the collections and disbursements under USOF are given in Table 9.18 and the activities funded through the USO in Box 9.5.

### Manufacturing and R&D

9.94 With the rapid growth of the telecom network, there is a need to further expand the telecom infrastructure and research and development (R&D). This would require infusion of funds and strengthening of the domestic telecom manufacturing sector. The development of Special Economic Zones (SEZs) facilitate better telecom services which will help in making India a hub for telecom manufacturing.

9.95 It has been decided to set up Telecom Testing and Security Certification Centre (TETC) for communication security, research and monitoring. A large number of companies like Alcatel and Cisco have also set up their research and development centres in India.

**Table 9.18** USO Fund: collections and disbursements (Rs. crore)

Year	2002-03	2003-04	2004-05	2005-06	2006-07	Total
Collections	1,653.6	2,143.2	3,457.7	3,533.3	4,211.1	14,999.0
Disbursements	300.0	200.0	1,314.6	1,766.8	1,500.0	5,081.4

**Box 9.5 Support through the USO Fund**

- As on September 30, 2007, 5,64,054 revenue villages (as per 1991 & 2001 Census) are already covered with Village Public Telephones (VPTs). Agreements were signed with BSNL to provide 66,822 VPTs in the remaining uncovered villages. As on December 31, 2007, 52,342 VPTs have been provided. The remaining uncovered villages are likely to be provided with VPTs in a phased manner by June 2008. Provision of VPTs in villages is one of the activities under the Bharat Nirman Programme.
- Agreements were signed with the successful bidders for providing Rural Community Phones (RCPs) in 46,253 villages, which was subsequently revised as 43,409 due to availability of PCO facility in such villages. Out of these, 38,112 RCPs have been provided till December 2007.
- Out of a total of 1,86,872 MARR based VPTs, 1,80,115 have been replaced till December, 31, 2007.
- Out of the 2,647 Short Distance Charging Areas (SDCAs), 1,685 net cost positive SDCAs have been identified for providing rural Direct Exchange Lines (DELs). About 25,64,577 rural DELs were provided under this scheme till March 2007.
- A scheme has been launched by the Government to support setting up and managing 7,871 infrastructure sites over 500 districts in 27 States of the country for provision of mobile services. The infrastructure created shall be shared by the service providers for provision of mobile services including other Wireless Access Services like Wireless on Local Loop (WLL) using fixed/mobile terminals in the specified rural and remote areas, where there is no existing fixed wireless or mobile coverage. Mobile services, through these shared towers, are targeted to be made operational in a phased manner by May 2008. An additional capacity of 24 million new lines has been estimated through the infrastructure so created under this scheme. A separate scheme is also proposed to be launched for the provision of mobile services in Andaman & Nicobar Islands, Lakshdweep & Minicoy Islands and Leh & Laddakh area in Jammu & Kashmir.

**Vision for the future**

9.96 Telecom development in rural areas assumes special significance in India as more than 70 per cent of the population lives in villages. A well spread out provision of affordable telecom services in rural areas enhances the ability of people to participate in market economy, which in turn improves their productivity and contributes to their earnings. It is therefore proposed to achieve rural tele-density of 25 per cent by means of 200 million rural connections at the end of the Eleventh Five Year Plan.

9.97 Recognizing the potential of broadband services in the growth process, it has been proposed in the Eleventh Five Year Plan to provide broadband for all secondary and higher secondary schools, all public health care centres and all gram panchayats. It is also visualized to link block headquarters and the nearest exchange through the State Wide Area Networks (SWAN) connectivity. It is also envisaged that Internet and broadband subscribers will increase to 40 million and 20 million, respectively, by 2010.

9.98 The telecom sector has continued to register robust growth and has emerged as a key sector driving India's economic progress. The

policy of enabling greater competition has yielded tangible benefits and encouraged massive investment and expansion accompanied by technological changes and improvement in quality of service. This sector is now well set on the path of further growth with an expansion in rural telephony and broadband coverage.

**POSTS**

9.99 India Post is under universal service obligation to provide basic postal facilities throughout the country at an affordable price. A network of 1,55,516 post offices in the country, the largest in the world, of which more than 1.39 lakh are in rural areas is indicative of this commitment.

**IT Induction**

9.100 Rapid introduction of information technology has not only changed the way post offices do business the world over, but also the businesses that they do. While technology has enabled India Post to add value to its traditional postal activities like mail processing, tracing and tracking of consignments, etc., it has also offered new opportunities for introduction of various IT-enabled services like electronic money transfer —

both domestic and international — electronic payment of the bills of various service providers and collection of fees.

