

Chapter 8

FINANCIAL ISSUES IN POWER SECTOR FINANCING

8.0 INTRODUCTION

Power generation capacity along with the associated power infrastructure in India has increased substantially over the years. Though the current annual per capita power consumption in India has increased to over 717 kilo watt hours (kWh), it is still very low when compared to the estimated per capita annual consumption of over 1,200 kWh in China and nearly 13,300 kWh in the United States of America. Without adequate energy of desired quality, the 8% economic growth achieved in the recent past cannot be sustained and the economic growth targets envisaged by the Government over the next decade may not be achievable.

The government has been setting ambitious targets for the power sector during the five year plans to manage the demand-supply mismatch. However, the planned capacity additions vis-à-vis actual capacity addition achieved during the last four plan periods has varied in the range of 50-60%. Fund availability is one of the key factors that play a crucial role in determining the quantum of capacity addition.

This chapter provides estimates of the total investment requirement during the 12th Plan and the quantum of funds available from various sources to meet the same. Further, the chapter highlights various financial issues namely quantum and tenor of funds, cost of funds, etc. related to availability of funds for power sector. Policy issues that could impede the flow of funds to the Power Sector, such as, concerns related to land acquisition, fuel security related issues, environment issues, poor financial health of power distribution companies etc. have also been covered in the chapter.

In view of the above mentioned issues, various Policy measures such as introduction of specialized long tenor debt fund, dedicated fund for financing power projects in North Eastern sector, take-out financing schemes, credit enhancement scheme by IIFCL, modification in IRDA/ PFRDA guidelines, various tax incentives on investments, etc. have also been suggested in this Chapter.

8.1 FINANCIAL PERFORMANCE OF POWER SECTOR DURING 11TH PLAN

The 11th Plan fund requirement for the power sector was Rs. 10,31,600 crore. The All India Expenditure in Power for 11th Plan has been about Rs. 707,278 crore. The year wise details of 11th Plan expenditure with sector wise break up in respect of Generation, transmission and distribution are given in **Appendix 8.1 and 8.2.**

The details of projected fund requirement and actual expenditure during 11th Plan are as follows:

Table 8.1**Projected fund requirement v/s likely expenditure during 11th Plan**

S. No.	Segment	Outlay (Rs. crore)	Likely Expenditure (Rs. crore)*	Achievement (%)
1.	Generation (including Nuclear [#] , NCES, Merchant and Captive)	566,396	479,620	84.68%
2.	Transmission	140,000	122,991	87.85%
3.	Distribution (including DDG)	307,000	100,000	32.57%
4.	R&M	15,875	3,564	22.45%
5.	HRD	462	83	17.97%
6.	R&D	1,214	352	29.00%
7.	DSM	653	668	102.30%
Total		1,031,600	707,278	68.56%

Source: CEA & Working Group report of 11th Plan

[#]Source: Department of Atomic Energy Annual Accounts

*Generation includes nuclear, NCES, merchant and captive power projects

* Transmission includes 33 kV and above inter and intra state transmission lines

* Distribution is inclusive of sub-transmission lines upto 33 kV levels and DDG

*includes actual and projected expenditure up to FY 2011-12

As can be observed from above, the expenditure incurred on generation, transmission and distribution is in deviation to the rule of 2:1:1. This deviation can be attributed to the inclusion of sub-transmission lines and system upto 33 kV levels under the classification of distribution.

The Gross Budgetary Support (GBS) expenditure in respect of CPSUs during 11th Plan is expected to be about 2228 Cr against allocation of Rs 3000 Crore.

8.1.1 Transmission

In the transmission sector, a total of Rs. 122,991 crore of the estimated fund requirement of Rs. 1,40,000 crore for 11th Plan were utilized.

Table 8 2**Transmission - 11th Plan - Fund Requirement & Utilization**

(Figures in Rs. crore)

S. No.	Sector	Estimated Fund Requirement	Anticipated Fund Utilization
1	Central	75,000	56,370
2	State	65,000	66,379
Total *		140,000	122,991*

Source: CEA & Working Group report of 11th Plan

* Includes Rs. 242 Cr in Private Sector which was not envisaged earlier.

8.1.2 Distribution

Financial requirement for the 11th Plan for the distribution sector had been worked out as Rs.3,07,000 crore. The expenditure incurred during the first 4 years of 11th Plan period in the distribution sector is about Rs. 75,000 crore. On the basis of the ongoing works under distribution schemes, a total expenditure of Rs. 1,00,000 crore is expected to be made at the end of 11th Plan. The target was estimated on a normative basis including spill-over of 10th Plan.

However, low investment in the distribution sector has been a matter of concern. The lack of adequate investment may lead to delays in capacity augmentation/ replacement of obsolete equipments which may adversely impact the performance of the distribution sector.

8.2 PHYSICAL TARGET FOR 12TH PLAN

8.2.1 Generation (Conventional Sources)

The fund requirement during the 12th Plan for generation (conventional sources) projects is on account of balance payment in respect of projects likely during last year of 11th Plan, projects likely during the 12th Plan and funds for advance action in respect of 13th Plan projects. Therefore, details of likely capacity addition corresponding to these projects are as follows:

i. Planned capacity addition during 2011-12

During the year 2011-12 a capacity of 17,601 MW is expected to be commissioned. Type –wise details are as furnished in **Appendix 8.3**

ii. Planned capacity addition for 12th Plan

The planned capacity addition during 12th Plan is 75,785 MW. The year wise and type details of capacity likely during the 12th Plan are furnished in **Appendix 8.3**.

iii. Advance action for 13th Plan

It has been estimated that thermal power projects with a total capacity of 93,456 MW are expected to yield benefit in 13th Plan. In line with project implementation schedule, construction work on a part of the targeted capacity will begin during the 12th Plan. The year wise details of capacity addition during 13th Plan are given in **Appendix 8.3**.

8.2.2 Generation (Non-Conventional Energy Resources)

Details of 12th Plan target of Grid Interactive RE projects are furnished in the table below:

Table 8.3

12th Plan Tentative Targets for Grid Interactive RE Projects (Figures in MW)

Sources / Systems	Target for 12th Plan
Wind Power	11,000
Biomass Power Baggasse Co-generation Biomass Gasifiers	2,100
Small Hydro (up to 25 MW)	1,600
Solar Power	3,800
Total	18,500

Source: MNES

8.2.3 Captive power plants

The expected capacity addition in captive power plants during 12th Plan has been estimated at around 13,000 MW.

8.2.4 Transmission

The expected transmission capacity addition during 12th Plan is 1,09,440 ckm which is expected to result in the total transmission capacity of 3,79,011 ckm by the end of 12th Plan. Significant capacity expansion is expected in 765kV AC transmission system. The total Inter Regional transmission capacity addition for 12th Plan has been planned at about 38,000 MW.

8.2.5 Distribution

According to CEA, during the 12th Plan, an expansion of 1,35,000 ckm, 5,60,000 ckm and 6,10,000 ckm of 33kV lines, 11kV lines and LV lines have been estimated. The new transformation capacity is expected to be about 88,000 MVA and distribution transformer capacity is expected to increase by 1,05,000 MVA.

8.3 DEVELOPMENT OF POWER SECTOR IN THE NORTH-EAST REGION

8.3.1 Generation

The total fund requirement for generation capacity addition in NER and Sikkim has been calculated to be Rs. 54,215 crore. The cost per MW assumed for the purpose is 10% higher than average all India cost for setting up projects of similar nature.

8.3.2 Transmission and Distribution

Central Transmission Utility in consultation with CEA has designed Transmission and Distribution schemes in NER and Sikkim to evacuate the power generated from projects in this region. Fund requirement for Transmission and Distribution schemes in NER and Sikkim, with likely benefits during 12th Plan, has been estimated at around Rs. 26,392 crore.

Brief details of the transmission and distribution schemes are as follows:

Table 8.4

Transmission and Distribution schemes in NER and Sikkim

(Figures in Rs. Crore)

S.No.	Scheme Name	Fund requirement
1	Strengthening of transmission and distribution in NER and Sikkim	11,348
2	Transmission – Lower Subansiri HEP and Kameng HEP	11,130
3	Transmission – Pallatana GBPP to regional group point	1,770
4	Transmission – Pallatana GBPP regional system strengthening	2,144
	Total	26,392

Source: CEA

8.4 FUND REQUIREMENT FOR 12TH PLAN

The fund requirement for 12th Plan has been estimated under the following broad categories:

- a) Generation Projects (conventional Utility) likely during last FY of 11th Plan i.e. 2011-12
- b) Generation Projects (conventional Utility) planned for 12th Plan
- c) Advance action during 12th Plan for Generation Projects (conventional Utility) planned for 13th Plan
- d) Generation Projects based on Non Conventional Energy Sources
- e) R&M of Power Plants
- f) Captive Power Projects
- g) Transmission
- h) Distribution
- i) Research and Development
- j) Demand Side Management and Energy Efficiency (DSM & EE)
- k) Human Resource Development

Fund requirement for Generation Projects has been computed on the basis of normative per MW cost of different types of generation projects viz. thermal, hydro and nuclear. The above costs, based on the FY 2011-12 price levels, are listed in **Appendix 8.4**. Year-wise requirement of funds during the gestation period of the power projects has also been detailed in **Appendix 8.4**.

Based on the past trend, it has been observed that around 10% of total project expenses in a power project are incurred post-commissioning i.e. during the first year of commercial operations. Accordingly, 10% of total fund requirement for projects likely to be commissioned during 2011-12 will be required during 12th Plan.

Fund requirement for Generation Projects 12th Plan have been computed on the basis of per MW cost and the phasing of total expenditure of different types of generation projects viz. thermal, hydro and nuclear as in **Appendix 8.4**.

For fund requirements of advance action of 13th Plan projects, total fund requirement that will be required during 12th Plan is based on the past trend of expenses incurred during the initial years of construction. The assumptions with regards to cost per MW and phasing schedule are given in **Appendix 8.4**.

Fund requirement for Captive power projects has been estimated based on per MW cost furnished in **Appendix 8.4**.

The estimated expenditure for R&M for 12th Plan is expected to be Rs. 31,887 crore, which includes Rs. 28,000 crore for R&M of thermal power plants and Rs. 3,887 crore for R&M of hydro power plants.

Fund requirement for inter and intra state transmission lines (33 kV and above) is expected to be Rs. 1,80,000 crore .

Fund requirement for distribution (including sub-transmission lines upto 33 kV levels) has been estimated at Rs. 3,06,235 crore. Funds under APDRP and RGGVY approved schemes have been allocated to central and state sector in the ratio of 90:10. Further, the sector wise break up of remaining funds have been made on the basis of energy sold by power distribution companies as provided in the report on "Performance of State Power Utilities". As per the data, the percentage share of power utilities in private sector has been estimated at 7.90% and the remaining 92.10% has been allocated to state power utilities.

