

## Investment in Infrastructure

### INTRODUCTION

**14.1** The Eleventh Plan emphasized the importance of investment in infrastructure for achieving a sustainable and inclusive growth of 9 to 10 per cent in GDP over the next decade. In this context, it envisaged an increase in investment in physical infrastructure from the level of about 5 per cent of GDP during the Tenth Plan to about 9 per cent of GDP by 2011–12 (terminal year of the Eleventh Plan). This was estimated to require an investment of Rs 20,56,150 crore (US\$ 514 billion) during the Eleventh Plan period as compared to an estimated investment of Rs 8,71,445 crore (US\$ 218 billion)<sup>1</sup> during the Tenth Plan. Further, it was estimated that the contribution of the private sector in this investment would increase from about 20 per cent in the Tenth Plan to about 30 per cent in the Eleventh Plan.

**14.2** This chapter reviews the total investment in the major infrastructure sectors (electricity, roads and bridges, telecommunications, railways, ports, airports, irrigation, water supply and sanitation, storage, and oil and gas pipelines). Developments in some of these sectors are discussed in Chapters 15, 16, 17, and 18.

### INVESTMENT IN THE TENTH PLAN

**14.3** At the time of the finalization of the Eleventh Plan document, information relating to actual investment

in the terminal year of the Tenth Plan (2006–07) was not available, and the data for private investment in the previous years too was also not available for some of the sub-sectors. These figures are now available and indicate that the actual investment in infrastructure during the last two years of the Tenth Plan were higher than the levels estimated while formulating the Eleventh Plan. As a result, the total investment in infrastructure during the Tenth Plan was Rs 9,19,225 crore, that is, 5.48 per cent higher than the earlier estimates of Rs 8,71,445 crore.

**14.4** This increase was mainly due to higher investment by the private sector at Rs 2,25,220 crore as against an anticipated amount of Rs 1,72,188 crore. This implies that the realized private sector investment in infrastructure during the Tenth Plan was 24.50 per cent of the total investment as against just below the 20 per cent anticipated earlier. This increase was largely due to a higher investment realized in oil and gas pipelines, electricity, irrigation, ports, storage, and airports during the Tenth Plan period.

### PROJECTIONS FOR THE ELEVENTH PLAN

**14.5** Starting from a higher base of Rs 2,44,495 crore in 2006–07, instead of Rs 2,25,246 crore estimated earlier, the total investment in infrastructure during the first two years of the Eleventh Plan increased to

<sup>1</sup> An exchange rate of \$1= Rs 40 has been used to ensure comparison at 2006–07 price levels.

Rs 3,03,807 crore in 2007–08 and Rs 3,59,192 crore in 2008–09 as against the earlier projected levels of Rs 2,70,273 crore and Rs 3,21,579 crore respectively. The contribution of the private sector in the total investment in infrastructure in the first two years of the Eleventh Plan was 34.32 per cent and 33.73 per cent respectively, which is higher than the Eleventh Plan target of 30 per cent investment by the private sector.

14.6 Taking account of the developments in the first two years, the earlier projections for the entire Eleventh Plan period have been revised and it is now estimated that the total investment in infrastructure in the Eleventh Plan would be Rs 20,54,205 crore, which is comparable to the earlier estimates. The details are given in Table 14.1. The assumptions underlying the projections are given in Annexure 14.1.

14.7 The increase in investment in the first two years of the Eleventh Plan, above the levels projected earlier is due to higher levels of investment in oil and gas pipelines, airports, and telecom. In the case of oil and gas pipelines, there has been a change in definition since oil pipelines were earlier not included. This is expected to contribute an additional investment of Rs 1,08,190 crore during the Eleventh Plan.

14.8 Table 14.2 shows that starting from a higher base of 5.71 per cent of GDP in the terminal year of the Tenth Plan (2006–07), investment in infrastructure during the Eleventh Plan reached 7.18 per cent of GDP in 2008–09. This is expected to increase to 8.37 per cent of GDP in the terminal year of the Eleventh Plan period, which would yield an average of 7.55 per cent of GDP for the Eleventh Plan as a whole. The Eleventh Plan is therefore likely to see an increase

**TABLE 14.1**  
**Sector-wise Investments: Tenth Plan and Eleventh Plan**

(Rs crore at 2006–07 prices)

Sector	Tenth Plan		Eleventh Plan	
	Original projections	Actual investments	Original projections	Revised projections
Electricity (incl. NCE)	2,91,850 (33.49)	3,40,237 (37.01)	6,66,525 (30.42)	6,58,630 (32.06)
Roads & bridges	1,44,892 (16.63)	1,27,107 (13.83)	3,14,152 (15.28)	2,78,658 (13.57)
Telecommunications	1,03,365 (11.86)	1,01,889 (11.08)	2,58,439 (12.57)	3,45,134 (16.80)
Railways (incl. MRTS)	1,19,658 (13.73)	1,02,091 (11.11)	2,61,808 (12.73)	2,00,802 (9.78)
Irrigation (incl. watershed)	1,11,503 (12.80)	1,19,894 (13.04)	2,53,301 (12.32)	2,46,234 (11.99)
Water supply & sanitation	64,803 (7.44)	60,108 (6.54)	1,43,730 (6.99)	1,11,689 (5.44)
Ports (incl. inland waterways)	14,071 (1.61)	22,997 (2.50)	87,995 (4.28)	40,647 (1.98)
Airports	6,771 (0.78)	6,893 (0.75)	30,968 (1.51)	36,138 (1.76)
Storage	4,819 (0.55)	5,643 (0.61)	22,378 (1.09)	8,966 (0.44)
Oil & gas pipelines	9,713 (1.11)	32,367 (3.52)	16,855 (0.82)	1,27,306 (6.20)
Total	8,71,445 (100)	9,19,225 (100)	20,56,150 (100)	20,54,205 (100)

Source: Planning Commission.

