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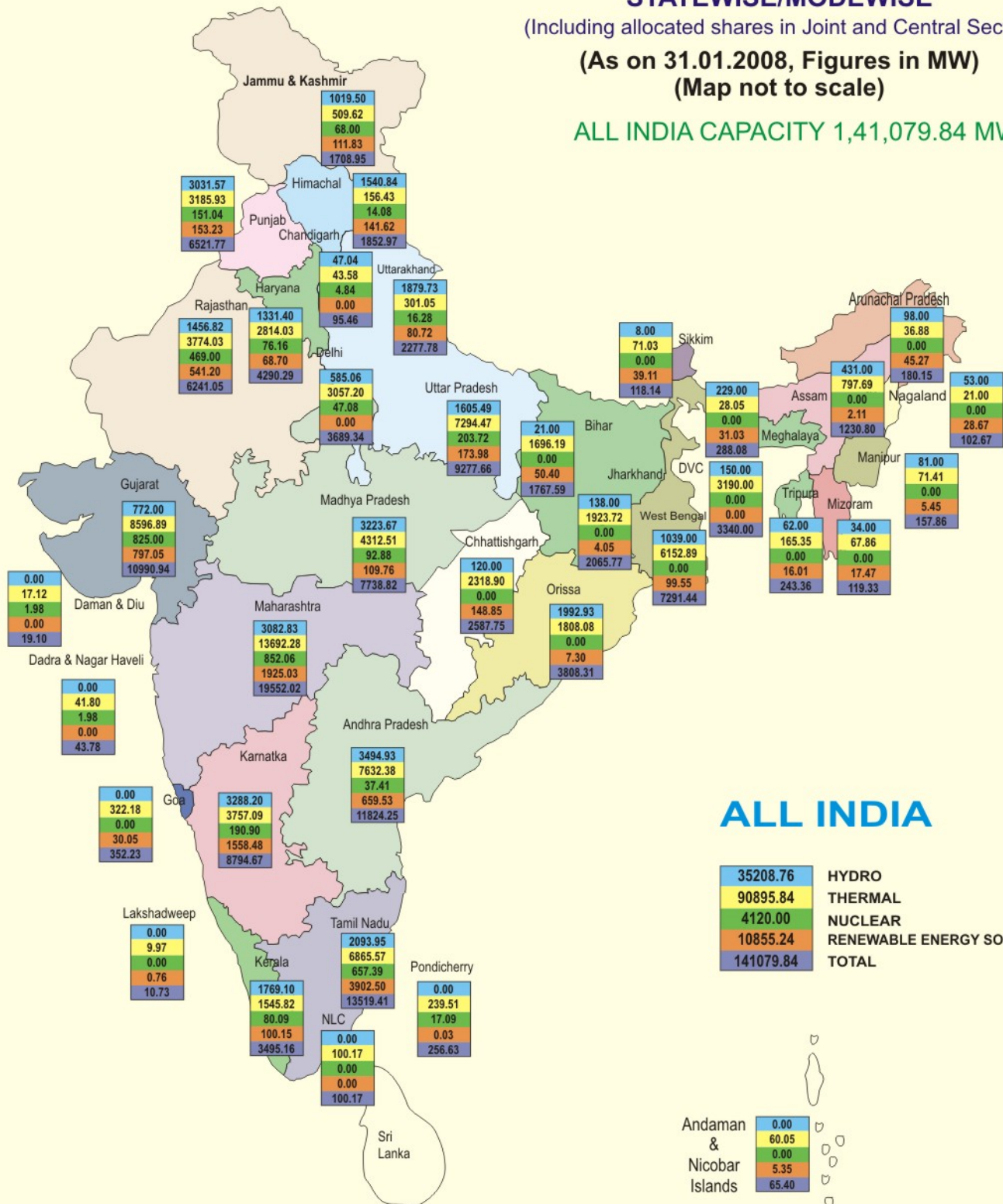
Government of India

MAP OF INDIA SHOWING INSTALLED GENERATING CAPACITY STATEWISE/MODEWISE

(Including allocated shares in Joint and Central Sector)

(As on 31.01.2008, Figures in MW)
(Map not to scale)

ALL INDIA CAPACITY 1,41,079.84 MW



ALL INDIA

35208.76	HYDRO
90895.84	THERMAL
4120.00	NUCLEAR
10855.24	RENEWABLE ENERGY SOURCES
141079.84	TOTAL

Annual Report

2007-08



Ministry of Power

Government of India

Shram Shakti Bhawan, Rafi Marg, New Delhi
Website : www.powermin.nic.in



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Hon'ble Prime Minister Dr. Manmohan Singh addressing the Conference of Chief Ministers on Power Sector Issues on 28th May 2007 at Vigyan Bhavan, New Delhi

CHAPTER - 1

PERFORMANCE HIGHLIGHTS

Section 3(i) of Electricity Act 2003 mandates the Central Government to prepare an Electricity Policy in consultation with State Governments and the Central Electricity Authority (CEA).

The Policy aims at accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources technology available to exploit these. resources, economics of generation using different resources and energy security issues.

Salient features of the Policy are as under : -

- Access to Electricity : Available for all households in next five years.
- Availability of Power : Demand to be fully met by 2012. Energy and peaking shortages to be overcome and spinning reserve to be available.
- Supply of Reliable and Quality Power of specified standards in an efficient manner and at reasonable rates.
- Per capita availability of electricity to be increased to over 1000 units by 2012.
- Minimum lifeline consumption of 1 unit/household/day as a merit good by year 2012.
- Financial Turnaround and Commercial Viability of Electricity Sector.
- Protection of consumers' interests.

REFORM STATUS

Electricity (Amendment) Act, 2007.

The Electricity (Amendment) Act, 2007, amending certain provisions of the Electricity Act, 2003, has been enacted on 29th May, 2007 and brought into force w.e.f. 15.06.2007.

The main features of the Amendment Act are: -

- Central Government, jointly with State Governments, to endeavour to provide access to electricity to all areas

including villages and hamlets through rural electricity infrastructure and electrification of households.

- No License required for sale from captive units.
- Deletion of the provisions for elimination of cross subsidies. The provisions for reduction of cross subsidies would continue.
- Definition of theft expanded to cover use of tampered meters and use for unauthorized purpose. Theft made explicitly cognizable and non-bailable.



Hon'ble Prime Minister Dr. Manmohan Singh, at the conference of Chief Ministers organised by the Ministry of Power flanked by Sh. Sushilkumar Shinde Minister of power and Sh. Anil Razdan Secretary (Power) on his right, and Sh. P. Chidambaram, Minister of Finance, Dr. Montek Singh Ahluwalia Dy. Chairman, Planning Commission and Sh. Sontosh Mohan Deb Minister for Heavy Industries on his left

Rules under Electricity Act. 2003

The Central Government has issued the following Rules under the Electricity Act, 2003 during this year: -

- The Central Government has notified Appellate Tribunal for Electricity (Procedure, Form, Fee and Record of Proceedings) Rules, 2007 on 22.1.2007, which have replaced the Appellate Tribunal for Electricity (Form, Verification and Fee for filing an Appeal) Rules, 2004 notified on 13.04.2004.
- Central Electricity Regulatory Commission Fund (Constitution and the manner of application, of the Fund) and Form and Time for Preparation of Budget Rules, 2007 notified on 22.10.2007
- Central Electricity Regulatory Commission (Form of Annual Statement of Accounts and Records) Rules, 2007 notified on 22.10.2007.

STATUS OF ULTRA MEGA POWER PROJECTS

- **Mundra in Gujarat** : The project was handed over to the Successful Bidder i.e., Tata Power Company Ltd., on 23.04.2007 at the evaluated levelized tariff of Rs.2.26367/kWhr.
- **Sasan in Madhya Pradesh** : The project was handed over to the Successful Bidder i.e., M/s Reliance Power Ltd., on 07.08.2007 at the evaluated levelized tariff of Rs.1.19616/k Whr.
- **Krishnapatnam in Andhra Pradesh** : The Project was handed over to Reliance Power Ltd., on 29.01.2008 at the levelized tariff of Rs.2.33/ kwhr.
- **Tilaiya in Jharkhand** : The RfQ stage in respect of Tilaiya UMPP was completed on 12.11.2007 and 13 bids have been received. The bids are under evaluation.
- Bidding process in respect of other five proposed UMPPs in State of Orissa, Tamil Nadu, Chattisgarh, Maharashtra and Karnataka is contingent upon necessary clearances/tie up from the respective State Governments which are being pursued.

APDRP

- 27 States have either constituted or notified their regulatory commission.
- 100% feeder metering have been achieved in 20 States.
- At national level 98% feeders and 89% of the consumers have been metered .
- An amount of Rs.1959.70 crore has been released as incentive to Andhra Pradesh, Gujarat, Haryana, Kerala,

Madhya Pradesh, Maharashtra, Punjab, Rajasthan and West Bengal.

- AT &C losses have been brought down below 20% in 215 APDRP towns in the country of which 163 towns have been brought down below 15%.

SAARC

- Under areas of cooperation in energy sector, training programmes have been offered for participants from SAARC countries. These are being organized by Public Sector Undertakings under Ministry of Power, viz., NTPC, POWERGRID and NHPC.

CONFERENCES/MEETINGS

Following Conferences/Meetings were held during the year to discuss power related issues

- Chief Secretaries' conference on 23rd & 24th April, 2007.
- Chief Ministers' conference on 28th May, 2007.
- Group of Ministers' meeting on 24th September, 2007 wherein constitution of following Task Force/ Sub Committee was approved :-
 - (i) Task Force on Hydro Project Development
 - (ii) Sub-Committee on financing issues.
- Chief Secretaries Conference was held on 19th Feb. 2008.
- National Power Project Monitoring Board (NPPMB) is being set up as per the decision taken in the Chief Ministers Conference.

ENERGY CONSERVATION

- CDM-CFL scheme announced on 28.05.2007.
- ECBC launched on 27th May, 2007 and energy audit studies in 17 government buildings have been completed in the second phase.
- Collectively saved 308 MW of energy and in monetary terms Rs.1843 crores per year by implementation of the energy efficient measures.

RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJANA(RGGVY) OF RURAL ELECTRICITY INFRASTRUCTURE & HOUSEHOLD ELECTRIFICATION

Central Govt. has launched a new scheme "Rajiv Gandhi Grameen Vidyutikaran Yojana of Rural Electricity Infrastructure and Household Electrification" on 4th April, 2005 for the attainment of the National Common Minimum Programme (NCMP) goal for providing access to electricity to all households in the country in

five years. Rural Electrification Corporation(REC) is the nodal agency for the scheme.

Under the scheme 90% capital subsidy would be provided for overall cost of the project for provision of:

- Rural Electricity Distribution Backbone (REDB) with at least one 33/11 kV(or 66/11kV) substation in each block
- Village Electrification Infrastructure (VEI) with at least one distribution transformer in each village/habitation.
- Decentralized Distribution Generation (DDG) Systems where grid supply is either not feasible or not cost-effective.

Since April, 2005, till 25th January, 2008, 45,602 villages have been electrified under RGGVY, 25,087 villages have been intensively electrified, 22,87,016 rural households (including 18,76,216 BPL households) have been released connections. Installation of Franchisee System to make rural electricity distribution business revenue sustainable is mandatory under the scheme. Franchisees' are in place in 14 states in 73,422 villages.

CONTINUATION OF RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJANA IN 11TH PLAN PERIOD

The continuation of Rajiv Gandhi Grameen Vidyutikaran Yojana has been approved by the Government in the 11th Plan for attaining the goal of providing access to electricity to all households, electrification of about 1.15 lakh

un-electrified villages and electricity connections to 2.34 crore BPL households. The approval has been accorded for capital subsidy of Rs.28000 crore during the 11th Plan period, at this stage.

Generation Performance

Generation during the year 2007-08 is targeted at 710.00 BU i.e. growth of 7.0% over generation target of 663 BU for the previous year.

- In the current financial year during period Apr'07-Jan'08 the actual generation was 586.03 BU against 551.54 BU generated during corresponding period of previous financial year representing a growth rate of about 6.25%. Loss of generation due to shortage (mainly gas) was of the order of 27.42 BU. But for this, growth rate would have been about 11.2%.
- Overall PLF of thermal power stations during the period April 07-Jan '08 in current financial year has been 77.7% against 76.6% in the corresponding period of last year.
- The PLF of central generating stations has improved to 86.0% during April 07-Jan '08 from 83.4% during corresponding period of previous year.

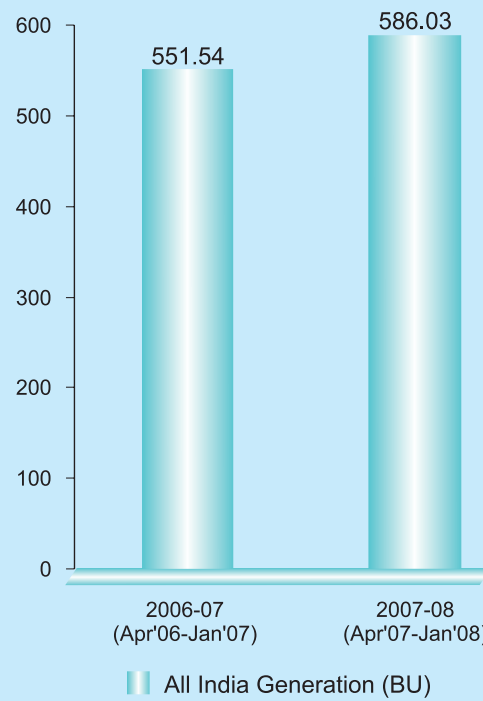
New Hydro Policy

- The New Hydro Policy has been approved by the Govt. on 3rd January' 08

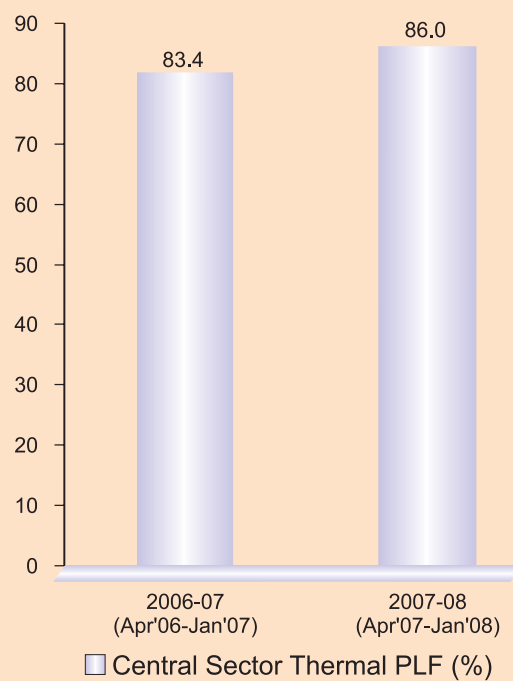


Hon'ble Prime Minister Dr. Manmohan Singh meeting the Delegates at the Conference of Chief Ministers organised by Ministry of Power at New Delhi