9.101 The 8,263 computerized post offices in the country serve as an IT backbone of the department. The Eleventh Five Year Plan target is to computerize the rest of the 17,878 departmental post offices, besides computerizing 64,000 selected branch post offices in the rural areas. 1,318 post offices/administrative offices would be networked with the National Data Centre in Delhi by the end of March 2008. This strong IT base would enable India Post to provide several additional value-added services besides providing “anywhere-anytime” banking. The Post Office Savings Bank is the largest savings bank in the country in terms of network, and having more than 16.43 crore accounts with deposits amounting to Rs. 3,23,842.58 crore as on March 31, 2006. Other major initiatives of the Department of Posts in the year 2007-08 are outlined in the following sections.

#### **Introduction of Logistics Post Air**

9.102 In August 2007, India Post launched its first freighter aircraft connecting Kolkata-Guwahati-Imphal-Agartala to expedite the delivery of mail and parcels in the North-Eastern States. The difficult geographical terrain of North-East India has been a limiting factor for free movement in the region. A new service named Logistics Post Air has been launched which provides for collection, transportation by air and delivery of large consignments in the North-East. This service has provided huge business opportunities to the entrepreneurs in the North-Eastern States of India. On an average 165 tonnes of logistics freight is being carried per month on this sector. There has been an increasing demand to extend this service to other North-Eastern States of India.

#### **India Post – SBI tie-up for rural banking**

9.103 The alliance with the State Bank of India has provided India Post an opportunity to play a more meaningful role in the national effort to expand coverage of rural banking. The reach and retail network of India Post in the rural areas combined with the banking expertise of the State Bank of India has the potential to extend modern ICT-based banking facilities, including loan facilities, to cover one lakh non-banked and under-banked villages in the country. The pilot project being undertaken in the five States of Andhra Pradesh, Tamil Nadu,

Maharashtra, Karnataka and Jharkhand operating through the post offices will soon be extended to other States. This tie-up has also the potential of benefiting small and medium entrepreneurs in the rural areas thereby giving a boost to rural and small-scale industries.

#### **New mail paradigm**

9.104 India Post has designed a new mail paradigm whereby technology would be leveraged to create the focal points for expedited processing and delivery of mails. The idea is to consolidate the resources and the infrastructure to create Mail Business Centres as an integrated point to handle both the production and marketing of mail. Personnel skills are being enhanced through extensive training in marketing. So far 126 Mail Business Centres have been opened in the country.

#### **Investment of Postal Life Insurance and Rural Postal Life Insurance Fund**

9.105 The Government has decided to invest Postal Life Insurance and Rural Postal Life Insurance Funds, hitherto deposited with the Ministry of Finance under special deposit scheme in Central Government securities, Infrastructural Bonds and other approved securities as per the IRDA guidelines. An investment board would decide policy guidelines for the management of the fund whereas an investment division manned by financial experts would take day to day decisions. Execution of the decisions of the investment division would be made by two public sector asset management companies.

#### **Special Purpose Vehicle for Estates Management**

9.106 A proposal to create a Special Purpose Vehicle for planning and execution of commercial utilization of vacant plots of land and buildings is under active consideration of the Government. The SPV is proposed to be a 100 per cent subsidiary of the Department of Posts.

#### **Leveraging the network of India Post**

9.107 Rural postal network of India Post has emerged as an effective delivery mechanism for the Central and State Government schemes and services. The IT-enabled network of the India Post has been successfully utilized for disbursement of wages to the beneficiaries under NREGA in 19

districts of Andhra Pradesh and in all 22 districts of Jharkhand. The scheme is also operative in Karnataka, Madhya Pradesh and West Bengal. More than 40 lakh post office savings bank accounts have been opened so far for disbursement of wages to the beneficiaries under NREGA. Arrangements are being worked out with the Ministry of Rural Development to extend this facility to other States. Further, 2,000 self-help groups in five districts of Tamil Nadu have been credit linked to the post offices on behalf of NABARD. Disbursements of benefits under the old-age pension scheme is also being done through post offices in Bihar and Jharkhand. It is proposed to utilize Postal Savings Bank facility for disbursing national old-age pension payments also.

### **Railway reservations**

9.108 Booking of rail tickets through post offices is yet another effort by the India Post to extend the benefits of IT induction to people residing away from the railway reservation centres. The scheme, initially proposed to be launched at 30 locations, will be extended to rural areas also. Further tie-ups with the railways with regard to parcels, sale of unreserved tickets, etc., is also being planned.

### **Online acceptance of RTI applications**

9.109 The Government of India has entrusted sub post masters at tehsil level to act as the Central Assistant Public Information Officer (CAPIO) to accept RTI requests and appeals from all Central Government Departments. About 629 post offices at the district level and 3,043 at the tehsil level have been equipped with the necessary facilities to accept online RTI requests and appeals on behalf of the Central Government Departments/ organizations/PSUs.