An outlay of Rs. 1,500 crore is expected for the National Perspective Plan on R & D, with Rs. 1,300 crore for Research & Development and Rs. 200 crore for "Power Academy". An outlay of Rs. 50 crores is projected for Research Scheme on Power (RSOP) which is managed by CPRI on behalf of Ministry of Power (MoP). In addition, an overall allocation of Rs. 2,618 crore is sought for Capital Projects, augmentation of test facilities, R&D infrastructure and establishment of new facilities at CPRI. Thus the total estimated expenditure for R&D during 12th Plan is expected to be Rs. 4,168 crore.

The outlay for various Demand Side Management (DSM) and Energy Efficiency programmes proposed by Bureau of Energy Efficiency for the 12th Plan is Rs 7,482 crore.

Funding for Human Resource Development (HRD) has been estimated based on the infrastructure cost of establishing new Institutes. An outlay of Rs. 4,108 crore has been proposed for this purpose in the 12th Plan.

Details of the Fund Requirement during the 12th Plan are as Summarised below:

Table 8.5

Capacity Addition & Fund Requirement for 12th Plan projects

S. No.	Capacity Addition	Allocation of cost towards 12th Plan (Rs. Crore)			
		Centre	State	Private	Total
1.	11th Plan (2011-12)				
a)	Generation –capacity addition	5,174	1,485	5,100	11,759
A	Sub-Total 11th Plan	5,174	1,485	5,100	11,759
2.	Generation – 12th Plan capacity addition				
a)	Thermal	48,650	55,734	1,73,117	2,77,500
b)	Hydro	35,183	8,024	6,952	50,159
c)	Nuclear	26,600	-	-	26,600
B	Sub-Total 12th Plan	1,10,433	63,758	1,80,069	3,54,260
3.	Advance action for 13th Plan				
a)	Thermal	40,440	14,805	80,577	1,35,822
b)	Hydro	28,132	612	11,216	39,960
c)	Nuclear	96,800	-	-	96,800

S. No.	Capacity Addition	Allocation of cost towards 12th Plan (Rs. Crore)			
		Centre	State	Private	Total
C	Sub-Total 13th Plan	1,65,372	15,417	91,793	2,72,582
4.	Sub-Total generation (A+B+C)	2,80,979	80,660	2,76,961	6,38,600
5.	Captive Power Projects			65,000	65,000
6.	R&M of Power Plants	19,847	12,040		31,887
7.	Transmission	1,00,000	55,000	25,000	1,80,000
8.	Distribution	48,191	2,38,082	19,963	3,06,235
9.	Research & Development	4,168			4,168
10.	DSM & EE	7,482			7,482
11.	Human Resources Development (Training Infrastructure)	4,108			4,108
	Fund Outlay (4 to 11)	4,64,774	3,85,782	3,86,924	12,37,480

Source: CEA

Fund requirement for RE projects in 12th Plan have been computed on the basis of per MW cost of different types of RE projects which are based on the FY 2011-12 price levels and listed in **Appendix 8.4**. The total fund requirement for RE projects in 12th Plan has been calculated as below:

Table 8.6(a)

Fund requirement for RE projects in 12th Plan

S. No.	Type	Total cost (Rs. crore)
1.	Biomass	10,500
2.	SHP	8,000
3.	Solar	49,400
4.	Wind	67,200
	Total	1,35,100

Hence, the total fund outlay for 12th Plan has been calculated as below:

Table 8.6(b)

Particulars	Total cost (Rs. crore)
Total fund outlay except RE projects	12,37,480
Fund outlay for RE projects	1,35,100
Total fund outlay for 12th Plan	13,72,580

The year wise fund requirement during 12th Plan is given in the table below:

Table 8.4(c)**Year wise fund requirement during 12th Plan***(Figures in Rs. Crore)*

Financial Year	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Fund requirement	2,36,996	2,42,335	2,72,042	3,02,770	3,18,436	13,72,580

8.5 FUND AVAILABILITY

Debt: Equity (D/E) ratios for central, state and private sector have been taken based on the current lending norms for funding of power sector. The details are as given below:

Table 8.5**Debt equity ratios**

Sector	Debt	Equity
Centre	70%	30%
State	80%	20%
Private	75%	25%

The possible sources of funding are commercial banks, public financial institutions, dedicated infrastructure/power finance institutions, insurance companies, overseas markets, bilateral/multilateral credit, bond markets and equity markets. The sources of funds, expected funds mobilization and financial & policy issues have been detailed in subsequent sections.

8.5.1 Current norms and trends**8.5.1.1 Commercial banks / Infrastructure Finance Companies**

As per the prevalent guidelines/ prudential norms, the financing limits applicable for banks/ IFC are as follows:

8.5.1.1.1 Exposure Ceilings of banks for Individual/ Group Borrowers

As per the prudential norms stipulated by RBI, the credit exposure to single borrower and group shall not exceed 15% and 40% respectively of Bank's capital funds (Tier I & Tier II capital).

Credit exposure to single borrower may exceed the exposure norm of 15% of the bank's capital funds by an additional 5% (i.e. up to 20%) provided the additional credit exposure is on account of infrastructure.

Credit exposure to borrowers belonging to a group may exceed the exposure norm of 40% of the bank's capital funds by an additional 10% (i.e. up to 50%), provided the additional credit exposure is on account of extension of credit to infrastructure projects.

Banks may, in exceptional circumstances, with the approval of their Boards, consider enhancement of the exposure to a borrower up to a further 5% of capital funds subject to the borrower consenting to the banks making appropriate disclosures in their Annual Reports. As per the guidelines on

exposure norms, the banks may further fix internal limits for aggregate commitments to specific sectors / industries.

Some banks also have an internal policy cap broadly on the following lines:

- i. Maximum term loans not to exceed 30% (of total time / term deposits / total non food advances) at any time
- ii. Terms loans per industry at a maximum of 10% of non-food advances
- iii. Maximum limit for infrastructure advances at 7% of non-food advances

As per RBI's report published in June, 2011, advances to infrastructure exhibited strong growth of above 40 per cent in 2010-11. The share of infrastructure lending in total advances consequently increased to 12.9 per cent in March 2011 as against 11 per cent in March, 2010. Credit to the power sector accounted for about 42 per cent of aggregate infrastructure credit. During the last five years, exposure of scheduled commercial banks to the power sector grew at a CAGR of 35% p.a.

8.5.1.1.2 Exposure Ceilings of Financial Institutions for Individual /Group Borrowers

As per the prudential norms, the credit exposure to single borrowers shall not exceed 15% of capital funds of the IFC. However, the exposure may exceed by additional 5% (i.e. up to 20%) provided the additional credit exposure is on account of infrastructure projects. IFC may, in exceptional circumstances, with the approval of their Boards, consider enhancement of the exposure to a borrower up to a further 5% of capital funds (i.e. 25% of capital funds for infrastructure projects and 20% for other projects).

The credit exposure to the borrowers belonging to a group shall not exceed 40% of capital funds of the IFC. However, the exposure may exceed by additional 10% (i.e. up to 50%) provided the additional credit exposure is on account of infrastructure projects. IFC may in exceptional circumstances, with the approval of their Boards, consider enhancement of the exposure to a borrower up to a further 5% of capital funds (i.e. 55% of capital funds for infrastructure projects and 45% for other projects). The IFC may fix internal limits for aggregate commitments to specific sectors.

8.5.1.2 Insurance Companies

While considering the other major category of investment institutions i.e. the insurance companies, it may be observed that the Insurance Regulatory and Development Authority of India (IRDA) have mandated the pattern of investments to be followed by the various insurance companies. Investments in government securities, approved securities, approved investments and in infrastructure and social sectors have been prescribed in the Insurance Act, 1938 and the regulations have been framed there under. IRDA has also specified that every insurer carrying on the business of life insurance shall invest and at all times keep invested its controlled fund (other than funds relating to pension and general annuity business and unit-linked life insurance business) in the prescribed manner.

As per the fourth amendment to investment regulations in 2008, IRDA has specified the following limits for the investments that are to be maintained by life insurance companies. The limits for investments by life insurance companies are provided below:

Table 8.6**Limits for investments by Life Insurance Companies**

S.No.	Type of Investment	% of fund
i)	Government securities or other approved securities	Not less than 50%
	-Government securities	Not less than 25%
ii)	Investments as specified in Section 27A of Insurance Act, 1938 and Approved Investments subject to Exposure/Prudential norms	
a)	Infrastructure and Social Sector by way of investments in Bonds/debentures of HUDCO, National Housing Bank, Housing Finance Corporations, Asset Backed Securities with underlying housing loans	Not less than 15%
b)	Others to be governed by Exposure Norms. (Investments in 'Other than in approved Investments' in no case exceed 15% of the Fund)	Not exceeding 35%

Source: Insurance Regulatory and Development Authority

For general insurance companies, IRDA has specified sectoral caps for investments as follows:

Table 8.7**Limits of Insurance specified for General Insurance companies**

S No.	Type of Investment	Percentage
i)	Government Securities or other approved securities	Not less than 30%
	-Government securities	Not less than 20%
ii)	Housing and Loans to State Government for Housing and Fire Fighting equipment	Not less than 5%
iii)	Investments in Approved Investments	
	a) Infrastructure including Bonds/Debentures, Equity and Asset Backed Securities with underlying infrastructure assets	Not less than 10%
	b) Others to be governed by Exposure Norms. However the investments in 'Other than in Approved Investments' in no case exceed 25% of the Assets	Not exceeding 55%

Source: Insurance Regulatory and Development Authority

The aggregate investment of life insurance in Housing and Infrastructure on March 31, 2010 was at Rs. 73,439 crore compared to Rs. 66,673 crore on 31st March 2009. This was a decline from 8.97% of the investments in traditional products of life insurance companies in 2009 to 8.29% in 2010.

The infrastructure investments of non-life insurers as on March 31, 2010 were Rs. 10,373 crore compared to Rs. 8,980 crore on 31st March 2009. This was an increase from 15.25% of total investments of non-life insurers in 2009 to 15.63% in 2010.

8.5.1.3 Overseas Markets: External Commercial Borrowing (ECB)

As defined by RBI, ECB can be accessed by a borrower under two routes, namely, (i) Automatic Route and (ii) Approval Route. ECB for investment in infrastructure sector up to USD 500 million falls under the Automatic Route i.e. it will not require RBI/ government approval. Borrowers can raise ECB from internationally recognized sources such as international banks, international capital markets, multilateral financial institutions, export credit agencies and suppliers of equipment, foreign collaborators and foreign equity holders.