GENERATION



PLF OF THERMAL STATIONS

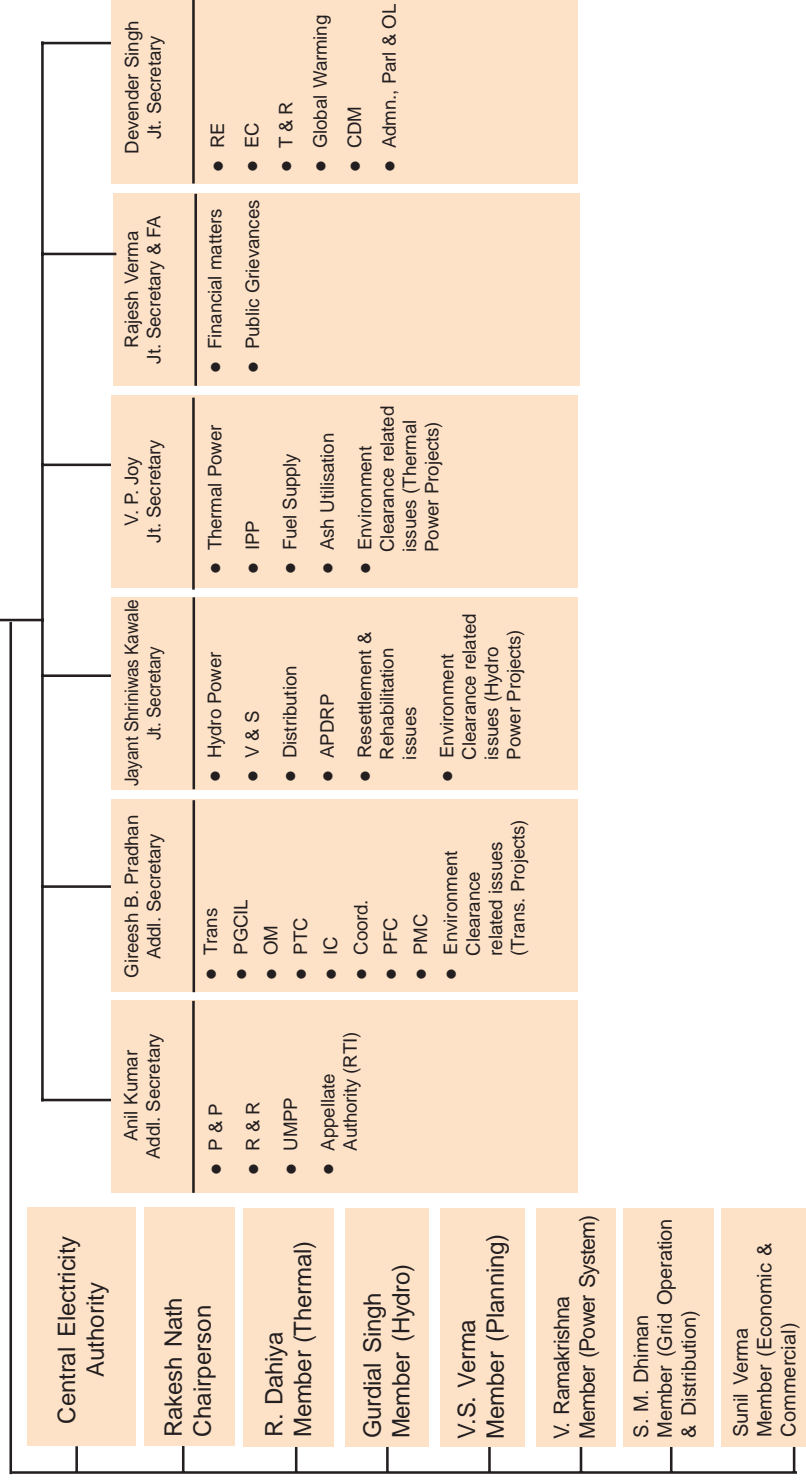




ORGANISATION STRUCTURE

SUSHILKUMAR SHINDE
MINISTER OF POWER

ANIL RAZDAN
SECRETARY (POWER)



CHAPTER - 2

MINISTRY OF POWER

The Ministry of Power started functioning independently with effect from 2nd July, 1992. Earlier it was known as the Ministry of Energy comprising the Departments of Power, Coal and Non-Conventional Energy Sources.

Electricity is a concurrent subject at entry number 38 in the List III of the Seventh Schedule of the Constitution of India. The Ministry of Power is primarily responsible for the development of electrical energy in the country. The Ministry is concerned with perspective planning, policy formulation, processing of projects for investment decisions, monitoring of the implementation of power projects, training and manpower development and the administration and enactment of legislation in regard to thermal, hydro power generation, transmission and distribution. The Ministry has developed its website www.powermin.nic.in.

The Ministry of Power is mainly responsible for evolving general policy in the field of energy. The main items of work dealt with by the Ministry of Power are as given below:

- General Policy in the electric power sector and issues relating to energy policy and coordination thereof. (Details of short, medium and long-term policies in terms of formulation, acceptance, implementation and review of such policies, cutting across sectors, fuels, regions and intra-country and inter-country flows);
- All matters relating to hydro-electric power (except small/mini/micro hydel projects of and below 25 MW capacity) and thermal power and transmission & distribution system network;
- Research, development and technical assistance relating to hydro-electric and thermal power, transmission system network and distribution systems in the States/UTs;



Meeting of Group of Ministers on Power Sector chaired by Shri Sushilkumar Shinde, Minister of Power on 24th September, 2007 at New Delhi



Winners of Vishwakarma Rashtriya Puraskar instituted by the Ministry of Labour and Employment in Oct. 2007 at Vigyan Bhawan, New Delhi

- Administration of the Electricity Act, 2003, (36 of 2003), the Energy Conservation Act, 2001 (52 of 2001), the Damodar Valley Corporation Act, 1948 (14 of 1948) and Bhakra Beas Management Board as provided in the Punjab Reorganisation Act, 1966 (31 of 1966)
- All matters relating to Central Electricity Authority, Central Electricity Board and Central Electricity Regulatory Commission;
- Rural Electrification;
- Power schemes and issues relating to power supply/ development schemes/programmes/ decentralized and distributed generation in the States and Union Territories;
- Matters relating to the following Undertakings / Organizations:
 - a. Damodar Valley Corporation;
 - b. Bhakra Beas Management Board (except matters relating to irrigation);
 - c. NTPC Limited;
 - d. National Hydroelectric Power Corporation Limited;
 - e. Rural Electrification Corporation Limited;
 - f. North Eastern Electric Power Corporation Limited;
 - g. Power Grid Corporation of India Limited;
 - h. Power Finance Corporation Limited;
 - i. Tehri Hydro Development Corporation;
 - j. Satluj Jal Vidyut Nigam Limited;
 - k. Central Power Research Institute;
 - l. National Power Training Institute;
 - m. Bureau of Energy Efficiency;
- All matters concerning energy conservation and energy efficiency pertaining to Power Sector.

ORGANISATIONS UNDER THE MINISTRY OF POWER

In all technical and economic matters, Ministry of Power is assisted by the Central Electricity Authority (CEA), constituted under section 3 (1) of the Electricity (Supply) Act, 1948 which has now been replaced by Electricity Act, 2003. The CEA advises the Ministry of Power on all technical and economic matters.



Shri Gireesh Pradhan, Addl. Secretary (Power) and Senior officials of Power Sector PSUs at Ministry of Power Pavilion, IITF 2007 at Pragati Maidan, New Delhi.

The construction and operation of generation and transmission projects in the Central Sector are entrusted to Central Sector Power Corporations, viz. The NTPC Limited, the National Hydro-Electric Power Corporation (NHPC), the North-Eastern Electric Power Corporation (NEEPCO) and the Power Grid Corporation of India Limited (PGCIL). The PGCIL is responsible for all the existing and future transmission projects in the Central Sector and also for the formation of the National Power Grid. Two Joint Venture Power Corporations namely, Satluj Jal Vidyut Nigam (SJVN) and Tehri Hydro Development Corporation (THDC) are responsible for the execution of the Satluj Jal Vidyut Nigam (SJVN) in Himachal Pradesh and projects of the Tehri Hydro Power Complex in Uttarakhand respectively. Statutory bodies i.e., Damodar Valley Corporation (DVC) and Bhakra Beas Management Board (BBMB) are also under the administrative control of the Ministry of Power. Programmes of rural electrification are provided financial assistance by the Rural Electrification Corporation (REC) under the Ministry of Power. The Power Finance Corporation (PFC) provides term-finance to projects in the power sector.

Further, the Autonomous Bodies (Societies) i.e. Central Power Research Institute (CPRI), the National Power Training Institute (NPTI) and the Bureau of Energy Efficiency (BEE) are also under the administrative control of the Ministry of power.

ORGANISATION SET-UP

Shri Sushilkumar Shinde is the Minister of Power since the 30th January, 2006.

Shri Anil Razdan is the Secretary in the Ministry of Power since the 1st February, 2007. The Ministry has two Additional Secretaries and four Joint Secretaries, including the Financial Adviser.

Shri Anil Kumar, Additional Secretary, oversees the work relating to Policy & Planning; Reforms & Restructuring and Ultra Mega Power Projects. He is also designated the Appellate Authority under Right to Information Act.

Shri G. B. Pradhan, Additional Secretary, oversees the work relating to International Cooperation, OM, Transmission, Coordination; Power Finance Corporation and Project Monitoring Panel.

The allocation of work among the four Joint Secretaries in the Ministry of Power is as under :

- i) Hydro Power and Vigilance & Security; Resettlement and Rehabilitation issues and Environment clearance related issues pertaining to Hydro Power Projects; Distribution, APDRP.
- ii) Thermal, Independent Power Producers; Fuel Supply, Ash Utilisation and Environment clearance related issues pertaining to Thermal Power Projects;
- iii) Rural Electrification; Rajiv Gandhi Gramin Vidyutikaran Yojana; Rural Electrification Corporation; Energy Conservation; Demand Side Management; Energy Efficiency; Training & Research; Global warming and

Clean Development Mechanism; Administration, Parliament and Official Language.

- iv) Financial matters and Public Grievances.

There is a Principal Accounts Office headed by the Controller of Accounts who in turn reports to the Financial Adviser in the Ministry of Power. Matters relating to reservations for SC/ST, Physically Handicapped and Ex-Servicemen in the Ministry including PSUs under its administrative control are dealt with by the Deputy Secretary (Admn), who is also the Liaison Officer for SC/ST and there is separate Liaison officer for OBCs. The sanctioned strength of the Ministry is 337.

CHAPTER - 3

GENERATION & POWER SUPPLY POSITION

GENERATION

The overall generation in the country has increased from 264 Billion Units (BUs) during 1990-91 to 662.52 BUs during 2006-07. The overall generation (Thermal+ Nuclear + Hydro) in public utilities in the country over the years are as under:

Year	Generation (BUs)
1990-91	264.3
1995-96	380.1
2000-01	499.5
2001-02	515.2
2002-03	531.6
2003-04	558.3
2004-05	587.4
2005-06	617.5
2006-07	662.52
2007-08 (up to Jan.'08)	586.00

PLANT LOAD FACTOR (PLF)

The all India PLF of thermal utilities during 2006-07 was 76.8%. The comparative sector-wise PLF in percentage over the years are as under :

Year	Central	State	Private	Overall
1990-91	58.1	51.3	58.4	53.8
1995-96	70.9	58.1	72.3	63.0
2000-01	74.3	65.6	73.1	69.0
2001-02	74.3	67.0	74.7	69.9
2002-03	77.1	68.7	78.9	72.1
2003-04	78.7	68.4	80.5	72.7
2004-05	81.7	69.6	85.1	74.8
2005-06	82.1	67.1	85.4	73.6
2006-07	84.8	70.6	86.3	76.8
2007-08 (up to Jan.'08)	86.0	70.9	90.8	77.7

POWER SUPPLY POSITION

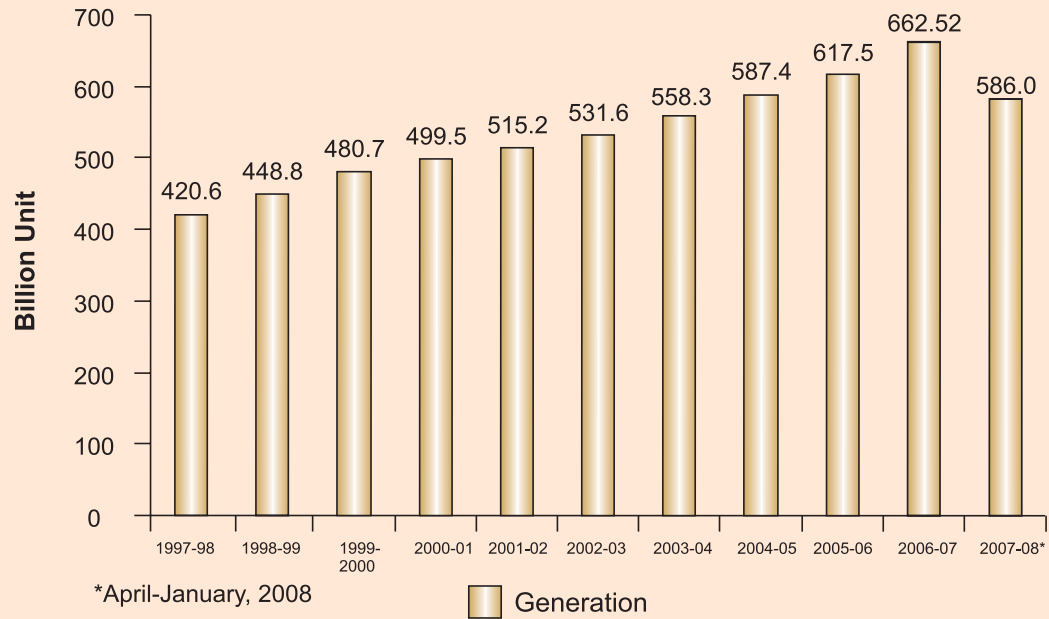
The power supply position from 1997-98 onwards are as under :

Year	Energy Requirement (MU)	Energy availability (MU)	Energy shortage (MU)	Energy Shortage (%)
1997-98	424505	390330	34175	8.1
1998-99	446584	420235	26349	5.9
1999-00	480430	450594	29836	6.2
2000-01	507216	467400	39816	7.8
2001-02	522537	483350	39187	7.5
2002-03	545983	497890	48093	8.8
2003-04	559264	519398	39866	7.1
2004-05	591373	548115	43258	7.3
2005-06	631554	578819	52735	8.4
2006-07	690587	624495	66092	9.6
2007-08 (up to Jan.'08)	608804	554248	54556	9.0

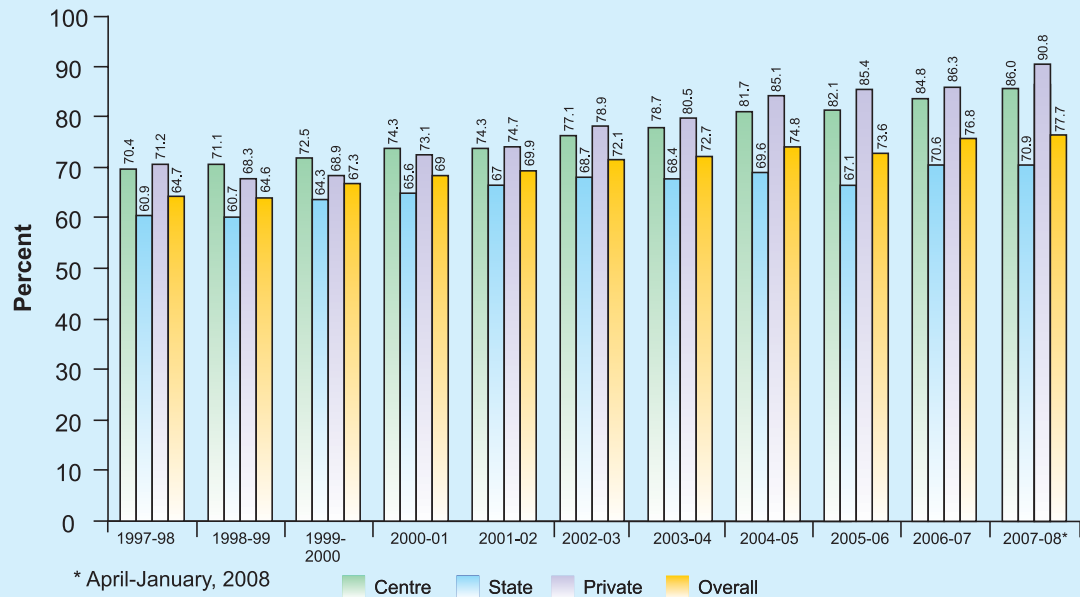
PEAK DEMAND :

Year	Peak demand (MW)	Peak Met (MW)	Peak shortage (MW)	Peak Shortage (%)
1997-98	65435	58042	7393	11.3
1998-99	67905	58445	9460	13.9
1999-00	72669	63691	8978	12.4
2000-01	78037	67880	10157	13.0
2001-02	78441	69189	9252	11.8
2002-03	81492	71547	9945	12.2
2003-04	84574	75066	9508	11.2
2004-05	87906	77652	10254	11.7
2005-06	93255	81792	11463	12.3
2006-07	100715	86818	13897	13.8
2007-08 (up to Jan.'08)	107010	90793	16217	15.2

