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RURAL ELECTRIFICATION CORPORATION LIMITED

INDUSTRY OVERVIEW
DRAFT 4

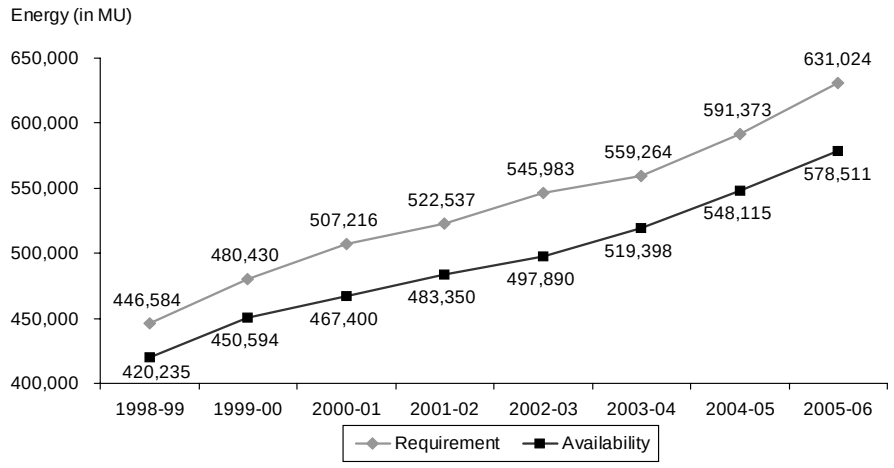
INDUSTRY OVERVIEW

Certain information in this section has been extracted from publicly available documents prepared by various sources, including officially prepared materials from the GoI and its various ministries and various multilateral institutions. Such information has not been prepared or independently verified by us or any of our advisors. Unless otherwise indicated, the data presented excludes captive capacity and generation. The term "units" as used herein refers to kilowatt hours (kWh).

INDIAN ELECTRICITY DEMAND

Historically, the power industry in India has been characterized by energy shortages.

The following graph presents the gap between requirement and supply of electricity in India from fiscal 1999 to 2006:



Source: Ministry of Power Annual Report, 2005-06, www.cea.nic.in

Although power generation capacity in India has increased substantially in recent years, it has not kept pace with the growth in demand or the growth of the economy generally. According to India's Central Electricity Authority, during fiscal 2007 India's total energy shortage was 68,341 million units, or 9.9% of its total requirements, and India's peak shortage was 13,610 million units, or 13.5% of peak demand requirements.

On a per capita basis, energy consumption in India is relatively low in comparison to much of the rest of the world, including other developing nations. According to MoP data, in 2001, India's per capita electricity consumption was 408 units per year, as compared to a world average of 2,326 and yearly per capita consumptions of 2,642 units in Middle Eastern countries, 1,419 units in Latin America countries, 1,093 units in China, 549 units for Asian countries and 515 units for African countries. However, according to data from the MoP, per capita consumption of energy in India is projected to increase to 932 units per year by fiscal 2012.

As India's economy continues to grow, it is expected that India's energy consumption will grow as well. The GoI has adopted a system of successive Five Year Plans that set out targets for economic development in various sectors, including the power sector. According to the Planning Commission

of India, the Indian economy has grown at an average of 8% for the past three years. The Eleventh Plan, which covers fiscal 2008 through 2012 targets an average growth rate of 9% for the plan period and according to data from the MoP, in order for India to maintain a sustained growth of 8% to 9% per annum through the next 25 years and meet the energy needs of all citizens, India would need to increase its primary energy supply by three to four times and electricity generation capacity by about six times.

In order to match the increasing demand for power within India, substantial increases in generation capacity will be required, which will require additional improved transmission and distribution systems, all of which will require significant investment. According to data from the MoP, as on March 31, 2007, India's power generation systems had a total installed capacity of 132,330 MW. According to data from the MoP, an additional 78,577 MW are required to meet the projected demand during the Eleventh Plan. The overall requirement of funds in the Eleventh Plan for the power sector has been estimated at Rs. 10,316,000 million.

REGULATORY, LEGAL AND POLICY ENVIRONMENT IN THE POWER SECTOR

In recent years, in light of India's persistent power shortages, the GoI has taken significant action to restructure the power sector to improve its commercial and financial viability and to attract investments in this sector.

