

# Energy, Infrastructure and Communications

## 10 CHAPTER

*In tandem with the pick-up in overall industrial growth, core industries and infrastructure services have also evinced signs of recovery with easing of supply bottlenecks in certain sectors and demand recovery in others. The robust growth momentum in telecommunications, particularly the wireless segment, continues with monthly additions exceeding 17.6 million connections. In the midst of the worst-ever slowdown in the history of world civil aviation, even the modest levels of growth in India are indicative of resilience. Core industries like power, coal and other infrastructure like ports and roads are also reviving. Available evidence points to a steady revival of flows of investible resources. However, the levels of broadband penetration, capacity creation in some crucial infrastructure sectors and the state of development of markets for longterm finance remain causes for concern. There is need to develop infrastructure to complement and sustain the economic growth momentum. Efforts—legislative, administrative and executive—are on to minimize the infrastructure deficit, ameliorate bottlenecks in completion of projects and nurture core industrial intermediates and infrastructure services.*

10.2 The stimulus measures announced by the national authorities worldwide to combat the economic slowdown contained infrastructure build-up plans. In line with the rest of the world, the Union Budget for 2009-10 substantially stepped up allocation for many infrastructure sectors over the Budget estimates for the previous year, especially for the National Highways Development Programme (NHDP), Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and Accelerated Power Development and Reform Programmes (APDRP).

### OVERVIEW OF PERFORMANCE

10.3 Construction of rural roads under the Prime Minister's Gram Sadak Yojana (PMGSY) proceeded apace and remained on course to achieving the Eleventh Five Year Plan targets for expenditure on rural roads. As against the target of developing about 3,165 km length of national highways under the NHDP in 2009-10, the achievement till November

2009 has been about 1,490 km (Table 10.1). Against the target of awarding projects for a length of about 9,800 km under the NHDP during 2009-10, projects have been awarded for about 1,285 km up to November 2009. Capacity creation in the power sector seems to have gone up in the current year; however, the actual capacity addition during April-December 2009 was only 43.9 per cent of the target of 14,507 mega watt (MW) for the current fiscal, with the corresponding achievements by the Central, State and private sectors being at 29.4 per cent, 40.5 per cent and 54.8 per cent respectively.

10.4 The Department of Programme Implementation monitors the progress in Central-sector projects costing Rs100 crore and above, on a monthly basis. The Progress Report for October 2009 indicated that projects such as roads, power, railways, petroleum, telecom, coal and steel constituted about 94 per cent of the total number of

**Table 10.1 : Indicators of infrastructure capacity creation**

Item	2006-07	2007-08	2008-09	April-Dec.2009
Power Capacity Addition (MW)	6,853	9,263	3,454	6,375
Addition to Refinery Capacity- Petroleum	5.1	16.5	29.0	Nil
Road Length Upgraded -NHAI (km).	636	1,683	2,203	1,486*
Road Length Upgraded NIH (O) & BRDB- km.	1,686	1,897	2,226	1,294*
Road Works Completed under PMGSY (km)	30,710	41,231	52,405	36,273
Route km RKM's electrified-Railways	361	502	787	
Additional Locations with Computerized Passenger Reservation-Railways	82	234	88	189*
New Lines (km)-Railways	250	156	357	
Doubling of Lines (km)-Railways	386	426	363	
Gauge Conversion (km)-Railways	1,082	1,549	563	
Addition to Port Capacity (MTPA)	48.5	27.3	42.7	
Net Addition to Switch Capacity-Telecom (000 lines)	9,603	7,159	14,393	7,105*

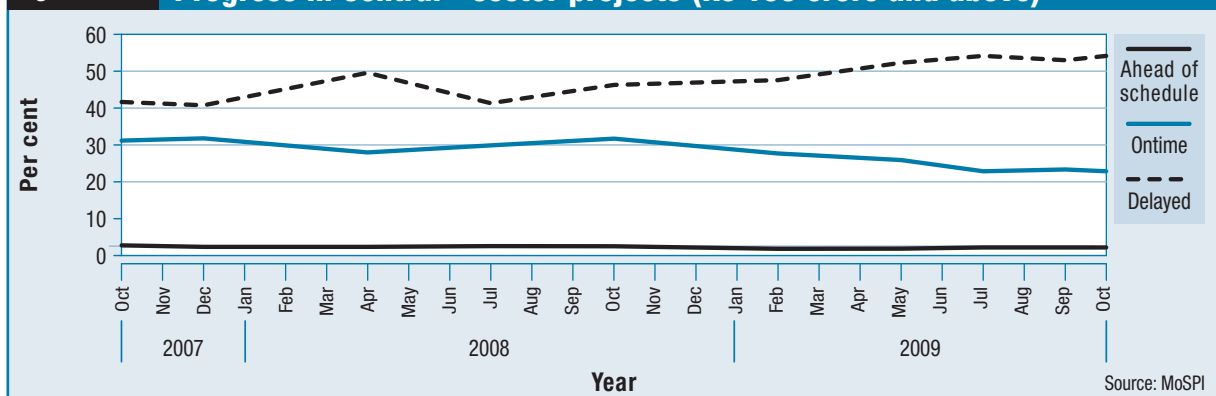
Sources : Ministry of Power, Ministry of Petroleum & Natural Gas, Ministry of Statistics and Programme Implementation (MoSPI), National Rural Roads Development Agency & Ministry of Railways.

\* April-November.

591 monitored projects. Over time, project delays have been creeping up (Fig 10.1)

10.5 In the current year, core industries and infrastructure services, in general, seem to have come out of the slump witnessed amidst the general slowdown of the economy in the previous fiscal. In the current fiscal, electricity generation emerged from the lacklustre growth witnessed in the previous year and equalled its performance in 2007-08. That this was achieved despite constraints imposed by the inadequate availability of coal and dismal hydel generation owing to the failure of monsoons, attests to its potential. This improved performance was facilitated by the improved availability of gas for the power sector. The coal sector grew at a reasonable

rate during the current year (Table 10.2); but the fact that the power sector as a major consumer felt acute shortage of domestic coal availability, raised questions about the required growth in coal production. Rail freight traffic grew at 7.4 per cent, year-on-year, mainly on account of the buoyant growth in traffic in coal, pig iron and finished steel, cement and container services, pointing towards renewed economic activity (Table 10.2). In airways, the situation improved visibly in both cargo and passenger traffic from that obtained in the second half of the previous year; the passenger traffic in the domestic terminals seems to have revived. The rising trend in wireless phone connectivity, which remained unaffected amidst the general slowdown during the

**Figure 10.1 Progress in Central - sector projects (Rs 100 crore and above)**

Source: MoSPI

**Table 10.2 : Growth in core industries and infrastructure services (in per cent)**

	2007-08	2008-09	H1 2008-09	H2 2008-09	April-Nov. 2009
Power	6.3	2.7	2.6	2.9	6.3
Coal	6.0	8.1	7.9	8.3	9.3
Finished Steel	6.8	0.6	4.3	-2.7	1.5
Railway Revenue-earning Freight Traffic	9.0	4.9	8.5	1.8	7.4
Cargo Handled at Major Ports	12.0	2.1	7.2	-2.4	4.7
Telephone Connections	83.7	10.1	31.3	-4.9	-
Cell Phone Connections	38.3	44.8	25.9	60.3	52.4
Fertilizers	-8.6	-2.5	-1.2	-3.9	11.1
Cement	7.8	7.5	6.0	9.0	10.5
Crude Oil	0.4	-1.8	-0.8	-2.7	-1.4
Refinery	6.5	3.0	4.5	1.5	-1.2
Natural Gas	2.1	1.4	4.8	-1.9	32.7
Air Export Cargo	7.5	3.4	8.0	-1.2	5.6
Air Import Cargo	19.7	-5.7	5.9	-16.9	-4.5
Passengers at International Terminals	11.9	3.8	7.2	0.7	2.8
Passengers at Domestic Terminals	20.6	-12.1	-7.5	-16.4	10.7

Source : MoSPI

previous year, continues at a robust pace during the current year too.

## POWER

### Generation

10.6 Electricity generation by power utilities during 2009-10 has been targeted to go up by 9.1 per cent to 789.5 billion KWh. The growth of power generation during April–December 2009 was about 6.0 per cent (Table 10.3) as compared to about 2.7 per cent during April-December 2008. Decline in hydroelectric power generation was mainly due to poor monsoons. Coal-based generation of power constituted around

80 per cent of thermal generation and around 66 per cent of the total generation of power (Table 10.4). The power sector is a major consumer of coal using 74 per cent of the coal production. Coal-based power generation was constrained by the shortage in domestic supply of coal and the non-materialization of planned imports during April-December 2009. The total consumption of coal by the power sector during the period was 271.0 million tonnes. About 16.7 million tonnes of coal was imported. Apart from bridging the demand-supply gap, blending of imported high quality coal with high ash domestic coal helps thermal power stations adhere to environmental stipulations of using coal with less than 34 per cent ash content.

**Table 10.3 : Power Generation by Utilities (Billion KWh)**

Category	2007-08	2008-09	April-December		Growth (per cent)
			2008-09	2009-10	
Power Generation*	704.5	723.8	540.0	572.5	6.0
i) Hydroelectric	123.4	113.0	92.4	85.4	(-) 7.4
ii) Thermal	559.0	590.0	430.7	468.5	8.8
iii) Nuclear	16.8	14.8	11.3	13.4	18.6
iv) Bhutan Import	5.3	5.9	5.6	5.1	(-) 8.3

Source : Ministry of Power

\* Excludes generation from captive and non-conventional power plants and thermal power plants below 20 MW units and hydro power plants below 2 MW.

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10.7 The availability of gas from the KG (Krishna Godavari) basin (D6) and utilization of surplus gas available on fallback basis resulted in better utilization of capacity and higher plant load factor (PLF) as also high growth in electricity generated from gas-based plants. The overall PLF also improved during April-December 2009 (Table 10.4). A sector-wise and region-wise break-up of PLF, a measure of efficiency, from 2007-08 to 2009-10 (April-December)

**Table 10.4 : Thermal power generation during April-December 2009**

Components	Generation	Growth (MUs)	PLF (in per cent)	
			Apr.-Dec. 2008	Apr.-Dec. 2009
Coal	376.6	5.5	75.9	76.5
Lignite	18.0	17.1	62.7	74.5
Gas Turbine	70.3	30.9	58.0	65.9
Multi-fuel	0.4	-56.5	53.0	23.1
Diesel	3.2	-9.0	-	-
Thermal Total	468.5	8.8	75.2	76.2

Source: Ministry of Power.

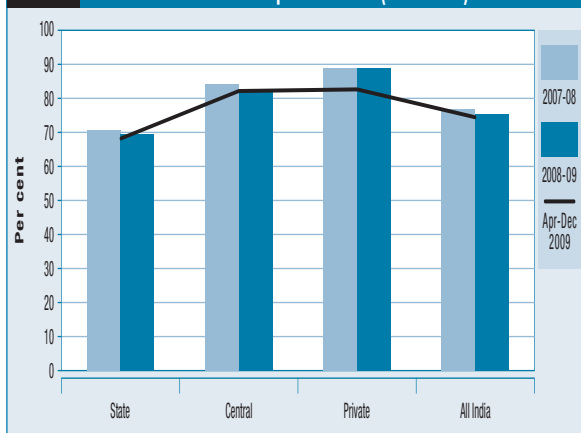
indicates the continuity and change over time and regional variation (Fig 10.2).

10.8 Out of the total installed generation capacity in the country, about 11 per cent is based on gas or liquid fuel (excluding diesel). The commencement of production of gas from D-6 fields of the KG basin since April 2009 has improved gas availability for electricity generation (Table 10.5).

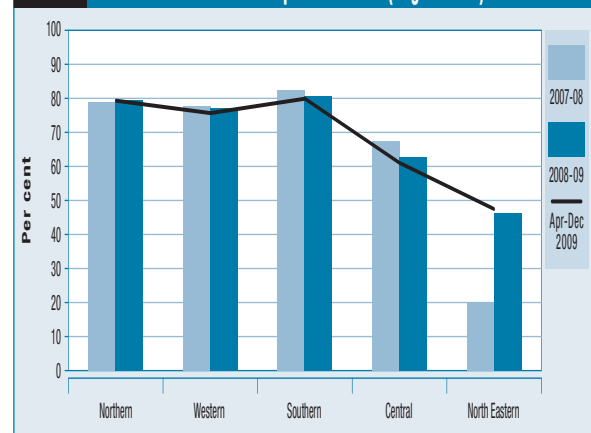
### Power deficit

10.9 The deficit in power supply in terms of peak availability and total energy availability rose continuously from 2003-04 to 2007-08, a period characterized by high growth in peak demand and total energy requirement. Despite modest growth in electricity generation, the peak deficit came down significantly in 2008-09 on account of a slowdown in growth of peak demand. During April-December 2009, the peak and total energy deficits came down considerably to 12.6 per cent and 9.8 per cent respectively from 13.8 per cent and 10.9 per cent during the corresponding period in the previous year (Figure 10.3). This happened mainly on account of the increase in growth of electricity generation.

**Figure 10.2A Plant load factor of thermal power stations (Sector wise)**



**Figure 10.2B Plant load factor of thermal power stations (Region wise)**

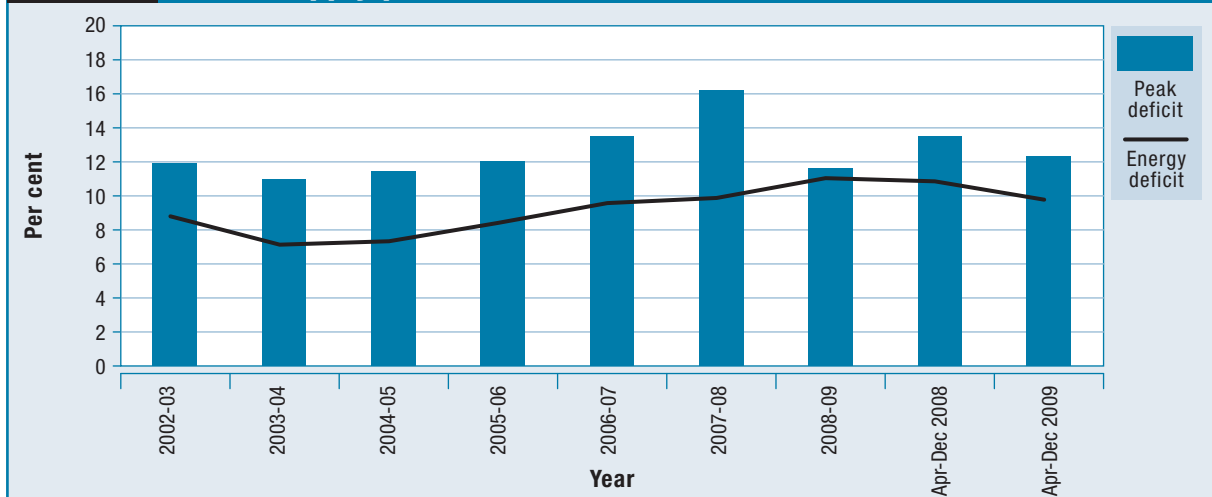


**Table 10.5 : Coal and gas input for the power sector**

Year	Coal (in million tonnes)		Gas (in MMSCMD)*		
	Consumption	Imports	Required at 90 per cent PLF	Shortfall	Generation loss (BUs)
2006-07	302.5	9.7	61.2	26.1	26.3
2007-08	329.6	10.2	65.7	27.5	31.2
2008-09	358.0	16.1	66.6	29.2	33.7
Apr-Dec 2009 **	271.0	16.7	76.5	24.3	18.2

Source : Ministry of Power.

\*Based on normative gas requirements; \*\* Figures for gas refer to April-November 2009; BU-billion units; MMSCMD-million metric standard cubic metre per day.

**Figure 10.3 Power supply position: All India**

### Capacity addition

10.10 The Eleventh Five Year Plan envisaged a capacity addition of 78,700 MW, of which 19.9 per cent was hydel, 75.8 per cent thermal and the rest nuclear. Projects under execution in various sectors for the Eleventh Five Year Plan have made steady progress (Table 10.6).

**Table 10.6 : Capacity addition during the Eleventh Five Year Plan (with high level of certainty) (MW)**

Status	Central	State	Private	Total
<b>Plan Target</b>	36,874	26,783	15,043	78,700
<b>Commissioned</b> (as on 31.12.2009)	4,990	9,112	4,990	19,092
<b>Under Construction</b>	16,232	12,243	14,807	43,282

Source : Ministry of Power.