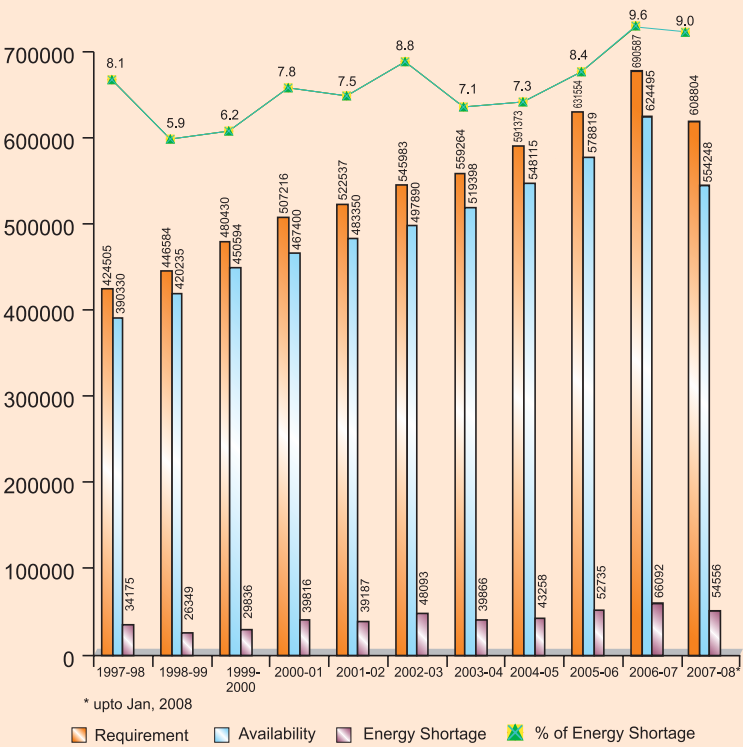
GENERATION (BU)



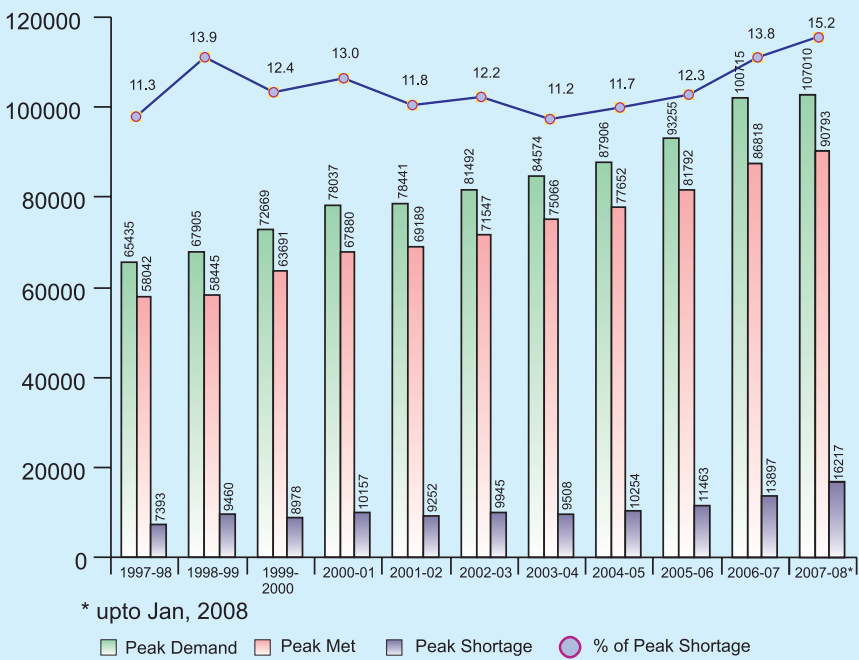
SECTOR-WISE PLANT LOAD FACTOR



POWER-SUPPLY POSITION - ENERGY



POWER SUPPLY POSITION - PEAK



CHAPTER - 4

CAPACITY ADDITION PROGRAMME IN THE XITH PLAN

1. The National Electricity Policy envisages demand for power to be fully met by 2012 and energy and peaking shortages to be overcome. This entails provision of adequate reliable power, at affordable cost with access to all citizens. Electricity is in the Concurrent List in the Constitution and the primary responsibility of structuring its availability and distribution is that of the States. However, both the Centre and the States have to play a decisive and positive role. While shortages are presently being experienced by each region, it is much more acute in the case of some regions and a large number of States are affected.
2. The all India installed power generation capacity as on 31.01.2008 was 141080 MW comprising of 90896MW thermal, 35208 MW hydro, 4120 MW nuclear and 10856MW R.E.S. The Central Sector's share in generation has gradually increased from 12% in 1979 to 34% as on 31.01.2008. On the other hand the share of the State Sector has declined from 82.5% to 53% while the share of private sector has gone up from 5.2% to 13% during the same period.
3. The National Electricity Policy (NEP) stipulates power for all by 2012 and annual per capita consumption of electricity to rise to 1000 units from the present level of 631 units. To fulfill the objectives of the NEP, a capacity addition of 78,577 MW has been proposed for the 11th plan. This capacity addition is expected to provide a growth of 9.5 % to the power sector. The break up of the capacity addition target is given as under:
(in MW)

Sector	Hydro	Thermal	Nuclear	Total (MW)
Central	9685	26800	3380	39865 (50.7%)
State	3605	24347	0	27952 (35.5%)
Private	3263	7497	0	10760 (13.8%)
Total	16553 (21%)	58644 (74.6%)	3380 (4.4%)	78577 (100%)



Shri Sushilkumar Shinde, Union Minister of Power addressing the Conference of Chief Secretaries and Power Secretaries of States / UTs on Power Sector on 23-24 April, 2007

Capacity addition programme during 2007-08 and achievement till 31.01.2008

Capacity addition Programme during 2007-08

	Central sector	State sector	Private sector	Total
Thermal	3490	4767.20	750	9007.2
Hydro	690	1682	0	2372
Nuclear	660	0	0	660
Total	4840	6449.2	750	12039.2

Achievement – 2007-08 (April, 2007 to 31st January,2008)

	Central sector	State sector	Private sector	Total (MW)
Thermal	1490	3580	250	5320
Hydro	520	1203	0	1723
Nuclear	220	0	0	220
Total	2230	4783	250	7263

4. After finalization of the 11th Plan document by the Working Group on Power for 11th Plan in Feb.2007, a number of additional projects have also made considerable progress and while most of these projects are in a position to commission well within the 11th Plan, some of these are being considered for

commissioning during 11th Plan on best effort basis. The status of placement of orders for the main plant in case of thermal projects and main civil works in case of hydro projects for the projects originally envisaged under 78,577 MW target is as under:

(MW)

Original target	Status of projects included in 78577 MW			There fore Balance Col.3-4	Additional Capacity Ordered	Capacity targeted for 11 th Plan	Additional Capacity Best efforts
1	2	3	4 (Not Likely)	5	6	7	8
78577	Commissioned	7683	-	7683	-	7683	-
	Under Construction	51940	-	51940	9705	61645	3400
	LOA to be placed	18954	9504	9450	-	9450	1792
	Total	78577	9504	69073	9705	78778	5192

5. The investment climate in the country is buoyant and as shown above large capacity is currently under execution. Between 1st April, 2007 to 31st January, 2008 orders in respect of 22 projects aggregating 20245 MW were placed. Out of this 17 projects aggregating 18385 MW pertain to thermal segment and 5 projects

aggregating 1860 MW pertain to hydro segment.

6. Capacity addition (last five years)

In the last five years including 2007-08 (April 2007 – 31st January, 2008), the following new capacities have been added:

(MW)

Years	Central	State	Private	Total
2002-03	1210	1100.10	548.00	2858.10
2003-04	3035	816.62	100.00	3951.62
2004-05	2710	1168.92	70.00	3948.92
2005-06	1420	1488	660.8	3568.8
2006-07	3890	1671	1291.8	6852.8
2007-08 (April, 2007 to 31st Jan, 2008)	2230	4783	250	7263



The Conference of Chief Secretaries of States / UTs on Power Sector Issues at New Delhi, 19th February, 2008 chaired by Shri Sushilkumar Shinde, Minister of Power flanked by Shri Anil Razdan, Secretary (Power) and Shri Rakesh Nath, Chairperson, CEA on his right and Dr. Kirit S. Parikh, Member (Energy), Planning Commission, Justice Anil Dev Singh, Chairman, ATE and Sh. Bhanu Bhushan, Member CERC on his left

7. The capacity addition programme is being continuously kept under watch by the Central Government in consultation with the State Governments. A number of specific action points have been identified to achieve this extremely large capacity addition programme. All out efforts are being made to complete the ordering of the projects, wherever it is yet to be done, so as to achieve the 11th Plan target.

8. Setting up of Ultra Mega Power Project

8.1 The Ministry of Power, Government of India has launched an initiative for development of coal-based Ultra Mega Power Projects (UMPPs) in India, each with a capacity of 4,000 MW or above. These projects will be awarded to developers on the basis of tariff-based competitive bidding. To facilitate the tie-ups of inputs and clearances, project-specific shell companies have been set up as wholly owned subsidiaries of the Power Finance Corporation (PFC) Ltd. These companies undertake preliminary studies and obtain necessary clearances including water, land, fuel, power off take tie-up etc. prior to award of the project to the successful bidder.

8.2 Originally, nine sites had been identified by CEA in nine States for the proposed UMPPs. These include four pithead sites, one each in Chhattisgarh, Jharkhand, Madhya Pradesh and Orissa, and five coastal sites, one each in Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Tamil Nadu. It is proposed to set up pithead projects as integrated projects with

corresponding captive coal mines. On the request of Ministry of Power, Ministry of Coal has already allocated captive coal mining block(s) for Sasan UMPP in Madhya Pradesh, for Orissa UMPP (except for Chaturdhara block), for Tilaiya UMPP in Jharkhand and for Chhattisgarh UMPP. For the coastal projects, imported coal shall be used. The projects are to be developed with a view to lower the cost of power to the consumers. These projects, adopting supercritical technology to reduce emissions, would be environment-friendly. A time bound action plan for preparation of project report, tie-up of various inputs/clearances, appointment of consultants, preparation of RFQ/RFP has been prepared.

8.3 The bidding process in respect of Sasan, Mundra and Krishnapatnam UMPPs has been completed. M/s. Tata Power has been awarded the Mundra Project at Rs. 2.26 per KW/H. M/s. Reliance Power Ltd. has been awarded Sasan and Krishnapatnam UMPPs at Rs. 1.19616 per KW/H and Rs. 2.33 per KW/H respectively. The respective Special Purpose Vehicles (SPVs) of Sasan, Mundra and Krishnapatnam UMPPs have been transferred to the successful bidders. The bidding process in respect of Tilaiya UMPP has been initiated by the Special Purpose Vehicle (SPV) i.e. Jharkhand Integrated Power Ltd. The last date of submission of RfQ documents was 12.11.2007 and 13 bids have been received. The bids are under evaluation. The development of other five projects is contingent upon the various clearances from the respective State Governments.

CHAPTER - 5

STATUS OF POWER SECTOR REFORMS

Electricity (Amendment) Act, 2007

The Electricity (Amendment) Act, 2007, amending certain provisions of the Electricity Act, 2003, has been enacted on 29th May, 2007 and brought into force w.e.f 15.6.2007. The main features of the Amendment Act are:

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

Operationalisation of open access:

Open access is one of the key features of Electricity Act, 2003 for making the electricity industry competitive. Open access in inter-State transmission is fully operational. To give a fresh impetus to implementation of open access over transmission lines of State Utilities and over the distribution networks, the Ministry of Power convened the Conference of the Chief Secretaries in April, 2007 and the Conference of Chief Ministers in May, 2007, in which open access were one of the agenda items. The Ministry also convened interaction with the Forum of Regulators (FOR) and the State Power Secretaries on 5.11.2007 exclusively on Operationalisation of open access at State level. The SERCs have resolved to actively operationalise open access. The Forum has also launched a website www.forumofregulators.org to display the open access charges and status of open access applications in various States.

Power exchanges

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

Guidelines for procurement of electricity

In compliance with section 63 of the Electricity Act, 2003, the Central Government on January 19, 2005 had notified guidelines for procurement of power by Distribution Licensees through competitive bidding. On March 31, 2006, Central Government has also issued the standard bid document containing Request For Qualification (RFQ), Request For Proposal (RFP) and model Power Purchase Agreement (PPA) for long term procurement of power from projects having specified site and location through tariff based competitive bidding. The Central Government has further revised these standard bidding documents on 21st September, 2007 based on the experience gained so far and the feedback received from the stakeholders.

Successful tariff based bidding for three Ultra Mega Power Project of 4000 MW each capacity has shown that competitive procurement of power leads to significant benefits to the consumers.

Reorganisation of the State Electricity Boards

Before enactment of the Electricity Act, 2003, various States had enacted State Electricity Reforms Acts, which provided for reorganization of their State Electricity Boards (SEB).

Section 172 (a) of the Electricity Act, 2003 provides that the SEB shall be deemed to be the State Transmission Utility (STU) and a licensee under the provisions of the Act for a period of one year from the appointed date, i.e. 10th June, 2003. However a SEB can continue for some more time as agreed to mutually by State and Central Government.

So far, 13 states have reorganized their SEBs. 10 States namely, Orissa, Haryana, Andhra Pradesh, Karnataka, Uttar Pradesh, Uttarakhand, Rajasthan, Delhi, Gujarat and Madhya Pradesh have done so under their State Electricity Reforms Acts. Assam, Maharashtra and West Bengal (w.e.f. 1.4.2007) have reorganized their SEBs under the provisions of the Electricity Act, 2003. The SEB of Assam presently continues to discharge the licensee function only for trading of electricity. Government of Tripura has corporatised its electricity department.

The remaining states of Bihar, Jharkhand, Kerala, Punjab, Chhattisgarh, Tamil Nadu, Meghalaya and Himachal Pradesh are in the process of formulating schemes for reorganisation of their SEBs.

CHAPTER - 6

DISTRIBUTION REFORMS & ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (APDRP)

Distribution Reforms:

The Ministry of Power took various initiatives towards reforms and other policy measures for helping the state power Utilities to bring improvement in their efficiency towards bringing about commercial viability in the power sector. Some of the major initiatives were : establishment of regulatory mechanism at central and state level, restructuring of the state power Utilities, metering of feeders & consumers, energy accounting & auditing, securitization of outstanding dues of CPSUs etc. Ministry of Power signed MOUs with states to under take distribution reforms in a time bound manner. 27 states, have so far either constituted or notified their regulatory commissions and 22 have issued tariff orders in the direction of rationalizing tariffs. Now the states are moving towards Multi-Year Tariff, Time of Day Metering and intra-state Availability Based Tariff. 14 SEBs / Electricity Departments have been unbundled & corporatised. All the states have securitized their outstanding dues towards CPSUs. Electricity Distribution has been privatized in Delhi and Orissa. At the national level 98% feeders and 89% of consumers have been metered so far. 100% feeder metering has been achieved in 20 States.

ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME:

The Accelerated Power Development Reforms Programme (APDRP) was launched in 2002-03 for implementation in the 10th Plan as additional central assistance to the states for strengthening and up gradation of sub-transmission and distribution systems of high-density load centres like towns and industrial areas.

The main objectives of the programme were to reduce AT&C loss, reduction of commercial loss and to improve quality and reliability of supply.

The Programme has two components:

Investment component- Central Government provides assistance to the tune of 25% and 90% of the project cost in the form of grant to Non-special category and Special Category states respectively. Balance amount to be arranged from Financial Institutions / own resources.

The status as on 31st October 2007:

No of projects sanctioned	:	571
Total project Cost	:	Rs. 17,033.58 Crore
APDRP (GOI) Component	:	Rs. 8,720.07 Crore
Total fund released by GOI	:	Rs. 7,124.61 Crore
C/Part drawn from FIs	:	Rs. 4,836.49 Crore
Total fund utilized	:	Rs. 11,279.50 Crore

Earlier, Government was providing 10% loan to special category and 25% to Non-special category states in addition to the grant as mentioned above. However, as recommended by the 12th Finance Commission, the loan component has been discontinued by the Ministry of Finance w.e.f. 2005-06. Funds are released by Ministry of Finance, Government of India under the advice from Ministry of Power in three installments progressively based on implementation progress.

Incentive component- This component is to incentivize the SEBs / utilities to reduce their financial losses. Funds are released to the SEBs for actual cash loss reduction. For every Rs.2 of cash loss reduction Rs.1 is given as grant. The cash losses are calculated net of subsidy and receivables. The year 2000-01 has been adopted as the base year.

Nine states have shown reduction of cash loss amounting to Rs.5753.22 Crore and have become eligible for APDRP incentive of Rs. 2876.61 Crore. Government has released Rs. 1959.70 Crore so far to Andhra Pradesh, Gujarat, Haryana, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and West Bengal.

Although at national level the AT&C loss of state power utilities has not shown much improvement over the past three years, the loss has come down in towns where APDRP has been implemented. Some of the utilities which adopted various interventions as envisaged under the programme have shown significant reduction in AT&C loss. AT&C losses have been brought down below 20% in 215 APDRP towns in the country, of which 163 towns have been brought below 15%.

The billing efficiency at the national level has improved from 68.37% during 2002-03 to 69.80% during 2005-06. The national average collection efficiency has also improved from 92.68% during 2002-03 to 93.79% during 2005-06. With this improvement in billing and collection efficiency, the national average AT&C loss of the distribution companies has reduced from 36.63% to 34.54%.