General

The most significant reform package has been the introduction of the Electricity Act, 2003, which has modified the legal framework governing the electricity sector and has been designed to address systemic deficiencies in the Indian power sector and to attract capital for large-scale power projects. The Electricity Act is a central unified legislation and replaces the multiple legislations that previously governed the Indian electricity sector. The objective is to introduce competition, protect consumer's interests and provide power for all. Under the Electricity Act, the regulatory regime is more flexible than under prior legislation and allows regulatory commissions greater freedom in determining tariffs. Additionally, the Electricity Act also provides for rural electrification, open access in power transmission and distribution, de-licensing of power generation and distribution and power trading.

The GoI notified the National Electricity Policy in February 2005. This policy aims to accelerate the development of the power sector, to provide supply of electricity to all areas and to protect the interests of consumers and other stakeholders, with attention on the availability of energy resources, the technology available to exploit these resources, the economics of generation using different resources and energy security issues. The salient features of this policy include:

- the access to electricity for all households in the next five years from the date of the policy;
- the availability of power to fully meet demand by 2012;
- the supply of reliable and quality power in an efficient manner and at reasonable rates;
- the increase of per capita availability of electricity to over 1,000 units by 2012;
- minimum lifeline consumption of 1 unit per household per day as a merit good by year 2012;

- the financial turnaround and commercial viability of the electricity sector; and
- the protection of consumer interests.

The GoI notified the National Tariff Policy in January 2006. This policy aims to ensure financial viability of the power sector, attract investments, ensure availability of electricity to consumers at reasonable rates, and promote transparency and consistency in regulatory approach for tariff setting.

Rural

The GoI undertook a number of initiatives over the years for rural electrification, including Kutir Jyoti Yojana, Minimum Needs Programme, Pradhan Mantri Gramodaya Yojana (PMGY), Accelerated Rural Electrification Program (AREP), Accelerated Electrification of One Lakh Villages and One Crore Households. However, to further strengthen the pace of rural electrification and with an objective to electrify all villages and provide access to electricity to all rural households by year 2009, the GoI launched the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) in April 2005 as a new comprehensive programme merging within it all the ongoing schemes.

In order to achieve the electrification of villages, the scheme envisages the creation of a rural electricity distribution backbone with atleast one 33/11KV sub-stations of adequate capacity in geographical blocks where these do not exist, a village electrification infrastructure with distribution transformers of appropriate capacity in villages and other habitations and decentralised distribution generation systems based on conventional sources where grid electricity supply is not feasible or cost effective. This infrastructure would service the requirements of agriculture and other activities in rural areas including irrigation pumpsets, small and medium industries, local industries, warehousing, healthcare, education and information technology in order to facilitate overall rural development, generate employment opportunities and alleviate rural poverty.

The GoI also notified the Rural Electrification Policy in August 2006. This policy aims at improving the access and quality of electricity supply in rural areas. The salient features of the policy are:

- the provision of access to electricity to all households by year 2009;
- the supply of reliable and quality power at reasonable rates;
- minimum lifeline consumption of 1 unit per household per day as a merit good by year 2012.

Distribution

To improve the distribution of power and accelerate the distribution of power reforms, in March 2003 the Central Government formulated the Accelerated Power Development Reform Programme ("APDRP"). The objectives of this programme are to improve the financial viability of state power utilities, reduce aggregate technical and commercial losses, improve customer satisfaction and increase the reliability and quality of the power supply by reducing outages and interruptions.

The ARDRP scheme seeks to reform the power distribution sector by providing investment and incentives to SEBs and SPUs and distribution companies to strengthen and improve sub-transmission systems and distribution networks. Under APDRP, the GoI provides funds as additional assistance in form of grants to states that have committed themselves to a time-bound programme of reforms. The additional funds allocated to SEBs and SPUs are to be utilized for upgrading and modernizing certain sub-transmission and distribution networks.