10.11 The target for 2007-08, the first year of the Eleventh Plan, was initially fixed at 16,335 MW and subsequently reduced to 12,039 MW. Against this revised target, a capacity addition of 9,263 MW was achieved during the year. A capacity addition target of 11,061 MW comprising 9,304 MW thermal, 1,097 MW hydro and 660 MW nuclear was originally planned for 2008-09. On account of revision in the

definition of commissioning of thermal projects, the capacity addition target for the year 2008-09 was revised as 7,530 MW, against which a capacity of 3,454 MW was added up to March 31, 2009. In the current fiscal, the hydel and nuclear segments made little progress and the progress in the thermal segment was uneven across the three sectors (Table 10.7).

10.12 The main reasons for underachievement of capacity addition targets during 2007-08 and 2008-09 were delayed and non-sequential supply of material by suppliers, shortage of skilled manpower for construction and commissioning of projects, contractual disputes between project authorities, contractors and their sub-vendors, delay in readiness of balance of plants by the executing agencies, design problems in CFBC boiler and shortage of fuel.

10.13 The Ministry of Power has adopted a monitoring system of capacity addition at different levels: the Central Electricity Authority (CEA), Ministry of Power, Power Project Monitoring Panel and Advisory Group. The CEA and Ministry of Power hold review meetings periodically with developers and other stakeholders.

**Table 10.7 : Capacity addition target (original) and achievement during April-December 2009 (in MW)**

Sector	Thermal		Hydro		Nuclear		Total	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Central	2,490	1,000	252	Nil	660	Nil	3,402	1,000
State	4,679	1,979	301	39	Nil	Nil	4,980	2,018
Private	5,833	3,357	292	Nil	Nil	Nil	6,125	3,357
<b>Total</b>	<b>13,002</b>	<b>6,336</b>	<b>845</b>	<b>39</b>	<b>660</b>	<b>Nil</b>	<b>14,507</b>	<b>6,375</b>

Source : Ministry of Power.

## Ultra Mega Power Projects (UMPPs)

10.14 Nine UMPPs of 4,000 MW each have originally been identified for development under the international competitive bidding route. Four UMPPs, namely Sasan in MP, Mundra in Gujarat, Krishnapatnam in Andhra Pradesh and Tilaiya in Jharkhand have already been awarded. One unit of 660 MW of the Sasan UMPP and two units of 800 MW each of the Mundra UMPP are expected to be commissioned in the Eleventh Five Year Plan. In respect of the UMPP at Sarguja district in Chhattisgarh, all the pre-Request for Qualification (RfQ) activities have been completed. For the UMPP in Sundergarh district, Orissa, most of the pre-requisites for issuing the RfQ are already in place, except issuance of Section 4 Notification. With respect to the UMPP in Tamil Nadu, the site has been finalized at Cheyyur, along with the captive port which is under finalization. For the second UMPP in Andhra Pradesh, the site at Nayunipalli, Prakasam District has been finalized by CEA/PFC in consultation with State Government. For UMPPs to be located in Karnataka and Maharashtra, second UMPP in Gujarat and two additional UMPPs in Orissa, requisite inputs regarding land availability and water linkage are being examined.

## Mega Power Policy

10.15 Guidelines under the Mega Power Policy, introduced in 1995, were modified in 1998 and 2002 and further amended in April 2006 to encourage power development in Jammu & Kashmir and the north-eastern region. In the wake of the important statutory and policy-level changes, some of the provisions of the present Mega Power Policy were revisited, bringing them in line with the National Electricity Policy 2005 and Tariff Policy 2006. With a view to rationalize the procedure for grant of mega certificate and facilitate quicker capacity addition, following modifications to the Mega Policy have been made.

- (i) The existing condition requiring privatization of distribution by power-purchasing states will be replaced by the condition that they shall undertake to carry out distribution reforms as laid down by the Ministry of Power.
- (ii) The condition requiring inter-State sale of power for getting mega power status will be removed.
- (iii) The present dispensation of 15 per cent price preference available to domestic bidders in

case of cost plus projects of public-sector undertakings (PSUs) will continue. However, the price preference will not apply to tariff-based competitively bid projects of PSUs.

- (iv) Developers of mega power projects will not be required to undertake international competitive bidding for procurement of equipment for the mega power project if the requisite quantum of power has been tied up through tariff-based competitive bidding or the project has been awarded through tariff-based competitive bidding.
- (v) All benefits, except a basic custom duty of 2.5 per cent only, available under the Mega Power Policy would be extended to expansion unit(s) of existing mega power projects even if the total capacity of expansion unit(s) is less than the threshold-qualifying capacity, provided the size of the unit(s) is not less than that provided in the earlier phase of the project. All other conditions for grant of mega power status shall remain the same.
- (vi) Mega power projects may sell power outside long-term power purchase agreements (PPAs) in accordance with the National Electricity Policy 2005 and Tariff Policy 2006.

## Induction of supercritical technology through bulk ordering

10.16 The Government approved proposals for the induction of supercritical technology through bulk ordering of 11 units of 660 MW (totalling 7,260 MW) by the National Thermal Power Corporation (NTPC) Ltd. for itself and on behalf of its joint venture (JV) companies and on behalf of the Damodar Valley Corporation (DVC). Following this, NITs for bulk tender of Steam Generator Packages and Steam Turbine Generator Packages were issued by the NTPC on October 16, 2009. The award process is likely to be completed by July 2010.

## Development of hydro power

10.17 Forty-six hydro projects with an aggregate capacity of 13,675 MW are under construction in the country. The main reasons for their slow development include difficult and inaccessible potential sites, difficulties in land acquisition, rehabilitation, environmental and forest-related issues, inter-State issues, geological surprises and

contractual issues. Private-sector participation in hydel power projects has been increasing; there are 14 schemes with an installed capacity of 4,383 MW under construction in the private sector. Private developers have been allotted 129 schemes with an installed capacity 36,123 MW by States which are yet to be taken up for construction. The bulk of the potential which is in the Himalayan region is yet to be tapped. Out of the 162 projects for which preliminary feasibility reports were prepared under the 50,000 MW Hydro Electric Initiative, 77 (33,951 MW) have been taken up for detailed survey and investigation and preparation of detailed project reports (DPRs)/implementation. So far, DPRs for 21 schemes have been prepared.

10.18 Some of the features of the new hydro policy include making available the dispensation for project development allowed for PSUs to the private sector for a period of five years; better relief and rehabilitation packages for affected families; risk mitigation for developers and facilitation of early financial closure. A Task Force under the Chairmanship of the Minister of Power has been constituted to look into all issues relating to the development of hydro power. Another Task Force constituted to develop the model contract documents for hydro power projects has since prepared them.

### Transmission, Trading, Access and Exchange

10.19 An integrated power transmission grid helps to even out supply-demand mismatches. The existing inter-regional transmission capacity is about 20,800 MW. This has enabled inter-regional energy exchanges of about 36,815 MUs during April-December 2009.

### Trading of Electricity

10.20 Power trading facilitates disposal of surplus power with distribution utilities and meeting the short-term peak demand. The Central and State Electricity

Regulatory Commissions have powers to grant inter-State and intra-State trading licences respectively. The Central Electricity Regulatory Commission (CERC) has so far granted 44 inter-State trading licences, of which 40 are in existence as on July 31, 2009. Electricity trading by licensed inter-State traders is picking up (Table 10.8).

### Inter-State trading margin regulations 2010

10.21 The CERC has issued new regulations fixing trading margins for inter-State trading in electricity. The main features of the new regulations are: i) the trading margin shall apply only to short-term buy – short-term sell contracts for inter-State trading. ii) the Trading margin shall not exceed 4 paise per unit if the sell price of electricity is less than or equal to Rs.3 per unit. The ceiling of trading margin shall be 7 paise per unit in case the sell price of electricity exceeds Rs 3 per unit. iii) if more than one trading licensee is involved in a chain of transactions, the ceiling on the trading margin shall include the trading margins charged by all the traders put together. In other words, traders cannot circumvent the ceiling by routing the electricity through multiple transactions. iv) long-term agreements have been exempted from trading margins to facilitate innovative products and contracts for new capacity addition which involve higher risk in transactions.

### Open access

10.22 The regulations on open access in inter-State transmission and those on inter-State trading are issued by the CERC while the responsibility for introducing open access at distribution level rests with State Electricity Regulatory Commissions (SERCs). States have been asked to take steps to ring fence the State Load Dispatch Centres (SLDCs) so that they are not be under any pressure from utilities to counter open access.

10.23 Open access in inter-State transmission is fully operational. To boost open access, the CERC

**Table 10.8 : Electricity trading**

Period	Volume of electricity traded (MUs)	Weighted average purchase price (Rs./kWh)	Weighted average sale price (Rs./kWh)	Trading margin (Rs./kWh)
2005-06	14,188.8	3.14	3.23	0.09
2006-07	15,022.7	4.47	4.51	0.04
2007-08	20,964.8	4.48	4.52	0.04
2008-09	21,916.9	7.25	7.29	0.04
April-Oct. 2009	15,551.7	5.32	5.36	0.04

Source : Ministry of Power.

**Table 10.9 : Status of applications received for open access in distribution (November 30,2009)**

States	Received		Approved		Implemented	
	No.	MW.	No.	MW.	No.	MW.
Andhra Pradesh	11	1,055.8	4	51.3	4	51.3
Chhattisgarh	16	404.3	6	66.0	5	53.0
Gujarat	44	5,534.0	40	5,523.2	40	5,523.2
Madhya Pradesh	30	60.2	30	60.2	30	60.2
Maharashtra	64	14,452.0	57	14,310.5	7	163.0
Rajasthan	31	277.6	29	264.3	29	264.3
Tamil Nadu	16	1,752.0	1	18.0	0	0.0
Other States (*)	56	2,195.1	45	1,457.2	38	1,357.3
<b>Total</b>	<b>268</b>	<b>25,731.0</b>	<b>212</b>	<b>21,750.8</b>	<b>153</b>	<b>7,472.4</b>

Source: Forum of Regulators.

\* Other States include Haryana, Himachal Pradesh, Jharkhand, Kerala, Orissa, Punjab, Uttar Pradesh, West Bengal and Karnataka.

has recently notified a regulation on Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission. The regulation has introduced medium-term open access to the inter-State grid. A transmission corridor can now be availed of for a period ranging from three months to three years. Provisions have also been made for seeking connectivity to grid. The new dispensation has abolished the discrimination between public-sector and private-sector generators in the matter of connectivity to grid. Also, now any 100 MW and above consumer can be connected directly to the Central Transmission Utility grid without having to go to SLDCs.

10.24 The volume of approved open access transactions (in energy terms) in inter-State transmission has increased over the period. The energy approved for open access through the bilateral route involving trade through electricity traders or directly between distribution licencees was 16,441 MUs in 2004-05, 27,756 MUs in 2008-09 and 24,443 MUs in 2009-10 (up to Dec 2009). With the introduction of power exchanges in 2008, open access is approved separately for collective transactions in the exchanges. The approved energy for open access through such collective transactions was 2,765 MUs in 2008-09 and 4,831 MUs in 2009-10 (up to December 2009). There has been migration of the volume of energy approved from bilateral to collective transactions. The total volume of energy approved for open access in inter-State open access (including bilateral and collective transactions) was 30,521 MUs in 2008-09 and 29,274 MUs in 2009-10 (up to December 2009).

10.25 Status of applications received for open access in distribution varies across select States (Table 10.9). The open access charges vary widely across States.

### Power exchange

10.26 The CERC has issued power market regulations which focus on creating an overall power market structure and role of power exchanges and traders and provide for market oversight and surveillance. The two power exchanges, namely the Indian Energy Exchange Ltd. (IEX), New Delhi, and the Power Exchange India Ltd. (PXIL), Mumbai, have been in operation from June 27, 2008 and October 22, 2008 respectively. Increasing volumes of electricity transacted through power exchanges would indicate the progress in this regard (Table 10.10).

**Table 10.10 : Volume of electricity transacted by power exchanges during April-October 2009 (in MUs)**

Day-Ahead Market	IEX	3,047.5
	PXIL	384.7
Term-Ahead Market *	IEX	17.5
	PXIL	2.2

Source : Ministry of Power.

\* Term-Ahead Contracts introduced at the two power exchanges from September 15, 2009.

### Promotion of green power

10.27 The CERC has notified tariff regulations for electricity generated from renewable energy (RE) sources (Box10.1). These regulations assume

### Box 10.1 : Terms and conditions for tariff determination from Resources

The CERC has notified tariff regulations for electricity generated from RE sources. Salient features of the regulations are as under:

- Control Period of three years, except for solar projects for which capital cost shall be reviewed every year in view of technological advancement;
- Tariff Period is 13 years for RE technologies; excluding SHP below 5 MW (35 years), Solar Photovoltaic (PV) and Solar Thermal (25 years) as these technologies need handholding support for a longer time;
- Thirteen Years tariff period covers the debt repayment obligation; beyond the tariff period, RE project is to compete.
- Provision for generic levelized tariff based on *suo motu* petition for RE technology such as wind energy, small hydro power, biomass power (based on rankine cycle technology), non-fossil fuel co-generation; and solar PV and solar thermal.
- Provision for project-specific tariff for municipal solid waste projects, solar PV and solar thermal power projects, (if the developer so opts), hybrid solar thermal power plants and biomass projects other than those based on rankine cycle technology application with water cooled condenser.

special importance in view of the National Action Plan on Climate Change which stipulated that minimum renewable purchase standards be set at 5 per cent of the total power purchases in year 2010 and increase thereafter by 1 per cent every year for ten years. The Commission has issued generic tariff for various RE technologies for 2009-10.

10.28 The Forum of Regulators has evolved a Renewable Energy Certificate (REC) mechanism at national level to facilitate inter-state transaction of RE sources. The CERC has notified the REC Regulation for implementing an REC framework. This is a market-based instrument to promote renewable energy and facilitate compliance with renewable purchase obligations under inter-State transactions of RE generation. The REC mechanism is aimed at addressing the mismatch between availability of RE resources in a State and the requirement of the obligated entities to meet the renewable purchase obligation.

### AT&C losses and Restructured APDRP

10.29 The focus of the Restructured Accelerated Power Development Reforms Programme (RAPDRP) is on actual, demonstrable performance in terms of reduction in aggregate technical and commercial (AT&C) losses. Projects under the scheme will be

taken up in two parts in towns and cities with population more than 30,000 (10,000 in case of special category States).

#### Part A

10.30 Part A shall include projects for establishment of baseline data and information technology (IT) applications for energy accounting/auditing and IT-based consumer service centres. Preparation of baseline data covering consumer indexing, GIS mapping, metering of distribution transformers and feeders, and automatic data logging for all distribution transformers and feeders and SCADA (Supervisory Control and Data Acquisition) / DMS (Distribution Management System) system is only for big cities. It would include asset mapping of the entire distribution network at and below the 11Kv transformers and adoption of IT applications for meter reading, billing and collection, energy accounting and auditing, redressal of consumer grievances and establishment of IT-enabled consumer service centres. The baseline data shall be verified by an independent agency appointed by the Ministry of Power.

10.31 A steering committee has been constituted under the Secretary (Power) in order to sanction projects, monitor and review implementation, approve guidelines for operationalizing the components of the scheme, approve and sanction activities to be taken up under Part C of the scheme, appoint agencies for verifying and validating baseline data systems and for verifying fulfilment of programme conditions by utilities, and approve conversion of loan into grant upon fulfillment of necessary conditions. The steering committee has approved 1,344 projects for 22 states under Part A at the cost of Rs 4,859.60 crore. The budget allocation for 2009-10 is Rs 1,730 crore (Rs 1,650 crore as loan and Rs 80 crore as grant). Six States, namely West Bengal, Madhya Pradesh, Rajasthan, Karnataka, Uttarakhand and Gujarat have awarded the work for implementation of projects approved under Part A of the RAPDRP to the IT Implementing Agency.

#### Part B

10.32 Part B shall include regular distribution-strengthening projects. These include renovation, modernization and strengthening of 11 Kv-level sub-stations, transformers/transformer centres, re-conductoring lines at 11Kv level and below, load bifurcation, load balancing, high voltage distribution system (HVDS) and installation of capacitor banks and mobile service centres. In exceptional cases, where sub-transmission system is weak,

strengthening at 33 Kv or 66 Kv level may also be considered.

10.33 Expected investment in Part A is Rs 10,000 crore and that in Part B Rs 40,000 crore. Initially 100 per cent funds for Part A and 25 per cent (90 per cent for special category States) for Part B projects shall be provided through loan from the Government of India. The balance funds for Part B projects shall be raised from financial institutions. The entire amount of loan for Part A projects shall be converted into a grant once the establishment of the required baseline data system is achieved.