Note: Figures in brackets indicate sectoral shares compared to total investment in infrastructure.

**TABLE 14.2**  
**Revised Projected Investment as Percentage of GDP**

(Rs crore at 2006–07 prices)

Years	Tenth Plan (Actual)	Base Year of Eleventh Plan (2006–07) (Actual)	2007–08 (Actual)	2008–09 (Actual/ Estimated)	2009–10 (RE/BE/ Projected)	2010–11 (BE/ Projected)	2011–12 (Projected)	Total Eleventh Plan
GDP at market prices	1,78,40,877	42,83,979	47,17,187	50,03,545	53,63,800	57,92,904	63,14,265	2,71,91,700
Public investment	6,94,006	1,73,676	1,99,539	2,38,054	2,62,963	2,90,832	3,19,904	13,11,293
Private investment	2,25,220	70,819	1,04,268	1,21,138	1,39,866	1,69,227	2,08,413	7,42,912
Total investment	9,19,225	2,44,495	3,03,807	3,59,192	4,02,829	4,60,059	5,28,316	20,54,205
<b>Investment as percentage of GDP</b>								
Public investment	3.89	4.05	4.23	4.76	4.90	5.02	5.07	4.82
Private investment	1.26	1.65	2.21	2.42	2.61	2.92	3.30	2.73
Total investment	5.15	5.71	6.44	7.18	7.51	7.94	8.37	7.55

*Source:* GDP data for Tenth Plan, 2007–08 and 2008–09 are from CSO. GDP growth rates for 2009–10, 2010–11, and 2011–12 have been assumed as 7.2, 8, and 9 per cent respectively.

of about 2.40 percentage points of GDP in the total investment in infrastructure as compared to the Tenth Plan. From the terminal year of the Tenth Plan to the terminal year of the Eleventh Plan, this increase would be 2.66 percentage points of GDP. Further, about two-thirds of this increased investment would be on account of the private sector.

### SECTOR-WISE PROJECTIONS

**14.9** The sector-wise projections of investment during the Eleventh Plan, made in accordance with the assumptions stated in Annexure 14.1, are given in Table 14.3, which shows investments by the Centre, the states, and the private sector separately. Some features emerging in each sector which are worth noting are now discussed.

#### ELECTRICITY

**14.10** The projected investment of Rs 6,58,630 crore in the electricity sector is slightly lower than the original projection of Rs 6,66,525 crore. The figures for private investment in the electricity sector show an increase of 55 per cent as compared to the original projections. The contribution of public sector investment is likely to decline mainly due to lower than anticipated investment in the central sector in the first two years of the Eleventh Plan. As discussed in Chapter 15, capacity addition of 62,374 MW is likely to be achieved

during the Eleventh Plan as compared to a target of 78,700 MW.

#### ROADS

**14.11** The projected investment in the road sector is also significantly lower at Rs 2,78,658 crore compared with Rs 3,14,152 crore in the original projections. The decline in investment is due to a shortfall in the award of road projects by the National Highway Authority of India (NHAI) during the first three years of the Plan. It is interesting to note that investments in the road sector by the states are expected to increase due to higher investments under the Pradhan Mantri Gram Sadak Yojana (PMGSY).

**14.12** The Ministry of Road Transport and Highways (MoRTH) has decided to speed up implementation of the National Highway Development Project (NHDP) to achieve a completion rate of 20 km of highways per day. This is likely to increase the investment during the last two years of the Eleventh Plan, but the major build-up in expenditure as a result of this acceleration will be in the Twelfth Plan.

#### TELECOM

**14.13** The growth in the telecom sector has been phenomenal and the investment is expected to be Rs 3,45,134 crore, which is 34 per cent higher than

**TABLE 14.3**  
**Revised Projections of Investment in Infrastructure during the Eleventh Plan**

(Rs crore at 2006–07 prices)