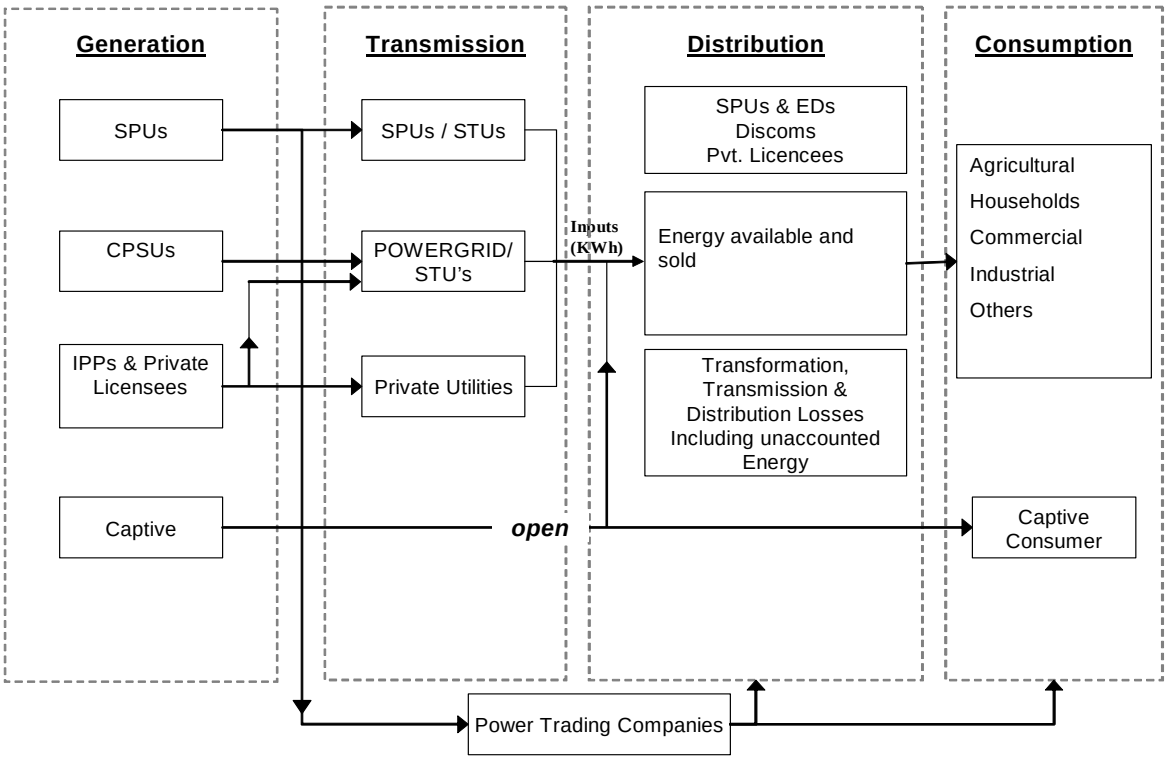
The GoI provides funds to SEBs and SPUs under the programme in two components. The first component is an investment component pursuant to which certain distribution projects are eligible for partial financing in the form of grants from the GoI; currently SEBs and SPUs in special category states are eligible to receive 90% of the cost of the project in the form of a grant and SEBs and SPUs in non-special category states are eligible to receive 25% of the cost of the project in the form a grant. In each case, the balance of the funding for the project must be arranged by the SEB and SPU in the form of internal or external financing or through other means. The second component is an incentive component, whereby the MoP provides to the states a grant of 50% of the SEBs' and SPUs' actual cash loss reduction year over year net of subsidies and receivables using a base year of fiscal 2001.

At the Conference of Chief Secretaries/Power Secretaries of States/Union Territories on power sector issues held in April 2007, it was proposed to revise the APDRP under the Eleventh Plan, in order to complete the already sanctioned schemes and to cover balance district headquarters and major towns. The investment and incentive components are proposed to be merged and the assistance would be linked to achievements in terms of aggregate technical and commercial losses in the project areas and fulfilment of updated reform conditionalities. Funding for strengthening of sub transmission and distribution network will be in the form of loan through financial institutions. Up to 50% (up to 90% for special category states) of the loan would be converted into grant on reducing aggregate technical and commercial losses to at least 15% through specified reform and performance milestones within the stipulated period.