The overall commercial loss (without subsidy) of the utilities has reduced from Rs. 29,331 Crore during 2001-02 to Rs. 19,545 Crore during 2005-06.

Restructuring of APDRP:

A Chief Ministers' Conference was held on 28th May 2007 under the Chairmanship of the Hon'ble Prime Minister, during which a Resolution was passed relating to "Reduction of AT&C losses to 15 percent". It was resolved that the

States commit themselves to achieve and sustain drastic reduction in the overall AT&C losses through the next five years, and at least to a level of 15% in the APDRP project areas as has been demonstrated by the participating States in APDRP towns and cities. Towards this end, the States with appropriate assistance from the Centre would establish the necessary baseline data and adopt IT applications for energy accounting and auditing, besides ensuring a resolute elimination of electricity theft, which is negating various investments and initiatives for power sector reforms. It is further reiterated that where free or subsidized power is provided to a section of consumers, the State Government shall ensure upfront payment of the same to the utilities.

The focus of the restructured APDRP during XIth Plan shall be on actual, demonstrable performance in terms of loss reduction.



Smt. Sheila Dikshit, CM of Delhi, Smt. Vasundhara Raje, CM of Rajasthan and Smt. Vidya Stokes, Power Minister of Himachal Pradesh at the Conference of Chief Ministers organised by Ministry of Power at New Delhi

CHAPTER - 7

TRANSMISSION

Transmission projects continue to be accorded a high priority in the context of the need to evacuate power from the generating stations to the load centers, system strengthening and creation of National Grid. The

construction targets for the year 2007-08 and achievement up to November, 2007 of Central Sector Transmission projects including Joint Venture projects of POWERGRID are summarized below:

Works	Programme for the year 2007-08	Achievement upto Nov. 2007	% of Achievement
765 kV lines	160 Ckm.	220 Ckm.	137.50
400 kV lines	4894 Ckm.	3934 Ckm.	80.38
220 kV lines	224 Ckm.	275 Ckm.	122.77
765 kV Sub-Stations	2169 MVA	1500 MVA	69.16
400 kV Sub-Stations	8940 MVA	3965 MVA	44.35
220 kV Sub-Stations	400 MVA	100 MVA	25.00

CENTRAL SECTOR TRANSMISSION

Ministry of Power has planned to establish the requisite transmission capacity in the Central Sector to match the generation capacity addition and encourage inter-state/inter-

regional exchange of power to mitigate the situation of surplus /deficit of power in various regions. Transmission lines and sub-stations completed during the year 2007-08 (up to Nov, 07) are shown in the following table:

S. No.	Name of the transmission line/Sub-station	No. of ckt	Voltage kV
1.	TRANSMISSION LINES		
	i) Talchar-Kolar (Aug.) 500 MW	Bipole	± 500 HVDC
	ii) Sipat - Seoni Line1	S/C	765
	iii) Balia - Lucknow	D/C	400
	iv) Maithon - Ranchi	D/C	400
	v) Line from Singrauli to a point 2.3 Km near existing Vindhyachal - Kanpur Line.	D/C	400
	vi) Gooty - Raichur	D/C	400
	vii) Vindhyachal - Korba	S/C	400
	viii) Lucknow - Bareilly	D/C	400
	ix) LILO of Bareilly - Mandaula at Bareilly	2xD/C	400
	x) Satna - Bina Ckt-II	S/C on D/C	400
	xi) LILO of Lucknow - Moradabad at Bareilly	D/C	400
	xii) Satna - Bina Ckt-I	D/C	400

S. No.	Name of the line/Sub-station	No. of ckt	Voltage kV
	xiii) LILO of Dadri - Ballabhgarh at Delhi	D/C	400
	xiv) LILO of S/C Bhilai - Satpura at Seoni	D/C	400
	xv) Biharshariff - Balia (Quad) Ckt-I	D/C	400
	xvi) Unchahar - Raibareilly	S/C	220
	xvii) LILO of one ckt of Unchahar-Lucknow at Raibareilly	D/C	220
	xviii) MTPS-Durgapur	D/C	220
	xix) LILO Patratu-Chandil D/C at Ranchi	2xD/C	220
2	OTHER SCHEMES		
	i) Series Compensation on Ballia-Lucknow at Lucknow		400
Sl. No.	Name of the Sub-station	Voltage Ratio (kV/kV)	Capacity (MW/MVA)
3	NEW SUB STATIONS		
	i) Seoni Sub station (7x (500-333))	765/400	1500
	ii) Ranchi (ICT-1)	400/220	315
	iii) Gwalior (New)	400/220	315
	iv) Delhi (GIS)	400/220	630
	v) Muzaffarpur (ICT-II)	400/220	315
	vi) Ranchi (ICT-II)	400/220	315
	vii) Raebareilly	220/132	100
4	SUB STATION EXTENSION		
	i) Talchar (Aug.) 500 MW	± 500 HVDC	500
	ii) Kolar (Aug.) 500 MW	± 500 HVDC	500
	iii) Wagoora (3rd) (3x105)	400/220	315
	iv) Moga (Aug)	400/220	315
	v) Kadapah Extn.	400/220	315
	vi) Gooty Extn.	400/220	315
	vii) Kolar Extn.	400/220	500
	viii) Gazuwaka Extn,	400/220	315
	ix) Bareilly Sw. Stn. Extn.	400	-



A view of Transmission Towers

TOWARDS FORMATION OF NATIONAL GRID

Ministry of Power has envisaged the establishment of an integrated National Power Grid in the country by the year 2012 with an inter-regional power transfer capacity of about 37,700 MW. The exploitable energy resources in our country are concentrated in certain pockets. As a result, some regions do not have adequate natural resources for setting power plants to meet the future requirements whereas others have abundant natural resources. This has necessitated the formation of National Power Grid to transmit power from resource rich to deficit area as well as facilitate scheduled/ unscheduled exchange of power. A perspective transmission plan has been evolved for strengthening the regional grids with ultimate objective of establishment of strong & vibrant National Grid to support the generation capacity addition program of XI Plan. Details are given at Annexure-I.

Further, acquiring Right of Way (ROW) for constructing transmission system is getting increasingly difficult. This necessitates creation of high capacity "Transmission Highways", so that in future, constraints in ROW do not become bottleneck in harnessing natural resources. Working towards this plan, POWERGRID has implemented various inter regional schemes and inter regional power transfer capacity of about 17,000 MW is established by November, 2007. Four major power regions of the country namely, North-Eastern, Eastern, Western and Northern are now operating as one synchronous grid

with total generating capacity of about 1,00,000 MW. This is facilitating free flow of power from surplus to deficit regions bringing much needed economy.

3.4 PRIVATE SECTOR PARTICIPATION IN TRANSMISSION

POWERGRID has been successful in facilitating private investment in transmission sector. POWERGRID's first Joint Venture project, Transmission System associated with Tala Hydroelectric Project, East-North Inter-connector and Northern India Transmission System, with M/s. Tata Power was commissioned successfully in August, 2006.

Action has been initiated to bring in more private investment in transmission projects for eg : Transmission system associated with Koldam & Parbati-II is also proposed to be executed on JV route. Besides, in addition some transmission lines under Western Region Strengthening Scheme-II (Sets B&C) on tariff based bidding through 100% private sector participation (IPTC route) in line with CERC directive are being implemented.

Ministry of Power has notified guidelines for encouraging competition in development of transmission projects. Guidelines for tariff based bidding for transmission projects have also been notified by the Ministry. In terms of Para 13 of the guidelines for Encouraging Competition in Development of Transmission Projects, an Empowered Committee has been constituted for identification of projects and selection of developers. The Empowered Committee has identified 14 transmission projects for development through competitive bidding.

CHAPTER - 8

RURAL ELECTRIFICATION PROGRAMME

Rural electrification has been regarded as a vital programme for the development of rural areas. In 1947, only 1500 villages were electrified in India. The per capita consumption was 14 units. The initial focus was on 'electrification for irrigation' to enhance agricultural produce which was reflected in the definition of village electrification accepted till 1997 - that "a village was deemed to be electrified if electricity is being used within its revenue area for any purpose whatsoever".

This definition of village electrification was reviewed in consultation with the State Governments and State Electricity Boards and following new definition was adopted after 1997:

"A village will be deemed to be electrified if electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsoever.

In February, 2004, the definition was made even more encompassing as also target specific. "A village would be declared electrified if :

- (i) Basic infrastructure such as distribution transformer and distribution lines are provided-in the inhabited locality as well as the dalit basti/ hamlet where it exists. (For electrification through Non-conventional Energy Sources a distribution transformer may not be necessary).
- (ii) Electricity is provided to public places like schools, panchayat offices, health centres, dispensaries, community centres, etc. and
- (iii) The number of households electrified should be at least 10% of the total number of households in the village.

Government of India from time to time had launched the following programmes for electrification of rural areas in the country :

(i) Rural Electrification under Minimum Needs Programme(MNP)

This was started in 5th Five Year Plan with rural electrification as one of the components of the programme. Under this programme funds were provided as Central assistance to the states in the form of partly grants and partly loans. Since the inception of the MNP, the component that relates to rural electrification had been set off against the loan component of MNP. The areas covered under the

MNP for the purposes of rural electrification were remote, far flung and difficult villages with low load potential. The scheme has been discontinued from 2004 onwards and has been subsequently merged with the new scheme, Rajiv Gandhi Grameen Vidyutikaran Yojana.

(ii) Pradhan Mantri GramodayaYojana (PMGY)

This scheme was launched in 2000-01 but rural electrification component was added in the next financial year-2001-02. It was being implemented by State Electricity Boards/Electricity Departments/Power Utilities which were designated as implementing agencies. Funds were being released by State Government to the implementing agencies. Funds under the programme were provided to the states as Additional Central Assistance which followed the normal-pattern of central assistance i.e 90% grant & 10% -loans for special category states, 30% grant & 70% loan for other states. The scheme has been discontinued from 2005-06 onwards.

(iii) Kutir Jyoti Scheme

This programme was launched in 1988-89 to provide single point light connections to households of rural families below the poverty line including harijans and adivasi families. The allocation amongst the States was based on the size of rural population below the poverty line and level of village electrification in the State, with higher, weightage given to States having larger population of rural poor and low electrification levels. This scheme has been now merged with RGGVY.

(iv) Accelerated Rural Electrification Programme(AREP)

The scheme was introduced in the year 2003-04 under which interest subsidy of 4% was to be provided on loans availed by State Governments/Power Utilities from Financial Institutions for carrying out rural electrification programme. The assistance was limited to electrification of un-electrified villages, electrification of hamlets/dalit bastis/tribal villages and electrification of households in villages through both conventional and non-conventional sources of energy.

(v) Accelerated Electrification of One lakh villages and One crore households

Government of India in 2004-05 introduced a scheme "Accelerated Electrification of One lakh villages and One crore households" by merging the interest subsidy Scheme-



Children learning computer in a rural school

AREP (Accelerated Rural Electrification Programme) and Kutir Jyoti Programme. Under this scheme there was a provision for providing 40% capital subsidy for rural electrification projects and the balance as loan Assistance on soft terms from REC. The scheme has now been merged with the new scheme RGGVY.

(vi) Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)

This Scheme of Rural Electricity Infrastructure and Household Electrification has been introduced in April, 2005 for achieving the National Common Minimum Programme objective of providing access to electricity to all Rural Households over a period of four years. Rural Electrification Corporation (REC) is the nodal agency for the programme.

Under this scheme 90% Capital Subsidy will be provided for rural -electrification infrastructure through: -

- (i) Creation of Rural Electricity Distribution Backbone (REDB) with one 33/11 kV (or 66/11 kV) substation in every block where it does not exist.
- (ii) Creation of Village Electricity Infrastructure (VEI) for electrification of all un-electrified villages/habitations and provision of distribution transformer(s) of appropriate capacity in every village/habitation.
- (iii) Decentralized Distributed Generation (DDG) and Supply System from conventional sources for Villages/Habitations where grid supply is not cost effective and where Ministry of Non-Conventional Energy Sources would not be providing electricity through their programme(s).

Balance 10% will be loan assistance on soft terms by REC.

The scheme, inter-alia, provides for funding of electrification of all un-electrified Below Poverty Line (BPL) households with 100% capital subsidy.

The scheme aims at electrifying all un-electrified villages over a period of four years and provide access to electricity to all rural households.

STATUS OF RURAL ELECTRIFICATION UNDER RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJANA (RGGVY) .

All the states except Delhi & Goa have signed Agreements under RGGVY. CPSUs are implementing the scheme in 139 districts. 235 Projects were taken up for implementation in X Plan. Balance projects are being taken up in XI Plan. Since April, 2005, till 11th January, 2008, 44,216 un-electrified villages in Rajasthan, Uttar Pradesh, Uttarakhand, Chhattisgarh, Madhya Pradesh, Karnataka, Bihar, Jharkhand and West Bengal have been electrified under this scheme. Besides above, intensive electrification of 24,394 already electrified villages has also been achieved.

In 2007-08, 5691 un-electrified villages have been electrified as on 11.01.2008.

Franchisees are in place/operation in 14 states namely, Uttar Pradesh, Uttarakhand, Karnataka, West Bengal, Assam, Nagaland, Haryana, Orissa, Madhya Pradesh, Andhra Pradesh, Rajasthan, Bihar, Gujarat and Chhattisgarh covering 73,422 villages. Revenue collection and consumer services have improved in the states where franchisees are in operation. The Ministry is pursuing capacity building of franchisees to make them effective and sustainable.

All the 27 states participating in RGGVY have notified constitution of District Committees to, inter-alia, monitor the implementation of RGGVY & all the 26 states except Manipur have notified rural areas to take the advantage of the exemptions provided in the Act for setting up Decentralized Distributed Generation.

CONTINUATION OF RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJANA IN 11TH PLAN PERIOD

The continuation of Rajiv Gandhi Grameen Vidyutikaran Yojana has been approved by the Government in the 11th Plan for attaining the goal of providing access to electricity to all households, electrification of about 1.15 lakh un-electrified villages and electricity connections to 2.34 crore BPL households. The approval has been accorded for capital subsidy of Rs.28000 crore during the 11th Plan period, at this stage.

CHAPTER - 9

ENERGY CONSERVATION

Energy is an important input required for economic and social development. India ranks world's sixth energy consumer accounting for about 3.5% of the world's total annual energy consumption, but, per capita consumption of energy is very low at 631kwh. as compared to world consumption of 2873 kwh. which needs to be increased to meet the goals of economic and social development. The installed power generation capacity has grown up 94 times since independence and the total installed capacity of power generation in India has reached 1,40,627 MW (as on 5.01.2008). However, there is still a peak demand shortage of around 14.8% and an energy deficit of 8.4% in the country. To mitigate shortage of energy in general and electricity in particular, in addition to augmenting the capacity of energy supply, its efficient use and conservation is also essential. Keeping this in view and to maintain GDP growth of 8 to 10%, the government has initiated several policy measures to accelerate power generation and promote energy efficiency to meet power requirements.

The conventional sources of energy such as Thermal, Hydro and Nuclear are major sources of generation of electricity in India. Conventional sources of energy are valuable, because their formation takes millions of years-whether it is oil or coal. Moreover, the conventional sources of energy are exhaustible. Energy prices may rise in the long run to reflect the relative scarcity and high cost of exploration and extraction. Hence, all initiation has to be taken to optimal use of the available resources so that they can continue for a long duration.

Energy Efficiency improvements not only reduce the energy consumed per unit products and services made available but also improve energy security of the country to ensure sustained availability of energy resources at affordable price.

In order to institutionalize energy conservation efforts in the country, the Government has passed the Energy Conservation Act in 2001, and established the Bureau of Energy Efficiency, under Ministry of Power, Government of India, on 1st March 2002 to promote the efficient use of energy and its conservation. Ministry of Power, through BEE, has initiated a number of energy efficiency initiatives through a range of measures, including the launch of Energy Conservation Building Code for large, new commercial buildings; the launch of energy labeling scheme for appliances; the initiation of process for the development of energy consumption norms for industrial sub sectors and an annual examination to certify energy auditors and energy managers. However, the effectiveness of this and other measures ultimately depends on their adoption by all energy

users and consequently on their awareness of the energy savings opportunities around them. Keeping this in view, Ministry of Power has initiated National Campaign on Energy Conservation and National Painting Competition on Energy Conservation for school children.