10.34 Up to 50 per cent (90 per cent for special category States) of the cost of Part B projects shall be converted into a grant in five equal tranches on achieving the 15 per cent AT&C losses in the project area on a sustainable basis for a period of five years. In addition, utility level loss reduction (AT&C losses) @ 3 per cent per annum for utilities with baseline loss levels exceeding 30 per cent and @ 1.5 per cent for utilities with baseline loss levels less than 30 per cent have to be achieved.

### Part C

10.35 Part C is an enabling component for implementation of the APDRP. A provision of Rs 1,177 crore through Gross Budgetary Support has been made in the scheme. This part is to be implemented by the Ministry of Power/nodal agency. The Power Finance Corporation has been appointed as the nodal agency for operationalizing the programme. The activities under Part C include:

- Preparation of template for system requirement specifications for subdivision automation and customer relations management module, as well as for automated baseline data collection systems;
- validation of the baseline data to be done by independent agencies;
- appointment of project advisors and project management consultants to assist in monitoring, to validate project proposals submitted by distribution companies (project advisers) and to assist distribution companies in formulating detailed project reports (DPRs), in standardizing bidding/contract documents, managing the bid process, etc. (project management consultants);
- project evaluation for which a panel of evaluators will be finalized through a bidding process;
- capacity building and development of franchisees in the distribution sector; and

- carrying out consumer attitude survey to assess the impact of the measures taken.

### Part D

10.36 Under Part D of the scheme, there is provision for incentive for utility staff in towns where AT&C loss levels are brought below the baseline. An amount equivalent to 2 per cent of the grant for part B projects is proposed as incentive for utility staff in project areas where AT&C loss levels are brought below 15 per cent.

### Rural electrification

10.37 Under the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY), 69,963 villages have been electrified and connections have been released to 88.8 lakh BPL households up to January 15, 2010. Under Tenth Plan, 235 projects covering 68,763 villages and 83.10 lakh BPL connections were sanctioned at a cost of Rs. 9732.90 crore. In Phase-I of the Eleventh Five Year Plan period 332 projects have been sanctioned for implementation at a cost of Rs 16,506 crore for electrification of 49,736 un-electrified villages and release of electricity connections to 162.96 lakh BPL households. Till January 15, 2010, 328 projects have been awarded. Franchisees are in place in 1,02,255 villages in 16 States as on January 15, 2010.

### Energy Conservation and efficiency

10.38 Several measures have been taken by the Ministry of Power and the Bureau of Energy Efficiency to promote energy conservation and its efficient use targeting 5 per cent reduction in demand during the Eleventh Five Year Plan through schemes being implemented by the Bureau of Energy Efficiency ( Table 10.11).

10.39 The Ministry of Power has also launched an awareness programme which includes giving incentives for efficiency and conservation efforts by way of National Energy Conservation Awards, painting, debate and essay competitions for schoolchildren and creating general awareness through the media on the need for energy conservation. The National Mission for Enhanced Energy Efficiency is one of the eight missions under the National Action Plan on Climate Change. The scheme has been approved and its implementation will commence in 2010-11. The objective of the Mission is to achieve growth with ecological sustainability by devising cost-effective strategies for end-use demand side management.

Table 10.11 : Measures for energy conservation &amp; efficiency

Initiative	Components	Achievements/developments
<b>Bachat Lamp Yojna</b>	Provides high-quality compact fluorescent lamps to consumers at rate comparable to that of incandescent bulbs	The pilot scheme was approved by the CDM (Clean Development Mechanism) Executive Board of the UNFCCC (United Nations Framework Convention on Climate Change) in 2008-09. Avoided capacity generation of 104 MW achieved.
<b>Standards &amp; Labelling Scheme</b>	Lays down minimum energy performance standards for high energy equipment and appliances.	Labelling of ACs, refrigerators, TFLs and transformers made mandatory from January 7, 2010. Labelling of geysers, motors, pumps, colour TVs, LPG stoves, ceiling fans introduced on a voluntary basis. About 1,744.84 MW of avoided capacity generation achieved.
<b>Energy Conservation, Building Code (ECBC) in existing buildings</b>	ECBC sets performance standards for new commercial buildings with connected load of more than 500 KW or 600 KVA of electricity consumption, energy conservation measures in existing buildings proposed through Energy Service Companies (ESCOs) under performance contracting.	Forty-four architects have been empanelled. Investment grade audits have been initiated in 35 Central Government buildings and 400 buildings in States. Thirty-five ESCOs have been empanelled and accredited. Avoided capacity generation of 7 MW achieved.
<b>Demand Side Management (DSM)</b>	DSM in agriculture & municipalities	Approval for implementing the scheme was received in the last quarter of 2008-09 and it is now operational.
<b>Strengthening state-designated agencies</b>	Financial assistance to SDAs for strengthening institutional capacities	Action plans for 28 states are under implementation. Avoided capacity generation of 787 MW achieved.
<b>National Energy Conservation Awards</b>	For specified sectors, large, medium and small industries, SDAs and municipalities	Avoided capacity generation of 834 MW achieved.
<b>Energy efficiency in enterprises</b>	For small and medium enterprises	Approval for the scheme was received in the last quarter of 2008-09. Now operational.
<b>State Energy Conservation Fund</b>	Central Government to contribute to the State Conservation Fund once it is set up by the respective State for energy conservation on activities.	Approval for the scheme was recently obtained.

Source : Ministry of Power.

## PETROLEUM

### Oil and gas production

10.40 With around 75 per cent of total oil consumption in the country being met through imports, the dependence on imports for petroleum and petroleum products continued to be high. The domestic supply of crude oil remained around 34 million metric tonnes (MMT) and natural gas at about

32 billion cubic metric tonnes (BCM) during the past five years. With 15 new oil and gas discoveries during the current financial year, domestic availability is expected to improve. During 2009-10, the projected production for crude oil is 36.7 MMT, which is about 11 per cent higher than the actual crude oil production of 33.5 MMT in 2008-09. This is primarily due to increase in crude oil production from Rajasthan (2.4 MMT) and the KG deepwater (0.8 MMT). The

projected production for natural gas (including coal bed methane [CBM]) for 2009-10 is 50.2 BCM which is 52.8 per cent higher than the actual production of 32.8 BCM in 2008-09. The increase in natural gas production is primarily from the KG deepwater block.

### Progress of the New Exploration and Licensing Policy (NELP) and Coal Bed Methane Policy

10.41 Of the estimated sedimentary area of 3.14 million sq. km, at present 1.17 million sq. km is held under petroleum exploration licences. Since operationalization of the NELP in January 1999, 72 oil and gas discoveries have been made by private/joint venture (JV) companies in 21 blocks. Under the NELP, more than 600 MMT of oil equivalent hydrocarbon reserves has been added.

10.42 As on April 1, 2009, investment made by Indian and foreign companies was of the order of US \$ 11.9 billion. After concluding seven rounds of NELP, 203 production-sharing contracts (PSCs) have been signed. The area awarded under the NELP for exploration was 46 per cent of the Indian sedimentary basin. The eighth round of the NELP was launched in April 2009 offering the highest number of exploration blocks ever, that is 70 blocks covering a sedimentary area of about 1,63,535 sq. km. The offered blocks included 24 deepwater blocks, 28 shallow water blocks, 8 on-land blocks and 10 Type-S blocks. As part of the CBM policy approved in July 1997, 26 CBM blocks have been awarded in the first three rounds. As part of CBM IV, the Government offered 10 blocks covering an area of about 5,000 sq. km. spread over seven states, namely Assam, Jharkhand, Orissa, Madhya Pradesh, Chhattisgarh, Maharashtra and Tamil Nadu.

10.43 The Government has received 76 bids for 36 blocks out of 70 blocks offered under NELPVIII and 26 bids for 8 blocks out of 10 blocks offered under CBMIV by the bid-closing date, that is October 12, 2009. In respect of 16 deep water blocks, 15 shallow water blocks and 3 on-land blocks, no bids were received. A total of 62 companies comprising 10 foreign and 52 Indian companies have made bids.

### Domestic reserves and production

10.44 Balance recoverable crude oil and natural gas reserves in the country are 736.45 MMT and 1,119.55 BCM respectively. New oil and gas reserves found by private/JV companies in the KG deepwater and Rajasthan are in production.

### Gas Production from KG-D6 Basin

10.45 Gas production from KG-D6 began on April 1, 2009. It is expected that production would be ramped up to 80 MMSCMD by the end of 2009-10. An Empowered Group of Ministers (EGOM) constituted to decide commercial utilization of gas under the NELP has allocated 61.611 MMSCMD of gas produced from KG-D6 on firm basis and 30 MMSCMD on fall-back basis to various priority sectors.

### Crude oil production from Rajasthan

10.46 Crude oil production by the Rajasthan Cairn Energy India Pty. Ltd. has started in block RJ-ON-90/1 with effect from August 29, 2009 at the initial production rate of 3,500 barrels per day. Production from this block, which is of very high quality, is likely to increase during 2009 through 2011. The Government has designated IOC, MRPL and HPCL for lifting part of the crude oil production from this block after ascertaining the capacity of receiving refineries of the nominees. The production expected from this block during 2009-10 is 2.4 MMT.

### Improved oil recovery/enhanced oil recovery (IOR/EOR)

10.47 Work programmes have been undertaken primarily by the Oil and Natural Gas Corporation (ONGC) for IOR/EOR in its 15 largest fields, which account for 80 per cent of its reserves and production. Eighteen IOR/EOR schemes of have already been approved to increase the recovery factor from 14 ageing oil & gas fields of the ONGC at an estimated cost of about Rs14,510 crore.

### Development of marginal fields

10.48 Concerted efforts have been made to put new and marginal fields in production through in-house resources as well as through service contract. Out of a total of 165 marginal fields, ONGC has already monetized 56. Of the remaining 109 fields, 68 are being monetized in-house by ONGC, 20 through service contracts and 21 are likely to be offered. The marginal field policy is being finalized.

### Underground coal gasification (UCG)

10.49 ONGC entered into an Agreement of Collaboration with the National Mining Research Centre-Skochinsky Institute of Mining in Russia. In the selected Vastan mine block, a seismic survey was carried out and 18 boreholes were drilled for detailed UCG site characterization. Vastan in Gujarat and Hodu Sindri in Rajasthan have been found suitable for UCG stations. Pilot production of UCG at Vastan by the ONGC would commence in 2010.

### Gas hydrate

10.50 India is a pioneer in the field of gas hydrate. In accordance with the roadmap for the National Gas Hydrate Programme (NGHP), India has already acquired core samples with the help of the US drill ship *JOIDES Resolution*. In December 2008, a memorandum of understanding (MOU) was signed between the Directorate General of Hydrocarbons and the U S Geological Survey for cooperation on exchange of scientific knowledge and technical personnel in the field of gas hydrate and research. The second NGHP expedition has been planned in 2010 to map the prospects of gas hydrate in Krishna Godavari and Mahanadi deepwater areas.

### Equity oil & gas from abroad

10.51 The Government is encouraging national oil companies to aggressively pursue equity oil and gas opportunities overseas. The Oil & Natural Gas Corporation Videsh Limited (OVL) produced about 8.75 MMT of oil and equivalent gas in 2008-09 from its assets abroad in Sudan, Vietnam, Venezuela, Russia, Syria and Colombia. In 2008-09, OVL has acquired seven blocks in five countries comprising two blocks each in Brazil and Columbia and one each in Myanmar, Venezuela and Trinidad & Tobago. The largest ever acquisition of a foreign company, Imperial Energy Plc. UK. (IEC) by an oil PSU, OVL has taken place. OIL-IOC alliance has also acquired one block in Timor Leste and two blocks in Egypt. BPCL along with Videocon has acquired participating interest in 10 blocks in Brazil.

### Refining & pipeline capacity

10.52 The total installed capacity of refineries increased to 177.97 MMTPA as on April 1, 2009. The new refineries at Bhatinda, Paradip and Bina will further augment domestic refinery capacity. By the end of the Eleventh Five Year Plan, refinery capacity is expected to reach 240.96 MMTPA. The country has a network of 24 product pipelines with a length of 10,514 km and capacity of 62.91 MMT; 3 LPG pipelines of 2,197 km length and 4.50 MMT capacity; 6 crude oil pipelines of 5,795 km length and 52.75 MMT capacity.

### Rajiv Gandhi Gramin LPG Vitrak Yojana (RGGLVY)

10.53 The Ministry of Petroleum & Natural Gas has formulated a vision for the year 2015 'Customers Satisfaction & Beyond' wherein it is targeted to cover 75 per cent of the population with LPG by that year.

The LPG customer base is targeted to increase from 10.6 crore as on April 1, 2009 to 16.0 crore by the year 2015. The focus would be on States and regions where coverage is below the national average. A new low-cost LPG distributor scheme, the RGGLVY was launched on October 16, 2009 with a view to releasing LPG connections in rural areas where operations with the present norms are economically unviable. The scheme has been launched at locations having potential of up to 600 refills per month. Advertisements inviting applications for distributorship have been released in eight States covering 1,215 locations.

### Public grievances redressal system in Oil Marketing Companies (OMCs)

10.54 In order to streamline the public grievances redressal system, OMCs have started unique toll-free telephone numbers that are provided to register complaints and follow up. Customer contact with senior company officials is fixed on prescribed days of the month. For booking refill cylinders 24x7, SMS and interactive voice response system (IVRS) facilities have been introduced.

### Special efforts towards energy (oil & gas) conservation

10.55 The Petroleum Conservation Research Association (PCRA) is mandated to formulate and spread awareness on energy / petroleum conservation. This is carried out through field-level activities like energy audit, fuel oil diagnostic studies, service to small-scale industries, institutional training programmes, seminars, exhibitions, painting competitions and workshops. During 2009-10, 3,572 activities have so far been conducted. The PCRA has carried out technical/R&D interventions aimed at reducing energy intensity in the small and medium enterprises. A Technology Conservation Centre has been set up at the PCRA, New Delhi, for effective information dissemination on energy-efficient products and technologies for the general public. The Centre has been attracting a large number of visitors including international visitors.

10.56 The PCRA media campaign "Save Fuel Yanni Save Money" was adopted to develop a strong motivation for attitudinal change in favour of fuel-efficient measures in petroleum-intensive sectors. An impact assessment survey showed that the PCRA campaign was very successful and resulted in significant fuel saving.

### Box 10.2 : Major Initiatives in the petroleum sector at a glance

- In the eighth round of the NELP (NELP-VIII), 1.62 sq. km area will be covered comprising 70 blocks. Out of 70 blocks, 36 have been awarded under NELP-VIII.
- In CBM-IV, out of 10 new blocks 8 have been awarded.
- During 2009-10, crude oil production is projected to increase by 11 per cent and natural gas production by 53 per cent.
- Crude oil production commenced in block RJ-ON-90/1 in August 2009.
- Eighteen new IOR/EOR schemes have been approved to increase the recovery factor from 14 ageing oil & gas fields of the ONGC at a cost of Rs 14,510 crore.
- The first natural gas production from block D6 of the KG Basin, undertaken by Reliance Industries Limited (RIL) and NIKO Resources Limited, commenced in April 2009.
- The Empowered Group of Ministers has decided to allocate 61.6 MMSCMD of gas produced from KG-D6 on firm basis and 30 MMSCMD on fall-back basis to various priority sectors.
- The RGGLVY has been launched in October 2009 to increase rural penetration of LPG.
- Vision-2015 for LPG to focus on providing 5.5 crore new connections till 2015 to raise population coverage from 50 per cent to 75 per cent.

## COAL

10.57 More than 92 per cent of the coal production in India is of non-coking coal. Raw coal production during April-November 2009 was 325.87 million tonnes as against 289.69 million tonnes in the same period of the previous year, registering a growth of 12.5 per cent. Coking coal production for the period was 25.60 million tonnes against 18.85 million tonnes of the same period in the previous year. The growth rate in the production of raw coal increased from 6 per cent during 2003-04 to 2007-08 to 8.4 per cent in 2008-09, due to enhanced production by all the

stakeholders especially captive blocks and large PSUs like Coal India Ltd. (CIL) and Singareni Collieries Company Ltd (SCCL). During 2008-09, the import and export of coal was about 59 million tonnes and 1.66 million tonnes respectively. The corresponding figures stood at 18.85 million tonnes and 0.39 million tonnes during April-June 2009.

10.58 Under the e-auction scheme, SCCL and CIL have started e-auction of coal. During 2008-09, SCCL sold 3.63 million tonnes of coal through e-auction (Table 10.12).

10.59 The Government has approved formation of a Special Purpose Vehicle (SPV), namely International Coal Ventures Limited (ICVL) for securing metallurgical coal and thermal coal assets overseas by PSUs including CIL. Aspects like the functioning of ICVL and strength of personnel are being finalized. The Empowered Committee of Secretaries constituted for considering the proposals of ICVL for acquiring coal properties abroad will also consider CIL's proposals for investing in coal assets abroad which are more than Rs 1,000 crore.