Sector	X Plan (Actual)	XI Plan (Original projections)	2007–08 (Actual)	2008–09 (Actual/ Est.)	2009–10 (RE/BE/ Proj.)	2010–11 (BE/ Proj.)	2011–12 (Proj.)	XI Plan (Revised projections)
<b>Electricity (incl. NCE)</b>	<b>3,40,237</b>	<b>6,66,525</b>	<b>1,11,134</b>	<b>1,17,093</b>	<b>1,25,958</b>	<b>1,44,974</b>	<b>1,59,471</b>	<b>6,58,630</b>
Centre	1,02,665 (30.17)	2,55,316 (38.31)	29,386	36,769	39,528	49,900	54,890	2,10,474 (31.96)
States	1,00,738 (29.61)	2,25,697 (33.86)	27,252	30,109	31,193	34,313	37,744	1,60,611 (24.39)
Private	1,36,834 (40.22)	1,85,512 (27.83)	54,497	50,215	55,237	60,760	66,836	2,87,546 (43.66)
<b>Roads &amp; bridges</b>	<b>1,27,107</b>	<b>3,14,152</b>	<b>42,741</b>	<b>48,108</b>	<b>54,638</b>	<b>63,183</b>	<b>69,988</b>	<b>2,78,658</b>
Centre	50,468 (39.71)	1,07,359 (34.17)	12,963	14,876	17,370	21,765	23,942	90,916 (32.63)
States	67,416 (53.04)	1,00,000 (31.83)	22,769	25,660	28,225	31,048	34,153	1,41,855 (50.91)
Private	9,223 (7.26)	1,06,792 (33.99)	7,009	7,572	9,043	10,370	11,893	45,887 (16.47)
Telecom	1,01,889	2,58,439	31,900	52,295	64,206	84,339	1,12,394	3,45,134
Centre	48,213 (47.32)	80,753 (31.25)	7,894	11,048	13,186	13,988	15,387	61,503 (17.82)
Private	53,676 (52.68)	1,77,686 (68.75)	24,007	41,248	51,019	70,351	97,007	2,83,631 (82.18)
<b>Railways (incl. MRTS)</b>	<b>1,02,091</b>	<b>2,61,808</b>	<b>31,182</b>	<b>39,095</b>	<b>42,830</b>	<b>40,875</b>	<b>46,820</b>	<b>2,00,802</b>
Centre	98,914 (96.89)	2,01,453 (76.95)	29,594	35,863	39,548	36,675	40,343	1,82,024 (90.65)
States	2,508 (2.46)	10,000 (3.82)	1,128	2,554	2,048	2,253	2,479	10,462 (5.21)
Private	669 (0.66)	50,354 (19.23)	460	677	1,233	1,947	3,999	8,316 (4.14)
<b>Irrigation (incl. WS)</b>	<b>1,19,894</b>	<b>2,53,301</b>	<b>38,789</b>	<b>44,858</b>	<b>49,093</b>	<b>54,045</b>	<b>59,449</b>	<b>2,46,234</b>
Centre	8,597 (7.17)	24,759 (9.77)	1,831	2,133	2,095	2,348	2,583	10,990 (4.46)
States	1,11,296 (92.83)	2,28,543 (90.23)	36,958	42,725	46,997	51,697	56,867	2,35,244 (95.54)
<b>Water supply &amp; sanitation</b>	<b>60,108</b>	<b>1,43,730</b>	<b>19,110</b>	<b>19,939</b>	<b>21,941</b>	<b>24,141</b>	<b>26,559</b>	<b>1,11,689</b>
Centre	20,261 (33.71)	42,003 (29.22)	7,201	7,764	8,541	9,395	10,334	43,235 (38.71)
States	38,830 (64.60)	96,306 (67.00)	11,845	12,094	13,303	14,633	16,096	67,971 (60.86)
Private	1,018 (1.69)	5,421 (3.77)	65	81	97	113	128	484 (0.43)
<b>Ports</b>	<b>22,997</b>	<b>87,995</b>	<b>4,942</b>	<b>7,148</b>	<b>8,323</b>	<b>9,454</b>	<b>10,779</b>	<b>40,647</b>
Centre	4,051 (17.62)	29,889 (33.97)	831	1,040	1,076	1,152	1,268	5,366 (13.20)

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(Table 14.3 contd...)

Sector	X Plan (Actual)	XI Plan (Original projections)	2007-08 (Actual)	2008-09 (Actual/ Est.)	2009-10 (RE/BE/ Proj.)	2010-11 (BE/ Proj.)	2011-12 (Proj.)	XI Plan (Revised projections)
States	619 (2.69)	3,627 (4.12)	223	375	654	719	791	2,763 (6.80)
Private	18,327 (79.69)	54,479 (61.91)	3,888	5,733	6,593	7,582	8,720	32,517 (80.00)
<b>Airports</b>	<b>6,893</b>	<b>30,968</b>	<b>6,912</b>	<b>7,522</b>	<b>7,092</b>	<b>7,178</b>	<b>7,434</b>	<b>36,138</b>
Centre	3,811 (55.29)	9,288 (29.99)	1,888	2,287	2,386	2,463	2,709	11,732 (32.46)
States	712 (10.33)	50 (0.16)	424	525	91	100	110	1,251 (3.46)
Private	2,370 (34.38)	21,630 (69.85)	4,600	4,711	4,615	4,615	4,615	23,155 (64.07)
<b>Storage</b>	<b>5,643</b>	<b>22,378</b>	<b>906</b>	<b>1,281</b>	<b>1,669</b>	<b>2,199</b>	<b>2,911</b>	<b>8,966</b>
Centre	1,416 (25.09)	4,476 (20.00)	0	0	47	47	47	141 (1.57)
States	2,124 (37.64)	6,713 (30.00)	0	0	70	70	70	210 (2.34)
Private	2,104 (37.27)	11,189 (50.00)	906	1,281	1,552	2,082	2,794	8,615 (96.09)
<b>Oil &amp; gas pipelines</b>	<b>32,367</b>	<b>16,855</b>	<b>16,190</b>	<b>21,854</b>	<b>27,080</b>	<b>29,671</b>	<b>32,511</b>	<b>1,27,306</b>
Centre	31,367 (96.91)	10,327 (61.27)	7,354	12,234	16,603	18,264	20,090	74,545 (58.56)
Private	1,000 (3.09)	6,528 (38.73)	8,836	9,620	10,476	11,407	12,421	52,761 (41.44)
<b>Total</b>	<b>9,19,225</b>	<b>20,56,150</b>	<b>3,03,807</b>	<b>3,59,192</b>	<b>4,02,829</b>	<b>4,60,059</b>	<b>5,28,316</b>	<b>20,54,205</b>
Centre	3,69,763 (40.23)	7,65,622 (37.24)	98,941	1,24,013	1,40,381	1,55,998	1,71,593	6,90,926 (33.63)
States	3,24,242 (35.27)	6,70,937 (32.63)	1,00,598	1,14,041	1,22,583	1,34,834	1,48,311	6,20,367 (30.20)
Private	2,25,220 (24.50)	6,19,591 (30.13)	1,04,268	1,21,138	1,39,866	1,69,227	2,08,413	7,42,912 (36.17)
<b>Total</b>	<b>9,19,225</b>	<b>20,56,150</b>	<b>3,03,807</b>	<b>3,59,192</b>	<b>4,02,829</b>	<b>4,60,059</b>	<b>5,28,316</b>	<b>20,54,205</b>
Public	6,94,006 (75.50)	14,36,559 (69.87)	1,99,539	2,38,054	2,62,963	2,90,832	3,19,904	13,11,293 (63.83)
Private	2,25,220 (24.50)	6,19,591 (30.13)	1,04,268	1,21,138	1,39,866	1,69,227	2,08,413	7,42,912 (36.17)
<b>GDP</b>	<b>1,78,40,877</b>	<b>27,044,506</b>	<b>47,17,187</b>	<b>50,03,545</b>	<b>53,63,800</b>	<b>57,92,904</b>	<b>63,14,265</b>	<b>2,71,91,700</b>
Investment % of GDP	5.15	7.60	6.44	7.18	7.51	7.94	8.37	7.55