The following rules apply in regards to the amount and maturity of ECBs raised through automatic route (*Source: Reserve Bank of India*):

- a) ECB up to USD 20 million or equivalent in a financial year with minimum average maturity of three years.
- b) ECB above USD 20 million and up to USD 500 million or equivalent with a minimum average maturity of five years.
- c) ECB up to USD 20 million can have call / put option provided the minimum average maturity of three years is complied with before exercising call / put option.

All-in-cost includes rate of interest, other fees and expenses in foreign currency except commitment fee, pre-payment fee, and fees payable in Indian Rupees. Moreover, the payment of withholding tax in Indian Rupees is excluded for calculating the all-in-cost.

Table 8.8

Ceilings for ECB Lending

Minimum Average Maturity Period	All-in-cost Ceilings over six month LIBOR*
Three years and up to five years	300 basis points
More than five years	500 basis points

Source: Reserve Bank of India

* For the respective currency of borrowing or applicable benchmark.

While the above norms are expected to balance the interests of the country and the borrower, and ensure adequate supply of funds, the same need to be appropriately channelized towards the power sector, either in the form of syndicated debt, tied financing / supplier's credit, or assistance from multilateral agencies. Further, rising cost of domestic borrowing could lead to an increase in demand for ECBs amongst Indian companies. However, the availability of long-term funds in overseas markets is an area of concern, with the lenders generally preferring to limit their exposure to shorter term tenors of up to 5 years.

8.5.1.4 Multilateral Agencies

Some of the concerns that need to be addressed, related to funding of projects from multilateral agencies, such as World Bank, Asian Development Bank etc. are:

- Significant emphasis on Environment and Social Issues with added costs of audits and certifications.

- Comparatively lengthy and time consuming appraisal and due diligence exercise, conducted by multilateral agencies.

The above can be attributed to the requirement on the part of multilateral agencies regarding the risk profile of the project and past experiences of the progress of power sector reforms in the country. Further, inadequate returns due to poor financial health of the SEBs; implications of announcements of free power by state governments; lack of comprehensive payment security mechanism etc. are acting as deterrents to advancement of financing by multilateral agencies to the sector in a big way.

8.5.1.5 Bond Market

The Indian Financial system does not have large active and liquid debt market. The Corporate Debt Market in India is in its infancy both in terms of microstructure as well as market outcomes. Primary market is dominated by financial sector and relatively small amount of funds are raised by manufacturing and other service industries. While Indian firms are still seeking bank finance as the path to fulfil the funding requirement, the government securities market has grown exponentially during last decade due to many structural changes introduced by the government and RBI to improve transparency in the market dealings, method of primary auctions, deepening the market with new market participants like primary dealers, borrowings at market determined rates, and creating technology platforms to recognize the institutional characteristics of the market. However, secondary market activities in corporate bonds have not picked up as in the case of government securities. Efforts of Securities Exchange Board of India (SEBI) and the stock exchanges to bring the trading to electronic stock exchange platforms have not yielded desired results.

The Indian debt market is dominated by government securities, which constituted more than 75% of the total debt outstanding at the end of June, 2011. In terms of trading activity, government securities are the most liquid and contribute more than 80% of the trading volume of the debt market. Presently trading activity in the G-Sec market is also very concentrated (in terms of liquidity of the outstanding G-Sec.) with the top 10 liquid securities accounting for a majority of the daily volumes.

The primary market in corporate debt is basically a private placement market with most of the corporate bond issues being privately placed among the wholesale investors i.e. the banks, mutual funds, provident funds & other large investors like LIC, etc. The proportion of public issues in the total quantum of debt capital issued annually has substantially decreased in the last few years.

8.5.2 Estimated Funds Mobilization

The details of the major sources of financing and estimated quantum of funds are mentioned in subsequent sections.

Table 8.9

Major sources of financing and funds mobilization

(Figures in Rs. Crore)

Sources of Funds	12th Plan estimations
Equity	
By promoters for IPPs, IPTCs	80,481
By promoters for NCES & Captive	56,780
Internal Resources	126,226
Total Sources of Equity (A)	263,487
Debt	
Scheduled Commercial Banks (SCBs)	270,455
PFC	178,259
REC	175,950
Other IFC	36,427
Bonds/Debentures	140,541
Multilateral/Bilateral Credits/ECBs	90,755
Insurance companies	28,899
Total Sources of Debt (B)	921,286
Total Sources of Debt and Equity (C=A+B)	1,184,773

8.5.2.1 Sources of equity

Internal resource, mobilization by Public Sector Enterprises (PSEs) in 12th Plan have been estimated at Rs.1,26,226 crore. The estimate has been made on the basis of the Internal & Extra Budgetary Resources (I&EBR) data. The details of the same have been provided in **Appendix 8.5**.

For IPPs, IPTCs, NCES and Captive power projects it has been assumed that the required equity has been/ will be tied up to the satisfaction of lenders as these projects will achieve Financial Closure on non-recourse basis.

8.5.2.2 Sources of debt

8.5.2.2.1 Banks

The following assumptions have been used to estimate fund availability from banks during 12th Plan:

- The Non-food Gross Bank Credit (GBC) has been increasing at a decreasing rate in the last three years – a drop from 22.3% in 2008 to 16.7% in 2010. The average growth rate of the same has been assumed at 15% for the duration of the XII five-year plan.
- The share of advances to Industry in GBC has increased from 38.7% in 2007 to 43.1% in 2010 and the same has been assumed to be 44% during XII five year plan.
- The share of advances to power sector in the above has increased from 10% in 2007 to 14.36% in 2010 and same has been assumed to be stable at 15% during XII five year plan.

On the basis of above assumptions, the funds available from banks during 12th Plan have been estimated at Rs. 2,70,455 crore. The calculations are provided in **Appendix 8.7**.

8.5.2.2.2 PFC

The funds available from PFC for 12th Plan have been estimated at Rs. 1,78,259 crore. The assumptions are provided in **Appendix 8.8**.

8.5.2.2.3 REC

The funds available from REC for 12th Plan have been estimated to be Rs. 1,75,950 crore. The assumptions are given in **Appendix 8.9**.

8.5.2.2.4 Other IFC

The major IFCs other than PFC and REC are Infrastructure Development Finance Company Limited (IDFC), Larsen and Tubro Finance and PTC India Financial Services Ltd. The projected funding by IDFC for 12th Plan power projects is Rs. 30,000 crore which is about 80% of its incremental loan book in 12th Plan. Assuming similar ratios for the other two companies, the total funds available from the IFCs for 12th Plan power projects has been calculated as Rs. 36,427 crore. The calculations have been shown in **Appendix 8.10**.

8.5.2.2.5 Bonds/Debentures

Bond and Non-Convertible Debenture (NCD) issuances grew at a CAGR of 18% from Rs. 99,222 crore in FY 2007 to Rs. 1,94,948 crore in FY 2011. During the same period, bond issuances by Power sector companies (excluding IFC) increased at a CAGR of 38% from Rs. 5,275 crores to Rs. 19,025 crores. While the year on year growth rates for bond issuances has been volatile due to the impact of economic crisis, the percentage of bond issuances by Power sector companies to the overall bond issuances has been in the range of 7-10%.

Going forward, the growth rate of bond and NCD issuances during 12th Plan has been assumed at a conservative rate of 9% p.a., while the growth rate of bond issuances by Power sector companies is expected to moderate to around 10% p.a. Based on these assumptions, the total bond and NCD issuances in the terminal year of 12th Plan are expected to be around Rs. 3,27,000 crore with bond issuances by Power sector companies at around Rs. 33,704 crore i.e. around 10% of total bond and NCD issuances. The funds available from Bond issuances during 12th Plan have been estimated at around Rs. 1,40,541 crore. The details of the same have been provided in **Appendix 8.11**.

8.5.2.2.6 Multilateral/ Bilateral Credits/ ECBs

The total outstanding amount of multilateral credits, bilateral credits and ECBs increased from Rs. 303,800 crore in March 2004 to Rs 412,076 crore in March 2007 (*Source: RBI*). The CAGR of the same has been computed as 10.7%. Assuming the same trend to continue, the total inflow of funds through these routes has been calculated to be Rs. 4,53,777 crore.

Based on the industry reports (*Source: McKinsey*), 24% of the total external borrowings have been assumed to be channelled towards infrastructure investments, out of which, 20% (83% of external borrowing to infrastructure) are assumed to be channelized to power sector. Hence, the total funds available through these routes have been calculated to be Rs. 90,755 crore. The details of the same have been provided in **Appendix 8.12**.

8.5.2.2.7 Insurance companies

The following assumptions have been used to estimate fund availability from life and non-life insurance companies

- **Life insurance companies:**
 - The total investments of life insurance companies grew from Rs. 743,602 crore in March 2009 to Rs. 873,536 crore in March 2010 which is a growth of about 17.5%. The growth rate of these investments has been assumed to be 15% per annum till FY 2017.
 - In FY 2009 and FY 2010, about 9% of total investments of life insurance companies have been in housing and infrastructure sector. The same trend has been assumed to continue till FY 2017
 - 25% of the total investments of housing and infrastructure sector have been assumed to be allocated to power sector

- **Non-life insurance companies:**
 - The total investments of non-life insurance companies grew from 58,893 in March 2009 to 66,372 in March 2010 which is a growth of about 12.7%. The growth rate of these investments has been assumed to be 12.5% per annum till FY 2017.
 - In FY 2009 and FY 2010, about 15.5% of total investments of non-life insurance companies have been in housing and infrastructure sector. The same trend has been assumed to continue till FY 2017
 - 25% of the total investments of housing and infrastructure sector have been assumed to be allocated to power sector

On the basis of the above assumption, fund availability for power sector during 12th Plan from life and non-life insurance companies has been estimated at Rs. 28,899 crore. The calculations are provided in **Appendix 8.6**.

8.5.3 Fund mobilization from special schemes

In addition to the sources of debt and equity mentioned above, funds are available from the following special schemes:

8.5.3.1 Gross Budgetary Support (GBS)

GBS to Central Sector power PSEs has been estimated at Rs. 2,473.26 crore during 12th Plan. In addition fund infusion through GBS under planned schemes has been estimated at Rs. 1,77,368 crore. The details are given at **Appendix 8.5**. Funds under NEF scheme amounting to around Rs. 22,000 crore will be provided as interest subsidy and thus have been excluded for estimation of fund availability.

8.5.3.2 Credit Enhancement Scheme

The credit enhancement scheme of Government of India through India Infrastructure Finance Company Limited (IIFCL) could help infrastructure project developers access funds at a cheaper rate based on a guarantee. It would also release bank funds to lend to industry and retail borrowers.