10.60 For increasing the output of washed coking and non-coking coal, CIL has envisaged setting up of 20 new coal washeries for an ultimate raw coal throughput capacity of 111.10 million tonnes per annum with an estimated capital investment of about Rs 2,500 crore. These include seven coking coal washeries and 13 non-coking coal washeries.

10.61 For increasing production from underground mines, initiatives like identification of high capacity underground mines for development with latest technology, restart of mining in abandoned mines forming joint ventures with reputed mining companies, introduction of continuous miners and PSLW as a mass production technology in more mines, introduction of high wall mining and upgradation of equipment size are being taken.

10.62 As of now, 213 coal blocks with geological reserves of about 49.07 billion tonnes have been allocated to public/private companies. However, the

**Table 10.12 : E-auction by CIL & SCCL during April-December 2009 (million tonnes)**

Company	Offered Quantity up to Dec.2009	Sold Quantity up to Dec.2009	Per cent Increase on notified price up to Dec. 2009
CIL	37.13	30.66	60.3
SCCL	1.29	1.07	45.0

Source: Ministry of Coal.

effective allocation is only of 208 coal blocks. Out of the 208 coal blocks allocated, 95 with geological reserves of about 27,388 million tonnes have been allocated to public-sector companies and the rest to private-sector companies. Out of the total allocated blocks, 25 have commenced production. The production from these coal blocks during April-November 2009 was 23.66 million tonnes (provisional).

10.63 The Government granted Miniratna Status (Category-II) to Central Mine Planning & Design Institute Limited (CMPDIL), Ranchi, in May 2008.

## RAILWAYS

10.64 Indian Railways is the third largest rail network in the world under a single management. Better 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. Out of freight and passenger traffic, the freight

segment accounts for about 70 per cent of revenue. Within the freight segment, bulk traffic accounts for nearly 84 per cent of revenue-earning freight traffic (in physical terms), of which about 44 per cent is coal (Table 10.13).

### Rationalization of freight rates and passenger fares

10.65 There has been no across-the-board increase in freight rates in recent years. Railways has taken a number of steps to attract additional traffic, one of which is the dynamic pricing policy through which differential tariff is charged to take care of skewed demand during different periods of the year and between different regions. Besides, a slew of freight incentives schemes have been launched, particularly in the traditional empty-flow direction and during lean season. The procedure for availing of the benefits has been simplified. The freight for export of iron ore has been reviewed and the rate brought down significantly.

**Table 10.13 : Performance of the Indian Railways**

Particulars	2007-08*	2008-09*	Change (per cent)		
			Apr.-Nov. 2009 (P)*	2008-09	Apr.-Nov. 2009
1. Revenue-earning Freight Traffic (million tonnes)	793.9	833.4	573.5	5.0	7.4
i) Coal	336.8	369.6	252.8	9.7	8.4
ii) Raw material for Steel Plants (excl. Iron Ore)	11.2	10.9	7.8	-3.0	5.6
iii) Pig Iron & Finished Steel	25.8	28.2	20.0	9.4	15.7
(a) from Steel Plants	20.8	22.0	15.6	6.0	16.8
(b) from Other Points	5.0	6.2	4.5	23.4	11.8
iv) Iron Ore for Export	136.7	130.6	88.6	-4.5	3.7
(a) for Export	53.7	45.8	30.1	-14.9	6.7
(b) for Steel Plants	43.6	42.9	29.7	-1.6	1.4
(c) for Other Domestic Users	39.3	41.9	28.7	6.6	3.2
v) Cement	79.0	86.3	59.6	9.2	9.1
vi) Foodgrains	38.2	35.6	22.7	-6.8	4.0
vii) Fertilizers	35.8	41.3	30.1	15.4	5.3
viii) Petroleum Oil Lubricants	35.9	38.1	26.2	6.1	2.2
ix) Container Service	21.1	27.8	22.6	31.7	16.9
(a) Domestic Container	3.7	6.5	5.5	74.6	49.5
(b) Export-Import Container	17.4	21.3	17.1	22.4	9.2
x) Balance (Other Goods)	73.3	65.0	43.2	-11.4	6.7
2. Net Tonne km (billion)	521.4	551.4	378.4	5.8	9.6
3. Net tonne km/wagon/day (BG)	3,539@	8,762\$	8,958#	—	3.7
4. Passenger Traffic Orig. (million) <sup>e</sup>	6,524.0	6,920.0	4,849.8	6.1	4.7
5. Passenger km(billion)	770.0	838.0	612.0	8.8	7.8

Source : Ministry of Railways.

Notes: P - Provisional ; e excluding Metro Kolkata; \* excluding Konkan Railway Loading; \$ calculated in terms of 8 wheelers; @ calculated in terms of 4 wheelers;

10.66 Similarly, passenger fares have also been rationalized. With effect from April 1, 2009, the existing basic fares up to Rs 50 per passenger for non-suburban mail/express including super-fast trains and non-suburban ordinary passenger trains were reduced by giving a discount of Re 1. Fares beyond Rs 50 per passenger were reduced by giving a discount of 2 per cent.

### Launch of new trains

10.67 Indian Railways has launched a new class of passenger-carrying Duroto trains in September 2009. Seven Duroto trains have already been introduced. Duroto is a non-stop super fast passenger-carrying train, ensuring better speed, comfort and security for passengers.

10.68 The first-ever Yuva trains which are targeted mainly at unemployed youth have been introduced between Howrah and Delhi and Hazrat Nizamuddin and Bandra. These Yuva trains are being introduced to ensure that youth of low-income groups can travel at low rates between major cities. The Yuva fares are applicable to unemployed persons between the age group 15 and 45 and 60 per cent of the seats are reserved for them. The total chargeable fare for Yuva passengers inclusive of all other charges like Reservation Fee, super fast train charge and development charge will not exceed Rs 299 up to a distance of 1,500 km and Rs 399 for distance more than 1,500 and up to 2500 km.

10.69 Indian Railways has introduced the Izzat scheme of uniformly priced monthly seasons tickets (MSTs) at Rs 25 inclusive of all surcharges which will be issued for a distance up to 100 km to persons working in the unorganized sector with monthly income not exceeding Rs 1,500. These MSTs are being issued for journeys with effect from August 1, 2009.

10.70 Indian Railways introduced only ladies Matrabhumi train services in Delhi, Chennai and Kolkata suburban on the pattern of Mumbai suburban as working women face considerable difficulties in travelling to work. These services will run during office hours.

10.71 To attract high-value and transit-sensitive non-bulk parcel traffic, Indian Railways introduced Delhi-Howrah-Delhi, Delhi-Ahmedabad/ Vapi-Howrah faster parcel services/premium parcel express trains named Tejshree Parcel Sewa as a pilot project. This is envisaged as a time-tabled service from dedicated terminals with guaranteed transit time.

## Upgradation of passenger amenities

### Adarsh Stations

10.72 Indian Railways has decided that 17 more railway stations would be added to the existing list of 358 Adarsh Stations. Railways will develop Adarsh Stations with basic facilities such as drinking water, adequate toilets, catering services, waiting rooms and dormitories especially for lady passengers and better signage. The work has started at various stations.

### Quality food in trains

10.73 Indian Railways Catering and Tourism Corporation Limited (IRCTC), a PSU of the Ministry of Railways, has started a centralized 24x7 toll-free telephone No. 1800-111-139 for railway users to make suggestions on catering services on Indian Railways. For meeting the catering requirements of common passengers, Janta meals priced at Rs 10 has been revamped. On an average 1.1 lakh Janta meals are sold every day on Indian Railways. Besides, Railways has plans to open Janahaar cafeterias exclusively to sell economy meals and Janta meals. Six Janahaar cafeterias have been commissioned at Howrah, Bangalore, Secunderabad, Chennai, Lucknow and Gorakhpur railway stations and five more will be set up shortly at Sealdah, Patna, Kharagpur, New Jalpaiguri and Mysore. Catering services similar to Rajdhani/Shatabdi express are provided in Duroto Trains. All sleeper-class passengers of Duroto trains are also provided meals onboard.

### Multifunctional complexes

10.74 Multifunctional complexes are being developed at 50 railway stations serving places of pilgrimage, industry and tourist interest in different parts of the country this year. Multifunctional complexes in station premises will provide rail users facilities like shopping, food stalls and restaurants, book stalls, PCO/STD/ISD/fax booths, medicine and variety stores, budget hotels and underground parking.

10.75 The authorized enquiry for Indian Railways, 139 – Rail Sampark, has recently introduced SMS facility, which is a premium service. The users can obtain information regarding PNR status, fare, seat availability and arrival/departure by sending SMSs in the specified syntax to 139.

### *Train information*

10.76 Real-time train running information to passengers is proposed to be provided through Online Coach Indication Display Boards and Train Arrival/Departure Display Boards. The trial of one of the pilot projects, Satellite Imaging for Rail Navigation (SIMRAN) using real-time train tracking through GPS and mobile (GSM) technologies has been successfully carried out by the Research Design and Standards Organisation (RDSO), Lucknow, in coordination with IIT/Kanpur.

### *Computerization of passenger and freight services*

#### *Passenger reservation system (PRS)*

10.77 The computerized PRS of Indian Railways is the largest passenger reservation network in the world, available at 1,910 locations with more than 7,245 terminals. On an average, 3.5 crore passengers per month are booked through the PRS with an average earning of Rs 1,410.8 crore per month. Further, Railways has tied up with India Post for operation of PRSs through post offices.

#### *Unreserved ticketing system (UTS)*

10.78 The computerized UTS, initiated to provide a fast, flexible, and secure method of issuing unreserved tickets, enables passengers to get unreserved tickets up to three days in advance from any counter and any station to any station in a defined cluster. Computerized UTS is available at 2,911 locations with approximately 6,239 counters provided till November 2009. Automatic ticket-vending machines have been installed at 375 locations.

#### *Freight operations information system (FOIS)*

10.79 The FOIS gives an account of all demands, number of loads/rakes/trains and their pipeline, freight locos, stock at aggregate level, etc. FOIS Phase I (Rake Management System – RMS) module, implemented at 243 locations, covers all major yards/lobbies and control offices at divisions and zones. FOIS Phase II (Terminal Management System – TMS) has been commissioned at 523 locations.

### *Rail Safety*

#### *Reduction in accidents*

10.80 As a result of continuing steps to prevent accidents, the number of consequential train accidents came down from 415 in 2001-02 to 177 in 2008-09. April to November 2009, the number of consequential train accidents decreased from 117

to 102, compared to the corresponding period of the previous year. Accidents per million train kilometers, an important index of rail safety, also came down from 0.55 in 2001-02 to 0.20 in 2008-09.

#### *Improving communication system on Railways*

10.81 RailTel was set up for creating optical fibre cable (OFC)-based communication infrastructure for modernizing the communication system for train control, operations and safety and to generate revenue through commercial exploitation of surplus capacity. RailTel has set up an OFC network of 37,000 route kilometres, of which 26,650 is of high bandwidth capacity. Till date, 231 important stations and about 3,276 other stations have been connected on the OFC network.

#### *Modernization of signalling system*

10.82 Improvements and modernization of the signalling system carried out to increase efficiency and safety include provision of an electrical/electronic interlocking system replacing the overaged mechanical/multi cabin signalling system at 198 stations during April-November 2009; replacement of outdated filament-type signals with long life, highly durable LED signals at 561 stations, improvement of the reliability and visibility of signals; introduction of a centralized online monitoring/diagnostic system with provision of Data Loggers at 337 stations; provision of automatic block signalling to increase line capacity on 52 route km; commissioning of the On-board Train Protection System at Chennai-Gummiddipundi suburban section (50 route km) as a pilot project to prevent “Signal Passing at Danger” cases and enforce speed restrictions (a second pilot project of the Train Protection Warning System on a main line—Delhi-Agra section of Northern/North Central Railways—is under way); provision of automatic clearance of block section at 276 sections through use of axle counters reducing dependence on the human element and enhancing safety; interlocking of 260 level-crossing gates; and provision of track circuiting for enhancing safety by reducing human dependence at 656 locations.

#### *Investment in capacity*

10.83 The Railways is setting up new production units—Rail Coach Factory at Rae Bareilly, Coach Factory at Kanchrapara, Diesel Locomotive Factory at Marhowra, Electric Locomotive Factory at Madhepura and Rail Wheel Factory at Chhapra. It is also setting up two ancillary units at Dankuni to manufacture components and sub-assemblies for electric and diesel locomotives.

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10.84 The Dedicated Freight Corridor (DFC) project envisaging a Western DFC (1,483 km) from Mumbai to Dadri/Tughlakabad catering largely to the container transport requirement and an Eastern DFC (1,806 km) from Ludhiana to Dankuni largely serving coal and steel traffic, is being implemented by the Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL). The project is funded through a debt to equity ratio of 2:1. Along the Western DFC alignment, the Delhi-Mumbai Industrial Corridor is also coming up. Considering the need for DFCs on other important routes, feasibility studies have been completed on North-South, East-West, East-South and Southern Corridors and traffic projections, cost and viability are under examination.

10.85 Railways have set up the Rail Land Development Authority for commercial development of vacant Railway land and air space which is not immediately required by the Railways. Railways also plans to utilize its vacant land, wherever feasible, for setting up infrastructural projects through innovative financing to earn revenue, create additional infrastructure and generate employment. Consultation with State Governments is undertaken wherever required.

10.86 During the Eleventh Five Year Plan period, electrification of 3,500 route km is planned with an outlay of Rs3,000 crore, taking the percentage of electrified network to 33.4 per cent. In the first two years of the Five Year Plan, 1,299 route km has been electrified.

10.87 Following the opening of railway lines from Anantnag to Mazhom (66 km) and Mazhom to Baramulla (35 km), the newly constructed 18 km-long rail line between Anantnag and Quazigund, the last stretch of railway line in the Kashmir Valley, was commissioned in October 2009, making the entire 119 km-long rail line from Baramulla to Quazigund operational.

### Use of bio-fuel in Railways

10.88 Indian Railways is the largest single consumer of high-speed diesel (HSD) oil in the country (Table 10.14). There is huge potential for using bio-diesel in lieu of HSD. Indian Railways has tested various bio-fuels up to B10 blend on diesel locomotives and found that B10 blend, that is 10 per cent bio-diesel in HSD oil, can be used in the existing diesel engines without any modification.

10.89 As part of the bio-diesel initiative of Indian Railways, plantation of *Jatropha curcas* on vacant

**Table 10.14 : Diesel (HSD) oil consumption**

(in million litres)

Year	Traction	Non-traction
2004-05	2,080.6	34.2
2005-06	2,111.2	39.1
2006-07	2,211.5	39.9
2007-08	2,284.1	43.7
2008-09	2,312.0	46.2

Source : Ministry of Railways

Railway land has been taken up in a significant way. Railways is going to set up four esterification plants for converting *Jatropha curcas* oil into bio-diesel. Railways also plans to introduce the use of compressed natural gas (CNG) in diesel multiple unit (DMU) commuter trains. One DMU power car has been converted to run on dual fuel mode using CNG and diesel. The operating cost of CNG-based DMUs is expected to be 25 per cent less than that of diesel-based DMUs with salutary effect on carbon dioxide emission as well.

## ROADS

10.90 Road transport accounted for around 87 per cent of passenger movement and 60 per cent of freight movement in 2005-06. The country's road network consists of national highways (NHs), state highways, major district roads, other district roads and village roads.

### National Highways Development Project (NHDP)

10.91 About 27 per cent of the total length of national highways is single-lane/intermediate lane, about 54 per cent is two-lane standard and the balance 19 per cent is four-lane standard or more. In 2009-10, as against the stipulated target of developing about 3,165 km length of NHs under various phases of the NHDP, the achievement up to November 2009 has been about 1,490 km. Against the target of awarding projects for a total length of about 9,800 km under various phases of the NHDP during 2009-10, projects have been awarded for a total length of about 1,285 km up to November 2009 (Table 10.15).

10.92 Steps taken to expedite the progress of the NHDP include regular monitoring of contracts and progress reviews, appointment of senior officials by State Governments as nodal officers for resolving problems associated with implementation of the NHDP, setting up of a Committee of Secretaries under

**Table 10.15 : National highways development projects (as in November 2009)**

NHDP Component	Total length	Completed 4 lane	(length in km)	
			Under implementation	Balance for award of civil works
GQ	5,846	5,743	103	—
NS-EW	7,142	4,439	2,066	637
Port Connectivity	380	244	130	6
Other NHs	965	868	77	20
NHDP Phase-III	12,109	1,089	2,714	8,306
NHDP Phase-V	6,500	148	886	5,466
NHDP Phase-VII	700	—	19	681
<b>Total</b>	<b>33,642</b>	<b>12,531</b>	<b>5,995</b>	<b>15,116</b>

Source: Ministry of Road Transport and Highways.