### **Instant Money Order (iMO)**

9.110 Instant Money Order (iMO) service, which is available at 560 post offices, has revolutionized money transfer in the country. It is a web-based online domestic money transfer service. The service is instant and the payment can be received within minutes of the transaction being done. This service can be availed for remittance of an amount exceeding Rs. 1,000 and below Rs. 50,000. Payment is made in cash to the payee on production of a valid identity card and a confidential 16-digit number.

### **Thrust on Global business**

9.111 Keeping pace with the growth in the Indian economy and the export market, India Post has conceptualized a strategy for capitalizing on the emerging communication requirements the world over. To develop a focused approach and manage the potential of global communication business requirements in the postal and logistics sector, a new Global Business Division has been set up in the Postal Directorate. This division has started interacting with the world leaders in postal administrations and service providers to explore various business opportunities for the India Post. An MoU has been signed between India Post and Deutsche Post for cooperation to create synergies between the two postal administrations.

### **Electronic Payment System**

9.112 More than 5,500 post offices across the country are providing an IT-based bill/ fee/ tax collection facility called e-payment. In this system all bills/fees/taxes collected are consolidated electronically in the central server and a cheque for the total amount due along with the MIS is given to the service provider. E-payment would immensely benefit both rural and urban populations by making it possible for them to deposit bills/ fees/taxes in nearby post offices.

9.113 All these new initiatives have started impacting the revenue generation of the department. However, the user charges roughly cover about 78 per cent of the cost thereby bringing an element of subsidy in the postal services. It is worth noting that 22 per cent of the expenditure is on account of pension liability. If this amount is excluded then the revenue of the department roughly covers its expenditure. The deficit, which stood at Rs. 1,382 crore in 2004-05, has come down to Rs. 1,250 crore in 2006-07. Redefining the rationale and the delivery mechanism of the subsidy needs to be addressed urgently, more so in view of the fact that a large number of private couriers are operating in the market without any regulator in place. In order to provide a level-playing field to the department and also to regulate the courier market, the Government is considering appropriate amendments to the Indian Post Office Act, 1898.

## URBAN INFRASTRUCTURE

9.114 As per the 2001 Census, 285.35 million people reside in urban areas constituting approximately 28 per cent of the total population. It is estimated that the share of urban population may increase to about 40 per cent of the total population by 2020-21. In this context, improving the urban infrastructure covering basic civic services like water supply, sewerage, solid waste management and urban transport assume great significance. Municipal institutions responsible for providing these civic services are facing acute shortage of capacity and resource.

9.115 The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in 2005-06 to encourage cities to initiate steps to bring about improvement in the existing civic services levels in a sustainable manner. The components under the sub-mission, namely, Urban Infrastructure and Governance include urban renewal, water supply (including desalination plants), 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 made as Central assistance for the entire JNNURM for a period of seven years beginning from 2005-06. A corresponding amount of Rs. 50,000 crore would come from the State Governments and Urban local bodies (ULB).

9.116 With the launching of the JNNURM, the reform process of urban local bodies has begun. There is now a better appreciation at the State level of the importance of developing and sustaining the infrastructure through appropriate user charges. While sanctioning the projects, efforts are made to ensure public-private participation in the areas where it is feasible. What is also important is that many States and ULBs have started meeting timelines as far as implementation of the reforms which are directly linked to the approval and release of the Central grant.

9.117 An amount of Rs. 2,805 crore has been provided for the year 2007-08 for the Sub-Mission on Urban Infrastructure and Governance. A total number of 279 projects (as on January 1, 2008) have been sanctioned at an approved cost totaling Rs. 25,287.08 crore for 51 cities out of the listed 63 mission cities across 26 States. During this year 74 projects have been approved which will

cost Rs. 8,301.64 crore and a sum of Rs. 1172.55 crore has been released as Additional Central Assistance (ACA) in the form of admissible Central share. The ACA admissible for these projects is Rs. 12,223.42 crore out of which Rs. 2,525.62 crore has been released. While sanctioning these projects, highest priority has been accorded to sectors that directly benefit the common man and the urban poor, viz., water supply, sanitation and storm water drainage. Ninety projects are expected to be completed by December 2008.

9.118 A total investment of Rs. 3,35,350 crore has been envisaged by the mission cities for the development of urban services. The sectoral composition in the City Development Plans (CDP) submitted for 63 mission cities shows that the share of urban transport in the investment envisaged is 51 per cent, water supply - 14 per cent, sewerage - 13 per cent, drainage - 8 per cent and solid waste management - 3 per cent.