The scheme envisages IIFCL guaranteeing the bonds being issued by the Infrastructure Company or SPV and subscribing to 25% of the bonds issued. It is expected that the IIFCL guarantee will be backed by an insurance cover by Asian Development Bank (ADB) to the tune of 50% of IIFCL's exposure and the remaining 50% will enjoy government guarantee by virtue of sovereign guarantee of IIFCL. As a result of the credit enhancement, the SPV's rating is expected to improve from BBB to AA, making it investment grade which is the minimum acceptable level for pension and insurance funds. With the participation of pension and insurance funds, the twin benefits of longer tenor and stable interest rate could accrue to power projects while the ALM issues of banks could also be resolved.

The scheme is expected to be launched on a pilot basis for which IIFCL has set aside a target of Rs 5,000 crore which translates to around Rs 20,000 crore of funding assuming that IIFCL will subscribe to 25% of the bonds issued. Out of these, Rs 10,000 crore (50%) have been assumed to be available for funding of power sector.

8.5.3.3 Infrastructure Debt Fund

Ministry of Finance, Govt of India has proposed to establish India Infrastructure Debt Fund as a specialized long-term debt fund to cater to the needs of the infrastructure projects being set up through Public Private Partnership (PPP) route. The proposed fund could be structured as a trust or as company as mentioned below:

- As a trust sponsored by a financial sector entity like Mutual Funds (regulated by SEBI) and would have to invest 90% of its assets in the debt securities of infrastructure companies or special purpose vehicles (SPVs) across all infrastructure sub-sectors. Minimum investment by trust-based fund would be Rs. 1 crore with Rs. 10 lakh as minimum size of the unit.
- As a company by IFCs or banks (regulated by RBI) with a minimum capital of Rs. 150 crore. Such a fund would be allowed to raise resources through rupee or dollar denominated bonds of minimum 5 year maturity. These bonds could be traded among the domestic and foreign investors.

The fund is expected to garner resources from domestic and off-shore institutional investors, especially insurance and pension funds.

As stipulated in the fund guidelines, the debt fund would only lend to projects that meet the following criteria:

- Completed at least one year of commercial operations without any material default in debt service or in the performance of their obligations under the respective project agreements
- Awarded through competitive bidding as they would carry the assurance of a sustainable price discovery

The fund would enable the project companies to substitute their existing debt by long-term bonds at comparatively lower interest rates. The restructuring of project debt would also release a large volume of the present lending capacity of the commercial banks, thus enabling them to lend more to new infrastructure projects.

The infrastructure debt fund is expected to provide an additional debt of Rs. 50,000 crore for infrastructure projects and help bridge the likely gap in debt financing. Out of these, Rs. 25,000 crore (50%) has been assumed to be available for power sector.

8.6 ADEQUACY OF FUNDS

On the basis of the fund requirement and availability estimated in previous sections, the debt shortfall has been computed at around Rs. 97,444 crore and the equity shortfall has been computed at around Rs. 90,363 crore, implying a total funding shortfall of Rs. 1,87,807 crore.

After incorporating funds available from GBS and special schemes, the total funding available is detailed below:

Table 8.12
Assessment of adequacy of funds during 12th Plan (Figures in Rs. crore)

Particulars	Amount
Funds Required	13,72,580
Equity Required	3,53,850
Total sources of Equity	2,63,487
Equity available /(shortfall) (A)	(90,363)
Debt Required	10,18,730
Total sources of Debt	9,21,286
Debt available /(shortfall) (B)	(97,444)
Total Funds available /(shortfall) before considering impact of Special Schemes (A+B)	(187,807)
Funding by GBS	
GBS to CPSEs	2,473
GBS to plan schemes	1,55,368*
Sub-Total (C)	1,57,841
Funding from other Sources	
Credit Enhancement Scheme	10,000
Infrastructure Debt Fund	25,000
Sub-Total (D)	35,000
Total funds available /(shortfall) (E=A+B+C+D)	5,034

* Funds under NEF scheme amounting to around Rs. 22,000 crore will be provided as interest subsidy and thus have been excluded for estimation of fund availability.

A low economic growth scenario has also been considered for estimating the availability/shortfall of funds in case of adverse economic situation. The quantum of debt available from various sources in such a scenario has been compared with the base case estimation and results are tabulated in **Appendix 8.13**. The underlying assumptions involved in the calculations are also provided in **Appendix 8.14**.

The shortfall in availability of funds in the low economic growth scenario has been computed to be Rs. 1,40,528 crore vis-à-vis fund surplus of Rs. 5,034 crore in the base case scenario. The details of the same are provided as follows:

Table 8.13

Shortfall estimation in case of low economic growth

<i>(Figures in Rs. crore)</i>	
Particulars	Amount
Funds Required	13,72,580
Equity Required (D/E – 70:30)	3,53,850
Total Equity Available	2,63,487
Equity available /(shortfall) (A)	(90,363)
Debt Required (D/E – 70:30)	10,18,730
Total Debt Available	7,75,723
Debt available /(shortfall) (B)	(2,43,007)
Additional funds from GBS and other sources (C)	1,92,841*
Total funds available /(shortfall) (D=A+B+C)	(1,40,528)

* Funds under NEF scheme amounting to around Rs. 22,000 crore will be provided as interest subsidy and thus have been excluded for estimation of fund availability.

Further consideration may be given to the fact that the adequacy of funds for investment in the power sector has to be determined in conjunction with the financial and policy constraints prevalent in the economy.

8.7 FINANCIAL ISSUES

8.7.1 Quantum of Funds

Banks and Infrastructure Finance Companies (IFCs) are the predominant sources of financing. Balance sheet size of many Indian banks and IFCs are small vis-à-vis many global banks. Credit exposure limits of banks and IFCs towards power sector exposure is close to being breached. Any future exposure seems to be severely constrained by balance sheet size, their incremental credit growth and lack of incentives to lend to power sector. The desirability and sustainability of sectoral exposure norms of the banks in the future may be examined in view of the massive exposure of the banks and projected fund requirements for the power sector.

Further, any downgrade in the credit rating of power sector borrowers would adversely impact the ability of the major NBFCs viz. PFC and REC to raise large quantum of funds at a competitive rate from domestic as well as international capital markets. In such a scenario, the sources of funds available for power sector projects are expected to be further constrained.

8.7.2 Tenor of Funds

The capital intensive nature of power projects requires raising debt for longer tenor (more than 15 years) which can be supported by life of the Power Project (around 25 years). However, there is wide disparity between the maturity profiles of assets and liabilities of banks exposing them to serious Asset Liability Maturity mismatch (ALM). Accordingly, the longest term of debt available from any bank or financial institution is for 15 years (door-to-door) which could create mismatch in cash flow of the Power project and may affect the debt servicing. Options like re-financing may be explored to make funds available for the power project for a long tenor.

Though maturity profiles of funds from insurance sector and pension funds are more suited to long gestation power projects, only a miniscule portion is deployed in power sector. Appropriate fiscal incentives need to be explored to channelize savings. New debt instruments and sources of funds viz. Infrastructure Debt Fund, Clean Energy Funds etc. may be identified for the purpose of infrastructure financing.

8.7.3 Cost of Funds

Cost of Rupee funding is high as compared to foreign currency funding. In a competitive bidding scenario, higher cost of borrowing could adversely affect the profitability and debt servicing of loan. External Commercial Borrowings (ECBs) for power projects is not well suited due to issues relating to tenor, hedging costs, exposure to foreign exchange risks etc. Project financing by multilateral agencies (World Bank, Asian Development Bank) has been low due to various issues.

While bond offerings are a lower cost option to raise funds vis-à-vis syndicated loans, corporate bond market for project financing is virtually absent in India. The credit rating of the power projects being set up under SPV structure is generally lower than investment criterion of bond investors and there is a need for credit enhancement products.

8.8 POLICY ISSUES

8.8.1 Concerns Regarding Land Acquisitions

In light of recent court rulings relating to land acquisition for projects, developers have voiced their concerns in this regard. Also, the availability of land and right of way that are critical for the power project are emerging as a major issue for the developers. There is a need for uniform land acquisition policy framework across the country that could address all the issues relating to land acquisition that is equitable to all the stakeholders.

8.8.2 Fuel security and related issues

Coal produced in 2010 was 526 million tonnes and about 77% of the coal produced is consumed by Power Plants. An incremental demand of 350-400 mtpa has been estimated for 12th Plan, of which

about 50% is expected to be met by domestic supply. Accordingly, coal imports are estimated to reach a level of around 200 mtpa by the end of 12th Plan.

Coal based projects accorded Letter of Assurance (LoA) by Coal India Ltd. (CIL) are to the tune of 30,000 MW. However, a majority of LoAs are yet to be converted into binding Fuel Supply Agreement (FSA) as CIL has expressed inability to commit coal for all the projects under implementation. Lack of binding FSA adversely impacts fuel security and bankability of the project and lenders are unwilling to finance power projects without a binding FSA.

In order to meet the coal shortfall, most of power sector players are acquiring coal assets abroad. However, if the cost of imported coal is passed through to the beneficiary states/ UTs, it results in high power tariffs due to which the end users viz. Discoms are not willing to off-take the power. Further, IPPs are moving towards tariff bidding regime from cost plus regime and the ability of IPPs to absorb cost of imported coal is limited. Hence, lenders have voiced concern regarding the long term viability of imported coal based power projects.

Further, considering technical aspects, CEA has advised that the boilers be designed to blend domestic and imported coal in the ratio of 70:30 or higher. However, CIL has proposed fuel supply agreement with only 50% commitment of domestic coal and the balance requirement to be met through imports. The above issue needs to be addressed in such a way that the technical requirements and commercial agreements are aligned.

Captive coal blocks allocated by Ministry of Coal to various power project developers may not be implemented as per the envisaged implementation schedules due to issues relating to land acquisition and environmental concerns. The delay in development of captive coal blocks is also hindering the financing of end use power projects.

While most of the 12th Plan power projects have achieved financial closure, the above mentioned issues viz. lack of binding FSA, high cost of imported coal and delays in according statutory clearances to captive coal blocks are expected to impact financial closure of 13th Plan power projects.

8.8.3 Environmental Issues

Inordinate delays in environmental clearances may lead to cost escalation and in exceptional circumstances to abandonment of the Project. Credit off-take in the sector is hampered/ delayed as many projects are unable to achieve timely compliance of Conditions Precedent to disbursement.

8.8.4 Financial Health of Power Distribution Companies

The financial health of distribution utilities in the country is a matter of concern. The increase in financial losses of Discoms in the last few years could partly be attributed to high levels of Aggregate Technical and Commercial (AT&C) losses as well as inability of power tariffs to recover the cost of supply. If the present trend continues, projected losses in the year 2014-15 will be Rs 1,16,089 crores as per the study conducted by M/s MERCADOS for the XIII Finance Commission.