Along with the APDRP, the MoP has taken various other initiatives in the recent past for bringing improvement in the distribution sector. All the states have signed the Memorandum of Understandings with the Ministry to take various steps to undertake distribution reforms in a time bound manner. Subsequently, 25 states have constituted SERCs, 22 have issued tariff orders in the direction of rationalizing the tariffs and 22 states have corporatized their former SEB entities.

STRUCTURE OF THE INDIAN POWER SECTOR

The following diagram depicts the structure of the Indian power industry for generation, transmission and distribution and consumption:



Generation

Generation generally refers to the bulk production of electric power for industrial, residential and rural use. According to data from the MoP, at the end of the Tenth Plan as on March 31, 2007, India's power generation systems had a total installed capacity of around 132,330 MW of which central power sector utilities accounted for approximately 34.2%, state sector entities accounted for approximately 52.9% and private sector companies accounted for approximately 12.9%.

The table below shows total installed generation capacity by sector and type of generation as on March 31, 2007.

(Figures in MW)

Sector	Hydro	Thermal	Nuclear	R.E.S (1)	Total
State	25,786	43,334	0	976	70,096
Central	7,562	33,659	3,900	0	45,121
Private	1,306	9,022	0	6,785	17,113
Total	**34,654**	**86,015**	**3,900**	**7,761**	**1,32,330**

Source: DMLF Division, CEA
(1) Renewable Energy Sources, which include Small Hydro Projects, Biomass Gas, Biomass Power, Urban and Industrial waste power and Wind Energy.

Each successive Five Year Plan has had increased targets for the addition of power generation capacity. The Ninth Plan targeted a capacity addition of 40,245 MW of which 73.4% was to come from thermal capacity, 24.4% was to come from hydro capacity and 2.2% was to come from nuclear capacity. According to the MoP, approximately 47.8% of the planned capacity was added during the Ninth Plan. The Tenth Plan for fiscal years 2002 to 2007 targeted a capacity addition of 41,110 MW, which was subsequently revised to 30,641 MW; however at the end of the Tenth Plan period, only 21,180 MW of capacity was added.

The additional capacity required to meet the projected demand during the Eleventh Plan is estimated at 79,000-80,000 MW. Of the estimated capacity addition of 78,577 MW during the Eleventh Five Year Plan, the estimated contribution by each of the central, state and private sector is provided as follows:

(Figures in MW except percentages)

Sector	Capacity Addition	Percentage
State	27,952	35.6
Central	39,865	50.7
Private	10,760	13.7
Total	**78,577**	**100.00**

Source: Base Paper, International Conclave on Key Inputs for Accelerated Development of Indian Power Sector for 11th Plan and Beyond, 4-5 July 2007, MoP and CEA

Public sector. In India, control over the development of the power industry is shared between the central and the state governments. Central sector utilities were created in 1975 under administrative control of the MoP. State governments have set up state utilities that are responsible for ensuring the supply, transmission and distribution of electricity in the most economical and efficient manner.

One of the key changes introduced by the Electricity Act, 2003 is the elimination of the legal basis for the continuation of SEBs. It is intended that SEBs will be completely restructured and their assets unbundled into separate generation, transmission, and distribution companies. The SEBs of Orissa, Haryana, West Bengal, Andhra Pradesh, Karnataka, Uttar Pradesh, Uttaranchal Rajasthan, Delhi, Tripura, Maharashtra, Gujarat, Assam and Madhya Pradesh have been unbundled as on June 30,2007 .

Private sector. In 1991 the Government began to encourage private sector participation in the power industry. The significant private power sector participants include Tata Power and Reliance Energy.

The Electricity Act allows for increased private involvement in power sector development. In particular it has introduced significant changes in the industry, notably by moving the sector from a single-buyer market to a multi-buyer and multi-seller system. The aim is to give the private sector access to the state electricity board transmission grids thereby allowing private power producers to sell directly to large industrial consumers.

Captive power generation. The electricity supply industry in India is also characterized by a large amount of captive generation, which has been established by energy intensive industries such as steel and aluminium. Under the Electricity Act, captive generators are able to sell excess power to consumers. For fiscal 2007, the total installed capacity of captive power plants with capacity of 1 MW and above was 19,485 MW. Out of this, about 14,866 MW of captive generating capacity is

connected to the grid and balance 4619 MW is operating in isolation meeting their own captive power requirements.