Notes: GQ= Golden Quadrilateral(connecting Delhi, Mumbai, Chennai and Kolkata); NS-EW=North-South & East-West corridor (Srinagar to Kanyakumari).

the Cabinet Secretary to address inter-ministerial and Centre-State issues such as land acquisition, utility shifting, environment approvals and clearance of ROBs, simplification of the procedure of issue of land acquisition (LA) notifications and posting of Railways officer to the National Highways Authority of India (NHAI) to coordinate with the Ministry of Railways in expediting the construction of ROBs. Decision to not allow non-performing contractors to bid for future projects unless they improve performance in existing contracts and steps to improve cash flow problems of contractors by granting interest-bearing discretionary advance, release of retention money against bank guarantee of equal amount, deferment of recovery of advances (on interest basis) and relaxation in minimum IPC amount were some of the other steps taken.

10.93 Reasons for delay in the award of projects under the NHDP included new procedure for approval of PPP projects, modifications in the model concession agreements (MCA), new request for qualification (RFQ) process and new MCA conditions, cap on maximum number of pre-qualified bidders, and time involved in evaluation of voluminous information. Besides shortage of financial consultants due to conflict of interest clause, need for evaluation of request for proposal (RFP) documents for individual packages and factors that affected the bankability of projects like lenders' perception of high risk due to provision relating to premature termination of concessions, lingering doubts of lenders on interpretation of many provisions of the new MCAs and inadequate availability of long-term debt funds were the other reasons.

10.94 Recent initiatives taken included restructuring of projects to reduce total project cost (TPC) to make them financially viable, increase of up to 20 per cent in TPC case-of-project costs based on old DPRs, release of entire viability gap funding (VGF) (maximum up to 40 per cent) during the construction period, removal of provision in RFQs limiting the maximum numbers of pre-qualified bidders, urging lenders to resolve issues inhibiting financial closure, expeditious land acquisitions and shifting of utilities. These are expected to increase the pace of award under the NHDP.

#### *Revised Strategy for Implementation of the NHDP*

10.95 With a view to expediting the progress of the NHDP, the Ministry of Road Transport & Highways has set a target of completion of 20 km of NHs per day, which translates to 35,000 km at the rate of 7,000 km per year during the next five years (2009-14). The NHAI formulated Work Plans (Work Plan I & II) for awarding 12,000 km each during the years 2009-10 and 2010-11. These Plans lay down a specific timeframe for various activities and are being monitored very closely at various levels. Work Plan I (2009-10) covers balance stretches of NHDP-Phases II, III & V. So far, 14 projects for a length of about 1,300 km have already been awarded, bids for 20 projects covering a length of about 2,000 km have been received and are under process and another 23 projects for a length of about 1,700 km are presently on offer. After the last review of the road sector by the Prime Minister, a Committee (under Shri B.K. Chaturvedi, Member, Planning Commission) was set up. Based on the

recommendations of the Committee, appropriate changes in RFQs, RFPs and MCAs are being considered by the NHAI.

10.96 The NHAI is setting up 192 Special Land Acquisition Units (SLAU) in various States for expediting the LA process, which is identified as major bottleneck in the implementation of the projects. Seventy-two such units have already been set up. The NHAI has also decided to set up six zonal offices headed by Executive Directors to coordinate with State Governments in regard to LA and other pre-construction activities. Further, the NHAI has set up 10 regional offices to be headed by Chief General Managers for improvement in liaison with State Governments and for expediting pre-construction activities. Besides, Chief Ministers have been requested to set up High Level Coordination Committees under Chief Secretaries to sort out issues involving coordination between departments. It has also been decided to take up some mega projects of about 400 km to 500 km each costing up to US \$ 1 billion to attract investment by international companies. Two mega projects would be put up for bidding in the current financial year.

#### Financing of the NHDP

10.97 A part of the fuel cess is allocated to the NHAI to fund the implementation of the NHDP (Table 10.16). The fund allocated from the cess is leveraged to borrow additional funds from the domestic market. The Government of India has also taken loans for financing various projects under the NHDP from the World Bank (US\$ 1,965 million), Asian Development Bank (ADB) (US\$ 1,605 million) and Japan Bank for International Cooperation (32,060 million yen), which are passed on to the NHAI partly in the form of grant and partly as loan. The NHAI has also negotiated a direct loan of US \$165 million from the ADB for one of its projects.

**Table 10.16 : Financial structure of NHAI**

(amount in Rs. crore)

Year	Cess Funds	External Assistance		Borrowings	Budgetary Support
		Grant	Loan		
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	305.2	265.0
2008-09	6,972.5	1,515.0	379.0	1,096.3	159.0
2009-10	8,578.5	272.0	68.0	492.4	200.0

Source : Department of Road Transport & Highways.

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

10.98 The SARDP-NE aims at improving road connectivity to State capitals, district headquarters and remote places of the north-east region. It envisages two- / four-laning of about 5,184 km of National Highways and two-laning / improvement of about 4,756 km of State roads. This will ensure connectivity of 85 district headquarters in the north-eastern States to 2 National Highways/ two-lane State roads. The programme has been divided into Phase 'A', Phase 'B' and the Arunachal Pradesh Package of Roads & Highways.

10.99 Phase A consists of improvement of 2,796 km of roads consisting of 2,039 km of NHs and 757 km of State roads at an estimated cost of Rs 17,749 crore. Out of the 2,796 km, the Border Roads Organization (BRO) and State Public Works Departments (PWDs) have been assigned the development of 1,580 km. (The remaining length of 1,216 km will be built by the NHAI, Ministry/Arunachal Pradesh PWD and BRO.) Out of the 1,580 km, projects covering a length of 1,158 km have been approved till November 2009 and work is in different stages of progress. Phase B, involving two-laning of 1,673 km of NHs and two-laning / improvements of 3,152 km of State roads, is approved only for preparation of DPRs. Till November 2009, a DPR was prepared for 900 km.

10.100 The Arunachal Package covering a 2,319 km stretch of road was approved by the Government as part of the SARDP-NE on January 9, 2009. Out of this, 776 km has been approved for execution on build-own-transfer (BOT) (annuity) basis and the remnant for tendering on Engineering Procurement and Construction (EPC) basis. An RFQ have been invited for the stretch to be taken up on BOT (Annuity) basis and an RFP in respect of 748 km has been issued. For the other stretches to be taken up on EPC basis, DPRs are under preparation.

#### Initiatives for development of the entire NH network to minimum acceptable standard of two lanes

10.101 Initiatives have been taken to develop NHs having less than two lanes to minimum acceptable 2-lane standards by December 2014 by proposing a World Bank Loan and also through budgetary allocations. Proposals have been invited from the consultants for preparation of a DPR for the about 3,800 km length proposed to be developed under

World Bank assistance. The Ministry of Road Transport and Highways has also initiated action for improvement of the remaining 2,500 km of single / intermediate lane NHs through budgetary resources. In order to make a visible impact, the corridor development approach is being adopted whereby apart from widening to two lanes, strengthening of the existing two lanes in these corridors as also removal of other deficiencies are being covered.

### Development of roads in Left Wing Extremism (LWE)-affected areas

10.102 The project covering 1,202 km of NHs and 4,362 km of State roads in LWE-affected areas is spread over 33 districts in eight States, that is Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Orissa and Uttar Pradesh. An allocation of Rs 500 crore has been made from the gross budgetary support (GBS) under Annual Plan 2009-10 for the programme. As against the target of approval of projects for a total length of about 1,600 km at an estimated cost of Rs 1,900 crore under the LWE scheme up to December 2009, projects have been sanctioned / processed for a total length of 1,584 km at an estimated cost of Rs 1,784 crore till end-November 2009.

### Other new initiatives

- A Joint Task Force of the Confederation of Indian Industry (CII) and Ministry of Road Transport and Highways has been constituted to serve as an institutionalized framework for constant industry – Government interaction on issues related to development of NHs.
- The Ministry had awarded a consultancy service in December 2008 with the objective of preparing a Master Plan for a National Expressway Network. The Final Report submitted by the consultants in November 2009, inter-alia, recommended a total Expressway Network of about 18,637 km for completion in a prioritized manner in three phases up to the years 2012, 2017 and 2022. The Report has been accepted by the Government.
- The current numbering of NHs is not being done on a scientific basis. The Committee set up in this regard finalized its report in August 2009, duly considering the best global practices. Initiatives have been taken for publishing notification in this regard.
- In order to further address the dispute redressal mechanism of the NHAI, restructuring and strengthening of the NHAI and other tax-related

issues, the Chaturvedi Committee has been further requested to suggest measures in its second report.

- The proposal for setting up an Expressway Authority of India (EAI) is under active consideration. An Expressways Division has already been set up in the NHAI. Further action has been initiated to prepare a legislative framework for the EAI.
- Keeping in view the developments in the road transport sector it has been decided to review the Motor Vehicles Act 1988 (MVA) comprehensively vis-à-vis similar laws applicable in leading Asian countries such as China and Japan so as to meet the modern-day requirement of regulation of vehicular traffic. A committee has been constituted to carry out this exercise.
- The Government proposes to provide financial assistance to States for implementation of IT such as GPS, electronic ticket-vending machines and a computerized reservation system, subject to certain reforms to be undertaken by the State Governments. A scheme in this regard has been approved by the Planning Commission and the Expenditure Finance Committee.
- About 84 per cent of the Regional Transport Offices across the country have so far been computerized.
- Keeping in view the lack of proper infrastructure for enforcement of a strict inspection and maintenance regime for motor vehicles to check their roadworthiness, the Central Government proposes to assist the States to set up model Inspection and Certification (I&C) Centres. A scheme in this regard has been approved by the Planning Commission and the Expenditure Finance Committee.

### Construction of rural roads under the Prime Minister's Grameen Sadak Yojana (PMGSY)

10.103 The Eleventh Five Year Plan has projected an investment requirement of Rs 41,347 crore (at 2006-07 prices) for rural roads. During the first three years of the Eleventh Five Year Plan, the flow of expenditure under the PMGSY seems to be on course for meeting the Plan target (Table 10.17). In addition to the PMGSY there are roads built by PWDs and Panchayati Raj institutions in rural areas, the data on which are available only with a lag.

10.104 It may be seen that among the States, 57.3 per cent of the expenditure incurred under the

**Table 10.17 : Progress under the PMGSY**

Year	Length of road works completed (km)	Expenditure (Rs. crore)
2005-06	22,891	4,100.4
2006-07	30,710	7,304.3
2007-08	41,231	10,618.7
2008-09	52,405	15,162.0
Apr.-Dec. 2009	36,273	12,993.1

Source : National Rural Roads Development Agency.

PMGSY and 62.5 per cent of the road works completed during 2005-06 to April-December 2009 were in six States, namely Rajasthan, Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Maharashtra and Orissa (Figure 10.4). Efforts are made to persuade the State Governments to increase their absorptive capacity through institutional and organizational development. Shortage of contractors to undertake rural works on a large scale is a critical constraint in certain States though need-based relaxation in the bidding capacity and packaging of works has helped marginally in overcoming the problem. The constraint of inadequate availability of trained human resources has been sought to be overcome through need-based training programmes and more than 19,600 engineering personnel have so far been trained.

## CIVIL AVIATION

10.105 The civil aviation sector had shown signs of slowdown in passenger traffic during 2008 due to

the steep rise in fuel cost coupled with the impact of global economic slowdown. Signs of recovery became visible in the second past of 2009. The scheduled domestic passenger traffic has increased from 40.8 million in 2008 to 43.3 million in 2009, while scheduled cargo traffic showed almost no growth.

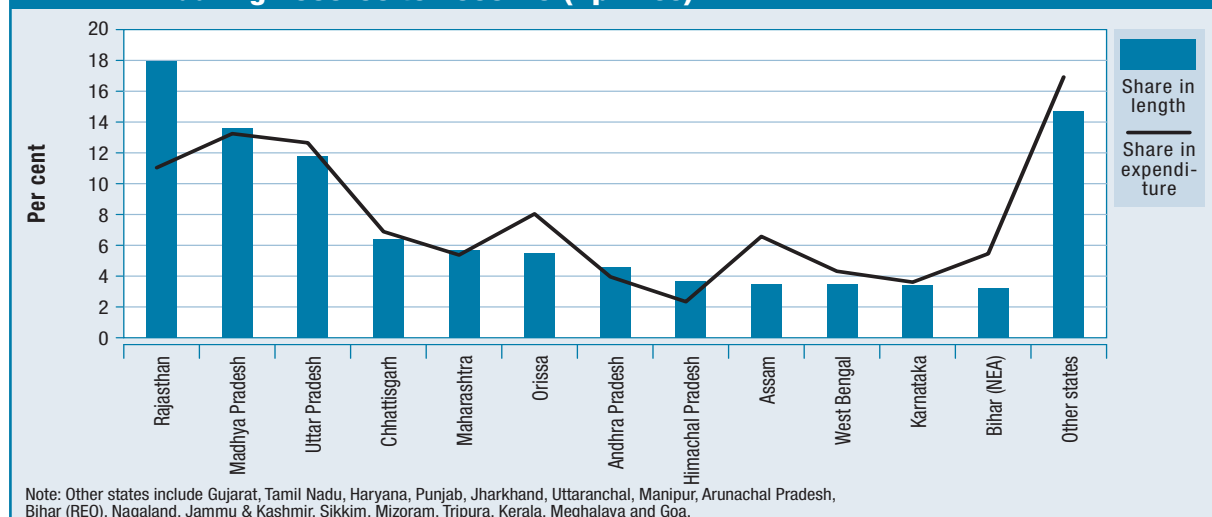
## Fleet Size

10.106 There are 15 scheduled operator's permit holders including two regional ones and two in the cargo category, with 419 aircraft endorsed on their permits. The number of non-scheduled operator's permit holders in different categories, namely passenger, cargo and charter, has gone up to 118, with 332 aircraft endorsed on their permit. The number of non-scheduled flight clearances granted to foreign non-scheduled operators in 2009 was 11,183. During 2009, a total of 1,18,064 tourists visited the country by 557 Inclusive Tourist Package (ITP) tourist charter flights.

## Airport Development

10.107 Development of airports at Delhi and Mumbai has been taken up under PPP mode. It is planned to fund the capital expenditure through private equity, borrowings and internal resources of joint venture companies. The development work is likely to be completed by 2010 at Delhi airport and 2012 in Mumbai at a total cost of Rs 20,000 crore. Development of Kolkata and Chennai international airports has been taken up by the Airports Authority of India (AAI) at the approved cost of Rs 1,942 crore and Rs 1,808 crore respectively. The work is in progress and is scheduled to be completed by May

**Figure 10.4 Share (in per cent) in length and expenditure under the PMGSY during 2005-06 to 2009-10 (Apr-Dec)**



2010 and January 2011 respectively. Bangalore and Hyderabad international airports have been developed on PPP mode as greenfield airports. These two airports have been put in operation.

### Greenfield Airports in the North-eastern region

10.108 The AAI plans to construct of greenfield airports in the north-eastern region with budgetary support. Construction work has already commenced at Peking Airport in Sikkim at a cost of Rs 309.46 crore and is likely to be completed by January 2012. Approval is being obtained for construction of greenfield airports at Cheitu (Nagaland) and Itanagar (Arunachal Pradesh).

### Development of 35 Non-metro Airports

10.109 The AAI has taken up the development of 35 non-metro airports at an estimated cost of Rs 4,662 crore. Of them, 9 have been completed and put in operation. The other projects are in progress and likely to be completed by 2010-11. The Committee of Infrastructure has identified 24 of the 35 non-metro airports for city-side development through PPP. It has been decided that in the first instance city-side development of 10 selected airports, namely Ahmedabad, Kolkata, Jaipur, Lucknow, Amritsar, Indore, Vishakapatnam, Hyderabad, Guwahati and Bhubaneswar, should be undertaken. It has been proposed to carve out the surplus land available with the AAI on the city side of the selected airports and lease out the same through open tenders.

### Creation of Heliport

10.110 Pawan Hans Helicopters Ltd. proposes to construct a heliport in New Delhi to provide connectivity to tourists and the business community, especially during the Commonwealth Games 2010, and for emergency/disaster management. Possession has been taken of the land allotted by the Delhi Development authority (DDA) at Rohini and M/s RITES Ltd has been engaged for preparation of a feasibility study.

### Progress made by the National Aviation Company of India Ltd (NACIL)

10.111 Post amalgamation of Air India (AI) with Indian Airlines (IA), the NACIL has made progress in some of the key areas identified as part of the merger plan.

- **Economies of scale:** These have been achieved in the procurement of goods and services by combining procurement and thereby availing of 'volume discount' in areas such as fuel in-flight service items, aviation and non aviation insurance.