Note: Figures in brackets indicate percentage share.

Rs 2,58,439 crore anticipated at the time of formulation of the Eleventh Plan. This over-achievement is due to a 60 per cent higher level of investment by the private sector as compared to the original projections. Competition in this sector has been quite intense, resulting

in benefits accruing to the economy and users through improved quality of services at lower costs. In sharp contrast, investment by the Centre in telecommunications is expected to be 23.84 per cent lower than the original projections in the Eleventh Plan.

**RAILWAYS**

**14.14** The projected investment in railways, including metro railways, in the Eleventh Plan is now expected to be about Rs 2,00,802 crore, which is 23.3 per cent lower than the earlier projection of Rs 2,61,808 crore. Both central sector and private investments are below the original projections. As per latest estimates, Rs 8,316 crore is expected by way of private investment, which is only 16.5 per cent of the original projections.

**14.15** Railways have opened up container movement to competition and 16 entities have been granted concessions for operating container trains. However, in other areas, progress in awarding PPP projects has been slow. The ministry has identified 50 stations for developing as world-class stations through the PPP route. It has also invited expressions of interest for the development of logistic parks through PPP. A 60 km elevated fully air-conditioned rail system in Mumbai is also proposed to be implemented through PPP. These projects need to be speeded up to improve the capacity and quality of services.

**14.16** Several PPP initiatives have been taken up for provision of metro rail systems in different cities. The Delhi Metro Rail Corporation has awarded the work for supply of rolling stock and operation of the Airport Express Line on a PPP basis. Two metro lines in Mumbai have also been awarded on a PPP basis. The Hyderabad Metro project is in the process of starting bidding on a PPP basis while the Bangalore High Speed Rail project is also being structured on the PPP mode.

**PORTS**

**14.17** Progress in the port sector has been much below expectations. Investment during the Eleventh Plan is now projected at Rs 40,647 crore, which is less than half of the original projection of Rs 87,995 crore. Private investment in the port sector is also expected to be almost 40.31 per cent lower as compared to the projections at the beginning of the Plan. This is because very few PPP projects have been awarded by the respective port trusts in the first two years of the Eleventh Plan. The Ministry of Shipping has revised the original target of 545 MMT of additional capacity for the major ports downwards and now

proposes to develop 48 projects with a capacity of 393 MMT, costing Rs 29,905 crore over the Eleventh Plan period.

**14.18** Compared to the slow progress in capacity addition in major ports, private sector ports in the state sector have done relatively well. Out of the total private investment of Rs 32,517 crore projected for the Eleventh Plan, the share of private investment in the state sector is Rs 26,370 crore.

**AIRPORTS**

**14.19** Investment in airports in the Eleventh Plan is now projected at Rs 36,138 crore, about 17 per cent higher than the original estimate of Rs 30,968 crore. Both public and private investment in airports is likely to increase compared to the investment projected at the beginning of the Eleventh Plan. Private investment is expected to contribute Rs 23,155 crore, which is 64 per cent of the total investment in airport infrastructure. The investment in state sector airports has taken a dip from 2009–10 onwards because of the completion of the Hyderabad and Bangalore projects.

**OIL AND GAS PIPELINES**

**14.20** The investment in oil and gas pipelines in the Eleventh Plan is expected to increase to Rs 1,27,306 crore as against the original figure of Rs 16,855 crore. This much nigger figure is primarily because the data now includes investment in oil pipelines whereas the earlier data only included gas pipelines. The investment in oil pipelines alone during the Eleventh Plan is projected at Rs 1,08,190 crore. This category includes large investments by the Centre as well.

**WATER SUPPLY**

**14.21** The total investment in water supply and sanitation in the Eleventh Plan is now estimated at Rs 1,11,689 crore, about 22 per cent lower than the original projection of Rs 1,43,730 crore. The Eleventh Plan strategy for urban development includes a departure from exclusive public sector monopoly over urban infrastructure and opening up possibilities of private investment in this area. However, private sector investment in water supply and sanitation is likely to be comparatively small initially and may not exceed 2 per cent of the total investment in this sector.