Schemes for Promoting Energy Efficiency in India during XI Plan

1. Bachat Lamp Yojana (BLY) Scheme

Ministry of Power, through Bureau of Energy Efficiency (BEE), is coordinating voluntary efforts under this scheme to provide high quality CFLs to domestic consumers for about Rs. 15 per lamp, i.e., at a rate comparable to that of incandescent bulbs. This would remove the barrier of high CFL price (currently Rs. 80 to 100 per lamp) which is constraining its penetration into households. It targets replacement of about 400 million incandescent bulbs in use in the country, leading to a possible reduction of 6,000 MW-10,000 MW of electricity demand, and a reduction of about 24 million tonnes of CO₂ emissions every year. The price reduction would be achieved by utilizing the Clean Development Mechanism (CDM) of the Kyoto Protocol through which the CFL suppliers would earn Certified Emissions Reductions (CERs) on the basis of the CO₂ emissions reductions that would occur because of the low electricity consumption of CFLs compared to incandescent bulbs. Hon'ble Minister of Power announced the scheme on 28th May, 2007 during the Chief Ministers' Conference on Power chaired by Hon'ble Prime Minister of India. To facilitate the project, BEE is preparing an "umbrella" CDM project under the recently announced Programme-of-Activities (PoA) of the CDM Executive Board. The PoA would define key CDM requirements, including the stakeholder comments, project baseline, additionality, methodology and the monitoring protocol through which the CO₂ emissions reductions would be assessed. The PoA approach reduces time and transaction costs for replicability since these key requirements will not need to be addressed by area-specific projects within the PoA. BEE will undertake monitoring under the approved methodology in all project areas. Scheme with an expenditure of Rs. 48 crores for monitoring during the XI plan has been approved. The scheme targets an avoided capacity of 4000 MW during the XI Plan.

Deliverables: The deliverables from the project are expected to be:

- (a) Coverage of the entire country in a phased manner- two projects in Haryana and Andhra Pradesh are to be

launched shortly. Two projects have been validated and approved by MOEF. Being submitted for registration to CDM Executive Board.

- (b) The coverage of entire country, based on DISCOM areas, is expected to be completed by 2009-10.
- (c) 6 major CFL manufacturers and 3 suppliers have agreed to participate- more are expected to follow.
- (d) PoA to be submitted for DNA approval in November and to CDM Executive Board by January after validation and stakeholder consultation.
- (e) States of Assam, Punjab, Andhra Pradesh, Haryana, Maharashtra, Chattisgarh and Karnataka have commenced project preparation. Other states are in the process.
- (f) Estimated replacement of about 400 million incandescent light bulbs in household sector.
- (g) Market transformation in favour of energy efficient CFLs in the household sector by high sale volumes and lower retail price.

2. Standards & Labeling Scheme

The Standards and Labeling programme is a key thrust area of Bureau of Energy Efficiency. Central Government, under the Energy Conservation Act, 2001 has powers to:

- Direct display of labels on specified appliances or equipment (14.d)
- Enforce minimum efficiency standards by prohibiting

manufacture, sale, and import of products not meeting the minimum standards (14.c)

The objectives of this program is to provide the consumer an informed choice about the energy saving, and thereby the cost saving potential of the marketed household and other equipment. This is expected to impact the energy savings in the medium and long run while at the same time it will position domestic industry to compete in such markets where norms for energy efficiency are mandatory. The scheme was launched by the Hon'ble Minister of Power in May, 2006 and is currently in vogue for four equipments/ appliances (ACs, Tubelights, Refrigerators (Frost-free), Distribution Transformers) on voluntary basis. 70% (AC), 90% (Tube Light), 70% (Refrigerator) industry already joined the scheme on a voluntary basis. Scheme with an expenditure of Rs. 47.75 crores during the XI plan has been approved. The scheme targets an avoided capacity of 3000 MW during the XI plan.

Deliverables: The deliverables from the project are expected to be:

- a) Notification for mandatory labeling
- b) Launch of awareness campaign- has commenced to enhance consumer awareness based on media plan approved by EFC.
- c) Rating plan for motors, ceiling fans
- d) Initiation of S&L programme for LPG burners in association with PCRA



Children displaying their painting skills on Energy Conservation Day painting competition



Hon'ble President Smt. Pratibha Devisingh Patil, flanked on the left by Shri Sushilkumar Shinde, Minister of Power and Shri Rakesh Nath, Chairperson, CEA and on the right by Shri Anil Razdan, Secretary (Power) and Dr. Ajay Mathur, DG, BEE during the National Energy Conservation Day on 14th December, 2007

- e) Commencement of check testing- Independent Agency (RITES) appointed and check testing will commence from January, 2008.
- f) Rating plan of LPG burners, kerosene stoves, vehicles, etc.
- g) Finalizing of rating plan for consumer electronics, transport sector, CFLs- in all about 20 high energy using end-use equipments and appliances are to be covered.
- h) Market transformation in favour of energy efficient equipments and appliances that adhere to Minimum Energy Performance Standards (MEPS).

3. Energy Conservation Building Code & Scheme on Energy Efficiency in Existing Building

Energy Conservation Building Codes (ECBC) set minimum energy performance standards for commercial buildings. Under section 14 (p) of the Energy Conservation Act, 2001, Central Government has powers to prescribe ECBC for commercial buildings (at present having a connected load of 500 KW) or building complex for efficient use of energy and its conservation. The state governments have the flexibility to modify ECBC to suit local or regional needs. The ECBC was launched by Hon'ble Minister of Power on 27th May, 2007 and is presently in vogue on voluntary basis.

ECBC is expected to be made mandatory in future after the following issues have been suitably addressed:

- a) Adequate numbers of architects, builders, contractors having technical capacity to design and implement ECBC is available.
- b) The compliance procedures have been finalized in consultation with states/ municipal agencies.
- c) Adequate manufacturing and marketing capabilities for the inputs materials required for ECBC complaint buildings are made available by a successful market transformation programme.
- d) Appropriate level of awareness, understanding and education regarding ECBC is developed.

There is a huge potential of energy savings in existing buildings. Energy Audit studies conducted in several office buildings, hotels and hospitals indicate energy saving potential of 23% to 46% in end uses such as lighting, cooling, ventilation, refrigeration etc. The potential is largely untapped, partly due to lack of effective delivery mechanisms for energy efficiency. Performance Contracting through Energy Service Companies is an innovative delivery mechanism for overcoming the barriers faced by energy users. The overall energy efficiency investment market size under ESCO system of performance contract

in India has been estimated by the ADB Study project team at Rs 140 bn (Rs. 14000 crores) and has the potential to save about 54 billion units of electricity annually. Scheme with an expenditure of Rs. 13.99 crores during the XI plan has been approved. The scheme targets an avoided capacity of 500 MW during the XI plan.

Deliverables: The deliverables from the project are expected to be:

ECBC

- Creating a pool of ECBC expert Architects – panel prepared
- Training material for various stakeholders is ready
- Simplified guidebook being prepared
- Initiation of outreach activities
- Initiation of 5 pilots in states- provision of technical assistance
- Outreach/ conferences in major state capitals
- Simplified compliance procedures for state and local bodies
- Capacity building of state and local government personnel
- Evaluation of code for revision
- Curriculum for colleges
- Strengthening of testing laboratories

Energy Efficiency in Existing Buildings

- Promotion of Energy Service Companies (ESCOs); particularly for existing buildings
- Rating of ESCOs by CRISIL/ ICRA being initiated to improve investor confidence
- Standardized performance contract documents for ESCOs
- Innovative financial products, like securitization of receivables, energy efficiency bonds to fund the projects
- Setting up of partial risk guarantee fund for risk mitigation

4. Agricultural (Ag DSM) and Municipal (Mu DSM) Demand Side Management (DSM) Scheme

Ag DSM promises immense opportunity in reducing the overall power consumption, improving efficiencies of ground water extraction and reducing the subsidy burden of the states without sacrificing the service obligation to this sector. It also presents a promising prospect of targeting subsidy to the beneficiary farmer. In terms of electricity saved, given that most of the pilot projects as well as other studies project potential savings of 45-50% by mere

replacement of inefficient pumps, the overall electricity savings (from 20 million pumps) is estimated at 62.1 billion units annually. A successful implementation model must address all the above variables and include all stakeholders. Provision of adequate incentive to farmers, given that they do not largely pay for electricity, is one of the major constraints in implementation of the scheme.

Mu DSM also assumes significance given that the Municipalities consume 10% of energy overall and the cost input of energy is as high as 60% of the costs incurred by the municipalities. Energy costs constitute up to 60-70 percent of an Indian municipality's total cost of pumping water to its residents. This financial constraint, coupled with inadequate or antiquated infrastructure and the lack of adequate managerial and technical capacities, greatly limits the ability of municipalities to improve water services while allowing inefficient usage of electricity. The electricity bills of the municipalities accounts for a significant part of its expenditure, given that an estimated 10% of electricity is consumed for urban water pumping. The cash starved municipalities are, therefore unable to meet the service delivery standards that are fast growing urban area demands. The fact that efficient water delivery systems can translate into measurable energy savings due to reduced pumping requirements and improved performance is vastly unknown to most of the municipal authorities. Absence of enabling state level policies or regulatory interventions to implement water and energy efficiency measures to improve service and reduce costs, while on the other hand, reduce power consumption of the utility does not help matters.

The estimated cost of the scheme is Rs. 55.69 crores and is under consideration. Retainer Consultant for Ag DSM scheme has been appointed (PWC) and work is to start in January, 2008. For Mu DSM, bids for appointing retainer consultant have been issued and the consultant will be selected in January, 2008. The scheme targets an avoided capacity of 2000 MW during the XI plan.

Deliverables: The deliverables from the project are expected to be:

- Business model linked to subsidy reduction being evolved
- Shelf of bankable DPRs to be prepared- 10 in each states (total 350) to stimulate the market
- Baseline development, conducive regulatory regime and payment security mechanism being worked out.
- Awareness and outreach to local and municipal bodies
- Manual for Mu DSM being developed with standard contract documents to enable easier implementation

- Risk mitigation measures for encouraging PPP being evolved
- CDM benefits for the scheme being put in.

5. Energy Efficiency in Small and Medium Enterprises (SMEs) Scheme

The proposal seeks to promote Energy Efficiency in SMEs during the XI plan. Many energy-intensive SMEs clusters located in various states of the country have large potential for energy savings. In quantitative terms, there is little reliable information and data available with respect to their energy consumption and energy saving opportunities. Bureau of Energy Efficiency (BEE), in consultation with Designated State Agencies, will initiate diagnostic studies in 25 SME clusters in the country, including 4-5 priority clusters in North East Region, and develop cluster specific energy efficiency manuals/booklets, and other documents to enhance energy conservation in SMEs. The scheme seeks to provide comprehensive energy efficiency solutions to 25 SME clusters by:

- (a) Conducting energy audits in these clusters
- (b) Preparing DPRs from energy audit studies
- (c) Enhancing the capacities of service providers in each cluster area
- (d) Provision of financing for such bankable DPRs
- (e) Awareness and outreach

The cost estimated during the XI plan for the above activities is around Rs. 45.66 crores. The scheme targets an avoided capacity of 500 MW during the XI plan.

Deliverables: The deliverables from the project are expected to be:

- Situation analysis of 35 clusters initiated to determine the present status of energy consumption, technology penetration etc.
- Investment grade energy audits (bankable DPRs) for about 10 units in each of the 25 clusters
- Template for DPR preparation for the balance units in clusters, given their similarities
- Adequate provision of expertise for the local service providers to help reach out to the units
- Availability of financing by capacity building of banking personnel in matters like project appraisal of performance contracting

6. Strengthening Institutional Capacity of SDAs Scheme

State Designated Agencies (SDAs) are statutory bodies set up by states to implement energy conservation measures

at state level. SDAs are expected to play three major roles namely:

- As a Development Agency
- As a Facilitator
- As a Regulator/Enforcing body

The main emphasis of the scheme is to build capacity necessary to enable them to discharge regulatory, facilitative and enforcement functions under the Act, given that the institutional capacity is limited - both in terms of human and infrastructure resources. Most of the states have notified SDAs in the last 2 years. 30 States have designated their agencies so far. The scheme seeks to develop and implement Energy Conservation Action Plan (ECAP) based on a uniform template evolved for taking measures necessary to build institutional and human capacity, enabling the SDAs to implement energy efficiency programmes and undertake evaluation and monitoring of the Energy conservation activities implemented in the state. ECAPs are being developed for various states and till now 15 states have already completed them. The scheme with an estimated cost of around Rs. 49.21 crores has been approved.

The deliverables of the scheme is to enhance institutional capacity of the SDAs so that they have a common understanding of the issues related to energy conservation activities and are able to implement the Energy Conservation Act in their respective states. No physical target is possible under this programme but the SDAs are expected to have a minimum understanding of nuances of energy conservation and efficiency like implementing performance contracting projects, ECBC, IT based monitoring and evaluation, energy audits in designated industries, etc. Phased 19 point action plan evolved for implementation by all SDAs. Energy Conservation Action Teams (ECATs) are being encouraged in the states for coordinated approach to energy conservation and efficiency.

7. Contribution to State Energy Conservation Fund (SECF) Scheme

This scheme is intended to be submitted in FY 2008-09 after the above scheme for institutional strengthening takes off in states. SECF is a statutory requirement and is one of the key elements of the ECAP. A provision of Rs. 140 crores has been kept for this scheme. The risk factors and deliverables are similar to that of the above scheme. The scheme will provide contribution to SECF after it is notified by states and will be pari-passu with the contribution made by the states. The effort will be to create a pool of financially sustainable activities for SDAs (like training programmes, fee for services, etc) which can augment the fund. The scheme is expected to commence in 2008-09.



Hon'ble President Smt. Pratibha Devisingh Patil giving away the first prize on National Energy Conservation Day, 14th December, 2007. Minister of Power and Secretary (Power) are in the foreground

8. Institutional Strengthening of BEE

The proposed scheme seeks to provide resources allocated during the XI plan for:

(a) Setting up of Energy Conservation Information Center (ECIC) christened BEEnet as a web enabled online data collection and collation system. The project will provide the following facilitation functions that BEE/SDAs are accredited with:

- Web based online system that facilitates seamless filing of returns by the Designated Consumers as required under section 14 (k) and 14 (l) of the Energy Conservation Act. The notification of the same has been issued by Government in March, 2007 and the returns will be required to be filed before the State Designated Agencies from FY 2008-09.
- The returns so filed, after due processing, be transferred to the respective state designated agencies as per their respective jurisdiction;
- Providing for due capture of existing data in respect of all other programmes of BEE/ SDAs.

(b) Infrastructure and resource augmentation of BEE; and

(c) Support to finance R&D in energy efficiency in IITs and Policy research from ASCI, IIPA, etc.

The proposal seeks government funding for infrastructure creation that is necessary for BEE to implement 8 new projects/schemes through the country with an allocation of Rs. 502 crores during the XI plan. The present working strength of 12 is grossly limited to undertake these activities, which are anyway being outsourced. The proposal does not seek creation of posts, which is being taken up separately, but backup support to enable effective implementation of energy efficiency measures. The total cost estimated for this scheme is Rs. 97 crores and is expected to deliver a robust organizational set up to implement, monitor and evaluate the schemes.

9. National Energy Conservation Awards, 2007

Ministry of Power had instituted National Energy Conservation Awards to motivate industrial units to conserve and use energy efficiency. This award scheme has been extended to building sector and zonal railway. Indian industrial units, office buildings, hotels and zonal railways, who are leading the way in becoming more energy efficient, were awarded by Ministry of Power in a function organized on the occasion of National Energy Conservation Day, the 14th December 2007 at New Delhi. These annual



Prize Winning Painting by Aritra Sahoo, West Bengal, on the occasion of Energy Conservation Day, 14th December, 2007

awards recognize innovation and achievements in energy conservation by the Industry; buildings & railways and raise awareness that energy conservation plays a big part in India's response to reducing global warming through energy savings.

Hon'ble President of India, Smt. Pratibha Devisingh Patil, gave away the Energy Conservation Awards to Award winning units. Sixty two (62) units in the industries, office buildings, hotels and zonal railways have been selected from 384 nominations received for the National Energy Conservation Awards 2007. This year, 2 Top Rank Award, 21 First Prizes, 19 Second Prizes and 20 Certificates of Merit have been awarded.

The Award Scheme has motivated the participating units to undertake serious efforts in saving energy. The 384 participating units of 2007 Awards have collectively invested Rs. 2923 crores in energy conservation measures and achieved a monetary savings of Rs. 1843 crores every year, implying a very short payback period of 19 months only; once again providing the fact that energy conservation is a least cost option. The participating units have also saved electrical energy of 1620 million kWh of electrical energy, which is equivalent to the energy generated from a 308 MW thermal power station at a PLF of 60%. In other words, these participating units have avoided the installation of power generating capacity equivalent to 308 MW thermal power station in 2006-07, which would otherwise have been required to meet the power demand of these units.