- **Progressive integration of network/schedules:** The NACIL has been progressively reducing the overlaps between routes operated by the erstwhile companies. All overlaps between schedules of erstwhile AI and IA except Del/DXB (Delhi/Dubai) and BOM/DXB (Mumbai/Dubai) have been eliminated. The overlaps between routes of full service carriers (AI, IA code) and low cost carriers (Air India Express) are progressively being reduced.

- **Progressive cross-utilization of aircraft fleet:** Fleet planning is now done across the entire NACIL fleet leading to more optimal fleet deployment.

- **Opportunity to join Star Alliance:** The NACIL has the opportunity to become part of the 'Star Alliance' network and is investing in and upgrading its products and facilities to satisfy the minimum requirements of Star Alliance.

10.112 Out of the combined acquisition of 111 aircraft, most of the new aircraft have been inducted as scheduled, but the B787 deliveries have been delayed. Boeing has revised the delivery schedule with the first aircraft to be delivered in April 2011 and the induction of 27 units to be completed by the second quarter of 2014.

### Financial Surveillance of Air Operators

10.113 The Air Transport Directorate in the Office of the Director General of Civil Aviation (DGCA) has started an evaluation of the financial health of the scheduled airlines. A one-time comprehensive audit of NACIL (I), Kingfisher and Jet Airways has also been carried out.

### Transparency in Air Fare Advertising

10.114 In order to have transparency in airfare advertising, Rule 135 of Aircraft Rules 1937 has been amended wherein airlines shall display tariff in a conspicuous manner to show the total amount payable by a passenger and complete break-up of the total amount, indicating the fare, tax, fees or any other charge, if any, separately. Scheduled domestic airlines have complied with the provisions of Rule 135.

## Tariff Monitoring

10.115 The DGCA has started monitoring tariffs of scheduled domestic airlines. A group has been constituted comprising tariff analysis experts who carry out the analysis of fares on major routes on daily basis.

## India-EU Civil Aviation Cooperation Programme

10.116 Under the Joint Action Plan, a Civil Aviation Cooperation Project-II has been agreed upon. Its terms of reference (TOR) have been finalized. The project called "Institutional Capacity Building in the Civil Aviation Section in India" is likely to commence during 2010.

## India-USA Aviation Cooperation Programme (ACP)

10.117 The India-US ACP was signed in June 2007 with the objective of promoting safety, operational efficiency and system capacity and facilitating and coordinating aviation industry training and technical ties between the US and India. The first phase of the ACP was completed in 2008 and its second phase is under way.

## PORTS

10.118 India has 12 major ports and 200 non-major ones. Of the non-major ports, about 66 are handling traffic. The total traffic carried by both the major and non-major ports during 2007-08 was estimated at around 723 million tonnes. The 12 major ports carry about three-fourths of the total traffic, with Visakhapatnam as the top traffic handler in each of the last seven years.

## Traffic growth

10.119 In 2008-09, the cargo handled by major ports registered a growth of 2.1 per cent against 12.0 per cent in 2007-08. About 80 per cent of the total volume of traffic handled was in the form of dry and liquid bulk, with the residual consisting of general cargo, including containerized cargo (Table 10.18). There was an impressive growth of 11.05 per cent per annum in container traffic during the five years ending 2008-09. Half of the world's traded goods are containerized, and this proportion is expected to increase further.

## Capacity addition

10.120 The annual aggregate cargo-handling capacity of major ports increased from 532.07 million

**Table 10.18 : Traffic at major ports**

(million tonnes)				
Commodity	2006-07	2007-08	2008-09	Growth% over 2007-08
PoL	154.3	168.7	176.1	4.4
Iron Ore	80.6	91.8	94.0	2.4
Fert. & raw materials	14.1	16.6	18.2	9.6
Foodgrains	5.0	2.2	1.8	-18.2
Coal	60.0	64.9	70.4	8.5
Vegetable Oil	3.6	3.8	4.8	26.3
Other Liquids	10.9	12.8	11.9	-7.0
Containerized Cargo	73.4	92.3	93.1	0.9
Others	61.9	66.2	60.2	-9.1
<b>Total</b>	<b>463.8</b>	<b>519.3</b>	<b>530.5</b>	<b>2.1</b>

Source : Department of Shipping.

tonnes per annum in 2007-08 to 574.77 million tonnes per annum in 2008-09. The average turnaround time decreased from 3.93 days to 3.87 days.

10.121 The average output per ship berth-day improved from 10,071 tonnes in 2007-08 to 10,473 tonnes in 2008-09. The pre-berthing waiting time at major ports on port account decreased from 11.40 hours in 2007-08 to 9.55 hours in 2008-09. Significant inter-port variations in pre-berthing waiting time persisted (Table 10.19).

10.122 Despite adequate capacity and modern handling facilities, the average turnaround time of major Indian ports was 3.87 days in 2008-09, compared to 10 hours in Hong Kong. This 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 the NHAI, Railways and State Governments to prepare comprehensive plans aimed at improving road-rail connectivity of ports. The NHAI has taken up port connectivity as major component of the NHDP.

10.123 Traditionally, most ports in the world are owned by the public sector. But privatization of port facilities and services has now gathered momentum. An enabling policy framework has 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

**Table 10.19 : Inter-port variations at Indian ports**

Name of port	Average pre-berthing waiting time (hours) (on port A/c)			Average turnaround time (days)		
	2006-07	2007-08	2008-09	2006-07	2007-08	2008-09
	Kolkata	0.13	0.24	1.27	3.89	4.87
Haldia Dock	26.05	33.44	24.45	3.97	4.26	4.21
Mumbai	5.22	5.07	7.37	4.63	4.44	4.95
JNPT	5.45	10.20	9.50	1.67	1.85	1.97
Chennai	0.80	1.00	0.90	3.40	4.60	4.20
Cochin	0.29	1.21	1.31	2.19	1.99	2.08
Visakhapatnam	4.78	5.10	4.35	3.65	3.91	3.93
Kandla	35.28	32.64	28.08	5.46	5.13	5.20
Mormugao	19.34	18.35	11.48	4.46	4.03	3.61
Paradip	1.41	1.48	1.30	3.54	5.54	4.78
New Mangalore	1.87	1.92	0.90	3.14	3.21	3.00
Tuticorin	3.22	4.32	3.36	3.67	3.80	3.66
Ennore	0.31	0.75	0.74	1.89	2.08	2.35
<b>All Major Ports</b>	<b>10.05</b>	<b>11.40</b>	<b>9.55</b>	<b>3.62</b>	<b>3.93</b>	<b>3.87</b>

Source : Department of Shipping

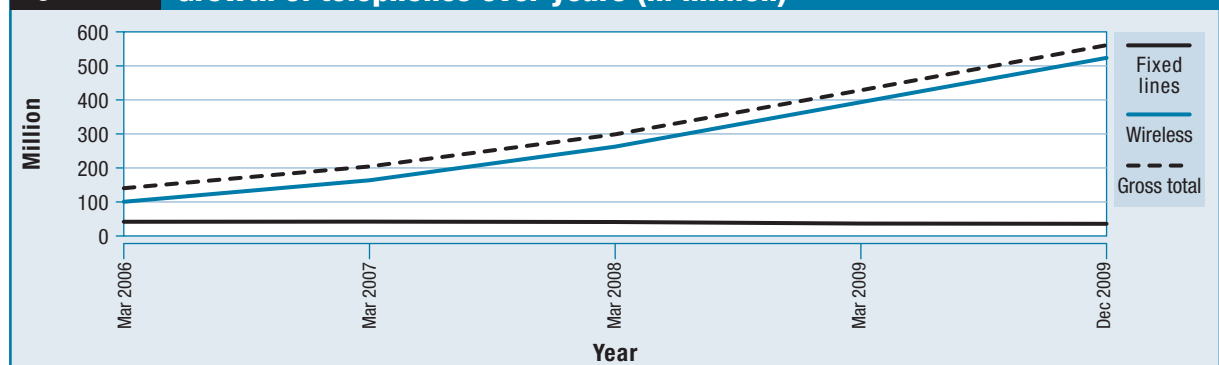
concession agreement or a divestiture to operate port services. Areas that have been opened up to the private sector on BOT basis include construction of cargo-handling berths and dry docks, container terminals and warehousing facilities and ship-repair facilities.

## TELECOMMUNICATIONS

### Growth

10.124 The opening of the telecom sector has not only led to rapid growth in subscriber base but also helped a great deal towards maximization of consumer benefits, particularly in terms of price discovery following the forbearance approach in

tariffs. From only 54.6 million telephone subscribers in 2003, the number increased to 429.7 million at the end of March 2009 and further to 562 million as on October 31, 2009 showing addition of 2.49 million during the period from March to December 2009. Figure 10.5 shows that this increase has been entirely due to the spectacular increase in wireless connections at a compound annual growth rate (CAGR) of 60 per cent per annum since 2004. With 525.1 million wireless connections, Indian telecom has become the second largest wireless network in the world. Approximately 85 per cent of the Eleventh Five Year Plan target of 600 million connections has already been achieved at the halfway point. Wire line connections, however, declined in recent years (Figure 10.5).

**Figure 10.5 Growth of telephones over years (in million)**

### Major trends

10.125 The share of the private sector in total telephone connections has increased to 82.3 per cent in December 2009 as against a meagre 5 per cent in 1999. Teledensity, an important indicator of telecom penetration, increased from 12.7 per cent in March 2006 to 37.0 per cent in March 2009 and 47.9 per cent in December 2009. Rural teledensity, which was above 1.2 per cent in March 2002, increased to 9.5 per cent in March 2008 and further to 15.1 per cent in March 2009 and 21.2 per cent at the end of December 2009. Urban teledensity increased from 66.4 per cent in March 2008 to 88.8 per cent in March 2009 and stands at 110.7 per cent in end- December 2009.

10.126 With the penetration of mobile services and flourishing of private service providers, rural telephone connections have gone up from 12.3 million in March 2004 to 123.5 million in March 2009 and further to 174.6 million in December 2009. Their share in total telephone connections has steadily increased from around 14 per cent in 2005 to 31 per cent as on December 31, 2009. During 2008-09, the growth rate of rural telephones was 61.5 per cent as against a 36.7 per cent growth of urban telephones. The private sector has contributed crucially to the growth of rural telephones by providing about 81.5 per cent of rural telephones as on December 31, 2009.

10.127 **Internet / Broadband** : With supportive policies, broadband subscribers grew from 0.2 million in 2005 to 6.2 million by end-April 2009 and about to 7.98 million by end-December 2009. India faces technological and commercial challenges in broadband penetration, the most important of which are low PC penetration and affordability issues due to high cost. The government has issued guidelines for Broadband Wireless Access (BWA) Services; the introduction of which will enhance broadband penetration. Wi-Max has been making headway in wireless broadband connectivity.

### New Horizons for Growth

10.128 **3G Telecom services** : The explosive growth of the telecom industry has kindled the urge to move towards better technology. One of the key frontiers is the launch of 3G technology. The government has recently announced guidelines for penetration of 3G telecom services. This will provide existing operators a good opportunity as also foreign players to make an entry into the Indian market and bring in new technology and innovations.

10.129 **Mobile Number Portability (MNP)** : MNP allows any subscriber to change his service provider without changing his mobile phone number. With the announcement of guidelines for MNP, telecom service provider will be forced to improve quality of service to avoid losing subscribers.

10.130 **Value added Services (VASs)**: Mobile VASs include, text or SMS, menu-based services, downloading of music or ring tones, mobile TV, videos, streaming, and sophisticated m-commerce applications. Prior to 2008, a majority of VAS revenues were attributable to SMS. With greater penetration of new services, availability of relatively inexpensive, feature-rich handsets and consumer education, VASs other than SMS are gaining importance. It is expected that over the next few years, non-SMS services would become a dominant contributor to VAS revenue.

10.131 **Manufacturing**: The Indian telecom industry manufactures a vast range of telecom equipment using state-of-the-art technology. The last five years saw many renowned telecom companies setting up manufacturing bases in India. The production of telecom equipment in value terms increased from Rs 41,270 crore (2007-08) to Rs 48,800 crore during 2008-09 and is further expected to increase to Rs 57,584 crore during 2009-10. Favourable factors such as facilitative policies, large talent pool in R&D and low labour cost can provide an impetus to the telecom manufacturing industry in the country. Exports increased from Rs 402 crore in 2002-03 to Rs 1,10,00 crore in 2008-09 accounting for 21 per cent of the equipment produced in the country.

## MAJOR POLICY INITIATIVES

10.132 No cap on the number of access providers in any service area. In 2008, 122 new Unified Access Service (UAS) licences were granted to 17 companies in 22 service areas of the country.

- Permission for use of dual technology spectrum under the same UAS/Cable Modern Termination System (CMTS) licence was granted to eight companies including Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL). BSNL and MTNL were exempted from the prescribed fee for such usages.
- On July 11, 2008, provision of mobile service within 500 meters of the international boarder within Indian territory has been permitted.

- With a view to regulating unsolicited calls from telemarketers, a regulation has been implemented whereby a National Do Not Call Registry (NDNC) has been put in place. With this, there has been substantial reduction in the number of unsolicited calls.
- It has been decided to introduce the National Integrated Directory Service (NIDQS). This facility would be useful to subscribers/users.
- Revised subscriberbased criteria for allocation of Global System for Mobile Communications (GSM) and Code Division Multiple Access (CDMA) spectra were issued in January 2008. Committees have been constituted for allocation of spectrum to access service providers and spectrum pricing.
- Foreign direct investment (FDI) ceilings have been raised from 49 per cent to 74 per cent. In the area of telecom equipment manufacturing and provision of IT-enabled services, 100 per cent FDI is permitted. This has made telecom one of major sectors attracting FDI inflows.
- Allocation of spectrum for 3G and BWA services to be through a controlled, simultaneous, ascending e-auction process. The Department of Telecom has taken the pioneering decision of launching of 3G services by BSNL and MTNL and initiation of process for auction of spectrum for 3G and BWA services to private operators.

### Activities under Universal Service Obligation (USO) Fund

10.133 The USO Fund (Table 10.20) continues to be used to subsidize telecom development in rural areas in the following ways;

- Operation and maintenance of village public telephones (VPT) in the revenue villages identified as per Census 1991 and installation of VPTs in every revenue village as per Census 2001. About 5.7 lakh VPTs are currently eligible for financial support for operation and maintenance. Agreements were signed with BSNL to provide subsidy support for provision of VPTs in 62,302 uncovered villages. As on December 31, 2009, 61,186 VPTs have been provided by BSNL.
- Provision of additional rural community phones (RCPs) is another important activity under the USOF. Out of the target of 40,705 RCPs, 40,694 have been provided till December.

- Another important activity under the USOF relates to replacement of Multi Access Radio Relay (MARR) technology VPTs installed before April 2002. Out of a total of 1,85,121 MARR based VPTs, 1,84,521 have been replaced till December 31, 2009.
- Support from the USOF is being given for provision of rural direct exchange lines (RDELs) in all the 1,685 net cost positive short distance charging areas. As on December 31, 2009, about 70.5 lakh RDELs have been provided.
- To provide infrastructure support for mobile services, a scheme has been launched to provide support for setting up and managing 7,436 infrastructure sites spread over 500 districts in 27 states. As on December 31, 2009, about 6,956 towers have been set up under this scheme. Utilizing the infrastructure so created, BTSs are being commissioned and mobile services started by universal service providers in a phased manner.
- In order to provide broadband connectivity to rural areas under the purview of the USOF, 95,011 broadband connections out of the proposed 8,88,832 wire-line broadband connections and four kiosks have been provided till December 2009.

10.134 It is proposed to achieve rural tele-density of 25 per cent by means of 200 million rural connections by the end of the Eleventh Five Year Plan. Recognizing the potential importance of broadband services, the Eleventh Five Year Plan targets providing broadband to all secondary and higher secondary schools, Public Health Care Centers and Gram Panchayats. It is also envisaged that internet and broadband subscribers will increase to 40 million and 20 million respectively by 2010.

**Table 10.20 : USO Fund: Collections and disbursements (Rs crore)**

Year	Allocation	Disbursements
2005-06	1,766.9	1,766.9
2006-07	1,500.0	1,500.0
2007-08	1,290.0	1,290.0
2008-09	1,600.0	1,600.0
2009-10*	2,400.0	1,846.9

Source : Department of Telecommunications.  
Note : \* As on December 31, 2009.