Investments in generation. The total fund requirement for generation projects, during the Eleventh Plan period is estimated at Rs. 4,108,960 million, with Rs. 2,020,670 million being required for the central sector, Rs. 1,237,920 million being required for the state sector and Rs. 850,370 million being required for the private sector. The total fund requirement includes the fund requirement estimated at Rs. 1,891,950 million for start-up generation projects benefiting in the Twelfth Plan.

Transmission

In order to accomplish the GoI's stated mission of "Power for all by 2012", there must be significant expansion of the regional transmission network and inter-regional capacity to transmit power.

The transmission of electricity is typically defined as the bulk transfer of power over a long distance at a relative high voltage. A reliable transmission and distribution system is important for the proper and efficient transfer of power from generation facilities to sub-stations or between substations. A transmission and distribution system is typically comprised of transmission lines, sub-stations, switching stations, transformers and distribution lines.

Demand for electric power transmission and distribution services is largely dependent on levels of electric power demand, and on the ability of the electric power generation and distribution sectors to service that demand. In order to ensure reliable supply of power, efficient utilization of generating capacity and effective exploitation of unevenly distributed generating resources in the country so as to optimize their potential, a strong interconnected transmission grid is required, which interconnects various generating stations and load centres.

In India, the transmission and distribution system is a 3-tier structure comprising distribution networks, state grids, and regional grids. These distribution networks and state grids are principally owned and operated by SEBs or other state utilities, or state governments (through state electricity departments). At present there are five regional grids operating in India, in the Northern, Eastern, Western, Southern and North eastern regions. Regional or interstate grids facilitate the transfer of power from a region with a surplus to one with a deficit. Most of the inter-state transmission links are owned and operated by PGCIL. These regional grids also facilitate the scheduling of maintenance outages and coordination between power plants.

In fiscal 2006, the GoI implemented a scheme under the Electricity Act to invite private sector investments in major transmission projects pursuant to which private developers are proposed to become transmission service providers on a "build, own and operate" basis. The GoI has identified 14 transmission-related projects to be implemented on a build, own and operate basis.

National grid. In order to optimize the utilization of generation capacity through the exchange of power between surplus and deficit regions and to exploit the uneven distribution of hydroelectric potential across various regions, the GoI in 1981 approved a plan to establish a national grid. The plan envisaged high-voltage transmission links across various regions in order to enable the transfer of power from surplus to deficit regions. The process of establishing the national grid was initiated with the formation of central sector power generating and transmission companies.

Current GoI plans focus on the creation of a national grid in a phased manner by adding over 60,000 ckm of transmission network by 2012. It is intended that integrated grid will evacuate an additional 100,000 MW by the year 2012 and carry 60% of the power generated in the country. The existing

inter-regional power transfer capacity of 9,000 MW is to be further enhanced to 30,000 MW by fiscal 2012 through creation of "Transmission Super Highways".

In order to enable the exchange of power and to encourage competition in power market, there is need for accelerated implementation of national power grid programme.

Investments in transmission. The total fund requirement for transmission system development and related schemes during the Eleventh Plan period is estimated at Rs. 1,400,000 million, with Rs. 750,000 million being required for the central sector and Rs. 650,000 million being required for the state sector.

In 1998, the GoI enacted the Electricity Laws (Amendment) Act, which recognized transmission as an independent activity, distinct from generation and distribution, and allowed private investment in the transmission sector.

In January 2000, the MoP issued guidelines whereby the state transmission utilities (STUs, SEBs or their successor entities) and the central transmission utility (Power Grid) could identify transmission projects for the intrastate and the inter-state/inter-regional transmission of power, respectively. The STUs and the CTU could invite private companies to implement these projects through an independent power transmission corporation, which would facilitate private investors including investors coming through FDI to invest 100% by themselves or on a joint venture basis with the CTU.

The role of the independent power transmission corporation would be limited to the construction, ownership and maintenance of transmission systems. The CTU and STUs would be involved in the development phase for obtaining project approvals and various regulatory and statutory clearances (such as environment and forest clearances and the securing of rights of way), and would transfer the same to the private companies selected.