In the last 9 years of Award scheme of the period 1999-2007, the participating industrial units have collectively saved Rs 7025 crores per year and the investment made on energy efficiency projects was recovered back in 18.5 months. In energy terms, 1420 MW of electrical power,

16 lakh kilolitre of oil, 52 lakhs metric tonnes of coal and 19 billion cubic metre of gas was saved, through the energy conservation measures of the participating units.

10. Painting Competition on Energy Conservation, 2007

Ministry of Power has undertaken National Campaign on Energy Conservation 2007. Under this campaign, a painting competition on energy conservation 2007 at School, State and National level was conducted. The painting competition is first conducted at the School level and two best paintings from the participating school are included in the concerned State & UT level Competition. First two winners from each State and UTs are invited to participate at the national level competition.

A total number of 24385 Schools and 5.25 lakhs students of 4th & 5th standards of the 35 States and Union Territories participated in the School Level Painting Competition, which was quite encouraging. This competition is aimed at motivating the children towards energy conservation and offers them a chance to explore their creativity. The Hon'ble President of India, Smt. Pratibha Devisingh Patil presented the awards to the winning children of National level painting competition in a function organized on 14th December, 2007 at New Delhi.

The paintings drawn by children reflected their interest in the energy conservation activities and their concern about energy crises. The tiny-tots have given the inspiring ideas and have drawn the impressing paintings. The vibrant designs, confidence and clear understanding of the topic, remarkable composure, creating marvels in creating energy conservation ideas in an effective way are some of the features these impressive paintings displayed.

11. National Campaign on Energy Conservation, 2007

The Government had launched a National Campaign on Energy Conservation 2005, on 14th December, 2004 to make people aware about the need of energy conservation



Prize Winning Painting by Khanjan Kashyap, Assam, on the occasion of Energy Conservation Day, 14th December, 2007



Prize Winning Painting by Pratik Samantray, Orissa, on the occasion of Energy Conservation Day, 14th December, 2007

and benefits to the individual, society and nation as a whole. The National Campaign was targeted in various sectors like Industrial, Commercial, Domestic, Agriculture and Educational institutions. The energy conservation awareness was communicated through print and electronic media. A postage stamp on energy conservation was also released by the Hon'ble Prime Minister of India on the same day, as a part of the national campaign to help create a movement for the energy conservation in the country.

Encouraged by the response received during 2005 & 2006, National Campaign on Energy Conservation for the year 2007 was also launched by the Hon'ble Minister of Power on 14th December, 2006. The National Campaign on Energy Conservation focuses on the creation of consumer awareness, and on understanding of the necessity and significance of energy conservation. The Campaign also urges all energy consumers to be part of the energy conservation efforts by optimizing the use of energy and making a habit of energy saving.



Prize Winning Painting by A. Meghana, Karnataka, on the occasion of Energy Conservation Day, 14th December, 2007

CHAPTER - 10

RENOVATION AND MODERNISATION OF THERMAL POWER STATIONS

To improve the performance of existing thermal power stations which had been in operation for more than 15 years, a Renovation and Modernisation (R&M) Programme called Phase-I R&M Programme was launched by the Government of India. The first phase of the programme was initiated in September 1984 for completion during the Seventh Plan Period. This programme was successfully completed and intended benefits were achieved.

R&M (Phase-II) Programme

In view of the encouraging results achieved from the Phase-I programme, the Phase-II programme for R&M of 44 numbers of thermal power stations was taken up in the year 1990-91. Power Finance Corporation (PFC) was assigned to provide loan assistance to the State Electricity Boards (SEBs) for carrying out R&M works. An expenditure of Rs. 862 crores was incurred and an additional generation of 5000 MU/ year had been achieved. Also, the Life Extension (LE) works on 4 units (300 MW) of Neyveli Thermal Power Station were completed.

9th Plan Programme

The CEA reviewed the progress of Phase-II R&M Programme and the balance activities still required to be carried out were included in the 9th Plan Programme along with the subsequently identified additional activities. During the 9th Plan Programme, 127 Units (17306 MW) at 29 power stations at an estimated cost of Rs. 917 crores for R&M and another 25 units (1685 MW) at an estimated cost of Rs. 1700 crores for Life Extension (LE) were taken up.

R&M and Life Extension works on all units planned for 9th five year plan have been completed.

10th Plan Programme

During the 10th plan, 106 old thermal units with a total capacity of about 10413 MW at an estimated cost of Rs. 9200 crores were initially identified for life extension works. Out of 106 units, life extension works on 26 units (1698 MW) were not found economically viable. Out of the balance 80 units, life extension works of 12 units (1025 MW) had been completed and LE works on 5 units (424 MW) were under progress. After implementation of life extension (LE) schemes, the economic operating life of the units will get extended by another 15-20 years besides

the overall improvement in the performance of the units. Also, R&M works on 57 units (14270 MW) at an estimated cost of Rs. 977 crores were identified for sustenance of their performance. Out of these 57 units, the R&M works on 14 units (2460 MW) have already been completed and further action is being taken by concerned SEBs/utilities to carryout the works on remaining units.

Improvement of Performance of existing Thermal Power Stations (PIE programme)

A three phase programme named 'Partnership in Excellence' (PIE) was launched by Ministry of Power, Government of India in August 2005 for an initial period of two years (i.e. up to August 2007) with a view to improve performance of such thermal power stations which were running at PLF much below 60%. CEA identified 26 thermal power stations comprising 80 units (8455 MW) having PLF below 60% to have partnership with better performing utilities viz. NTPC, Tata Power. Out of these 26 stations, the programme on 4 stations was not found feasible and on another 4 stations improvement is being carried out by self O&M by concerned utilities. NTPC was chosen as Partners in respect of 16 stations. In case of Dhuvaran TPS (units 5&6) of 140 MW each M/S Tata Power was selected as partner. Revival of Barauni TPS (units 6&7) each of 110 MW of BSEB was taken up under Rashtriya Sam Vikas Yojana (RSVY). Later on Muzaffarpur TPS (units 1&2) each of 110 MW of BSEB which was initially under PIE programme with NTPC as partner, was taken up by Vaishali Power Generating Company Ltd., a joint venture of NTPC & BSEB. NTPC has demobilized from two stations namely Bandel & Santaldih of WBPCL in March 2007. At present NTPC is providing consultancy in thirteen number of stations under PIE programme. The utilities expressed their views for continuation of the services of NTPC and Tata Power beyond August 2007 for few months more.

In the first phase, the PLF of the station is envisaged to be improved by implementing better O&M practices, training of operating personnel etc. Under second phase of the programme, the PLF of these stations has been envisaged to be improved at least to a level more than 60% by procuring essential spares from Original Equipment Manufactures (OEM), by carrying out comprehensive



A view of Thermal Turbine under maintainance

Capital Overhauling and doing essential R&M. In the third phase, the major Renovation & Modernization (R&M) / Life Extension (LE) works based on Residual Life Assessment (RLA) studies would be taken up, if found technoeconomically viable.

The programme has started showing results at a number of power stations in the form of improvement in PLF, availability, specific oil consumption and auxiliary power consumption. There was an overall increase in PLF from 43.3 % to 48.5 % during the year 2006-07 as compared to the previous year i.e. 2005-06 from the stations under PIE programme. During the current financial year up to Jan' 08 there is increase in generation of 544 MU over the corresponding period of previous year.

Programme for the year 2007-08

During the year 2007-08, LE work on unit No. 2 (1x40MW) of Obra TPS have already been completed and the execution of LE works on another 14 thermal unit (1834 MW) are in progress. Order for LE works as another 13 units (1700 MW) have been placed and works on these units a likely to be started shortly.

Further with a view to study the feasibility of incorporating efficiency improvement component in the R&M/ LE programme, few thermal power units (of 200/210 MW) have been identified. Suitable consultants would be selected to carry out the studies requires for efficiency improvement through R&M. On the basis of these studies the R&M/LE works would be implemented in coming years.

CHAPTER - 11

STATUS OF PRIVATE SECTOR PARTICIPATION IN POWER SECTOR

1.0 POLICY ON PRIVATE SECTOR:

The first major step towards encouraging private investment in the Power sector was taken in 1991 by providing a legal framework through an amendment of the then existing Electricity (Supply) Act, 1948 enabling private sector participation in generation. Subsequently, a definite tariff framework was also put in place through notification issued by the Government of India.

2.0 RESPONSE FROM THE PRIVATE SECTOR:

The response to GOI's energy policy has been encouraging. Till 31st December, 2007, a total capacity of a round 10,501.52 MW has so far been commissioned and capacity of another 10,760 MW has been targeted for the XIth Plan.

3.0 MAJOR POLICY INITIATIVES TAKEN TO STREAMLINE THE PROCESS OF PROJECT DEVELOPMENT:

3.1 Captive Power Plants: Captive Generation has been freely permitted. The Electricity Act, 2003 does away with the requirement of approval / clearance of any authority {State Electricity Board(SEB) / Central Electricity Authority(CEA)} for setting up of captive generating plant. The new law also ensures non-discriminatory open access for transmission of electricity generated from a captive generating plant to the destination of its use, subject to availability of transmission capacity and have to pay, transmission charges and exempt from payment of surcharge. Any person setting up a captive power plant can also establish and maintain dedicated transmission lines.

3.2 Open access to transmission: Under the new Electricity Act, 2003, non-discriminatory open access in Transmission has been envisaged. This will encourage competition amongst generators and distributors and trading in power from surplus to deficit regions.

3.3 Generating company permitted to distribute electricity in Rural Areas:

Section 14 of the Electricity Act, 2003 allows any generator of electricity to distribute electricity in a rural area without the requirement of any license, subject to compliance with measures as may be specified by the Central Electricity Authority under Section 53. Under the provisions of Section 4 of the Act, the Central

Government, in consultation with the State Governments, is to prepare and notify a national policy, permitting stand alone systems (including those based on renewable sources of energy and other non-conventional sources of energy) for rural areas, which has been notified.

3.4 Automatic approval for foreign direct investment :

Automatic approval (RBI route) for 100% foreign equity is permitted in generation, transmission, distribution and trading in power sector without any upper ceiling on the quantum of investment. The categories which would qualify for such automatic approval are :

- (i) Hydro - electric power plants
- (ii) Coal/lignite based thermal power plants
- (iii) Oil/gas based thermal power plants

3.5 Facilitating Financial Closure: It is expected that with the reforms and restructuring of the power sector, the confidence of investors/IPPs in power sector will improve and the outmoded precondition of payment security for investment funding would not be an impediment to attract investments. Encouraged with the reforms measures being undertaken, the financial institutions have shown renewed interest in investing in the power sector for viable projects being set up by promoters with credible background.

An Inter-Institutional Group (IIG) comprising senior representatives from the financial institutions and the Ministry of Power has been set up for facilitating early financial closure of private power projects. The Group consists of -

- Managing Director, State Bank of India - Chairman & Convenor;
- One senior representative each from IDFC, IDBI, ICICI, LIC, PFC, IFCI, PNB
- Joint Secretary, Ministry of Power.

This Group has been focusing closely on projects which could achieve early financial closure. 16 private power projects having a total capacity of about 7320 MW achieved financial closure and another 12 projects with a total capacity of 12647 MW are being monitored by the IIG for facilitating early financial closure.

CHAPTER - 12

INTERNATIONAL CO-OPERATION

CO-OPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

Development of water resources of the common rivers of India and neighbouring countries of Nepal, Bhutan and Myanmar for mutual benefits has been under consideration with these countries. There is regular exchange of electric power between India and the neighbouring countries for the supply of surplus power and meeting power requirements in the border areas. The details of co-operation with neighbouring countries are described below:

NEPAL

India has been assisting Nepal in the development of its hydro power potential and four hydro-electric schemes viz, Pokhra (1 MW), Trisuli (21 MW) Western Gandaki (15 MW) and Devighat (14.1 MW) have been implemented in the past with financial and technical assistance from Govt of India. Three major multipurpose projects in Nepal viz. Karnali, Pancheshwar and Sapta Kosi are presently under discussion at various levels as mutual benefit projects. A Feasibility report for the Karnali multi-purpose project (10,800 MW) was prepared in 1989. Key parameters of this project are to be finalized after mutual discussions. A Joint Commission on Water Resources (JCWR) headed by respective Water Resources Secretaries has been constituted to act as an umbrella Committee to ensure implementation of existing agreements/understanding and also to oversee work of all technical and expert level Committees related with water resources. Investigations have been carried out in respect of Pancheshwar MPP (5600 MW) by the two countries in their respective territories. A Joint Project office was established in Kathmandu in Dec., 1999 to carry out additional investigations and for preparation of a Detailed Project Report (DPR). The draft DPR has been prepared by the Indian side, which is to be mutually agreed by the two countries. A Joint Group has been constituted in Oct., 2004 for resolution of pending issues. The first meeting of this Joint Group was held in Kathmandu in Dec., 2004. The development of Pancheshwar project is covered under the Integrated Mahakali Treaty signed between Nepal and India in Feb., 1996. India has offered financial and technical assistance for investigation and preparation of DPR of Sapta Kosi High Dam. Multipurpose project and Sun Kosi Storage cum Diversion Scheme. A Joint Project Office (JPO) has been established on 17.08.2004 in Biratnagar, Nepal for taking up field investigations and studies for preparation of Joint DPR. The term of JPO has been extended till Sept., 2008, In addition, India has offered assistance for carrying out field investigations and studies for preparation of DPR for Naumure Multipurpose Project and a team of officers from the Ministry of Water Resources/ CEAI CWC & U.P.

Irrigation Deptt recently visited Nepal in this regard. Joint Technical Expert Groups have been constituted for the above projects for guidance for carrying out investigations and preparation of Detailed Project Reports (DPRs).

Satluj Jal Vidyut Nigam Limited (SJVN) a CPSU under Ministry of Power, Government of India has bagged its first International Competitively bid project in Nepal. SJVN responded to the international competitive bid invited by Government of Nepal (GON) for Arun-III Hydro Power Project and emerged as a front runner amongst the companies like SINOHYDRO Corp. Ltd. & China Overseas Engineering Group Co. Ltd. from China and GMR Energy Ltd., Reliance Energy Ltd., L&T Ltd. MAYTAS Infra Pvt. Ltd., Jindal Steel & Power Ltd. and JP Associates Ltd. from India. After detailed negotiations the agreement has been signed with Govt. of Nepal on 02.03.2008. The above agreement provides for construction on BOOT basis the Arun-III HEP within Seven & a half years from the date of signing of the agreement which includes Two & a half years for detailed survey & investigation. The Project will be operated by SJVN for thirty years from the date of issue of the generation license. The project is expected to generate 2891 MU per year out of which 21.9% free power shall be given to Government of Nepal. The project envisages construction of 68m high & 155m long Concrete Gravity Dam, Intake Structure with four openings, four underground desilting basins, a 7.5m dia & 11 Km long concrete lined HRT, and a 22m (W) x 35 m (H) x 161m (L) Power Cavern for housing 6 Pelton turbines of 67 MW capacity each. SJVN planned to sell power from this project to the Indian Consumers.

BHUTAN

In Bhutan, the Chukha HE Project (336 MW), implemented with Indian financial and technical assistance, is a shining example of cooperation between the two countries for mutual benefits. Surplus power from the project is being imported by India. Kurichhu HE Project (60 MW) in Eastern Bhutan has also been implemented with Indian financial and technical assistance. Another project viz. Tala HE Project (1020 MW) has also been commissioned in 2006-07 by the Tala Hydro-Electric Project Authority (THPA) comprising of Indian and Bhutanese Officers and engineers. Design & Engineering consultancy for the project in respect of electro-mechanical and civil works had been rendered by the Central Electricity Authority (CEA), Central Water Commission (CWC) and Water & Power Consultancy Services (WAPCOS). The project has been funded by India through grant and loan and the surplus power from the project is being imported by India. PTC has been designated as the nodal agency for transfer of Power from Tala Project to India.



Shri Anil Razdan, Secretary (Power) addressing the delegates of the Task Force on Carbon Sequestration Leadership Forum in October, 2007

An umbrella agreement for long-term cooperation for developing hydro electric projects and associated transmission has been signed. The agreement envisages the development and import by India of not less than 5000 MW by 2020. Further, Survey & Investigation for Punatsangchhu-I (1095 MW) has been completed by WAPCOS and its DPR was completed in June, 2006. An agreement has been signed between the Government of India (GoI) and the Royal Government of Bhutan (RGoB) in July'07 for execution of the Punatsangchhu-I project with Indian financial and technical assistance. In addition, an MOU has been signed between GoI and RGoB for preparation of DPR for Punatsangchhu-II (870/ 1000 MW) and Mangdechhu (360/600 MW) project in Jan., 2005. The work of preparation of DPR for Punatsangchhu HE Project St-II has been entrusted to WAPCOS. An implementation agreement has been signed between Deptt. of Energy (DOE), Ministry of Trade and Industry, Royal Govt. of Bhutan (RGoB) and NHPC on 29.09.06 for preparation of Detailed Project Report (DPR) of Mangdechhu HE Project. MoUs with these organizations have been signed by RGoB in Sept., 2006.