## POST

10.135 New mail paradigm: The mail profile in India Post has changed substantially with increase in volume of mail in Business-to-Customer and Business-to-Business segments. In line with this, India Post has leased three dedicated freighter aircraft for carriage of mail, parcel and logistics to and from the North-Eastern region operating six days a week on the Kolkata-Guwahati-Imphal-Agartala-Kolkata route and the metro cities such as Delhi, Mumbai, Chennai, Kolkata and Bangalore with Nagpur serving as the mail exchange hub. India Post has also set up 162 Mail Business Centres and plans to set up Automatic Mail Processing System at Delhi, Kolkata, Hyderabad and Bengaluru and upgrade the existing ones at Mumbai and Chennai.

10.136 IT induction: Out of a total of 25,531 departmental post offices, 12,604 have been computerized. So far 1,304 post offices have been networked through leased lines with the National Data Centre. Further, 5,170 post offices have been networked through broadband. The strong IT base has enabled Indian Post to offer a range of e-enabled services such as electronic Money Order (eMO), e-payment and instant Money Order (iMO) to customers. India Post is planning to computerize and network all its post offices in the next two years.

10.137 Banking and insurance services: India Post is pursuing the objective of financial inclusion through its 39,173 post offices in rural areas and 15,862 post offices in urban areas. The total number of accounts with post offices has increased from 14.23 crore in 2003-04 to 20.50 crore in 2008-09. The outstanding balance in Post Office Savings Bank accounts in 2008-09 was Rs 5,47,904 crore. India Post has already computerized its savings bank operations in 8,000 post offices. The post offices also provide insurance services to Government and semi-government employees and to the rural populace under the banners of postal life insurance (PLI) and rural Postal Life Insurance (RPLI). The number of Rural Postal Life Insurance policies has increased from 26.66 lakh in 2003-04 to more than 70 lakh in 2008-09.

10.138 Premium services: The revenue from premium products such as Speed Post, Bill Mail Service and Business Post has consistently been growing. From Rs 425.74 crore revenue booked in 2003-04, these services achieved Rs 1,435 crore in 2008-09. One of the premium products, Speed Post, which covers more than 1,200 towns has a market share of 27 per cent in the courier segment.

## Leveraging of the postal network

10.139 National Rural Employment Guarantee Scheme (NREGS): The Department of Posts has been given the responsibility of disbursing wages to NREGS beneficiaries through Post Office Savings Bank accounts. Starting with Andhra Pradesh Postal Circle in 2006, the payment of wages under the NREGS is currently operational in 19 Postal Circles comprising 21 States. The scheme is operational through 90,000 post offices. Nearly 4 crore NREGS accounts have been opened up to November 2009, and the amount disbursed in this financial year (April-Nov 2009) amounts to more than Rs 5,600 crore.

10.140 Tie-up with the State Bank of India (SBI): India Post has tied up with the SBI to sell its assets and liability products through identified post offices. Initially started in five States, the scheme was later extended to 23 States and Union Territories. The total liability products and total asset products sold so far amount to Rs 37 crore and Rs 12.98 crore respectively.

10.141 Tie-up with NABARD: The Department of Posts in collaboration with NABARD is providing micro-credit facility to Self-Help Groups (SHGs) through identified post offices on agency basis. The corpus fund for implementing this project is given by NABARD. The pilot is in operation in five districts involving seven divisions of Tamil Nadu Circle. So far, 800 SHGs have been provided with a loan of more than Rs 1.9 crore.

10.142 Sale of Gold Coins: In a tie-up with Reliance Money Limited, sale of gold coins was launched in October 2008 in selected post offices. The scheme is available in 468 post offices in 16 circles.

10.143 Old age pension: Old age pension is being paid through 20 lakh Post Office Savings accounts in Bihar, Delhi, Jharkhand and the north-east, and through money order in Jammu & Kashmir, Karnataka, Himachal Pradesh, Gujarat, Rajasthan and Tamil Nadu.

10.144 Online Acceptance of Right to Information (RTI) Applications: The Department of Posts has been assisting other public authorities under the Central Government in implementing the RTI Act by providing the services of its designated Central Assistant Public Information Officers (CAPIOs). Sub Post Masters at Tehsil level act as CAPIOs for accepting RTI requests and appeals. The Department has designated 4,000 post offices as points for receiving RTI applications and forwarding to public authorities. An RTI software has been developed to deal with such applications.

10.145 **Railway Ticket Reservation:** The scheme for sale of railway tickets through post offices is presently operative at 78 locations and will be extended to rural areas also.

10.146 **Collection of Rural Price Index Data:** The Ministry of Statistics and Programme Implementation (MoSPI) has entrusted the collection of statistics for ascertaining the Rural Price Index to 1,183 post offices across the country with effect from October 2009. The data so collected would be electronically transmitted to MoSPI.

### International relations

10.147 To improve quality of international mail processing, all Foreign Post Offices and Sub Foreign Post Offices have been computerized. International Parcel Post Hubs have also been established at Delhi, Mumbai and Kochi for specialized handling of parcels.

10.148 **International Electronic Money Order Service:** Indian Post is in the process of replacing its paper-based international money order service with the Electronic International Money Order Service through Universal Postal Union software. As per the agreement signed between India and the UAE for exchange of Electronic International Money Orders, the service was launched in April 2008. Initially, the service is being offered from the UAE to India through all head post offices in Delhi, Mumbai, Chennai, Kolkata, and the State of Kerala covering 97 head post offices.

10.149 **Launch of World Net Express:** A bilateral agreement has been signed between Indian Post and Deutsche Post AG on November 27, 2008 for providing new services to domestic and international customers. Under this, articles will be booked by selected post offices for delivery in about 200 countries around the world using the DHL network.

10.150 **Launch eMO Videsh:** With the launch of the new international remittance service eMO Videsh in October 2009, Indian Post now offers its customers an opportunity to send money in cash to a recipient abroad payable in cash or in his account. This service is in tie-up with the EURO GIRO for both outward and inward international remittance.

10.151 **Global Business Division:** A Global Business Division has been set up in the Department of Posts to provide focus to its international operations.

10.152 Indian Post has implemented certain recommendations of the R.S. Nataraja Murthy

Committee on the service conditions of Gramin Dak Sewaks (GDS), which include enhancement of emoluments of all categories of GDS and enhancement of certain allowances.

### Urban Infrastructure

10.153 As per the 2001 Census, about 27.8 per cent of the population lives in urban areas. Further, the Registrar General of India estimated in 2006 that 67 per cent of the population growth in the next 25 years is expected to take place in urban areas alone. Hence improving urban infrastructure including basic civic services assumes critical importance. Municipal institutions responsible for providing these civic services are facing acute shortage of capacity and resources.

### Jawaharlal Nehru Urban Renewal Mission (JNNURM)

10.154 The JNNURM was launched in December 2005. In order to provide reforms-linked Central assistance to State Governments for the development of urban infrastructure, a Mission Mode approach was adopted in 63 selected cities, which include cities with 4 million plus population (7), cities with 1 million plus but less than 4 million population (28 cities) and other selected cities like State capitals and cities of religious/historic and tourist importance (28). During 2009, two more cities, that is Tirupati and Porbandar were included as Mission Cities, taking the total number to 65. The Mission has two components, Urban Infrastructure and Governance (UIG) and Basic Services for the Urban Poor (BSUP). UIG Sub-component addresses the needs of Urban Infrastructure.

10.155 During 2008-09, the seven-year allocation for additional Central assistance (ACA) for the UIG component was increased from Rs 25,500 crore to Rs 31,500 crore. Since inception and till December 2009, as many as 515 projects across 31 States at a cost of Rs 58,038 crore were sanctioned under the UIG, comprising interalia 147 water supply projects, 108 sewerage projects, 70 drainage/ storm water drainage projects, 41 solid waste management projects, 85 roads /flyovers projects and 34 urban transport projects. So far, the committed ACA under the UIG for approved projects is Rs 27,040.3 crore, against which Rs 10,261.7 has been released till December 2009.

10.156 The Mission has achieved significant progress in triggering reforms in the urban sector. So far, 38 per cent of State-level reforms, 55 per

cent of urban local bodies (ULB)-level reforms and 54 per cent of optional level reforms—all three committed up to the fourth year—have been achieved. Maharashtra, Gujarat, Tamil Nadu and Andhra Pradesh have shown good progress. Some of the achievements are that 29 cities have migrated to a double-entry accrual-based accounting system, 15 cities have achieved 85 per cent coverage in property tax collection, 45 cities have internal earmarking of funds for services to urban poor and 20 States have taken steps to establish District Planning Committees. Five cities have achieved 100 per cent cost recovery in water supply. Stamp duty has been reduced to 5 per cent in 8 States including Union Territories and enhanced community participation in development programmes has been realized by enacting the Community Participation Law in 5 States and Public Disclosure Law in 11 States.

10.157 The Mission cities have agreed to include promotion of PPP through appropriate policies and projects. States such as Andhra Pradesh, Assam, Bihar, Gujarat, Jharkhand, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, West Bengal, has adopted a PPP policy. PPP initiatives have been taken by Indore, Vadodara, Pune and Ahmedabad for establishing city bus services.

10.158 The Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) is a sub-component of the JNNURM for development of infrastructural facilities in all towns and cities (other than the Mission cities). The UIDSSMT subsumed the erstwhile Integrated Development of Small and Medium Towns (IDMT) and Accelerated Urban Water Supply Programme (AUWSP) schemes. For obtaining assistance under the UIDSSMT, States and urban local bodies (ULBs) need to sign a memorandum, committing to reforms. During 2008-09, the seven-year allocation for the UIDSSMT was raised from Rs 6,400 crore to Rs 11,400 crore to enable the Centre to consider the "backlog" of projects which State Governments had recommended to the Central Government. From its inception till December 2009, as many as 753 projects across 636 towns and cities at a cost of Rs 12,824.6 crore were sanctioned under the UIDSSMT, comprising inter alia 416 water supply projects, 97 sewerage projects, 65 storm water drainage projects, 51 solid waste management projects, and 103 road projects. So far, the committed ACA under the UIDSSMT for approved projects is Rs 10,340.5 crore, against which Rs 5,862.1 crore had been released till December 2009.

### *Initiatives under the JNNURM*

10.159 A National Mission Mode Project under the National e-Governance Plan is being implemented in 35 JNNURM mission cities with more than one million population across 15 States on a pilot basis. The services covered for e-Governance reforms at State/ULB level under the scheme include registration and issue of building plan approvals, e-procurements and monitoring of projects, health, licences, solid waste management, accounting systems and personal information systems.

10.160 The Peer Experience and Reflective Learning (PEARL) programme was launched to foster knowledge sharing through networking among the Mission cities. The Mission supported formation of groups/networks amongst Mission cities having similar socio-economic profile and urban issues, along with natural affinity to peer pair. The National Institute of Urban Affairs (NIUA) has been appointed as National Coordinator for the PEARL programme. Under the programme, the network of heritage cities has organized knowledge-sharing workshops. A website has been made operational providing tools to support networking and knowledge sharing and the NIUA has brought out a newsletter called PEARL Update.

10.161 Other innovations for better implementation and monitoring of projects under the JNNURM inter alia include supporting a professionally manned programme management unit at State level and programme implementation unit at ULB level; third party monitoring through appointment of independent review and monitoring agencies; capacity building and communication activities for slow performing cities through rapid training programmes and the Community Participation Fund (CPF) for enhancing engagement of citizens in urban management.

### *Other Urban Infrastructure Schemes and initiatives in Urban Governance*

10.162 A new pilot scheme for infrastructure development (water supply, solid waste management and sewerage) in "satellite towns" around seven megacities (which exclude those towns and cities that have taken up projects under the UIDSSMT) has been launched. The selection of the cities/towns has been done in consultation with State Governments, subject to their commitment to implement reforms. These are Vikarabad (Andhra Pradesh), Vasai Virar (Maharashtra), Sri Perumbudur (Tamil Nadu), New Town (West Bengal), Hoskote

(Karnataka), Sanand(Gujarat) Sonapat (Haryana) and Pilkhua (Uttar Pradesh).

10.163 To assist the north-eastern States in meeting their development challenges in the urban sector, the ADB-assisted North Eastern Region Urban Development Programme (NERUDP) has been launched. Phase I of the project covers five capital cities, Agartala, Aizawl, Gangtok, Kohima and Shillong. Arunachal Pradesh, Assam and Manipur will be covered in Phase II. While 30 per cent of the cost will be borne by the Central Government and the balance given by the ADB as loan, 90 per cent of the project cost in the hands of the States will be a grant, and only 10 per cent will be a loan.

10.164 The Ministry of Urban Development prescribed service-level benchmarks for water supply and sewerage services in 2008. A pilot project on implementation of municipal service-level benchmarks in the urban water and sanitation sector has been initiated in 28 cities and the first stage, that is establishment of baseline levels of performance has been completed. During 2009, service-level benchmarks have been laid down also for e-governance of key municipal services. Under the Capacity Building in Urban Local Bodies (C-BULB) project, nine Centres of Excellence with focus on identified aspects of urban development have been set up across reputed institutions. Under the National Urban Sanitation Policy 2008, three important initiatives have recently been launched, namely rating of cities on sanitation, communication campaign and formulation of state sanitation strategies and city sanitation plans.

10.165 Under the Pooled Finance Development Fund (PFDF) Scheme, which provides credit enhancement to ULBs to access market borrowings through a state-level pooled finance mechanism, eight states have set up their "State Pooled Finance Entity". The first proposal for issue of a tax-free Pooled Finance Development Bond worth Rs 45.0 crore by the Water and Sanitation Pooled Fund of Tamil Nadu was notified and appropriate releases towards the Fund and project development cost were made in February 2008. However, only Rs 6.7 crore was subscribed. In the present economic scenario, the progress of the scheme has generally been slow.

10.166 The Constitution (112th Amendment) Bill 2009 to provide for 50 per cent reservation of women in ULBs was introduced in the Lok Sabha on November 24, 2009. The Bill seeks to increase the representation of women from the present level of

one-third to 50 per cent which would also include enhancement of reservation for women up to 50 per cent in seats reserved for Scheduled Castes, Scheduled Tribes, and 50 per cent reservations for women in the posts of Chairperson.

## Urban Transport

10.167 With the objective of guiding and facilitating implementation of the National Urban Transport Policy 2006 right from the planning stage, Central financial assistance to the extent of 80 per cent of the cost of studies in the area of urban transport is being provided under a revamped scheme, with 50 per cent of such assistance being admissible for preparation of detailed project reports.

10.168 Four Centres of Excellence have been set up for urban transport, one each at IIT Delhi and Chennai, the National Institute of Technology Warangal and CEPT University, Ahmedabad. Urban Bus Specifications were circulated to all States and Union Territories, JNNURM Mission cities and State Road Transport Corporations. Service-level benchmarks for urban transport have recently been laid down.

10.169 To provide better public transport and ease congestion, proposals for Bus Rapid Transit Systems (BRTS) have been approved for Ahmedabad, Bhopal, Indore, Jaipur, Pune, Rajkot, Surat, Vijaywada and Vishakhapatnam under the JNNURM covering a length of more than 422 km with total estimated cost of approximately Rs 4,770 crore, out of which Central assistance is around Rs 2,195 crore. A number of other cities are also coming up with BRTS proposals to be funded under the JNNURM.

10.170 As part of the stimulus package, purchase of buses for public transport in a time-bound manner was permitted under the JNNURM for the Mission cities. So far, a total of 15,260 buses have been approved for 61 Mission cities at a cost of about Rs 5,000 crore, out of which total admissible Central assistance would be Rs 2,100 crore. The financing is meant exclusively for city bus services and BRTS. Till January 2010, delivery of 4,883 modern ITS-enabled buses has taken place. This has transformed the bus transport scenario in those cities. As a result of the scheme, 34 cities in India would be getting organized city bus services for the first time.

## Metro Rail Projects

10.171 Delhi and Kolkata have introduced Metro Rail systems in their cities. Delhi Metro is a joint venture company of the Government of India and

**Table 10.21 : Metro rail projects approved by the Government of India**

Project	Length (km)	Commissioning schedule range	Cost (Rs crore)
<b>National Capital Region</b>			
Delhi MRTS Phase I	65.1	3/2004 to 11/2006	10,571
Delhi MRTS Phase II	54.7	6/2008 to 6/2010	11,691
Extension of Delhi Metro to Gurgaon	14.5	3/2010	15,89
Extension of Delhi Metro to NOIDA	7.0	11/2009	827
Central Secretariat to Badarpur	20.2	9/2010	4,012
Metro Link (Dwarka Sector-9 to Sector-21)	2.8	9/2010	356
Airport Metro Express Link	22.7	9/2010	3,869
<b>Total for Delhi &amp; NCR</b>	<b>186.8</b>		<b>32,916</b>
<b>Metro rail projects other than National Capital Region</b>			
Bangalore Metro	42.3	9/2012	8,158
Kolkata East-West Metro Corridor	14.7	1/2015	4,875
Chennai Metro	45.0	2014-15	14,600
Mumbai Metro Line-1	11.1	10/2010	2,356
Mumbai Metro Line-2	31.9		7,660
Total outside NCT	145.0		37,649
<b>Grand total (NCT+ outside NCT)</b>	<b>331.8</b>		<b>70,564</b>

Source: Ministry of Urban Development.