Owing to poor financial health of Discoms, the Discoms may not be able to borrow funds from lenders which could adversely impact investment in the power sector. The financial health of

Discoms would adversely impact their ability to pay for power procured from IPPs. In such a scenario, lenders are not willing to lend to generation and transmission projects of IPPs and IPTCs respectively.

Unless appropriate steps are taken now to curtail the mounting financial losses of the utilities, it may lead to breach of conditions agreed under the Fiscal Responsibility and Budget Management (FRBM) framework, apart from adversely impacting financial health of States and might even jeopardize the investment in the entire power sector.

8.8.5 Regulatory Issues

The bidding for power projects through Case I route is sporadic and inconsistent, hence the whole bidding process may be reviewed with respect to bidding mechanism, frequency and timing of bid, efficacy etc.

Moreover, the lenders are able to establish the bankability of a project only when there is a firm power purchase agreement in place with the Power Distribution Companies (Discoms) for major quantum of power to be generated by the project. Delays in bidding for power projects through Case I route could lead to delay in establishing bankability of a project and may lead to delays in targeted capacity addition.

Further, bidding for power projects through Case I and Case II routes envisages that a part of the risk on account of fuel cost will be borne by the project developer. Power projects coming up on imported coal could be adversely impacted by the recent changes in fuel pricing as witnessed in Indonesia and Australia. The new Indonesian mining laws make it mandatory that coal prices be based on international market rate. Similarly, Australia is planning a levy on general additional revenues from exports of coal as well as to impose a carbon tax. Both these measures could adversely impact the financial viability of imported coal based power projects.

8.8.6 Concerns regarding funding Renewable Energy (RE) Projects

For the lenders, RE projects are also considered as power projects and there is no separate sub-sectoral allocation. Consequently, RE projects have to compete with conventional power projects for borrowings from banks. Moreover, the lenders do not have any compulsion or incentive for financing RE projects. In lenders' view, the financial viability of a conventional power project is quite apparent vis-à-vis RE project. The funds available with many Indian banks are limited due to their low capitalisation; these banks are expected to cater to the needs of all classes of borrowers from retail to SMEs to large industries. By financing just a few projects, their sectoral limits in a particular sector get exhausted. Since RE projects have no separate sectoral limits they are the worst hit. As a result, conventional power projects are crowding out the RE projects in the debt market.

Most of the RE capacity in India has been set up to exploit tax incentives and was financed on full recourse basis. Though a number of small and independent developers are implementing RE projects on a non-recourse basis, lenders are not comfortable with such developers regarding their ability to infuse necessary equity, poor project preparation, bankability of projects etc. Also, the information relating to past performance of standalone RE projects is hardly available to the mainstream lenders, which otherwise would have helped in improving lenders' comfort regarding RE projects. Moreover, there are no credit enhancement products in the Indian debt market which could enhance the

comfort of project lenders. In the absence of familiarity and comfort, lenders prefer conventional power projects over the renewable projects.

8.8.7 Concerns regarding funding of projects in NE Region

Overall development of power sector in the NE region has been very slow. The reasons for the slow pace of power project execution are as follows:

- Hydro electric project sites are inaccessible and have very difficult approach/ maintenance of access roads
- Difficulties faced in obtaining environment & forest clearance, land acquisition, R&R issues
- Geological surprises
- Inadequate Survey & Investigation
- Law and Order issues

8.9 RECOMMENDATIONS & IMPLEMENTATION STRATEGY

8.9.1 Policy Measures for Equity Participation

Modifications in IRDA/PFRDA policy framework: The discussions should be held with IRDA/PFRDA for making suitable modifications in their policy framework so as to channelize long term funds available with insurance companies/NPS/EPFO to PEFIs.

IPO by Power companies: Profit making central/ state utilities in generation as well as transmission & distribution sector like NHDC, NLC, etc. should be encouraged for supply of PSU stock in the market by way of IPOs/ FPOs (Follow-on Public Offer)/ offer for sale.

8.9.2 Sector Specific Funds

From time to time, Government of India (GoI) introduces sector specific funds with specific objective of making funds available to a particular sector from the respective fund. Some of these funds which can be considered potential source of funds for the infrastructure sector are:

8.9.2.1 Specialized Debt Funds for Infrastructure Financing

Creation of specialized long-term debt funds to cater to the needs of the infrastructure sector; a regulatory and tax environment that is suitable for attracting investments is the key for channelizing long-term funds into infrastructure development.

RBI may look into the feasibility of not treating investments by banks in such close-ended debt funds as capital market exposure. IRDA may consider including investment in SEBI registered debt funds as approved investments for insurance companies.

8.9.2.2 Long tenor debt funds

Insurance Companies, Financial Institutions should be encouraged/provided incentives to invest in longer dated securities to evolve an optimal debt structure to minimize the cost of debt servicing. This would ensure lowest tariff structure and maximum financial viability. Option of a moratorium for an initial 2 to 5 years may also reduce tariff structure during the initial years.

8.9.3 Hydro Power Viability Fund

In case of hydro power projects, the cost of generation in the initial 4-5 years is comparatively much higher than in the later years. It is suggested that for long term Power Purchase Agreement (PPA) contracts, a component (say 25%) in the tariff of hydro power projects for the first five years after start of commercial operation is deferred and not recovered from the buyers but is added in the tariff from 11th to 15th years. To operationalise such schemes, lenders will need to initiate a scheme which finances the deferred component of the power tariff of the first five years and recovers its money during 11th to 15th year of the operation. For this, a fund can be set up by IFCs which cater to payments and receipts. The responsibility of developing and operating the hydro project viability fund can be vested with financial intermediaries like PFC etc. This will also rationalize the gap between the tariff of hydro and thermal in the initial years of operations. Any extra financing cost incurred on such viability gap financing should also be permitted as a pass through in the tariff by regulators.

8.9.4 Viability Gap Fund (for Remote areas)

The power projects that are listed under in generation or transmission and distribution schemes in remote areas like North-eastern region, J&K etc and other difficult terrains need financial support in the form of a viability gap for the high initial cost of power which is difficult to be absorbed in the initial period of operation. A scheme may be implemented in the remote areas as a viability gap fund either in the form of subsidy or on the lines of hydro power development fund, a loan which finances the deferred component of the power tariff of the first five years and recovers its money during 11th to 15th year of the operation may be introduced. Any extra financing cost incurred on such viability gap financing should also be permitted as a pass through in the tariff by regulators.

8.9.5 Policy Measures for financing RE Projects

In light of the concerns mentioned earlier, it can be suggested that some sort of interest subsidy may be offered or make concessional refinancing available to RE project lenders for encouraging financing to RE sector.

Further, in light of the fact that conventional power projects are crowding out the RE projects in the debt market, RBI may consider funding to RE Projects as a separate sector for the purpose of computing sectoral exposure limits.

8.9.6 Policy Measures for Take-out financing for ECB Lenders

RBI has stipulated guidelines for Take-out Financing through External Commercial Borrowings (ECB) Policy.

The guidelines stipulate that the corporate developing the infrastructure project including Power project should have a tripartite agreement with domestic banks and overseas recognized lenders for either a conditional or unconditional take-out of the loan within three years of the scheduled Commercial Operation Date (COD). The scheduled date of occurrence of the take-out should be clearly mentioned in the agreement. However, it is felt that the market conditions cannot exactly be anticipated at the time of signing of document and any adverse movement in ECB markets could nullify the interest rate benefit that could have accrued to the project. Hence, it is suggested that tripartite agreement be executed closure to project COD and instead of scheduled date of occurrence of the take-out event, a window of 6 or 12 months could be mentioned within which the take-out event should occur.

Further, the guidelines stipulate that the loan should have a minimum average maturity period of seven years. However, an ECB of average maturity period of seven years would entail a repayment profile involving door-to-door tenors of eight to ten years with back-ended repayments. An analysis of past ECB transactions indicates that ECB with such a repayment profile may not be available in the financial markets. Further, the costs involved in hedging foreign currency risks associated with such a repayment profile could be prohibitively high. Hence it is suggested that the minimum average maturity period stipulated should be aligned to maturity profiles of ECB above USD 20 million and up to USD 500 million i.e. minimum average maturity of five years as stipulated in RBI Master Circular No.9 /2011-12 dated July 01, 2011.

8.9.7 Policy Measures for financing power projects in NE Region

In light of the concerns mentioned in earlier sections, the following policy measures can be suggested:

- Geological survey & investigation works, preparation of DPR, approvals and clearances from various organizations including MoEF have to be taken up in a time bound manner. A well formulated time-frame for concerned authorities to respond to applications for approvals and clearances will alleviate the concerns of the lenders.
- A comprehensive plan for adequate road and power evacuation network needs to be formulated taking into consideration various development projects. Such a move is expected to substantially mitigate the construction and power evacuation risk of the projects.
- Non availability of construction materials like cement steel etc and long procurement time makes the Hydro Projects costly and unviable. Setting up of industries for construction material including cement industry may be encouraged in the North Eastern Region.
- Lending to power projects in NE could be brought under the ambit of priority sector for encouraging financing to power projects in NE sector.
- Power generation and transmission projects in NE sector could be financed through a dedicated NE fund. The mechanism of operation of this fund has been discussed in the next section.

8.9.8 Policy Measures for improving the health of state sector utilities

- The state governments should ensure that the accounts of a financial year are audited by September of the next financial year, henceforth. Computerization of accounts would be undertaken on priority, if not done already.

- The states should ensure that the distribution utilities file their Annual Tariff Revision Petition every year, by December – January of the preceding financial year to the State Regulators as stipulated by the National Tariff policy.
- The Annual Tariff Revision Petition should be filed before the SERC, keeping in view the increase of the Power purchase cost (which accounts for nearly 70-80% of the Cost of supply) and states will ensure that the difference between ARR and ACS is not only bridged but is positive to generate internal surpluses which can be used for network expansion and maintenance.
- The state governments should ensure automatic pass through in tariff for any increase in fuel cost by incorporating the same in the regulations, as provided in Section 62(4) of Electricity Act, 2003. (State Governments can issue directions to SERCs under Section 108 of the Electricity Act, 2003).
- The state governments should not only clear all the outstanding subsidies to the utilities, but ensure advance payment of subsidy as per the Section 65 of the Electricity Act, 2003 in future.
- The state governments should ensure payment of all outstanding dues from various departments of state government and institutions to the distribution utilities or release payments from the State budget directly.
- The state governments should consider converting loans due from the state governments to the distribution utilities as state government equity to ensure capital infusion and improvement in net worth of utility.
- The state governments should take effective steps to reduce AT&C losses to less than 15% by administrative measures, curbing pilferage of electricity and by setting up special police stations and special courts to deal exclusively with power theft related cases, if not done already.
- States should immediately initiate steps to appoint distribution franchises in urban areas through competitive bidding.
- States should immediately invite bids for meeting the uncovered generation capacity gap viz-a -viz the requirement in their States by the end of 12th Plan. The process will be completed by March, 2012.
- States should create a unit in their states for integrated planning of generation, transmission and distribution to meet the future requirement of their states.