AFGHANISTAN

Govt. of India has rendered assistance to Govt. of Afghanistan in the past for development of HE Projects. Some of these projects for which services have been rendered by India include Kajakai Power Project, Lower Helmand Valley Development Project and Khanabad Hydro-electric Project etc.

In addition, India is extending assistance for reconstruction/ rehabilitation and completion of Salma dam multipurpose

project (3x14 MW) through WAPCOS which is scheduled to be completed by Jan.,2009.

MYANMAR

India had extended assistance for Design & Engg. Of Sedawyagi HE Project (25 MW). In addition, Tamanthi HE Project (1200 MW) has been identified as a 'mutual benefit' project. A technical team comprising Engineers from CEA/ NHPC/ CWC/ GSI visited the project site in Nov., 1999. Three G&D sites have been established by India on Chindwin river. In pursuance to an agreement signed on 13.04.04 between the Ministry of External Affairs (MEA) and NHPC Ltd., the latter had prepared and submitted a Pre-Feasibility Report (PFR) of the Tamanthi HE Project (1200 MW) in April, 2005. The DPR for the project is now being prepared by Govt. of Myanmar through foreign consultants and is scheduled to be ready by early 2008, after which decision regarding India's involvement in the project relating to the level of investment, participation in construction and evacuation of power etc. would be taken.

TAJIKISTAN

The Government of India has agreed to undertake the renovation, modernization and uprating of Verzob-I project in Tajikistan in 2006. NHPC and BHEL, as implementing agencies, have already entered into an MOU with Bajik Torji, the Tajik agency for execution of the project.

MULTILATERAL COOPERATION:

Carbon Sequestration Leadership Forum (CSLF)

In June 2003, India signed, along with Australia, Brazil, Columbia, Italy, Japan, Mexico, Norway, China, Russia, U.K.

and EC, Carbon Sequestration Leadership Forum (CSLF) Charter which aims at facilitating the development of improved cost effective technologies for the separation and capture of carbon dioxide for its transport and its long term safe storage. Greece has recently joined as 22nd member of CSLF. India is represented on the Policy Group of CSLF by Secretary (Power) and Secretary, DST. Ministry of Power has been coordinating all the activities relating to CSLF in India.

India has taken a stand in CSLF that developed countries need to finance the CSLF related R&D activities in developing countries. A Task Force has also been constituted by CSLF for suggesting suitable approach in this regard which is being chaired by India. The meeting of the Task Force of CSLF Policy Group on Financing Issues was held (11-12 October, 2007) in New Delhi.

So far CSLF has recognized 17 projects. One of these projects has been co-sponsored by India along with US. This project is "Demonstration of Capture, Injection and Geologic Sequestration of CO₂ in Basalt formations of India". From the Power Sector, NTPC are associated.

India, Brazil, South Africa (IBSA) Dialogue:

This forum was set up in June, 2003. First meeting of the Working Group on Energy was held in Brazil in March 2006. Main areas of cooperation are:

- Bio-fuels and renewable energy
- Experience sharing in areas of energy efficiency
- CDM projects and evolution of regulatory structure

IBSA summit was held in 2007. Under IBSA Working Group on Energy, Expert level Workshop for sharing experience is proposed to be held by BEE during 2008

Asia Pacific Partnership (APP):

This initiative was launched in January, 2006. The partners are US, Australia, India, China, Japan and South Korea. Canada has joined recently. This Ministry coordinates the Task Force on "Power Generation and Transmission".

Activities undertaken during 2007:

A team of NTPC engineers visited China in Jan., 2007 for sharing the experience of China in Plasma Ignition system.

A team of NTPC engineers visited Japan in April, 2007 for 'Peer Review' of power plants.

AP6 Building and Appliances Task Force (BATF) Workshop and Energy Efficiency in Motor Division System (EEMODS) Conference was held in June, 2007. This was attended by Energy Economist, Bureau of Energy Efficiency.

Energy Regulatory and Market Development Forum's Steering Committee meeting was held on 30th and 31st August, 2007. Representatives from CERC and NTPC attended the meeting.

Next Peer Review of coal fired thermal power plant and best practices in power generation is being hosted in India during 6-12 February, 2008 by NTPC as a part of activity plan of the Task Force

For introducing best practices for efficiency improvement in power plants of State generation utilities under Asia Pacific Partnership (APP), USAID is working along with CENPEEP (an earlier collaboration of US side with NTPC) in the States of Maharashtra, Punjab, West Bengal and in DVC.

REGIONAL CO-OPERATION:

SAARC

One of the SAARC Working Groups is on Energy. India hosted the second Energy Ministers Conference and the Senior Energy Officials Meeting in the March, 2007 along with the First South Asia Energy Dialogue in New Delhi with a view to tap potentials for cooperation in energy sector and to provide inputs to the Working Group on Energy. The Dialogue was attended by academicians, experts, environmentalists, NGOs and energy officials from all the member States. For the first time Afghanistan also participated in the SAARC Energy Dialogue. 2007 was the year of SAARC.

BIMSTEC

Energy cooperation has emerged as one of the important areas in this regional Cooperation Forum which consists of Bangladesh, Myanmar, Thailand, India, Nepal, Bhutan, Sri Lanka. On the invitation of the Prime Minister, we hosted first BIMSTEC Energy Minister's Conference in New Delhi in October, 2005. The conference also adopted a Plan of Action in addition to the Ministerial Declaration.

As per the Plan of Action, India is going ahead for setting up of BIMSTEC Energy Centre in New Delhi. An MOA was drawn up and adopted in a meeting held in New Delhi on 21st December, 2006 by the member countries. As agreed in the meeting efforts are afoot for the construction of BIMSTEC Energy Centre and for development of physical infrastructure. In the meanwhile a virtual BIMSTEC Energy Centre is already in operation under www.bimstecenergycentre.org with effect from August, 2007.

BILATERAL COOPERATION:

Cooperation with Neighbouring Countries:

Existing cooperation with Nepal and Bhutan for construction of hydropower projects with Indian expertise has further been strengthened. Tala HEP in Bhutan has been commissioned. Further, an Agreement has been signed on 28.7.2007 between the Government of India and the Royal Government of Bhutan on the implementation of the Punatsangchhu-I Hydroelectric Project (1095 MW) in Bhutan. The project is expected to be completed in about seven years.

PGCIL is constructing 132 KV single circuit transmission line under Government of India assistance from Deothang in Bhutan to Rangia in Assam, India. This shall provide adequate transmission arrangement for reliable operation of Kurichhu HEP in Bhutan. Further, construction of 33 KV Indoor substations at Yurmoo, Trongsa & Bumthang along with 33 KV line from Yurmoo-Trongsa in Bhutan is also being undertaken by PGCIL.

PGCIL is constructing a 220 KV transmission line in Afghanistan from Kabul to Pul-e-Khumri and a substation in Kabul to enable import of power from Uzbekistan. The project is being funded by Government of India. The project is in advanced stage of completion and is scheduled to be commissioned in 2008-09.

PGCIL has undertaken pre-feasibility study for establishing Transmission interconnection of India with Nepal, Bangladesh and Sri Lanka.

NTPC is setting up a thermal power project in Sri Lanka. An MOA was signed in the year 2006 to this effect.

Cooperation with Other Countries:

FutureGen Project:

1. The US Government had invited Government of India to join in the collaborative funding for the FutureGen Project, a US \$ 950 million public-private initiative to design, build and operate the first coal-fired emission-free power plant of 275 MW. US\$ 250 million is expected from private industry coalition and the balance US \$ 700 million is to be provided by the US Federal Government in partnership with foreign governments.
2. Accepting this proposal, India has agreed to invest US \$ 10 million over a 5 year period. A Framework Protocol was signed between US and India on 3.4.2006 on cooperation on the FutureGen Project in New Delhi.
3. The Framework Protocol recognizes that the objective of the FutureGen Project is to demonstrate a technological solution applicable to a variety of coal types.
4. India has become a full charter member in the FutureGen Government Steering Committee (GSC) which is the mechanism to provide guidance, input and recommendations on the direction of the FutureGen Project.
5. India will also have opportunity of joining the Technical Sub Committees of the Steering Committee in focus areas like plant design, sequestration sub-system, technology inclusion, test planning, risk analysis and assessment.
6. First meeting was held in USA in September 2006.
7. The US Department of Energy has entered into a cooperative agreement with a Consortium (FutureGen Alliance) led by the coal fired electric power industry and the coal production industry to execute this project. This Consortium is responsible for the design, construction and operation of the FutureGen plant and also for monitoring and verification of sequestered carbon dioxide.

Three meetings to discuss the draft of the Agreement for international collaboration on the FutureGen Project were held in April-May, 2007, July, 2007 and October-November, 2007. These meetings were attended by along with delegations from India.

Indo-EU Cooperation:

At the 5th India-EU Summit held in November, 04, India and EU agreed to set up a Joint Energy Panel with a view to coordinate their actions in the field of energy and all related fuel chains. The Panel is co-chaired by the Foreign Secretary from India side.

The Energy Panel met for the first time in Brussels. The panel had decided to set up 3 Working Groups.

- i) Clean and Clean Coal Conversion Technologies
- ii) Energy efficiency and renewable energies
- iii) Fusion energy including India's participation in ITER

The Ministry of Power is leading the Working Group on Energy Efficiency and Renewable Energy.

The Energy Panel had its second meeting in New Delhi on 7th April, 2006. The panel, inter alia, agreed for constituting a new Working Group on Oil and Gas. It was also agreed to undertake Joint India-EU studies in following 5 areas out of which 4 will be funded by EU and one by India:

- Coal quality management system in India
- The assessment of technologies for capture and geological CO₂ storage
- Application of eco-design requirements/methodology for energy using products in India.
- Assessment of potential of using bio-fuel in India
- Study on R&M of two thermal power plants in India

These studies have been assigned to Ministry of Coal, MoPNG, NTPC etc. The nodal officers are in liaison with their counterparts on the EU side.

The meeting of the Energy Panel was held in Brussels on 20th June, 2007. It was decided to expand the scope of the Working Group on Coal. The possibility of alternating the emphasis of this group to cover predominantly coal mining and beneficiation at one meeting possibly in the EU and coal conversion, emission management at the next meeting possibly in India was considered and was agreed to. It had been proposed to hold the meeting on Coal Conversion in India and mining related meeting in Europe. The meeting of the Working Group on Coal covering conversion technologies was held on 21-22 January, 2008 in New Delhi.

Indo-German Cooperation

India and Germany launched energy dialogue in April, 2006. The year has seen an increasing interest on both sides to enhance cooperation. Two batches of engineers from CEA/ State utilities have been deputed to Germany for training in power plant efficiency improvement. The second meeting of the Indo-German Energy Forum was held in New Delhi in December, 2007. A number of issues for bilateral cooperation were identified and three ad-hoc sub groups, namely on, power plant efficiency, CDM projects in Energy and Renewables have been set up.

Indo-Japan Energy Dialogue

The Indo-Japan Energy Dialogue to promote cooperation



Shri Anil Razdan, Secretary (Power) holding discussions at the 2nd meeting of Indo-German Energy Forum on 20th December, 2007

in energy sector was set up. The Deputy Chairman, Planning Commission is the co-Chair from the Indian side. The Ministry of Power is heading the Working Groups on 'Energy Efficiency' and 'Power Generation and Electricity'.

LIST OF ON-GOING EXTERNALLY ASSISTED POWER PROJECTS

World Bank

- Power Sector Development Project-III (4813-IN)/PGCIL

ADB

- Power Transmission Improvement (Sector) Project (2152-IND)/PGCIL
- Power Sector Distribution (1968-IND)/PFC
- Assam Power Sector Restructuring Project (2037-IND)
- M.P. Power Sector Investment Project (2323,2324,2346,2347-IND)
- Uttarakhand Power Investment programme (2309-IND)

JBIC (Japan)

- North Karanpura TPP (IDP-160)/NTPC-3x660 MW
- Rural Electrification Programme (IDP-169)/REC
- Hyderabad Transmission Project (IDP-177)/APTRANSCO
- Bangalore Power Distribution Upgradation Project (IDP-178)/ BESCO
- Purulia Pump Storage Project (IDP-98,152,167)/WBSEDCL
- Bakreshwar TPP Unit 4&5 (IDP-147) / WBPDC
- Renovation & Modernisation of Umiam-II HEP (IDP-156)/MeSEB

KfW (Germany)

- Renewable Energy Programme for Rehabilitation, Upgradation & Modernisation of HEPs / PFC
- High Voltage Distribution System / REC

CHAPTER - 13

POWER DEVELOPMENT ACTIVITIES IN NORTH EASTERN REGION

The status of on-going projects which are likely to yield benefits during 11th plan are as under:

CENTRAL SECTOR PROJECTS

NEEPCO Projects (Hydro):

(i) Kameng HEP (600 MW), Arunachal Pradesh:

Investment approval was accorded to this project on 02.12.2004 (at approved estimated cost of Rs.2496.90 crore including IDC of Rs.249.09 crore at March, 04 price level). All the major civil works, Hydro Mechanical works and E&M works have been awarded in Dec., 04. M/s SMEC, Australia have been appointed as consultants on 17.12.2004 for detailed Design and Engineering Services. Dam, HRT, Surge shaft and power house excavation works are in progress. 3.85 km out of 14.5 km HRT excavation has been completed. An expenditure of Rs.636.80 crore has been incurred upto 31st December, 2007. The project was originally to be commissioned during 2009-10, but has now been revised to 2010-11.

NHPC Projects (Hydro):

(i) Teesta-V (510 MW)- Sikkim: The project had been accorded investment approval on 11th February, 2000 at an estimated cost of Rs.2198.04 crore (now anticipated to be Rs.2495.29 crore), to be executed by NHPC. The project is scheduled to be commissioned in 2007-08. The Unit 1 was rotated on 28.01.2008. Unit 2 has been commissioned on 06.02.2008 while Unit 3 is in the process of spinning. An expenditure of Rs.2430.24 crore has been incurred up to January, 2008 on the project.

(ii) Subansiri Lower (2000 MW) - Arunachal Pradesh:

The project has been accorded investment approval on 9th Sept., 2003 at a cost of Rs.6285.33 crore (now anticipated to be Rs. 7451.99 crore) to be executed by NHPC. The project is scheduled to be completed by 2011-12. Major Civil Works have been awarded to M/ S BGS-SGS-Soma and L&T Ltd. Order for Electrical works has been awarded to a consortium of M/s Alstom



A view of the Ranganadi Hydro Electric Power Station (405MW), Arunachal Pradesh



A view of the dam and spillway, Doyang Hydro Electric Power Station (75MW), Nagaland

Power Hydraulique, France and M/s Alstom Projects India Ltd., New Delhi, and Hydro Mechanical works have been awarded to M/s Texmaco. The project had suffered initial delays due to delay in issue of formal forest clearance by MOEF & non-diversion of land from the State Govts. of Arunachal Pradesh and Assam. Forest clearance was accorded by MOEF on 12.10.2004. The river has been diverted on 25.12.2007. The Excavation of Intake Structure, HRT and surge chamber are in progress. Due to incessant rain in the month of January, 2008, slope failure has taken place in the power house area and the project roads have also been damaged. An expenditure of Rs.1819.25 crore has been incurred up to January, 2008.

NTPC Projects (Thermal)

- (i) **Bongaigaon TPS (3X250) MW by NTPC:** NTPC has proposed to set up coal based Bongaigaon TPP (3x250MW) at Salkati, Kokrajhar District of Assam. A coal linkage has been accorded by the Ministry of Coal. MOE&F clearance has also been received on 07.06.2007. NTPC had invited bids for supply of the Main Plant Equipments and the Letter of Award (LOA) has been placed on 05.02.2008. Commissioning of

three (3) units is expected during the 11th Plan i.e. in Nov, 2010, March, 2011 and July, 2011 respectively.