9.119 The Memorandum of Agreement in respect of the reforms agenda has been negotiated and signed with all the 63 mission cities. In order to facilitate better understanding and easy implementation at the State level, the Ministry of Urban Development has prepared toolkits on all components of the programme. The need to strengthen capacity building through experience sharing has been recognized and a programme called PEARL (Peer Experience and Reflective Learning) has been launched on January 31, 2007. The objective of the PEARL programme is to create networks between JNNURM cities for cross learning and knowledge sharing on urban reforms and city governance so that the objectives of the mission are successfully achieved to make cities more livable, economically vibrant and environmentally sustainable.

9.120 Ongoing programmes of both the Central and State Governments may not be adequate to fill the resource gap given the large resource requirement. Therefore the Government approved the Pooled Finance Development Fund (PFDF) scheme on September 29, 2006, to provide credit enhancement to urban local bodies to access market borrowings based on their creditworthiness through State-level pooled finance mechanism. PFDF will ensure availability of resources to urban local bodies to improve urban infrastructure, service delivery and to ultimately achieve the goal of self-sustainability.

9.121 The other component of the JNNURM for the remaining small towns is called Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), which was launched in December 2005 for a period of seven years with the same objective by subsuming the erstwhile schemes of the Integrated Development of Small and Medium Towns (IDSMT) and Accelerated Urban Water Supply Programme (AUWSP) and to provide financial assistance/grants for urban infrastructure development activities to the cities/towns not covered under JNNURM. The Ministry of Urban Development has approved 590 projects in 477 towns and released ACA to 305 towns for 376 projects. Out of 305 towns, 23 towns have utilized

more than 70 per cent of ACA and the corresponding State share has been released under the scheme.

### Urban Transportation

9.122 Urban transport is one of the key elements of urban infrastructure. Effective urban transportation enhances productivity and growth of the economy. The urban transportation covers two broad modes, viz. private transport and public transport. The public transport empowers poor by making access to economic opportunities easier. It is also more energy efficient and less polluting. Public transport system also helps to improve urban-rural linkage and improves access of the rural/semi-urban population in the periphery to the city centres for the purpose of labour supply without proliferation of slums.

9.123 The major objective of urban transport initiative is to provide efficient and affordable public transport. The Ministry of Urban Development has formulated a National Urban Transport Policy (NUTP), with the objective of ensuring easily accessible, safe, affordable, quick, comfortable, reliable and sustainable mobility for all. Revised guidelines for preparation of comprehensive city transport plans and detailed project report have been prepared and circulated to all the 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. To make this scheme more attractive, a new scheme of providing 80 per cent of the cost as Central assistance has been prepared for sanction in the Eleventh Five Year Plan. 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.

9.124 Delhi and Kolkata have introduced the Metro Rail system. The Kolkata Metro is presently under the direct control of the Ministry of Railways and the Delhi Metro is a joint venture company of the Government of India and the Government of the National Capital Territory of Delhi (Box 9.7).

9.125 The Government of West Bengal is also planning to set up an East-West Corridor metro rail project for Kolkata on the DMRC model covering a length of 13.7 km. (8 km underground and 5.7 km elevated) from Howrah to Salt Lake V. This is to be implemented on the Delhi Metro

#### Box 9.6

##### CRISIL Awards for Excellence in Municipal Initiatives, 2006-07

When the Government of India launched the JNNURM programme in December 2005, it recognized that mere funding of infrastructure projects in cities would not transform them. Reforms of the Urban local bodies, Parastatal and the State level was essential for a city's sustainable, long-term growth. Urban local bodies need to reengineer their processes through the adoption of technology. States have to eliminate legal, institutional and financial constraints impeding investment in urban infrastructure and services. JNNURM specifies 13 mandatory and 9 optional reforms, which States and cities have to execute over the seven-year mission period.

The CRISIL Awards are being launched in partnership with the Ministry of Urban Development, Government of India. A city's "Commitment to Reforms" was the theme of CRISIL Awards for Excellence in Municipal Initiatives, 2006-07. The following cities were awarded for their performance at the National Conference on JNNURM held on October 9, 2007.

- Water Supply: Chandigarh and Nanded  
Sewerage: Chandigarh and Bangalore
- SWM: Vijayawada and Nanded
- Financial Management: Mumbai and Pimpri-Chinchwad Municipal Corp.
- Progress on e-governance set-up is being made in 8 cities
- 100 per cent cost recovery (water supply) has been achieved in 3 cities.

**Box 9.7****Delhi Metro Rail System**

The Delhi Metro Rail System, technically known as Delhi Mass Rapid Transit System (MRTS) and popularly called the Delhi Metro, has transformed the way people travel where it has already been commissioned in Phase I in 65.1 km. It has incentivized model shift from the private to public transport. Delhi Metro has also set standards for completion of projects with quality and without time and cost overrun as well as no inconvenience to the general public. Ever since it is commissioned, it has maintained the same level of quality of service. The unique joint venture institutional structure of 50:50 partnership of the Government of India (GoI) and the Government of the National Capital Territory of Delhi (GNCTD), set up for speedy implementation of this project, has proved to be very successful. Hence the venture is being repeated in other States as well.