8.9.9 Policy Measures for accelerating flow of debt investment in power sector

Exposure to State/Central Entities: In view of huge capacity addition targets and role being played by State/Central power entities, there is a need to have higher exposure ceilings for lending to State/Central sector entities (State/Central entities and joint sector entities promoted by state and/or central entities), so as to ensure availability of sufficient funding to such entities for development of Indian power sector as well as for growth of Indian economy. At present, PFC and REC has an exposure ceiling 100% to 150% of Net Worth for State/Central entities in power sector.

In this regard, exemption, granted to PFC and REC from RBI's Prudential Regulations in case of State/Central entities, may be continued till the end of 12th Plan i.e. March 31, 2017.

Combined Exposure Ceilings: RBI exposure norms applicable to IFCs allow separate exposure ceilings for lending and investment. Further, there is also a consolidated cap for both lending & investment taken together.

In project funding, the IFCs are mainly funding the debt portion and funding of equity is very nominal. Therefore, the consolidated ceiling as per RBI norms may be allowed as overall exposure limit with a sub-limit for investment instead of having separate sub-limits for lending and investment. This will leverage the utilization of unutilized exposures against investment. It is well justified since lending is less risky as compared to equity investment. This will provide additional lending exposure of 5% of owned funds in case of a single entity and 10% of owned funds in case of single group of companies, as per existing RBI norms.

UMPP: Government of India has launched an initiative for development of Ultra Mega Power Projects (UMPPs). Each UMPP has been envisaged with capacity of 3500 MW or more. A total of 16 (sixteen) UMPPs have so far been identified and out of those, 4 (four) of these have already been transferred to the successful bidders. As each UMPP is likely to cost around Rs.20000 crore and would require around Rs.15000 crore as debt component considering D/E ratio of 75:25. Such a huge debt requirement could not be met with present RBI exposure norms of 25% of owned funds in case of single borrower and 40% in case of group of companies.

It is recommended that a special dispensation may be considered by commercial banks for UMPPs in respect of exposure limit as at the time of transferring UMPP all clearances are available, escrow account is opened in favour of developers and PPAs are signed. Considering the above, there is a need to allow relaxed exposure ceilings for funding to UMPPs.

Exposure linked to Capital Funds: RBI Exposure ceilings for IFCs are linked to 'owned funds' while RBI exposure norms as applicable to Banks & FIs allow exposure linkage with the total regulatory capital i.e. 'capital funds' (Tier I & Tier II capital). Exposure ceilings for IFCs may also be linked to capital funds on the lines of RBI norms applicable to Banks. It will enable to use the Tier II capitals like Reserve for bad and doubtful debt created under Income Tax Act, 1961, for exposures.

Provisioning for Government Guaranteed Loans etc: RBI norms provide for 100% provisioning of unsecured portion in case of loan becoming 'doubtful' asset. Sizeable loans of Government IFCs like PFC and REC are guaranteed by State Governments and not by charge on assets. On such loans, 100% provisioning in first year of becoming doubtful would be very harsh and can have serious implication on the credit rating of IFC. Therefore, for the purpose of provisioning, the loans with State/Central Government guarantee or with undertaking from State Government for deduction from Central Plan Allocation or Direct loan to Government Department may be treated as secured.

Loan-wise Provisioning: As per RBI norms, the provisioning for NPAs is required to be made borrower-wise and not loan-wise if there is more than one loan facility to one borrower. Since Government owned IFC's exposure to a single State sector borrower is quite high, it would not be feasible to provide for NPA on the total loans of the borrowers in case of default in respect of one loan. Further, the State/Central sector borrowers in power sector are limited in numbers and have multi-location and multiple projects. Accordingly, default in any loan in respect of one of its project

does not reflect on the repaying capacity of the State/Central sector borrowers. A single loan default may trigger huge provisioning for all other good loans of that borrower. This may distort the profitability position. Therefore, provisioning for NPAs in case of State/Central sector borrowers may be made loan-wise.

Restructuring/Renegotiation/Rescheduling(R/R/R): RBI norms applicable to IFCs provide for R/R/R of principal/interest with or without sacrifice not more than once before commencement of commercial production of the project. On the other side, RBI norms applicable to Banks provide that loan will not be classified as NPA if it fails to commence commercial operations within 2 years from original Commercial Operation Date (COD). Further, the bank norms also provide for additional period of 2 years (i.e. total 4 years) in case of reasons for extension of COD is arbitration proceedings/ court case and additional period of 1 year (i.e. total 3 years) in case project is delayed for other reasons beyond the control of promoters.

In case of consortium financing, if separate asset classification norms are followed by IFCs as compared to other consortium lenders which are generally banking institutions; the asset classification for the same project loan could differ amongst the consortium lenders leading to issues for further disbursement etc.

Accordingly, there is a need of allowing IFCs to extend the COD within prescribed period from original COD, without any limitation on the number of times. It is also felt that the prescribed period from the original COD may be kept higher in case of projects involving higher gestation period. For example, hydro projects require high gestation period particularly due to its geographical situation and vulnerability due to implementation issues especially related to R&R. Accordingly, the prescribed period may be higher in case of hydro projects.

Notwithstanding, requirement of re-examination of project for its viability, provision to the extent of shortfall in security available etc. at the time of restructuring, as presently applicable as per RBI norms applicable to IFCs may continue to be applicable.

State/Central entities generally approach for extension of scheduled COD of the project for the reasons like procedural delays, minor breakdown, right of way problems etc. Such requests are normally agreed to, and moratorium & repayment schedule are also extended along with project completion dates. It may be mentioned that such extension of repayment schedule in respect of State/Central entities does not reflect on the problems with the repayment of loans, as the borrowers are generally big entities with large multi-location asset base.

Accordingly, such extension of scheduled COD of the project in respect of State/Central sector entities without sacrifice of either principal and/or interest may not be treated as R/R/R.

Capital Adequacy Ratio (CAR): Prudential Norms relating to requirement of capital adequacy are not applicable to Government owned IFCs. However, on the other side, it has been prescribed as an eligibility requirement for an Infrastructure Finance Company (IFC) being 15% (with minimum 10% of Tier I capital). Accordingly, Government owned IFCs are also required to maintain the prescribed CAR. Considering the better comfort available in case of Government owned IFCs, it is felt that RBI

may consider stipulating relaxed CAR requirement for Government owned IFCs. It will help such Government owned IFCs in better leveraging.

Risk Weights for CAR: RBI prudential norms applicable to IFCs require 100% risk weight for lending to all types of borrowers. However, it is felt that risk weight should be linked to credit rating of the borrowers. On this premise, a 20% risk weight may be assigned for IFC's lending to AAA rated companies.

Similarly, in case of loans secured by the Government guarantee and direct lending to Government, the IFCs may also assign risk weight in line with the norms applicable to banks. Accordingly, Central Government and State Government guaranteed claims of the IFC's may attract 'zero' and 20% risk weight respectively. Further their direct loan/credit/overdraft exposure to the State Governments, claims on central government will attract 'zero' risk weight. It may be mentioned that RBI vide its letter dated 18.03.2010 advised PFC and REC that State Government guaranteed loans, which have not remained in default for more than 90 days, may be assigned a risk weight of 20%.

ECB: As per extant ECB Policy, the IFCs are permitted to avail of ECBs (including outstanding ECBs) up to 50% of their owned funds under the automatic route, subject to their compliance with prudential guidelines. This limit is subject to other aspects of ECB Policy including USD 500 million limit per company per financial year. These limits/ceilings are presently applicable to all IFCs whether in State/Central or Private Sector.

Government owned IFCs are mainly catering to the funding needs of a single sector, like in Power sector where the funding requirements for each of the power project is huge. These Government owned IFCs are already within the ambit of various supervisory regulations, statutory audit, CAG audit, etc. It is, therefore, felt that the ceiling of USD 500 million may be increased to USD 1 billion per company per financial year for Government owned IFCs. Further, the ceiling for eligibility of ECB may also be increased to 100% of owned funds under automatic route for Government owned IFCs to enable them to raise timely funds at competitive rates from foreign markets. Thus, these measures will ensure Government owned NBFC-IFCs to raise timely funds at competitive rates thereby making low cost funds available for development of the infrastructure in India.

8.10 IMPLEMENTATION MECHANISMS

Some of the implementation mechanisms aimed at channelizing more funds into the power sector, based on the recommendations made in this report have been discussed ahead.

8.10.1 Policy Interventions & Financial Measures for Reducing Funding Gap

8.10.1.1 Tax incentives on investments

A higher economic growth can only be sustained through investment in the infrastructure sector. For garnering additional funds for the sector, there is a need to introduce additional investment limit of Rs. 50,000 per year for infrastructure bonds under Section 80C of the Income Tax Act, 1961 over and above existing limit of Rs. 1,00,000. Assuming a subscriber base of 13 million (approx. 33% of the total tax payer base of 40 million), the amount mobilized is estimated as Rs. 39,000 crore p.a.

Assuming a 50% flow to the power sector out of the above, the mobilization over 5 years is estimated at Rs. 97,500 crore. The loss of tax revenue from this step would be compensated by higher tax revenue in future due to higher GDP growth rate. Such a step can be supported at this junction as we expect higher tax collection as a result of a growing economy.

8.10.1.2 Institutional / Regulatory Interventions

- Payment security mechanism
 - a. Commitment of escrow upfront as in case of successful UMPPs to be provided
 - b. Alternatively, to provide access to large industrial consumers on payment of wheeling charges, in case of default, as adequate security in lieu of ESCROW.
- Uniform rules for cross subsidy and additional surcharges to be levied by SEB on sale of power by an IPP in that state to a third party
- In line with the National Electricity Policy, states should be encouraged to follow Intra – State ABT regime such that they are eligible for 14% return on equity. This would encourage better discipline even within the states and shall enhance internal resources for deployment in R&M/capacity expansion.

8.10.2 Fiscal and other Measures to enable cheaper power

- The effective tax rate for the business of lending to infrastructure sector after the likely advent of Direct tax code from FY12 is projected to go up from about 27% to 30% due to withdrawal of exemptions under 36(1)(viii) and 36(1)(viiia)(c) of Income Tax, 1961. Hence infrastructure lending would be subjected to maximum tax rate. Though concessions for developers in infrastructure space would continue, all benefits for infrastructure lending are proposed to be removed. This would force lenders to pass this additional tax burden in the lending rates which would enhance the cost of borrowing for infrastructure projects.

Since the need of the hour is to arrange low-cost funds for infrastructure sector, there is a strong case for levying MAT for infra lending rather than the normal corporate tax or to restore the tax concession already available to these financial institutions.