## IRRIGATION

**14.22** Investment in irrigation and watershed management is a critical part of rural infrastructure. It remains a public sector activity only because the sector is nowhere near being commercially viable since water charges account for only about 20 per cent of the operating costs. The total investment in this sector is expected to be about Rs 2,46,234 crore in the Eleventh Plan, which is 7.52 per cent higher than the original projections and will be more than double the investment of Rs 1,19,894 crore realized in the Tenth Plan.

## RURAL INFRASTRUCTURE

**14.23** The sectoral projections presented in Table 14.3 cover investment in both urban and rural areas. The rural investment component is important in keeping with the thrust of the Eleventh Plan towards a broad-based, inclusive growth of the economy with emphasis on bridging the rural-urban divide.

**14.24** Bharat Nirman, launched in 2005 for upgradation of rural infrastructure comprehensively across its sub-sectors, aims to provide electricity to 1,25,000 villages and to 23 million households; connect the remaining 66,802 habitations with all-weather roads and construct 1,46,185 km of new rural roads; provide drinking water to 55,067 uncovered habitations; provide irrigation to an additional 10 million ha; and connect the remaining 66,822 villages with telephones. It is estimated that out of the total projected investment of Rs 13,11,293 crore to be incurred by the Centre and the states on all infrastructure sectors during the Eleventh Plan, about Rs 3,93,388 crore (or 30 per cent) would be spent exclusively towards improving rural infrastructure.

## PROJECTED INVESTMENT IN THE TWELFTH PLAN

**14.25** The projections presented in Table 14.4 suggest that the economy will enter the Twelfth Plan in a more robust condition as far as infrastructure is concerned. Investment in infrastructure will be around 8.37 per cent of GDP in the base year of the Twelfth Plan. However, infrastructure requirements for a 9 per cent growth in GDP will require a further step up in the pace of infrastructure development during the Twelfth Plan. If GDP in the Twelfth Plan period grows at an average rate of 9 per cent per annum, it should be possible to increase the share of investment in infrastructure to about 10.70 per cent of GDP in the terminal year of the Twelfth Plan, as indicated in Table 14.4. These projections imply that investment in the infrastructure sector during the Twelfth Plan would be of the order of Rs 40,99,240 crore or US\$ 1,025 billion. At least 50 per cent of this investment would have to come from the private sector while public sector investment would have to increase from Rs 13,11,293 crore in the Eleventh Plan to about Rs 20,49,620 crore in the Twelfth Plan (at 2006–07 prices). This would imply an annual increase of about 9.34 per cent in real terms.

## POLICY INITIATIVES TO PROMOTE PRIVATE PARTICIPATION

**14.26** A number of initiatives have been taken in the course of the Eleventh Plan to accelerate the pace of investment in infrastructure. In particular, the government has taken several initiatives for standardizing the documents and processes for structuring and award of PPP projects in a transparent and competitive manner (see Box 14.1).

**TABLE 14.4**  
Projected Investment in Infrastructure during the Twelfth Five Year Plan

(Rs crore at 2006–07 prices)

Year	Base Year (2011–12)	2012–13	2013–14	2014–15	2015–16	2016–17	Total 12th Plan
GDP at market prices (Rs crore)	63,14,265	68,82,549	75,01,978	81,77,156	89,13,100	97,15,280	4,11,90,064
Rate of growth of GDP (%)	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Infrastructure investment as % of GDP	8.37	9.00	9.50	9.90	10.30	10.70	9.95
Infrastructure investment (Rs crore)	5,28,316	6,19,429	7,12,688	8,09,538	9,18,049	10,39,535	40,99,240
Infrastructure investment (US\$ billion) @ Rs 40/\$	132.08	154.86	178.17	202.38	229.51	259.88	1,024.81

#### Box 14.1 Structuring PPP Projects

PPP projects are based on long-term contracts and may involve delegation of governmental authority, such as that for toll collection, besides enabling private control over monopolistic services. The structuring of PPP contracts requires due diligence of a high order because of the complex nature of the partnerships and the need to protect the interests of the users as well as the exchequer. Inadequacies in the contracts/concessions can severely compromise the public exchequer and user interests besides leading to rent-seeking and exposing PPP projects to public criticism. Badly structured contracts and inadequate regulation can often lead to windfall gains and rent-seeking by private investors. It is, therefore, important to ensure that PPPs are carefully structured for safeguarding user and government interests with a view to ensuring efficient services at competitive costs.

#### COMMITTEE ON INFRASTRUCTURE

14.27 The Committee on Infrastructure (COI) was constituted on 31 August 2004 under the chairmanship of the Prime Minister. Its members include the Finance Minister, Deputy Chairman, Planning Commission, and the ministers in-charge of infrastructure ministries. The objective of COI was to initiate policies that would ensure time-bound creation of world-class infrastructure, develop structures that maximize the role of PPPs, and monitor the progress of key infrastructure projects to ensure that established targets are realized.

#### CABINET COMMITTEE ON INFRASTRUCTURE

14.28 In July 2009, a Cabinet Committee on Infrastructure (CCI) chaired by the Prime Minister was constituted to give further impetus to initiatives for development of infrastructure. CCI approves and reviews policies and projects across infrastructure sectors. It considers and decides financial, institutional, and legal measures required to enhance investment in infrastructure sectors. With the creation of the CCI COI has ceased to exist.