Government of the National Capital Territory of Delhi. While the existing Kolkata Metro is presently under the direct control of the Ministry of Railways, the East-West Metro Corridor Project for Kolkata is on the Delhi model and is being implemented through a joint venture company of the Government of India and Government of West Bengal. The Delhi Metro Railways (Amendment) Act 2009 came into effect in September 2009, providing an umbrella "statutory" safety cover for metro work in all the metro cities of India. The Act was extended to the National Capital Region, Bangalore, Mumbai and Chennai metropolitan areas with effect from October 16, 2009. The details of metro rail projects approved by the Government of India are presented in Table 10.21.

## FINANCING OF INFRASTRUCTURE

### Debt financing

10.172 Net bank credit to infrastructure in 2008-09, defined as the difference between outstanding gross deployment of bank credit to infrastructure in March 2008 and March 2009, increased substantially in the current fiscal (Table 10.22). Considering that there has been a steep decline in total industrial credit during the current year, this is particularly important.

**Table 10.22 : Increment Flow of Bank Credit to Infrastructure**

Net bank	(Rs. crore)				
	Infra-structure (Total)	Power	Tele-com	Roads & Ports	Other Infra-structure
2006-07	30,122	12,659	991	5,246	11,226
2007-08	61,745	21,909	18,597	9,546	11,692
2008-09	64,852	29,380	12,283	12,530	10,680
2008 (April-Nov)	21,918	13,107	-3,823	4,593	8,042
2009 (April-Nov)	64,321	37,806	761	18,408	7,326

Source : Reserve Bank of India (RBI).

Note : Data relate to select banks.

10.173 In the stock of infrastructure investment made by insurance companies in end-2007-08 (Rs 93,924.2 crore), public-sector companies had a share of 94.3 per cent. Private-sector investment share increased from 2.5 per cent 2004-05 to 5.7 per cent in 2007-08. In 2006-07, public-sector companies significantly stepped up in their infrastructure investment, but could not sustain the momentum in

**Table 10.23 : Investment by insurance companies in infrastructure**

(Rs. crore)*				
	2005-06	2006-07	2007-08	2008-09
Public-sector Companies	3,933.7	27,656.7	8,309.0	11,353.5
Private-sector Companies	775.3	1,249.3	2,090.8	1,735.1
<b>Total</b>	<b>4,709.0</b>	<b>28,906.0</b>	<b>10,399.8</b>	<b>13,088.6</b>

Source : Insurance Regulatory Authority of India.

2007-08 (Table 10.23). With public-sector companies achieving a 36.6 per cent growth in infrastructure investment, the year 2008-09 witnessed a modest recovery, but private-sector insurance companies are yet to make large-scale investments in the infrastructure sector.

10.174 Flow of resources to the infrastructure sectors through external commercial borrowings (ECBs) had quadrupled from 2005-06 to 2007-08 but went down drastically during 2008-09 (Table 10.24). The picture that emerged during the first half of the current fiscal does not lend support to any recovery in ECB flows to the infrastructure sectors on the whole, from the decline seen in the previous year.

10.175 Infrastructure industries have started deriving significant amounts of resources through private placement of debt. (While private placement has equity and debt components, the sector-specific

**Table 10.25 : Funds through private placement (only debt) in infrastructure**

(Rs. crore)			
Sector	2007-08	2008-09	Apr.-Dec. 2009*
Power generation & supply	3,468.0	12,670.7	7,674.6
Roads & Highways	388.1	1,551.9	1,185.0
Shipping	Nil	436.0	2,250.0
Telecommunications	Nil	4,350.0	1,092.0
<b>Total</b>	<b>3,856.1</b>	<b>19,008.6</b>	<b>12,201.6</b>

Source: PRIME Database. Note: \*provisional.

information on equity components is not available.) It may be seen that all infrastructure sectors raised substantially higher resources during 2008-09 through private placement of their debt, compared to earlier years (Table 10.25). The flow of debt private placement to infrastructure sectors has so far remained stable during the current year.

### Equity financing of infrastructure

10.176 Corresponding to the steep decline in the total capital raised through public and rights issues observed in 2008-09, there was a considerable downtrend in the capital raised through public and rights issues in infrastructure also. However, as the primary markets revived in the current year, equity financing of the infrastructure sector also seems to have gathered momentum (Table 10.26).

**Table 10.24 : Flow of external commercial borrowings to infrastructure (US\$ million)**

Sector	2007-08	2008-09	H1 2008-09	H2 2008-09	H12009-10
Air Transport	4,739.9	1,650.2	650.7	999.6	1,003.8
Telecommunications	3,022.2	1,678.2	587.1	1,091.1	558.5
Power	863.5	719.2	241.0	478.2	521.1
Shipping	664.7	791.5	310.7	480.7	125.9
Railways	1.4	100.0	0.0	100.0	450.1
Other Infrastructure Sectors	864.6	285.4	220.1	65.4	77.2

Source: RBI.

Notes: Figures are revised figures; Other infrastructure sectors included maritime transport, energy, port development, roads & bridges and other infrastructure projects.

**Table 10.26 : Capital raised through public and rights issues (Rs crore)**

Sector	2006-07	2007-08	2008-09	(April-Nov.)	
				2008	2009
Power	30	13,709	958	959	10,584
Telecommunication	2,994	1,000	100	100	Nil

Source: Securities and Exchange Board of India (SEBI).

Table 10.27 : FDI flows to infrastructure (US\$ million)

Sector	2006-07	2007-08	2008-09	(April-Nov.)	
				2008	2009
Power	157.5	968	984.8	594.2	1237.8
Non-conventional energy	2.1	43.2	85.3	31.8	67.0
Petroleum & natural gas	89.4	1,426.8	412.3	211.9	218.7
Telecommunications	477.7	1,261.5	2,558.4	2,052.1	2,223.3
Information & broadcasting *	43.6	321.5	762.3	400.3	420.1
Air transport **	92.1	99.1	35.2	35.1	14.1
Sea transport	72.5	128.4	50.2	29.5	274.2
Ports	0	918.2	493.2	484.7	65.4
Railway related components	25.8	12.4	18.0	15.0	25.1
<b>Total (of above)</b>	<b>960.7</b>	<b>5178.8</b>	<b>5,399.6</b>	<b>3,854.6</b>	<b>4,545.8</b>

Source: Department of Industrial Policy & Promotion.

Notes: \* Information & broadcasting including print media; \*\* Air transport including air freight

10.177 The total FDI flows during the first eight months of the previous and current fiscal years remained at comparable levels, but the FDI flows to the infrastructure sectors during April-November 2009 were distinctly higher than those during the corresponding period of the previous year. In recent years, a large chunk of these flows has been appropriated by the power and telecommunication sectors (Table 10.27).

## INFRASTRUCTURE DEVELOPMENT AND PUBLIC PRIVATE PARTERSHIPS (PPPs)

10.178 The recent economic downturn reinforced the need for enhancing infrastructure investment for greater productivity and growth. This in turn underscored the importance of PPPs in effectively harnessing the required resources. PPPs offer a number of advantages in terms of leveraging public capital to attract private capital and undertake a larger number of infrastructure projects, introducing private-sector expertise and cost-reducing technologies as well as bringing in efficiencies in operation and maintenance. Hence, more than their fiscal implications, PPPs are tools to fulfill the basic obligations of Governments to provide better infrastructure services (with large externalities), by increasing the accountability of the private sector as a service provider.

10.179 Yet, attracting private capital through PPP is neither easy nor automatic. A key pre-requisite is to lay down a policy, legal and regulatory framework that assures a fair return for investors, protects the

interests of users, especially the poor, and assures quality supply at reasonable cost. For this purpose, it is important that issues relating to the overarching PPP policy, incorporating inter alia the models to be used, contract documents to be adopted, procurement strategies and templates to be employed and mechanisms for financial structuring to be considered, are clearly outlined ab initio at the level of the sponsoring agencies, including State Governments.

10.180 The Government of India has identified a set of constraints in promoting PPPs, namely policy and regulatory gaps, inadequate long-term finance (debt and equity), inadequate shelf of bankable projects, inadequate capacity in the public and private sectors to manage PPP processes and projects and inadequate advocacy to create greater acceptance of PPPs by the stakeholders. To address these constraints, several initiatives have been taken by the Government of India to create an enabling framework for PPPs. The Government has established a streamlined system for clearance of PPP projects developed by Central agencies through setting up of the Public Private Partnership Appraisal Committee (PPPAC). Standardized bidding and contractual documents have been notified. The financing needs of projects are supported by providing Viability Gap Funding (VGF) to PPP projects and long tenor loans through India Infrastructure Finance Company (IIFC) Limited. IIFC (UK) Ltd., a subsidiary of IIFCL in London, has been established with the objective of borrowing funds from the RBI and lending to Indian companies implementing infrastructure

projects in India solely for meeting capital expenditure outside India. For providing financial support for quality project development activities to the States and the Central Ministries, the India Infrastructure Project Development Fund (IIPDF) supports up to 75 per cent of the project development expenses in the form of interest-free loan. The projects, sponsored by State Governments and municipalities, represent various sectors where PPPs are increasingly being adopted, namely the urban sector, health and education, civil aviation and roads. A panel of Transaction Advisers for PPPs has been notified for use by the States and other entities who are undertaking PPP transactions.

10.181 The Department of Economic Affairs (DEA) Ministry of Finance, in collaboration with the ADB initiated the PPP Pilot Projects Initiatives where the process of structuring the PPP project is handled

by the Central Government to develop demonstrable PPP projects in challenging sectors. Thirty projects in States, municipalities and Central Ministries have been identified and are thus being developed. A series of measures have been initiated to strengthen the capacities of PPP cells, established in Central Ministries and State Governments. The assistance/expertise is being utilized by State Governments for better identification of PPP projects, oversight of the procurement process, contract management and oversight, development of database and repository of knowledge resource and best practices, capacity building and policy support.

10.182 To intensify capacity building of public functionaries and integrate a capacity-building programme on PPPs at State level, the DEA is developing a comprehensive capacity- building programme, in collaboration with the World Bank

**Table 10.28 : State-wise and sector-wise PPP projects**

State/sector	Number	Below Rs 250 crore	Between Rs 251 to 500 crore	More than Rs 500 crore	Value of contacts (in crore)
<b>States</b>					
Andhra Pradesh	63	2,617	3,189	33,474	39,279
Delhi	10	95	408	10,374	10,877
Gujarat	29	407	3,361	14,944	18,712
Karnataka	97	2,673	12,203	24,616	39,492
Kerala	12	226	616	11,131	11,973
Madhya Pradesh	39	2,144	2,695	2,949	7,789
Maharashtra	31	865	1,100	32,062	34,026
Orissa	16	235	500	6,888	7,623
Pudducherry	1	0	419	1,867	2,286
Punjab	19	972	572	0	1,544
Rajasthan	51	1,308	833	3,113	5,253
Sikkim	24	734	2,669	13,708	17,111
Tamil Nadu	30	699	6,413	5,340	12,452
Uttar Pradesh	6	0	1,459	649	2,108
West Bengal	5	200	1,214	641	2,055
Other States	17	1,324	1,638	0	2,962
Inter-State	13	355	2,295	5,984	8,634
<b>Total</b>	<b>450</b>	<b>14,939</b>	<b>41,583</b>	<b>1,67,739</b>	<b>2,24,176</b>
<b>Sector</b>					
Airports	5	0	303	18,808	19,111
Energy	24	734	2,669	13,708	17,111
Ports	43	1,066	2,440	62,993	66,499
Roads	271	8,689	32,862	60,454	1,02,005
Urban Development	73	2,753	2,404	10,132	15,288
Other sectors	34	1,613	905	1,644	4,162

and KfW Development Bank, which would be delivered through the Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, State Administrative Training Institutes and Central Training Institutes. The programme components include training needs' assessment; development of course content; training of trainers (ToT); and roll-out of the programme through a few demonstration modules for the initial handholding of Trainers. Two levels of training would be imparted through the training institutes, namely sensitization courses on PPPs and specialized modules on managing PPPs. PPP Toolkits for four sectors (highways, ports, solid waste management and urban transport), risk and contingent liability frameworks and communication strategy for PPPs are being developed.

10.183 Many State Governments have institutionalized measures to encourage private-sector engagement in creation of infrastructure and delivery of services. Infrastructure Development and Enabling Acts have been developed by Andhra Pradesh, Bihar, Gujarat and Punjab. PPP policies and guidelines to facilitate PPP projects have been notified by Karnataka, Orissa, Assam, Goa and Madhya Pradesh. Other measures include development of sectoral policies for promoting PPPs, establishing nodal departments/ PPP cells, establishing VGFs (to supplement VGF provided by the Government of India), establishing Project Development Funds (to supplement Government of India grant under the India Infrastructure Project Development Fund (IIPDF) and establishing panels of transaction advisers and developing standardized bid documents, sectoral templates and handbooks on PPPs. Awareness of schemes, guidelines, initiatives and resource materials prepared is being created through PPP websites of Central and State Governments. The measures have resulted in a robust pipeline of over 450 projects in diverse sectors with an estimated project cost of over Rs 2, 24, 175.8 crore (Table 10.28).

### Development of PPP toolkits

10.184 The Government of India has been developing several enabling tools to promote PPPs. These tools are vital to catalyze investments for building new infrastructure and improve the efficient operation and management of assets over their lifetime and ensure real focus on service delivery. With a view to supporting and guiding Urban Local Bodies (ULBs) in the development of PPP projects,

a Water Supply toolkit and Urban Transport toolkit were launched in January 2010. The toolkits act as a ready reference guide to all ULBs in the country and aim to ensure widespread access to infrastructure financing through the PPP framework. For the purpose of preparation of the toolkit, service-level assessment of 16 sample cities in the state of Maharashtra was undertaken.

10.185 The toolkit has been developed after a review of existing PPP documentation and draws experience from existing PPP projects such as the performance-based management contract in Latur, concession for water supply and sewerage in Salt Lake city and city bus transport in Indore. Term sheets have been drafted for each PPP structure based on the learning of the documentation review and the study of concession contracts. Each term sheet contains a brief reference guide for understanding the key clauses applicable under the specific PPP structure. The clauses presented in the term sheet aim at guiding a service provider in drafting a contract for the selected PPP structure for the identified projects in urban water supply/urban transport sectors.

10.186 The toolkit details the key processes such as steps involved in identification of suitable PPP structure and processes involved in implementation; preparatory work to be done for the identification of a PPP structure; viability assessment of projects identified on PPP basis; process a public entity should follow to decide whether it should opt for public funding or PPP; identification and allocation of risks amongst the public entity and private operator/ developer and selection of a suitable contract structure; and procurement process to be followed if the ULB decides to implement the project on a PPP basis.

## CHALLENGES AND OUTLOOK

10.187 Infrastructure services that were affected by the slowdown in general economic activity during the previous year have gradually revived in the current fiscal with easing of supply bottlenecks in certain sectors and with demand recovery in others. However, considering the dimensions of the infrastructure deficit in the country, growth in infrastructure capacity and services will need to be accelerated on a big scale.

10.188 Raising the capacity creation in some critical infrastructure sectors to the desired level is a major challenge. Initiatives required are

multifaceted, and include those promoting flow of domestic and global resources to infrastructure, facilitating formulation, approval, financial closure and award of projects and easing implementation hurdles in terms of disputes in land acquisition, rehabilitation, contractual issues, shortage of raw materials, capital goods and fuel, environmental disputes and inadequate availability of skilled manpower. The foregoing analysis indicates that efforts--legislative, administrative and executive--are on, with a view to ameliorating the bottlenecks in realization of infrastructure projects. The need of the hour is to expedite, synergize and consolidate these efforts so as to sufficiently and promptly meet the demands of increasing population and urban migration and faster economic growth.

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10.189 The Planning Commission has estimated that as compared to 4.5 per cent in 2003-04, investment in infrastructure as a proportion of the gross domestic product (GDP) rose to 6 per cent in 2007-08. The collapse of markets worldwide and the dampening of equity markets acted as decelerators on the mobilization of resources by infrastructure sectors during the previous year. Available evidence points towards a steady revival of flows of investible resources to infrastructure sectors during the current year. However, reaching the target of an infrastructural investment of 9 per cent of the GDP fixed by the Eleventh Five Year Plan (2007-2012) would be an extremely challenging task. Efforts are required to channelize the long-term contractual savings to infrastructure sectors on a much larger scale.