- Excise duty on power generation, transmission & distribution equipment (which is currently at 14%) should be reduced and gradually phased out for generation projects with an installed capacity of more than 1,000 MW and for inter-state transmission lines. This is required, as power sector has no advantage of “cenvat” credit as there is no excise on power, which increases the cost of power.
- The import duty relaxation presently available for generation equipments may also be extended to include all equipment related to power transmission, distribution metering and energy conservation so that the supply of equipments at reasonable cost is available to continue with Distribution reforms which are being supported by schemes like APDRP etc.

- Existing Income tax exemption for power sector projects under section 80IA expiring in March 2012 to be extended till March 2017, i.e. end of 12th Plan period.
- Additional depreciation of 20% (WDV) under IT Act is available for investments in plant and machinery in industries other than power. Same depreciation should be made available to power industry also.
- Technology transfer for developing and enhancing existing manufacturing facilities in India needs to incorporate in equipment procurement contracts. As a first step, the domestic manufacturing obligations on the line of bulk-tendering carried out by NTPC for 800 MW and 660 MW sets could be stipulated for the power projects being awarded for the benefit of 13th Plan. Such a step will ensure that indigenous vendor development is facilitated for high-tech supplies in future.

8.10.3 National Electricity Fund (NEF)

The poor state of distribution sector requires investment for replacement of obsolete equipment and technology upgradation. During budget speech of 2008-09, Government of India (GoI) had announced the creation of NEF. Under this scheme, it was proposed that interest subsidy would be extended to the Distribution Utilities which would be linked to reforms. This is expected to reduce the burden of servicing the interest on the utilities.

The proposed scheme is envisaged to provide interest subsidy for over 15 years with an estimated outlay of Rs. 63,750 crore. The amount of Rs. 22,000 crore has been estimated for 12th Plan under NEF, assuming an average interest subsidy of 5% per annum which is expected to be provided from the funds allocated for distribution.

8.10.4 Dedicated fund for financing Power projects in NE sector

Power projects in NE sector could be financed through a dedicated NE fund. Since the benefits of optimal utilization of mineral and water resources of NE would accrue to the whole country, establishing such a fund could channelize the funds collected from the country as a whole and release capital resources of banks/ GoI grants for community level developmental work in NE region.

Further, project developers could be further incentivised to set up projects in the NER through fiscal incentives like waiver on Minimum Alternate Tax (MAT). It may be emphasised that MAT credits are utilized by a project developer between 5th and 10th year of the project cycle. Hence, MAT waiver would not impact the total tax payments but would only increase upfront equity returns to the project developer.

8.11 CONCLUSION

1. On the basis of envisaged capacity mix, proposed capacity addition schedule and associated project cost, the total funds required during 12th Plan have been estimated at Rs. 13,72,580

- crores with a Debt requirement of Rs. 10,18,730 crore and Equity requirement of Rs. 3,53,850 crore.
2. The availability of Debt and Equity during the same period have been estimated at Rs. 9,21,286 crores and 2,63,487 crores respectively implying a total funding shortfall of Rs. 1,87,807 crore.
 3. After incorporating funds available from GBS and special schemes, the shortfall in availability of funds in low economic growth scenario has been computed to be Rs, 140,528 crore vis.a.vis fund surplus of 5,034 crore in the base case scenario.
 4. While most of the 12th Plan power projects have achieved financial closure, fuel related issues viz. lack of binding FSA, high cost of imported coal and delays in according statutory clearances to captive coal blocks are expected to impact financial closure of 13th Plan power projects.
 5. Further, appropriate steps are required to be taken to curtail the financial losses of the utilities and improve the investment climate in the power sector.
 6. Due to the above reasons, mobilization of debt to power sector projects will continue to be challenge that needs to be addressed with suitable measures.
 7. Further various policy measures like Hydro Power viability fund, measures for financing RE projects and take-out financing for ECB lenders have been suggested so as to improve fund availability for the sector.

Appendix 8.1

All India Expenditure for 11th Plan (Generation, Transmission & Distribution)

(Figures in Rs. crore)

Sector	Segment	2007-08	2008-09	2009-10*	2010-11*	2011-12*	Total
Centre							
	Generation	18,675	26,199	28,179	21,752	32,066	126,872
	Transmission	6,772	8,282	10,872	13,167	17,277	56,370
	Distribution	61	76	107	9	145	399
	Sub-Total	25,508	34,557	39,157	34,929	49,489	183,640
							-
State							
	Generation	17,371	24,066	24,821	20,672	29,403	116,333
	Transmission	7,773	9,459	10,823	16,908	21,416	66,379
	Distribution	18,184	20,860	12,394	3,282	31,361	86,081
	Sub-Total	43,328	54,384	48,038	40,862	82,179	268,792
							-
Private							
	Generation	15,119	24,790	33,175	40,836	38,531	152,451
	Transmission	71	171	-	-	-	242
	Distribution	2,180	3,356	2,695	364	4,926	13,521
	Sub-Total	17,370	28,318	35,870	41,200	43,457	166,214
							-
Total							
	Generation	51,165	75,055	86,175	83,260	100,000	395,655 [#]
	Transmission	14,616	17,913	21,695	30,075	38,693	122,991
	Distribution	20,425	24,292	15,196	3,655	36,432	100,000
	Total	86,206	117,260	123,065	116,991	175,125	618,646

Source: CEA/Planning Commission

Appendix 8.2**All India Expenditure in Power for 11th Plan****(Figures in Rs. crore)**

Segment	Amount
Generation	395,655
Captive Power Projects	30,000
Renewable Energy Sources	40,000
Nuclear Power Projects ¹	13,965
Sub-Total Generation	479,620
Transmission	122,991
Distribution	100,000
R&M	3,564
HRD	83
R&D	352
DSM	668
Grand Total	707,278

Source: CEA/Planning Commission

¹ Source: Annual accounts of DAE

Appendix 8.3

Capacity Addition Programme (in MW)

A. Capacity addition Programme during FY 2011-12 is given as follows:

Particulars	FY 2012
Hydro	1,990
Thermal	13,611
Coal	12,375
Gas	851
Lignite	385
Nuclear	2,000
Total	17,601

Source: CEA

B. Projected Yearly Capacity addition Programme during 12th Plan is given as follows:

Particulars	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	Total
Hydro	1,370	1,808	2,077	2,530	1,419	9,204
Thermal	14,671	13,070	13,555	12,575	9,910	63,781
Coal	13,685	12,970	13,555	12,575	9,910	62,695
Gas	986	100	-	-	-	1,086
Nuclear	-	-	-	1,400	1,400	2,800
Total	16,041	14,878	15,632	16,505	12,729	75,785

Source: CEA

C. Projected Yearly Capacity addition Programme during 13th Plan is given as follows:

Particulars	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total
Hydro	1,964	2,497	2,426	2,430	2,689	12,006
Thermal	17,400	14,790	10,960	11,365	8,935	63,450
Nuclear	4,900	4,900	3,100	3,450	1,650	18,000
Total	24,264	22,187	16,486	17,245	13,274	93,456

Source: CEA

Assumptions for Estimation of Cost of Projects

Assumptions for estimating cost of power projects

(Figures in Rs. crore per MW)

S.No.	Type of Generation project	Cost
1	Thermal generation projects	6
2	Hydro generation projects	8
3	Nuclear projects	10
4	Captive	5
5	Solar	13
6	Wind	6
7	Other RES	5

*The above costs are based on the FY 2011-12 price levels

10% higher costs have been assumed for projects in NE region.

Assumptions for allocation of cost towards 12th Plan

Phasing of expenditure of generation projects during the project construction period, which are expected to be commissioned in 12th Plan is given as follows:

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Thermal	15%	25%	30%	30%	0%	100%
Hydro	15%	15%	20%	25%	25%	100%
Nuclear	10%	20%	30%	25%	15%	100%

Phasing of expenditure of generation projects during the project construction period, which are expected to be commissioned in 13th Plan is given as follows:

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Thermal	20%	30%	25%	25%	0%	100%
Hydro	20%	25%	25%	15%	15%	100%
Nuclear	20%	25%	25%	15%	15%	100%

Appendix 8.5

Fund requirement and availability for central sector

Internal and Extra Budgetary Resources of PSEs

(Figures in Rs. crore)

S. No.	Name of PSE	Internal Resources	Bonds/ Debentures	ECB/Supplier's credit	Others	Total IEBR
1	NTPC	71,806.20	91,918.30	55,888.00	-	2,19,612.50
2	PGCIL	30,609.00	57,425.00	14,000.00	-	1,02,034.00
3	NHPC	13,150.12	14,161.92	-	-	27,312.04
4	SJVNL	3,466.58	-	2,931.59	4,001.83	10,400.00
5	THDCIL	1,295.20	-	2,923.72	2,562.94	6,781.86
6	NEEPCO	1,362.58	-	181.30	4,322.91	5,866.79
7	DVC*	4,536.85	1,500.00	-	8,472.80	14,509.65
	Total	1,26,226.53	1,65,005.22	75,924.61	19,360.48	3,86,516.84

Source: I&EBR Data, MoP

Gross Budgetary Support (GBS) during 12th Plan

(Figures in Rs. crore)

Sl. No.	Scheme Name	Amount
1.	GBS to CPSEs	2473.26
2.	GBS to Plan Schemes	
a.	Distribution	
i.	R-APDRP	9,924
ii.	R-APDRP - additional requirement of funds for ongoing projects sanctioned during 11th Plan	9,900
iii.	Smart Grid	5,000
iv.	Research & Development (Rs. 5 Cr annually)	25
v.	RGGVY	59,391
vi.	Inclusion of Productive Load Scheme	30,970
vii.	Feeder separation Scheme	10,000
viii.	National Electricity Fund	22,000
ix.	Human Resources Development Plan	150
x.	Scheme for replacement of inefficient pump sets by energy efficient pump sets in Agriculture Sector	15,000
	Sub-Total Distribution	162,360
b.	DSM	7,482
c.	R&D	3,418
d.	HRD (Training Infrastructure)	4,108
	Sub-Total (GBS to Plan Schemes)	177,368
	Grand Total	179,841

Appendix 8.6

Sources of funds – Insurance Companies

Life Insurance

Actual

(Figures in Rs. crore)

Particulars	2008	2009	2010
Life Insurance Investments	632891	7,43,602	8,73,536
Growth of Life Investments		17.49%	17.47%
of which Infrastructure Investments	63,262	66,673	72,492
as % of Total Investments	10.00%	8.97%	8.30%

Source: IRDA

Projected

(Figures in Rs. crore)