**Delhi MRTS project Phase I (65.1 km)**, already completed, consist 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.

The Government has now sanctioned construction of DMRC Phase II and its extension, totaling to 115.505 km on the following corridors:

1. Vishwavidyalaya–Jahangir Puri
2. Central Secretariat–Qutab Minar
3. Shahdara–Dilshad Garden
4. Indraprastha–New Ashok Nagar
5. Yamuna Bank–Anand Vihar Inter-State Bus Terminus (ISBT)
6. Kirti Nagar–Mundka
7. Qutab Minar–Sushant Lok in Gurgaon
8. New Ashok Nagar–Noida
9. High Speed Express Link from New Delhi Railway Station to Indira Gandhi International Airport.

model. Based on a study conducted by the Japan Bank for International Cooperation (JBIC), the State Government has estimated the cost of the project at Rs. 5,165 crore. They are also proposing to avail of the JBIC loan to the tune of 50 per cent of the cost.

9.126 The Bangalore Mass Rapid Transit System (MRTS), called the Bangalore Metro Rail Project, was approved by the Government of India on April 27, 2006 for construction over a total length of 33 km (elevated: 25.65 km; underground: 6.7 km; at-grade: 0.65 km) in two corridors. The first East-West Corridor from Byappanahalli to Mysore Road is 18.1 km long and the second North-South Corridor from Yeshwanthpur to R.V. Road Jayanagar is 14.9 km long. The project is scheduled to be completed in five years, by December 2011. The first section of 7 km will be completed by March 2010.

9.127 Bangalore Metro Rail Corporation (BMRC), which is a joint venture company of the Government of India and the Government of Karnataka, is executing the project at an estimated cost of Rs. 6,395 crore. JBIC will lend Rs. 1,796 crore for the project. The civil construction work for the first section of 7 km. from Byappanahalli to the Cricket Stadium has been awarded in January 2007 and the work is in progress for other stretches and pre-construction works are under way.

9.128 The Government of Maharashtra got a master plan for the Mumbai Metro prepared by the Delhi Metro Rail Corporation which suggested implementation in three phases over nine corridors. The first corridor of Phase-I (Versova-Andheri-Ghatkopar) is fully elevated covering a total length of 11.07 km. This is to be implemented in the PPP mode on BOT basis. The Government of Maharashtra is also considering construction of a fully elevated corridor (second corridor of Phase-I), viz., Charcop-Bandra-Mankhurd over a length of 31.87 km at an estimated cost of Rs. 5,527 crore.

9.129 To provide better public transport and ease congestion, proposals for Bus Rapid Transit System (BRTS) have been approved for Ahmedabad, Bhopal, Indore, Jaipur, Pune, Rajkot, Vijayawada and Visakhapatnam cities under JNNURM covering a total length of more than 310 km with total estimated cost of Rs. 2,740 crore, out of which the Central assistance is around Rs. 1,295 crore.

9.130 Considering the low cost, ease of implementation, wide area coverage and overall sustainability, a number of other cities are also coming up with BRTS proposal to be funded under JNNURM. The States/UTs have also been advised to introduce modern city bus service with the state-

of-the-art buses on a public-private partnership basis so that public transportation can be marketed to people as a branded product and people are incentivized to use public transport rather than the personal vehicles.

9.131 Since the problems associated with urban transport are of relatively recent origin in India, the ability to fully understand and deal with these problems is yet to fully mature. This calls for concerted efforts for capacity building. Accordingly, a scheme for capacity building at institutional and individual level in Urban local bodies, State Governments and Central Government has been proposed for the Eleventh Five Year Plan.

### **INFRASTRUCTURE FOR THE ELEVENTH PLAN—INVESTMENT REQUIREMENT**

9.132 The Eleventh Five Year Plan envisages total investment in physical infrastructure (electricity, railways, roads, ports, airports, irrigation, urban and rural water supply and sanitation) to increase from around 5 per cent of GDP in 2006-07 to 9 per cent of GDP by the end of the plan period if the targeted rate of growth of 9 per cent for the Eleventh Five Year Plan period (200712) is to be achieved.

9.133 Consistent with the above projection, the investment in physical infrastructure alone during the Eleventh Five Year Plan has been estimated to be about Rs. 2,002 thousand crore (at 2006-07 prices which is equivalent to about US\$ 500 billion: @ Rs. 40/\$). Alternative estimates based on a bottom-up approach have also arrived at figure of Rs. 2,060 thousand crore (about US\$ 515.05 billion), at 2006-07 prices. Of this amount, the share of the Central Government, the State Governments and the private sector is projected at 37.16, 32.76 and 30.07 per cent, respectively.