#### PUBLIC-PRIVATE PARTNERSHIP APPRAISAL COMMITTEE

14.29 With a view to streamlining and simplifying the appraisal and approval process for PPP projects, a Public-Private Partnership Appraisal Committee

(PPPAC) was constituted under the chairmanship of Secretary, Department of Economic Affairs with Secretary, Planning Commission as one of the members. PPP proposals are appraised by the Planning Commission and approved by PPPAC. The PPPAC conducts a thorough scrutiny and due diligence in the formulation, appraisal, and approval of PPP projects. It had approved 144 projects with estimated project cost of Rs 1,30,915 crore by 31 December 2009.

#### EMPOWERED COMMITTEE/INSTITUTION (EC/EI)

14.30 An institutional framework comprising an inter-ministerial EC has been established for the purpose of appraising and approving projects for availing the Viability Gap Funding (VGF) grant of up to 20 per cent of the cost of infrastructure projects undertaken through PPP. Until December 2009, it had approved 55 projects in the state sector involving a total capital investment of Rs 39,736 crore.

#### VIABILITY GAP FUNDING (VGF)

14.31 Recognizing that the externalities engendered by infrastructure projects cannot always be captured by project sponsors, a VGF Scheme was notified in 2006 to enhance the financial viability of competitively bid infrastructure projects. Under the scheme, grant assistance of up to 20 per cent of capital cost is provided by the Central Government to PPP projects undertaken by any central ministry, state government, statutory entity, or local body. An additional grant of up to 20 per cent of project costs can be provided by the sponsoring ministry, state government, or project authority. Up to December 2009, 199 projects had been approved by the EC/EI with a capital investment of Rs 1,70,651 crore.

#### INDIA INFRASTRUCTURE FINANCE COMPANY LIMITED

14.32 The India Infrastructure Finance Company Limited (IIFCL) was established by the Central Government for providing long-term loans for financing infrastructure projects that typically involve long gestation periods. It provides financial assistance of up to 20 per cent of the project costs, both through direct lending to project companies and by refinancing banks and financial institutions. It had raised Rs 18,126 crore and approved 125 projects involving total investment of Rs 1,72,497 crore by 31 December



2009. Out of these 125 projects, financial closure has been achieved in 121 projects involving investment of Rs 1,58,003 crore.

### MODEL CONCESSION AGREEMENTS AND OTHER DOCUMENTS

**14.33** Recognizing the need for a standardized framework for PPPs, COI encouraged the creation of standard documents for bidding and also for award of concessions. Creation of a standardized framework ensures transparency in the allocation of risk, clarity in the obligation of the concessionaires, and minimization of possibilities of disputes arising from the agreement. It enables robust competitive bidding for individual projects with a reasonable commonality in approach across projects, which is an important aspect of good governance.

**14.34** To underpin this approach, a large number of standardized documents have been developed based on extensive inter-ministerial consultations. These have been published by the Planning Commission to promote and facilitate development of infrastructure. In several cases, for example, roads and ports, the Planning Commission has published model concession agreements that could be used by state governments for developing projects under the PPP mode. The Commission has been involved in consultations with state governments on PPP initiatives; it also renders advice as and when desired.

**14.35** A list of the Model Concession Agreements, Model Bidding Documents, and Guidelines and Manuals published by the Planning Commission is given in Box 14.2.

#### Box 14.2

#### Model Concession Agreements for PPP Projects

- National Highways
- State Highways
- Operation and Maintenance of Highways
- National Highways (Six laning)
- Urban Rail Transit Systems
- Non-Metro Airports
- Greenfield Airports
- Port Terminals
- Operation of Container Trains
- Re-development of Railway Stations
- Procurement-cum-Maintenance Agreement for Locomotives
- Transmission of Electricity

#### Model Bidding Documents for PPP Projects

- Model Request for Qualification (RFQ) for PPP Projects
- Model Request for Proposal (RFP) for PPP Projects
- Model Request for Proposal (RFP) for Selection of Technical Consultants
- Model Request for Proposal (RFP) for Selection of Legal Advisers
- Model Request for Proposal (RFP) for Selection of Financial Consultants and Transaction Advisers
- Model Request for Proposal (RFP) for Selection of Transmission Consultants
- Model Request for Proposal (RFP) for Selection of Financial Consultants and Transaction Advisers

#### Guidelines and Manuals

- Guidelines for Financial Support to PPPs in Infrastructure (VGF Scheme)
- Guidelines on Formulation, Appraisal, and Approval of PPP Projects (PPPAC)
- Guidelines for Establishing Joint Ventures in Infrastructure Sectors
- Guidelines for Monitoring of PPP Projects
- Scheme for Financing Infrastructure Projects through the India Infrastructure Finance Company Limited
- Manual of Specifications and Standards for Two-laning of Highways
- Manual of Specifications and Standards for Four-laning of Highways

**14.36** The government has identified several areas for reform of policy and processes. Based on inter-ministerial deliberations, a number of Reports have been prepared and their recommendations adopted. These are listed in Box 14.3.

**14.37** The Planning Commission has initiated an exercise to revise the financing plans in various infrastructures sectors after taking into account the progress made so far and the likely investment during the remaining years of the Eleventh Plan and in the entire Twelfth Plan period.