Particulars	2011	2012	2013	2014	2015	2016	2017
Life Insurance Investments	1,004,566	1,155,251	1,328,539	1,527,820	1,756,993	2,020,542	2,323,623
Growth of Life Investments	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
of which Infrastructure Investments	90,411	103,973	119,569	137,504	158,129	181,849	209,126
as % of Total Investments	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%

Net funds available from Life Insurance companies during 12th Plan: $25\% \times (2,09,126 - 1,03,973) = \text{Rs. } 26,288 \text{ crore}$

Non-life Insurance

Actual

(Figures in Rs. crore)

Particulars	2008	2009	2010
Non-life Insurance Investments	56,280	58,893	66,372
Growth of Non- Life Investments		4.64%	12.70%
of which Infrastructure Investments	7,660	8,980	10,373
as % of Total Investments	13.61%	15.25%	15.63%

Source: IRDA

Projected*(Figures in Rs. crore)*

Particulars	2011	2012	2013	2014	2015	2016	2017
Non-life Insurance Investments	74,669	84,002	94,502	106,315	119,604	134,555	151,374
<i>Growth of Non-Life Investments</i>	<i>12.50%</i>	<i>12.50%</i>	<i>12.50%</i>	<i>12.50%</i>	<i>12.50%</i>	<i>12.50%</i>	<i>12.50%</i>
of which Infrastructure Investments	11,574	13,020	14,648	16,479	18,539	20,856	23,463
<i>as % of Total Investments</i>	<i>15.50%</i>	<i>15.50%</i>	<i>15.50%</i>	<i>15.50%</i>	<i>15.50%</i>	<i>15.50%</i>	<i>15.50%</i>

Net funds available from Non-Life Insurance companies during 12th Plan: $25\% \times (23,463 - 13,020) =$
Rs. 2,611 crore

Total funds available from Insurance companies during 12th Plan = 26,288 + 2,611 = Rs. 28,899 crore

Appendix 8.7

Sources of funds – Banks (including syndicated loans)

Actual

(Figures in Rs. crore as on last Friday of FY)

Particulars	2007	2008	2009	2010
Non-food Gross Bank Credit (GBC)	18,01,240	22,02,890	26,02,290	30,37,318
<i>Growth in GBC</i>		22.30%	18.13%	16.72%
of which advances to industry	6,97,339	8,66,875	10,54,390	13,09,814
<i>% of GBC</i>	38.71%	39.35%	40.52%	43.12%
of which advances to power sector	73,158	95,067	1,24,447	1,88,147
<i>% of advances to industry</i>	10.49%	10.97%	11.80%	14.36%

Source: RBI

Projected

(Figures in Rs. crore projected as on last Friday of FY)

Particulars	2011	2012	2013	2014	2015	2016	2017
Non-food Gross Bank Credit (GBC)	35,23,289	40,51,782	46,59,550	53,58,482	61,62,254	70,86,592	81,49,581
<i>Growth in GBC</i>	16.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
of which advances to industry	15,50,247	17,82,784	20,50,202	23,57,732	27,11,392	31,18,101	35,85,816
<i>% of GBC</i>	44%	44%	44%	44%	44%	44%	44%
of which advances to power sector	2,32,537	2,67,418	3,07,530	3,53,660	4,06,709	4,67,715	5,37,872
<i>% of advances to industry</i>	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%

Net funds available from banks during 12th Plan: 5,37,872-2,32,537= **Rs. 2,70,455 crore**

Appendix 8.8**Sources of funds – PFC****Assumptions**

1. Profit After Tax (PAT) is estimated to grow by 15% p.a.
2. FY 2010-11 : Figures of PAT , Net worth, RBDD per Audited Standalone Financial Results
3. FY 2011-12 : Funds of ~Rs. 3433 crore is mobilized from FPO which will save interest cost @9.50% for 10 months with effective tax rate assumed as 27%
4. FY 2011-12 : Disbursement is based on MoU Target
5. It is assumed that transfer to RBDD will be 5% of PAT
6. It is assumed that minimum Capital Adequacy Ratio(CAR) of 17% will be maintained during 12th Plan period
7. It is assumed that Risk Weighted Assets (RWAs) constitute only Loan assets since Fixed Assets and current Assets forms small portion of RWAs.
8. It is assumed that recovery from borrowers will be 10% of previous year loan assets
9. It is assumed that Short Term Disbursement will be 13% of total disbursements
10. It is assumed that no money will be raised through issue of fresh equity shares

Sources of funds – REC**Assumptions**

1. FPO considered in the year 2014-15, fresh Equity equivalent to 10% of the Paid up capital as on March 31, 2014 to be raised @ 1.31 times of projected Book value of ₹ 195.60 as on 31.03.2014, i.e. Rs. 257/-.
2. Dividend payout is presumed to be that as per the Govt. of India guidelines.
3. Growth in disbursements taken @ 15% from 2012-13 and gradually reduced to 14%, 13%, 12% and 12% for the year 2013-14 to 2016-17. Further, it has been assumed that out of total disbursements, 85% will be long term disbursements and 15% will be short term.
4. Recoveries of outstanding loans as on 31.03.2011 considered on actual basis and for future disbursements it is considered 15% STL to be recovered over the next 3 years and balance in 10 instalments, 51% (60% of 85%) for the schemes whereby moratorium period is over.
5. Outstanding borrowings repayments considered on actual basis and in fresh mobilization, repayment considered 10% at the end of 1 year, 35% at the end of 3 years, 40% at the end of 5 years and 15% at the end of more than 7 years.
6. Adhoc Provision for Doubtful debts on standard assets made @ 0.25% for Loan assets as on 31.03.2011, the provision amount adjusted from reserves and for the additions during the year 2011-12 onwards same adjusted from the profit of the relevant year.
7. Addition to Reserve for Bad Debt u/s 36(1)(vii) of I-Tax Act assumed @ 2% of Income from Long Term Financing, which is assumed to be 90% of Total Income, (as in year 2010-11).
8. For Capital adequacy ratio, State Govt. guaranteed loans as on 31.03.2011 considered to be reducing @20% over the previous year balance. For fresh disbursements, it is presumed that 20% of the Loans will be secured by way of State Govt. Guarantees.
9. The existing Income Tax and regulatory provisions applicable to REC are presumed to continue over the next 6 years.

Appendix 8.10
Sources of funds – Other Infrastructure NBFCs
(Figures in Rs. crore)

IFC	L&T finance	PFS	IDFC	Total
LoanbookasonMarch31,2011	6,694.22	675.59	37,652.32	45,022
<i>Growth in Loan Book p.a.</i>	15.00%	15.00%	15.00%	
LoanbookasonMarch31,2017	13,464.47	1,358.85	75,732.26	90,556
Incremental Lending for 12th Plan	6,770.25	683.26	38,079.94	45,533
<i>Of which lending to Power Sector</i>	80%	80%	80%	
Incremental Lending to Power Sector for 12th Plan	5,416.20	546.61	30,463.96	36,427

* Source: IDFC

1. IDFC has indicated a 15% p.a. growth in loan book for 12th Plan period which amounts to incremental loans at around Rs. 38,000 crore.
2. As informed by IDFC, around 80% of incremental loans are expected to flow into power sector.
3. Incremental lending to Power Sector by IDFC for 12th Plan has been estimated at around Rs. 30,000 crore.
4. Similar numbers have been assumed for other IFCs also.

Appendix 8.11

Sources of funds – Bonds/Debentures

Actual

(Figures in Rs. crore)

Year ended March 31,	2007	2008	2009	2010	2011
Total Bonds & NCDs issuances	99,222	1,29,717	1,78,261	1,91,865	1,94,948
% growth y-o-y		31%	37%	8%	2%
Power Sector bond issuances	5,275	3,468	12,571	16,324	19,025
% growth y-o-y		-34%	262%	30%	17%
Power Sector as % of all bonds/ NCDs	5%	3%	7%	9%	10%

Source: Prime Database

Projected

Year ended March 31,	2012	2013	2014	2015	2016	2017
Total Bonds & NCDs issuances	2,12,493	2,31,618	2,52,463	2,75,185	2,99,952	3,26,947
% growth y-o-y	9%	9%	9%	9%	9%	9%
Power Sector bond issuances	20,928	23,020	25,322	27,855	30,640	33,704
% growth y-o-y	10%	10%	10%	10%	10%	10%
Power Sector as % of all bonds/ NCDs	10%	10%	10%	10%	10%	10%

Net funds available from bond issue during 12th Plan = sum of bond issue amount from FY 2013 to FY 2017 =Rs. **1,40,541 crore**

Appendix 8.12

Sources of funds – Multilateral/Bilateral Credits/ ECBs

1. Actual

(Figures in Rs. crore)

Particulars	2004	2005	2006	2007
Outstanding amount	303,800	335,315	335,802	412,076
% growth		10.37%	0.15%	22.71%

Source: RBI

$$\text{CAGR} = ((412,076/303,800)^{(1/3)} - 1) \times 100 = 10.70\%$$

2. Projected

FY 2008- FY 2011

(Figures in Rs. crore)

Particulars	2008	2009	2010	2011
Outstanding amount	456,168	504,978	559,011	618,825
% growth	10.70%	10.70%	10.70%	10.70%

FY 2012- FY 2017

(Figures in Rs. crore)

Particulars	2012	2013	2014	2015	2016	2017
Outstanding amount	685,039	758,338	839,481	929,305	1,028,741	1,138,816
% growth	10.70%	10.70%	10.70%	10.70%	10.70%	10.70%

Net funds available from Multilateral/Bilateral Credits/ ECB during 12th Plan = 20% x (1,138,816 – 6,85,039) = **Rs.90,755crore**

Appendix 8.13**Debt Availability in Low Economic Growth Scenario***(figures in Rs. crore)*

Source	Base Case Estimation	Low Economic Growth Scenario
SCBs	270,455	221,364
PFC	178,259	151,520
REC	175,950	149,558
Other IFC	36,427	30,343
Bonds/Debentures	140,541	125,261
Multilateral/Bilateral Credits/ECBs	90,755	74,502
Insurance companies	28,899	23,176
Total Debt Available	921,286	775,724

Appendix 8.14**Underlying assumptions for Low Economic Growth Scenario**

Institution	Sensitivity Parameter	Base Case Assumption	Low Economic Growth Scenario
SCBs	Annual growth of Non-food gross bank credit	15%	13%
PFC	Projected Long Term Disbursements	100%	85%
REC	Projected Long Term Disbursements	100%	85%
Other IFCs	Annual growth in Loan Book	15%	13%
Bonds/Debentures	Annual growth in Bond issuances by Power Sector	10%	7%
Multilateral/Bilateral Credits/ECBs	Annual growth in external debt outstanding	10.7%	9.5%
Life Insurance companies	Annual growth of life insurance investments	15%	13%
Non-Life Insurance companies	Annual growth of non-life insurance investments	12.5%	10.5%