#### **Financing of Infrastructure**

9.134 Such a large magnitude of investment during the Eleventh Five Year Plan period would need to be financed through non-debt and debt resources of the order of Rs. 1,064 thousand crore and Rs. 996 thousand crore, respectively. During 2008-09 alone, the projected investment in infrastructure is expected to be more than Rs. 322 thousand crore (comprising non-debt and debt resources at 2006-07 prices). The substantial

requirement of debt resources would have to be financed through various sources including domestic bank credit, non-bank finance, pension and insurance funds and through the ECB route.

9.135 Keeping in view the need for financing infrastructure, the Ministry of Finance in December 2006 constituted a Committee under the Chairmanship of Shri Deepak Parekh to identify the constraints and suggest measures for financing infrastructure. The Committee in its report submitted in May 2007 has stated that there are macroeconomic and institutional constraints in financing infrastructure.

9.136 Under macroeconomic constraints, the report observes that while the overall financial savings may be large, a shortage of long-term savings may persist in the medium term. Within the FRBM laws, there is limited scope for Central and State Governments to increase budgetary support and guarantees. Moreover, there is a lack of availability of risk capital to support debt, coupled with inadequate flow of equity capital into infrastructure. The financing of infrastructure is also constrained by the increasing concentration of risk due to single asset and single industry exposure norms. Furthermore, the economy's capacity to absorb capital inflows seems to be limited.

9.137 Under institutional constraints, the committee observes that commercial banks may be bound by exposure norms and difficulties arising from a maturity mismatch inherent in financing the infrastructure projects. Further, there is an absence of an efficient credit risk transfer mechanism which is compounded by insurance companies preferring to invest in the public sector. The NBFCs are also constrained due to lack of access to low-cost financing options and exposure norms. The main observations/recommendations to ameliorate some of these constraints are summarized in Box 9.8

#### **Public-Private Partnerships**

9.138 To initiate policies that ensure time bound creation of world class infrastructure and delivery of services matching international standards and at the same time develop structures that maximize the role of public-private partnerships (PPPs), a Committee on Infrastructure (COI), headed by the Prime Minister, was set up in August 2004. The

**Box 9.8 Major observations and recommendations of the Deepak Parekh Committee Report**

On the basis of the observations made on the constraints, the report makes, among other things, the following recommendations and suggestions for financing rapid development of infrastructure:

- Improving intermediation of domestic financial savings so that they are channelled to meet the specific requirements of infrastructure investment such as those relating to risk, tenor and scale.
- Facilitating targeted access to foreign financial savings.
- Distributing financial risk more widely and efficiently across the domestic financial system and abroad, to avoid excessive concentration.
- Making infrastructure financing—especially in sectors where it has not been traditionally forthcoming—relatively more attractive for a wide spectrum of investor/financier classes by providing more liberal regulatory regimes for infrastructure vis-à-vis non-infrastructure sectors and in some cases, offering well-designed fiscal incentives.
- Achieving all the above through a facilitating (rather than directive) framework for each class of financing institution, while ensuring that accelerated investment in infrastructure does not jeopardize fiscal discipline, financial stability and external viability.

To advance these objectives, the Committee proposes several initiatives which are broadly classified as under:

- (i) Development of domestic debt capital market
- (ii) Tapping the potential of insurance sector
- (iii) Rationalizing banks' and NBFCs' participation in infrastructure financing
- (iv) Fiscal measures
- (v) Facilitating equity flows into infrastructure
- (vi) Inducing foreign investments into infrastructure
- (vii) Utilizing foreign exchange reserves.

**Source: Extracts from the Report of the Committee on Infrastructure Financing; Full report is available at <http://www.pppinindia.com/policy.asp>**

COI is serviced by the Planning Commission. To provide greater focus to mainstreaming PPPs both in the Central and State sectors, a PPP Cell has been constituted in the Department of Economic Affairs (DEA). The DEA has taken several major initiatives in the matters concerning PPPs including policy, schemes, programmes and capacity building. While encouraging PPPs, six constraints have been identified:

- (i) Policy and regulatory gaps, specially relating to specific sector policies and regulations.
- (ii) Inadequate availability of long-term finance (10-year-plus tenor) – both equity and debt.
- (iii) Inadequate capacity in public institutions and public officials to manage PPP processes.
- (iv) Inadequate capacity in the private sector – both in the form of developer/investor and technical manpower.
- (v) Inadequate shelf of bankable infrastructure projects that can be bid out to the private sector.

- (vi) Inadequate advocacy to create greater acceptance of PPPs by the public.