Distribution

Power distribution is a critical link between generation, transmission and end users of power. As a result of high transmission, distribution and commercial losses and the poor financial health of bulk power purchasers (State Electricity Boards and State Power Utilities), investments in the distribution sector have been relatively low and the growth and maintenance of distribution systems in India has been poor. The poor financial health of SEB's and SPU's historically affects their ability to invest in new generation capacity, to update their transmission and distribution network and to undertake any system improvement. With distribution being the weakest link in the chain of power supply, distribution reforms have been identified as a key area of focus in the power sector reform process.

As regards the structure, in India, the distribution network and the state grids are mostly owned and operated by SEBs or state governments through SEBs. Delhi and Orissa are two states where private companies oversee power distribution. Additionally, Tata Power Limited, CESC Limited, Reliance Energy Limited, AEC Torrent Power Limited, SEC Torrent Power Limited and Noida Power Company Limited own and operate distribution networks in their respective license areas.

Rural Electrification

According to data available from the MoP, in India, out of estimated 587,556 villages about 150,000 are yet to be electrified. According to data available from the MoP, the states of Uttar Pradesh, Bihar, West Bengal, Uttaranchal, Jharkhand, Orissa, Assam, Meghalaya had over 80% villages and 56.5% of the rural households in the country that were yet to be electrified. The states of Himachal Pradesh, Goa, Punjab, Haryana, Sikkim, and Jammu and Kashmir, constituting about 6% of country's total

rural households, had achieved electrification in respect of over 75% of the rural households. However, the states of Bihar, Jharkhand, Assam, Orissa, Uttar Pradesh, and West Bengal, constituting 43% of country's total rural households still had 80% or more households that were yet to be electrified. 60.18 million or 43.5% of the rural households have been electrified, and 56.5% or 78.09 million are yet to be electrified.

The tables below show the pace of rural electrification of villages and households in some states in the country, as on March 31, 2007:

Village Electrification

State	Villages to be electrified	Percentage
Uttar Pradesh	40,389	42%
Bihar	20,449	53%
West Bengal	7,694	20%
Uttaranchal	2,785	18%
Jharkhand	22,920	78%
Orissa	9,682	21%
Assam	5,640	23%
Meghalaya	2,754	50%

Source: Ministry of Power website

Rural Households Electrification

Overall electrification in the country	Number of Households	Percentage
Total no. of Households	138.27 million	
Households electrified	60.18 million	43.5%
Households yet to be electrified	78.09 million	56.5%

Source: Ministry of Power website

States with more than 75% of households electrified

State	Percentage	Number of Households
Himachal Pradesh	94.5%	1,036,969
Goa	92%	130,105
Punjab	90.5%	2,482,925
Haryana	80.5%	1,926,814
Jammu & Kashmir	75%	868,341

Sikkim	75%	68,808

Source: Ministry of Power website

States with 80% or more households yet to be electrified

State	Percentage	Number of Households
Bihar	95%	12,010,504
Jharkhand	90%	3,422,425
Assam	83.5%	3,522,331
Orissa	80.6%	6,651,135
Uttar Pradesh	80%	16,505,786
West Bengal	79.7%	8,899,353
Total		51,011,534

Source: Ministry of Power website

Investments in distribution. The total fund requirement for sub transmission and distribution system development for urban and rural areas, during the Eleventh Plan period is estimated at Rs. 2,870,000 million. This is inclusive of the fund requirement for implementation of the GoI's Rajiv Gandhi Grameen Vidyutikaran Yojana estimated at Rs. 400,000 million and the fund requirement for implementation of other initiatives, including APDRP, estimated at Rs. 500,000 million. The entire fund requirement is estimated to be required for the state sector.

Development of the power sector requires large investment that cannot be met solely by public finance. The pace of reforms in the distribution sector would need to be accelerated in order to attract private investments. Therefore, the GoI is seeking a public private partnership model for resource mobilization and efficiency gains. An example of public private partnerships is already emerging in the form of franchisees in rural areas where electrification of villages has been achieved under the RGGVY.

PROVIDERS OF FINANCE TO THE POWER SECTOR IN INDIA

The primary providers of power sector financing in India are power sector specific government companies, financing institutions, public sector banks and other public sector institutions, multilateral development institutions and private banks.