### PARTICIPATION OF STATE GOVERNMENTS

**14.38** In a federal country like India, participation and support of the state governments is essential for developing world-class infrastructure. The state

#### Box 14.3 Reports

- Financing of the National Highways Development Programme
- Financing Plan for Airports
- Financing Plan for Ports
- Restructuring of NHAI
- Monitoring of PPP Projects
- Projections of the Eleventh Five Year Plan: Investment in Infrastructure
- Delhi–Mumbai and Delhi–Howrah Freight Corridors
- Road Rail Connectivity of Major Ports
- Customs Procedures of Container Freight Stations and Ports
- Simplification of Customs Procedures in Air Cargo and Airports
- Measures for Operationalizing Open Access in the Power Sector
- Tariff Setting for PPP Projects in Major Ports
- Toll Policy for National Highways
- Road Safety and Traffic Management
- Reducing Dwell Time of Cargo at Ports
- Norms & Standards for Capacity of Airport Terminals
- Approach to Regulation of Infrastructure
- Private Participation in Infrastructure
- Compendium of PPP Projects in Infrastructure
- Selection of Consultants: Best Practices
- Frequently Asked Questions (FAQs) on Model RFQ Document

governments' support in maintenance of law and order, land acquisition, rehabilitation and settlement of displaced persons, shifting of utilities, and obtaining environmental clearances is necessary for the projects undertaken by the Central Government or the private sector. Many state governments have also initiated several PPP projects for improving infrastructure. The participation of states has been improving steadily over the years.

### STATUS OF PPP PROJECTS

**14.39** A large number of PPP projects have been taken up in various infrastructure sectors, including roads, ports, airports, and urban infrastructure. A summary of PPP projects in the central and state sectors as on December 2009 is given in Table 14.5, which shows that 937 projects, involving an investment of Rs 7,16,439 crore are at various stages of awards and implementation. Out of these, 241 projects with an investment of Rs 66,512 crore have been completed and 292 projects with an investment of Rs 2,40,040 crore are under implementation. Another 404 projects involving an investment of Rs 3,76,429 crore are in the pipeline.

#### (A) PPP PROJECTS IN THE CENTRAL SECTOR

**14.40** In the central sector, 65 PPP projects, involving an investment of Rs 25,343 crore had been completed up to December 2009. As many as 83 PPP projects with an investment of Rs 75,914 crore are currently under implementation and another 160 PPP projects with an estimated investment of Rs 1,84,807 crore are in the pipeline.

#### Completed Projects

**14.41** Up to December 2009, 39 national highways PPP projects with an investment of Rs 13,698 crore and 23 PPP projects in the ports sector with an investment of Rs 5,762 crore had been completed. In the civil aviation sector, airports involving a total investment of Rs 5,883 crore had been completed through PPP mode in Cochin, Bangalore, and Hyderabad.

#### Projects under Implementation

**14.42** Sixty-four projects with an investment of Rs 41,911 crore are currently under implementation in the roads sector while in the ports sector,

**TABLE 14.5**  
**Status of PPP Projects**

S. No.	Sector	Completed Projects		Projects under Implementation		Projects in Pipeline		Total	
		No. of projects	Project cost (Rs crore)	No. of projects	Project cost (Rs crore)	No. of projects	Project cost (Rs crore)	No. of projects	Project cost (Rs crore)
<b>(A) Central Sector</b>									
1	National highways	39	13,698	64	41,911	81	76,341	184	1,31,950
2	Major ports	23	5,762	13	10,509	29	18,466	65	34,737
3	Airports	3	5,883	2	18,777			5	24,660
4	Railways			4	4,717	50	90,000	54	94,291
	<b>Total (A)</b>	<b>65</b>	<b>25,343</b>	<b>83</b>	<b>75,914</b>	<b>160</b>	<b>1,84,807</b>	<b>308</b>	<b>2,86,064</b>
<b>(B) State Sector</b>									
1	Roads	96	6,382	69	60,864	86	39,481	251	1,06,727
2	Ports	20	19,704	37	51,549	18	17,436	75	88,689
3	Airports			1	500	7	4,120	8	4,620
4	Railways			1	500	3	312	4	812
5	Power	7	8,971	15	29,448	34	62,032	56	1,02,847
6	Urban infrastructure	51	5,992	69	18,690	65	45,708	185	1,00,451
7	Other sectors	2	120	17	3,575	31	22,534	50	26,229
	<b>Total (B)</b>	<b>176</b>	<b>41,169</b>	<b>209</b>	<b>1,64,126</b>	<b>244</b>	<b>1,91,622</b>	<b>629</b>	<b>4,30,375</b>
<b>(C) Grand Total (A+B)</b>									
		<b>241</b>	<b>66,512</b>	<b>292</b>	<b>2,40,040</b>	<b>404</b>	<b>3,76,429</b>	<b>937</b>	<b>7,16,439</b>

13 projects involving an investment of Rs 10,509 crore are currently under implementation. The airports in Delhi and Mumbai are being upgraded with an investment of Rs 18,777 crore. In railways, private entities are investing Rs 2,387 crore in rolling stock for container trains and two loco factories are also being set up with an investment of Rs 1,500 crore. Port connectivity and other projects of Rs 830 crore are also under implementation. In sum, projects with an estimated investment of Rs 4,717 crore are under implementation in the railways sector.

### Projects in the Pipeline

14.43 It is expected that 81 national highways projects envisaging an investment of Rs 76,341 crore would be awarded within a year. Twenty-nine port projects with an estimated investment of Rs 18,466 crore are also in the pipeline. The Ministry of Railways plans to redevelop 50 railway stations in the PPP mode at an estimated cost of Rs 90,000 crore.

### (B) STATUS OF PPP PROJECTS IN THE STATE SECTOR

14.44 The state governments are implementing several infrastructure projects through the PPP mode in

different sectors. Information received from states and UTs includes 176 completed PPP projects in different sectors with a total investment of Rs 41,169 crore while 209 PPP projects are currently under implementation with an estimated investment of Rs 1,64,126 crore. In addition, 244 PPP projects are in the pipeline involving an estimated investment of Rs 1,91,622 crore.