9.139 To address these constraints, several initiatives have been taken by the Government of India to create an enabling framework for PPPs by addressing issues relating to policy and regulatory environment. Progressively, additional sectors have been opened to private and foreign investment, levy of user charges is being promoted, regulatory institutions are being set up and strengthened, and fiscal incentives are given to infrastructure projects. Standardized contractual documents such as sector-specific Model Concession Agreements, which will lay down the standard terms relating to allocation of risks, contingent liabilities and guarantees as well as service quality and performance standards, and standardized bidding documents such as Model Request for Qualifications and Model Request for Proposals are being prepared and notified. Approval mechanism for PPPs in the Central sector has been streamlined through setting up of the Public-Private Partnership Appraisal Committee (PPPAC).

www.pppinindia.com, a website exclusively devoted to PPPs, has been launched to serve as a virtual market place for PPP projects. An online database on PPP projects in the country is being developed to provide comprehensive information on the status of infrastructure sector PPPs.

9.140 To address the financing needs of these projects, various steps have been taken such as the setting up of the India Infrastructure Finance Company Limited (IIFCL) to provide long tenor debt to infrastructure projects and launching of a Scheme for Financial support to PPPs in Infrastructure to provide Viability Gap Funding (VGF) to PPP projects. Multilateral agencies such as the Asian Development Bank have been permitted to raise rupee bonds and carry out currency swaps to provide long-term debt to PPP projects. Setting up of dedicated infrastructure funds is also being encouraged to increase the flow of equity investments. The "India Infrastructure Finance Initiative," facilitated by Ministry of Finance, is one such collaborative effort to deploy approximately US\$ 5 billion in capital for infrastructure projects in India. The fund is structured as a venture capital fund, with about US\$ 2 billion in equity capital and US\$ 3 billion in long-term debt financing with maturities exceeding 10 years.

9.141 Initial steps have been taken to use foreign exchange reserves for building infrastructure. IIFCL is setting up an offshore SPV to utilize part of forex reserves for infrastructure development. The RBI has given "in principle" approval to invest up to US\$ 5 billion in the securities of the SPV and these would be fully guaranteed by the Government of India. The opportunities for private investment in infrastructure projects are immense. The Government of India now allows FDI in most infrastructure sectors to the extent of 100 per cent. The time is ripe for the foreign strategic investors to begin to taking greater interest in project development and management activity in India.

9.142 To meet the capacity building requirements of the public institutions and officials for preparing a pipeline of credible, bankable projects that can be offered to the private sector through competitive bidding process as well as to manage the PPP process, State Governments and Central Ministries are being provided with technical assistance in the form of in-house PPP experts,

financial/risk experts, MIS experts and access to a panel of legal firms. Other measures include assisting the State Governments and Central Ministries in hiring consultants through a panel of transaction advisers (TAs), preparation of a manual on PPPs to guide the users and undertake training programmes for public officials on PPPs, risk assessment, and exposure to pre-bid grading of projects. To intensify and deepen the capacity building of public functionaries at the State and municipal level, a curriculum for training at State Administrative Institutes and a "Training of Trainers" programme are being developed. As the reach of PPP increases across the sectors, the capacity of the private sector to manage these projects over their entire life cycle of 20 to 30 years would also have to be enhanced. These initiatives are being supported by TAs from the Asian Development Bank and the World Bank.

9.143 While quality advisory services are fundamental to procuring affordable, value-for-money PPPs, the costs of procuring PPPs, and particularly the costs of transaction advisers, are significant. For providing financial support for quality project development activities to the States and the Central Ministries, the Guidelines for India Infrastructure Project Development Fund (IIPDF) Scheme have been notified. The IIPDF with an initial budgetary outlay of Rs. 100 crore would be a revolving fund that would get replenished through success fee earned from successful bid projects, and, if need be, would be supplemented in subsequent years through budget support. The IIPDF would assist ordinarily up to 75 per cent of the project development expenses. The assistance from IIPDF would ordinarily be in the form of interest free loan. On successful completion of the bidding process, the project development expenditure would be recovered from the successful bidder.

9.144 India has witnessed a rapid increase in private investment in infrastructure over the last five years. In 2006, commitments to Indian infrastructure projects with private participation were around double that of Brazil and China, making India the leader amongst the middle and low-income countries.