Power-Sector Specific Government Companies

Besides our Company, the other sector specific companies owned by GoI and engaged in financing power sector are as follows:

Power Finance Corporation Limited. In order to provide funds for the power projects in India and to act as developmental financial institution for the power sector in India, the Power Finance Corporation Limited ("PFC") was incorporated on July 16, 1986. PFC is a government enterprise and its main objective is to raise the resources from international and domestic sources at the competitive rates and terms and conditions and on-ward lend these funds on optimum basis to the power projects

in India. PFC has been actively persuading State Governments to initiate reform and restructuring of their power sector in order to make them commercially viable and in this regard, is providing financial assistance to reform-minded States under relaxed lending criteria/exposure limit norms. It is also providing funds based services like Term Loans, Equipment Leasing, Bill Discounting, Buyers Line of Credit and also non funds based services like Guarantee Services and Consultancy Services.

Indian Renewable Energy Development Agency. The Indian Renewable Energy Development Agency ("IREDA") was established in 1987 as a public sector NBFC under the Ministry of Non-Conventional Energy Sources with the objective of promoting, developing and extending financial assistance for renewable energy and energy efficiency, and energy conservation projects. IREDA is playing a key role in the development of renewable energy in India.

Financial Institutions

Financial institutions were established to provide medium-term and long-term financial assistance to various industries for setting up new projects and for the expansion and modernization of existing facilities. These institutions provide fund based and non-fund based assistance to industry in the form of loans, underwriting, direct subscription to shares, debentures and guarantees. The primary long-term lending institutions include IDFC Limited, IIFC Limited, IFCI Limited, Industrial Investment Bank of India Limited and Small Industries Development Bank of India.

State Level Financial Institutions

State financial corporations operate at the state level and form an integral part of the institutional financing system. State financial corporations were set up to finance and promote small and medium-sized enterprises. At the state level, there are also state industrial development corporations, which provide finance primarily to medium-sized and large-sized enterprises.

Public Sector Banks and other Public Sector Institutions

Public sector banks make up the largest category of banks in the Indian banking system. The primary public sector banks operating in the power sector financing include the Industrial Development Bank of India, State Bank of India, Punjab National Bank and the Bank of Baroda. Other public sector entities such as the Life Insurance Corporation of India also provide financing to the power sector.

Private Sector Banks

After the first phase of bank nationalization was completed in 1969 the majority of Indian banks were public sector banks. Some of the existing private sector banks, which showed signs of an eventual default, were merged with state owned banks. In July 1993, as part of the banking reform process and as a measure to induce competition in the banking sector, the Reserve Bank of India permitted entry by the private sector into the banking system. This resulted in the introduction of nine private sector banks. These banks are collectively known as the ''new'' private sector banks. These institutions also provide fund based and non-fund based assistance to industry in the form of loans, underwriting, direct subscription to shares, debentures and guarantees, and will compete in this sector.

International Development Financial Institutions

International development financial institutions are supportive of power sector reform and of more general economic reforms aimed at mobilizing investment and increasing energy efficiency. The primary international development financial institutions involved in power sector lending in India include several international banking institutions such as Japan Bank for International Cooperation,

Kreditanstalt fur Wiederaufbau (KfW), the World Bank, the Asian Development Bank and the International Finance Corporation.

In the early 1990s, the World Bank decided to finance mainly projects in states that "demonstrate a commitment to implement a comprehensive reform of their power sector, privatise distribution, and facilitate private participation in generation and environment reforms". Recent loans from the World Bank have gone to support the restructuring of SEBs. In general, the loans are for rehabilitation and capacity increase of the transmission and distribution systems, and for improvements in metering the power systems in states that have agreed to reform their power sector.

The overall strategy of the Asian Development Bank (ADB) for the power sector is to support restructuring, especially the promotion of competition and private sector participation. Like the World Bank, the ADB also provides loans for restructuring the power sector in the states and improving transmission and distribution.

Other Provisions for Power Sector Finance

There also exist several short term and long term financing measures by the GoI to facilitate the financial viability of the power sector, such as the implementation of the Electricity Act 2003. As a long term financing measure, the process has been initiated for institutionalising mechanism for facilitating and accelerating private and foreign direct investment into the power sector.