### Completed Projects

14.45 Ninety-six road projects with an investment of Rs 6,382 crore and 20 non-major ports with an investment of Rs 19,704 crore have been completed through the PPP mode in the state sector. Fifty-one urban infrastructure projects have been executed through the PPP mode, involving an investment of Rs 5,992 crore. The largest number of projects have been completed in the roads sector followed by urban infrastructure projects.

### Projects under Implementation

14.46 In the roads sector, 69 projects with an investment of Rs 60,864 crore and 37 projects with an investment of Rs 51,549 crore in non-major ports, are under implementation. Sixty-nine urban infrastructure

projects with an investment of Rs 18,690 crore are also currently under implementation.

### Projects in Pipeline

14.47 Eighty-six PPP projects in the road sector envisaging an investment of Rs 39,481 crore are in the pipeline. Another 18 PPP projects with an estimated investment of Rs 17,436 crore in non-major ports and 65 PPP projects in urban infrastructure sector envisaging an investment of Rs 45,708 crore are also in the pipeline.

14.48 An illustrative list of some of the PPP projects in the central and state sectors is given in Box 14.4.

### WAY FORWARD

14.49 Against the backdrop of the financial crisis, the performance of the infrastructure sector has shown the resilience of the economy and its capacity to shield itself from such external influences. Although the projections for the Eleventh Plan have been downsized for some sectors keeping in mind the targets achieved in the first two years of the Plan, it is, however, expected that with the revival of the economy and the upbeat investment sentiment prevailing, the actual performance may turn out to be better than the revised projections of the Eleventh Plan discussed in this chapter.

#### Box 14.4 Some Illustrative PPP Projects

1. Bangalore International Airport, Karnataka
2. Rajiv Gandhi International Airport, Hyderabad
3. Indira Gandhi International Airport, New Delhi
4. Chhatrapati Shivaji International Airport, Mumbai
5. 6 Laning of Jaipur–Kishangarh National Highway
6. 8/6 Laning of Delhi–Gurgaon Expressway
7. Hyderabad–Vijaywada National Highway
8. Offshore Container Berths, Mumbai Harbour
9. Deep Draft Iron Ore Berth, Paradip Port
10. Mega Container Terminal, Chennai
11. Multi-purpose Cargo Berths, Kandla
12. Hyderabad Metro Rail Project, Hyderabad
13. Colaba Bandra Metro Corridor Line-III, Mumbai
14. Jhajjar Power Transmission Project, Haryana
15. Mundra Port, Gujarat
16. Pipavav Port, Gujarat
17. Gangavaram Port, Andhra Pradesh
18. Krishnapuram Port, Andhra Pradesh
19. Vadodara–Bharuch State Highway, Gujarat
20. Indore–Edelabad State Highway, Madhya Pradesh
21. Yedshi–Latur–Nanded State Highway, Maharashtra
22. Jaipur–Bhilwara State Highway, Rajasthan
23. Delhi Western Peripheral Expressway (KMP Expressway), Haryana
24. Bridge across River Godavari between Yanam–Edurulanka, Andhra Pradesh

## ANNEXURE 14.1

## Assumptions Underlying the Revised Investment Forecast

1. In making projections for the central sector, RE figures for 2009–10 and BE figures for 2010–11 have been adopted and thereafter, a growth rate of 10 per cent has been assumed for the terminal year of the Plan. For the state sector, the actual expenditure for 2008–09 has been taken into account and an annual growth rate of 10 per cent over the 2009–10 BE data has been assumed for making projections for the subsequent years of the Eleventh Plan.
2. For making projections for the private sector, actual GCF data have been taken from CSO with regard to the electricity, telecom, and storage sectors for the period from 2002–03 to 2008–09. While projections with regard to the telecom and storage sectors for 2009–10 onwards are based on the log linear method using time series data of the past five years, projections in the electricity sector are based on an anticipated growth rate of 10 per cent per annum over the 2008–09 data to reflect the current pace of accelerated capacity addition.
3. For making projections of private investment in roads, railways, ports, and airports, the time series data from 2002–03 to 2008–09 have been provided by the respective ministries. Projections in roads and ports for 2009–10 onwards are based on a growth rate of 15 per cent per annum over 2008–09 in view of the accelerated programmes in these sectors. Projections in railways from 2009–10 onwards are based on the log-linear method using a time series of the past five years. In airports, no growth in private investment has been assumed over the 2009–10 data as some of the PPP projects have been completed and no new projects have been awarded.
4. In the case of oil and gas pipelines, the data relating to private investment have been provided by the Ministry of Petroleum and Natural Gas for 2008–09 and 2009–10 only. Investment in 2009–10 is higher by about 15 per cent as compared to the investment in 2008–09. Estimated investment in the remaining two years of the Plan has been assumed by projecting an annual increase of 15 per cent. Similarly, the investment in 2007–08 has been estimated by reducing the investment by a corresponding rate. Private sector projections for water supply and sanitation during the Eleventh Plan are based on the total estimated investment indicated by the Ministry of Urban Development (MoUD), which has been suitably phased out over the Plan period.
5. In case of storage, due to negative gross capital formation of the public sector in 2007–08 and 2008–09, the data have been taken as zero and projections for the remaining three years have been retained at the level of 2006–07. Public sector GCF for the Centre and states has been assumed in the ratio of 40:60.
6. The investment data for various infrastructure sectors will be updated on a regular basis in consultation with CSO and the respective infrastructure ministries.