9.145 A survey of the 221 PPP projects was undertaken at the instance of DEA for preparation of an online database on PPPs. This survey

**Table 9.19 Public-Private Partnerships in India**

Sector	Total Number of Projects	Total Number of Projects based on value of contracts				Value of Contacts (Rs. crore)
		Less than 100 Crore	Between 100 and 250 Crore	Between 251 and 500 Crore	More than 500 Crore	
Airport	5	-	-	1	4	19,111
Ports	38	3	5	6	24	60,487
Railways	3	-	1	2	-	1,007
Roads	170	74	20	51	25	47,091
Urban Development	5	3	-	1	1	1,879
<b>Total</b>	<b>221</b>	<b>80</b>	<b>26</b>	<b>61</b>	<b>54</b>	<b>129,575</b>

Sector	Total Number of Projects	Total Number of Projects based on contract award Method			Value of (Rs. crore)
		Domestic Competitive Bidding	International Competitive Bidding	Negotiated MOU	
MOU					
Airport	4	-	4	-	18,808
Ports	28	4	12	12	57,433
Railways	3	1	-	2	1,007
Roads	164	123	36	5	45,737
Urban Development	2	1	1	-	525
<b>Total</b>	<b>201</b>	<b>129</b>	<b>53</b>	<b>19</b>	<b>123,510</b>

Source: 1. "Infrastructure Public-Private Partnership Financing in India," a study undertaken by PWC at the instance of DEA in collaboration with World Bank.

2. Online database on PPPs.

included PPPs - where a contract has been awarded and projects are under way (i.e., they are either operational, have reached construction stage, or at least construction/implementation is imminent). The survey covered projects totaling an estimated cost of Rs. 1,29,575 crore. The road projects account for 78 per cent of the total number of projects (36 per cent by total value) because of the small average size of projects. Ports, with a much larger average size of project, account for 17 per cent of the total number of projects (47 per cent by total value). Most of the contracts have been of the BOT/BOOT type (either toll or annuity payment models) or close variants. Almost all the projects in the sample (limited to the data available for 201 projects) were competitively bid (either national or international competitive bidding) with the negotiated ones (through MoUs) primarily accounted for by railways and ports sector.

## CHALLENGES AND OUTLOOK

9.146 The development of adequate infrastructure is a critical prerequisite for sustaining the growth momentum and to ensure inclusiveness of the

growth process. Not surprisingly, the Eleventh Five Year Plan document states that the pattern of inclusive growth of the economy projected for the Eleventh Five Year Plan period, with GDP growth averaging 9 per cent per year, can be achieved only if the infrastructure deficit can be overcome and adequate investment takes place to support higher growth and an improved quality of life for both urban and rural communities.

9.147 The challenges in implementing projects in this sector are immense. Each segment in the physical infrastructure sector has its own specificities, be it of land acquisition, environment, regulation, financing or of designing of contracts. In case of land acquisition, the problems are well known. There is no option but to squarely address them with foresight, sensitivity, fairness and transparency for all stakeholders. The need to develop appropriate mechanisms for financing infrastructure, especially the development of a domestic debt market, is overarching. It is also important to ensure synergy in the efforts being made to develop different types of infrastructure through effective coordination between different agencies. Only then can the sum total be greater

than its parts. These challenges are serious, but they are by no means insurmountable. The critical requirements would be determined and well-designed efforts by the Government(s) and the private sector partners to implement the policy initiatives already under way with the requisite amount of detailed technical, managerial, administrative and human skill and, not the least, with the will to implement in a transparent and inclusive manner.

9.148 As with any sector, growth of the infrastructure sector has two dimensions: growth in its output and increment in its capacity through new investment. While the year-on-year growth of infrastructure output is important in its own right, it is evident that the addition to capacity is a critical determinant of the potential output of production sectors. Viewed from the latter perspective, the growth in output of infrastructure sector and its capacity, particularly power, has been relatively modest as compared to the robust performance in manufacturing and services. The growth in universal intermediates like coal, petroleum and petroleum products, steel and cement has been subdued. While growth in GDP at about 9 per cent in recent years has come about in the face of severe constraints, it is apparent that further expansion in all sectors of the economy will be increasingly contingent on the availability of physical infrastructure and related services. On the investment front too, fresh capacity creation needs to gather greater momentum.

9.149 Though physical infrastructure may appear to be a constraint on growth at present, at the same time, if investment is forthcoming into this sector, it can not only help sustain growth in the production sectors, but may very well be “the driver of growth and employment” through its multiplier effects. Just as growth of the construction sector, especially in housing, stimulated growth in certain segments of the industrial sector in recent years, similarly investment in infrastructure can not only support growth but has the potential to drive growth in other sectors. This is because the growth prospects of the production sectors that include agriculture, industry and services are becoming closely intertwined with the growth of the infrastructure sector. Indeed, the growth of physical infrastructure can not only help in ameliorating some of the supply-side constraints over production, but also stimulate domestic demand for goods and services that is essential for growth.

9.150 The strategy for infrastructure development has been articulated in ample measure in the Eleventh Five Year Plan. An early head start is crucial for translating investment targets into investment intentions and investment intentions into ground realities. Realizing the investment targets and outcomes in a manner which does not deviate from the path of inclusive growth is not only a challenge but also an opportunity for sustainable growth.