Joint Venture Projects (Thermal)

- (i) **Tripura Gas (750 MW) by Power Development Company, Joint Venture of IL&FS, ONGC and Govt. of Tripura:** ONGC in joint venture with IL&FS Govt. of Tripura proposes to set up (3x250 MW) combined cycle gas based power plant at Paltana in Tripura. Gas supply agreement has been signed with ONGC in April, 05. The DPR for project has been completed. MOE&F clearance has been accorded on 07.02.2007. Pre- bid conference was held on 15.09.2007 and the Bids were opened on 21.12.2007 and are under evaluation. LOA is expected to be placed by March, 2008. The project is scheduled for commissioning during the 11th Plan.

STATE SECTOR PROJECTS

- (i) **Myntdu (2x42 MW) – Meghalaya:** Myntdu HE Project (2x42 MW) is under execution by the Meghalaya State Electricity Board. The CEA accorded clearance to this project on 20.09.99 at an estimated cost of Rs.391.33 crore (completion cost at 01/99 PL) with the commissioning target by 10/2006. The revised year of

commissioning of the project is 2008-09. The investment approval was accorded by the State Government on 09.06.2003. Environment clearance for the project was accorded on 20.9.2001, while forest clearance was accorded on 19.6.2001. The Main Dam works have been awarded to M/s SEW Construction Company, Hyderabad. Works of HRT have been awarded to M/s Skanska Cementation (I) Ltd., Kolkata in Feb. 2005. E&M works were awarded on 30.11.2005 to M/s VA Tech Hydro India Pvt. Ltd. & VA Tech Escher WV&S Flovel Ltd. 2,51,630 cum. of dam concreting out of a total of 3,32,311 has been since completed. Concreting of Power House structure is in progress. An expenditure of Rs. 365 Crore has been incurred up to 31st December, 2007. The project is scheduled for commissioning in 2009.

- (ii) **Lakwa Waste Heat Recovery Project (Steam Turbine-37.2 MW)** by Assam Power Generating Company Ltd. in the Sibsagar District of ASSAM state is presently under construction. LOI for turn-key contract was placed on M/s BHEL on 20.03.06. M/s BHEL commenced piling works on 27.11.2006. EPC contract for Raw water intake pump house & Raw water piping from river Desang to Lakwa TPS has been signed on 16.07.07 with M/s Sontosh Sahewalla, Sivasagar. Piling in HRSG-2, STG foundation area, HRSG Bypass stack-III, HRSG Main Stack-I&II, Deaerator & BFP area have been completed. Works are in progress in other areas.

PRIVATE SECTOR PROJECTS

- (i) **Teesta Stage- III (6x 200 MW) – Sikkim:** Project is under execution in private sector by M/s Teesta Urja Ltd. State clearance to the project accorded on 18th July 2005. Environment & Forest clearance are obtained on

03.08.2006 and 02.11.2007 respectively. LOA for turn key execution of the project placed on the EPC consortium led by M/s Navayuga Engineering Company, Hyderabad (CKD-NEC-SEW-CGGC-ABIR-SABIR) on 18.04.2007. Contract agreement signed in September, 2007. Financial closure was achieved on 14th August, 2007.

Private land acquisition has been completed and the contractor has already completed mobilization of men and equipment at the project site.

Latest cost of the project is estimated at Rs. 5705.55 crores. Latest commissioning schedule of the units are from January, 2012 to June, 2012.

- (ii) **Chuzachen (2x 49.5 MW) – Sikkim:** Project is under execution in private sector by M/s Gati Infrastructure Ltd. Environment clearance and Forest clearance have been accorded obtained on 09.09.2005 and 09.01.2006 respectively. Civil works and Hydro-Mechanical works have been awarded to M/s SEW - PRASAD (Joint Venture) on 12/8/2006. E&M works were awarded to M/s Alstoms Projects (I) Ltd., on 20.12.2006. Financial closure has been achieved on 14.03.2007.

The contractor has completed the preliminary mobilization at the site. The excavation of adits, diversion tunnels etc. for the Rongli & Ranpo Dam have commenced. Power House excavation is also in progress.

Latest cost of the project is Rs. 448.76 crores. Latest commissioning schedule of units is August and September, 2009.

ELEVENTH PLAN PROJECTS:

9 Hydro Power projects and 3 Thermal Power Projects with installed capacity of 5592 MW have been programmed to yield benefits during 11th Plan as per the details given below:

Sl. No.	Name of States	11 th Plan Addition				Total
		No. of Schemes	Hydro (MW)	No. of Schemes	Thermal (MW)	
1.	Assam	–	–	2	787	787
2.	Manipur	–	–	–	–	–
3.	Meghalaya	2	124	–	–	124
4.	Mizoram	–	–	–	–	–
5.	Arunachal Pradesh	2	2600	–	–	2600
6.	Nagaland	–	–	–	–	–
7.	Tripura	–	–	1	750	750
8.						
	Total (NER+ Sikkim)	9	4055	3	1537	5592

- * Sadamander HEP(71 MW and Bhasmey HEP(51 MW) are not feasible during 11th Plan. However, Teesta III would achieve its full capacity of 1200 MW during 11th Plan.

TWELVETH PLAN PROJECTS:

40 Hydro Power projects and 4 Thermal Power Projects with an aggregate installed capacity of 25,659 MW have been tentatively identified which are likely to yield benefits during 12th Plan as per the details given below:

Sl. No.	Name of States	12 th Plan Addition				Total
		No. of Schemes	Hydro (MW)	No. of Schemes	Thermal (MW)	
1.	Assam	2	210	1	480	690
2.	Manipur	2	66	—	—	66
3.	Meghalaya	3	90	2	960	1050
4.	Mizoram	—	—	—	—	—
5.	Arunachal Pradesh	18	20570	—	—	20570
6.	Nagaland	—	—	—	—	—
7.	Tripura	—	—	1	104	104
	Total (NER)	25	20936	4	1544	22480
8.	Sikkim	15	3179	—	—	3179
	Total (NER+ Sikkim)	40	24115	4	1544	25659

CHAPTER - 14

IMPLEMENTATION OF OFFICIAL LANGUAGE POLICY

Ministry of Power

Ministry of Power, its Attached and Subordinate Offices and Public Sector Enterprises, Autonomous Bodies, Boards, Societies and Institutions under administrative control of the Ministry of Power continued their efforts for ensuring effective implementation of Official Language Policy of the Government and in day to day activities of the Ministry promoted the progressive use of Hindi.

Orders were issued on 17th October, 2007 to ensure the full compliance of Section 3 (3) of the Official Language Act and Rule 5 of Official Language Rules 1976 in the Ministry and offices under the Administrative Control of the Ministry. In addition to this, detailed directions were issued on 24th August, 2007 for ensuring the compliance of statutory requirements of the rules of Official Language Rules 1976.

A meeting was held on 18th September, 2007 in the Power Grid Office in coordination with Powergrid Corporation of India Ltd. for preparing a glossary in pursuance of decision taken for preparing a consolidated Power glossary in the meeting of Hindi Advisory Committee held on 22th July, 2006 under the chairmanship of Hon'ble Minister of Power. In this meeting, the representatives from offices under the administrative control of the Ministry and public sector enterprises, autonomous bodies, societies, institutions and boards etc. participated. The nature of glossary, process of preparation and the guiding principles for selecting the words were fixed in this meeting after detailed discussion. The work of consolidation of words for the glossary was entrusted to NHPC office. Words selected by the Ministry and offices under the administrative control of the Ministry, were compiled/consolidated by the NHPC office and after that meetings were held on 24 and 25 Oct. 2007 in NTPC office, Lodhi Road, New Delhi, on 19 -20 Dec. 2007 in BBMB office, Chandigarh, on 10-11th January, 2008 in PFC office, New Delhi and dated 11-12 February, 2008 in the office of Neepco, New Delhi for the scrutiny of words in the context of use in the power Sector. In this way, the work of the first phase of preparing the glossary was completed.

A Scheme has been running for awarding a Vidyut Rajbhasha Shield for promoting the progressive use of Hindi through the positive competition among the Attached Offices under the administrative control of the Ministry and Public Sector Enterprises, Autonomous Bodies, Societies, Institutions and Boards, under which shield are awarded to officers working in 'A', 'B' and 'C' regions.

To encourage book writing originally in Hindi on the subjects related to Power sector, 'Kendriya Pustak Lekhan Puraskar

Yojana' is being operationalised. Under this scheme cash awards of Rs. 50,000/- first prize, Rs. 30,000/- second prize and Rs. 20,000/- third prize are given to writers of original books.

In compliance with the Official Language Policy, Hindi fortnight was celebrated from 14th September, 2007 to 28th September, 2007. During this period various competitions including Hindi essay writing, Noting, Drafting and Technical glossary, Hindi poetry, Hindi debate and Hindi typing competition were organized for the officers and staff of the Ministry. Officers and staff of the Ministry participated in these competitions vigorously. Successful competitors were given Certificates and cash awards of Rs. 2000/- first prize, Rs. 1800/- second prize, Rs. 1500/- third prize and Rs. 800/- consolation prize.

A Comprehensive Inspection Programme was prepared to review the progressive use of Hindi in the Attached and Subordinate Offices, Boards, Organizations and Public Sector Enterprises under the administrative control of the Ministry and 40 offices were inspected and necessary instructions were issued to remove the shortcomings found during the inspection.

Proper directions were given regarding inspections to be done by the Committee of Parliament on Official Language to the Attached and Subordinate Offices, Public Sector Enterprises under the administrative control of the Ministry.

Meetings of the Official Language Implementation Committee of the Ministry were continuously organized. Immediate action was taken in regard to the important decisions taken in these meetings. These important decision were running Hindi Workshops, Organizing Conferences, and Seminars, recruitment on the vacant posts of Hindi, bilingual advertisements in newspapers and conduct of refresher course in Corporations/Undertaking.

Central Electricity Authority

All out efforts are being made to enhance the usage of Hindi in official work in CEA. All incentive schemes sponsored by the Deptt. of Official Language are in operation in CEA. In addition, a Roving Shield is awarded to the Division/Section/ Unit who does maximum work in Hindi throughout the year. During the year, Rajbhasha Shields were awarded to 10 Divisions/Sections where maximum correspondence is made in Hindi with Regions "A" & "B". Apart from above CEA has introduced a Cash Award Scheme namely Kendriya Vidyut Pustak Lekhan Puraskar Yojana on All India basis to promote original book writing in Hindi from the calendar year 2003. Under this scheme winners are awarded with the

following prizes: (A) First Prize - Rs. 50,000/-, (B) Second Prize - Rs.30,000/- (C) Third Prize - Rs. 20,000/- .

For the Calendar Year 2005 two and for the Calendar year, 2006 six entries have been received. The Evaluation work is being done. This scheme is also in operation for the year 2007.

During the year 4 sub-offices of CEA were inspected to assess the usage of Hindi in official work. During this year two Sub offices of CEA i.e. RPSO Mumbai and Delhi have been inspected by parliamentary committee. Official Language Implementation Committee's quarterly meetings were held regularly.

Hindi Fortnight was observed from 14-9-2007 to 25-9-2007. During this period six Hindi Competitions namely Hindi Essay Writing, Hindi noting & Drafting, Hindi Technical article writing, Hindi speech, Kavya Paath and Hindi quiz were organized. Winners of these competitions were awarded Cash Prizes alongwith letter of appreciation on 25.9.2007 in the Hindi Day celebrations.

To create interest in Hindi sufficient number of Hindi Books were purchased for library of CEA . During the year 2 Hindi Computer Training Programme were organised by NPTI, Faridabad in CEA Hq. in which 25 employees of CEA were trained.

Officers and employees were regularly nominated for Hindi Language, Hindi Typing and Hindi Stenography training conducted under Hindi Teaching Scheme. Out of 31 typists 22 were trained and 01 is under training and 08 are still to be trained. In stenography out of 143 employees, 101 trained and 05 are under training and 37 are still to be trained. In Hindi Language all officers/employees are trained. Newly recruited officers/employees are being asked about their educational qualification in which information about their Hindi qualification level is being collected. In order that they may be given training in case they do not possess the knowledge of Hindi.

NPTI

NPTI and its Training Institutes are implementing the various provisions of the official language policy of the Government. Progressive usage of Hindi in Official work is being given due encouragement.

In compliance with the constitutional and statutory requirements, all documents required to be issued bilingually are being adhered to Similarly communications received in Hindi are replied in Hindi.

Meetings of Official Language Implementation Committee at NPTI Corporate Office and Training Institutes are convened regularly.

Cash Award Scheme such as Incentive Scheme for original noting drafting in Hindi has been implemented. During the year under report, 10 Officers/Staff of NPTI Corporate Office

and Badarpur Institute and 3 Officers/Staff of Nagpur Institute have been awarded under this scheme.

In order to assess the progressive use of Hindi at NPTI Corporate Office and its Institutes, periodic inspections were carried out .

In compliance with the Official Language Policy, a "Hindi Pakhwara" was celebrated in NPTI Corporate Office and its Institutes from 13.9.2007 to 26.9.2007. In order to step up the use of Hindi in official work, competitions in Hindi Essay writing, Hindi debate, Hindi poetry. Hindi noting and drafting etc. were organised. Officers/ Staff took part in the competitions and winners were conferred with certificate / cash awards.

In order to create a conducive and inspiring atmosphere for the implementation of the Official Language Policy" Hindi Workshops were organized at NPTI Corporate Office and its Institutes.

Visit of Second Sub-Committee of Committee of Parliament on Official Languages of Central Govt. Offices

The Second Sub-Committee of Parliament on Official Languages of the Central Government Offices visited NPTI Corporate Office, Faridabad on 19.2.2007 for inspection. During the visit a Presentation on 'Progressive use of Hindi in NPTI Corporate Office and its Institutes was made & Hindi Books and Training Literature of NPTI were displayed. During the inspection. the Parliamentary Committee found the various provisions of Official Language and use of Hindi in Office works are being implemented satisfactory. The suggestions made by the Committee are being implemented.

Hindi Computer Training Programmes

During the year, NPTI Corporate office, (Faridabad) NPTI Badarpur, Nagpur, Durgapur and PSTI, Bangalore has organized 37 Hindi Computer Training Programs for officers/ officials of various Government Departments/ Organisations/ PSUs sponsored by Rajbhasha Vibhag, Ministry of Home Affairs, Government of India. With a view to create a conducive. and inspiring atmosphere for the implementation of the Official Language Policy "Hindi Workshops" were organised at NPTI Corporate Office and its Institutes. Participants received effective tutoring with complete familiarization in relevant office Packages such as Word, Excel, Power point, Akshar, Leap office, Internet and E-mail etc.

NHPC

All efforts were made to encourage progressive use of Official Language in the Corporation by ensuring Implementation of various Acts, rules of Official Language policy of the Government of India. As per directives of Government Hindi Fortnight was observed from 1 to 14 September,2007 in Corporate Office and various projects/power stations/

Regional offices of the Corporation. The programme was of grand success. Various competitions, cultural programmes book exhibition were organised on this occasion. "Rajbhasha Jyoti" magazine was published to mark this occasion and 30 Rajbhasha Shields, Cash prizes and Certificates were given to the head of Departments/projects/offices under Rajbhasha Shield scheme. 24 employees were given cash award for doing noting/drafting in Hindi.

In order to propagate Hindi a separate Rajbhasha Library is established at Corporate office Mr. Sushilkumar Shinde, Hon'ble Union Minister of Power, inaugurated this Library on 23-04-2007. To create interest in Hindi books among employees, a 'Hindi Book Reading Scheme' has been introduced. A useful 'Official and Technical Glossary' has been published to facilitate employees for doing their routine official work in Hindi.

Quarterly meetings of Official Language Implementation Committee were held regularly in Corporate office as well as in various projects. Monthly meetings are being held in departments for monitoring of Implementation of Official Language policy.

A grand 'Akhil Bhartiya Rajbhasha Sammelan' was organised at Teesta-V project on 28th & 29th June, 2007. About 50 employees participated in this sammelan.

Hindi workshops were organised almost every month and about 75 employees got training of new Hindi Software ISM V-5.

To monitor progress in Implementation of Official Language policy, an internal inspection of various departments/projects/offices has been conducted during the year. Classes were organised to impart training of Hindi language, Hindi typing and Hindi stenography to the employees. The second Tuesday of every month is being observed as 'Hindi Diwas'. In order to enhance Implementation of Official Language 'Rajbhasha Desk' has also been established.

Committee of Parliament on Official Language inspected Salal Power Station, Uri Power Station and Liaison office, Ranchi on 07-06-2007, 11-06-2007 and 03-11-2007 respectively. Joint Secretary (Official Language), Ministry of Power also inspected our Corporate office on 06-08-2007. During all these inspections, the organisation got appreciation for implementing Official Language policy.

During the year NHPC got awards viz. Rajbhasha Aabhushan from Bhartiya Bhasha and Sanskriti Kendra, Delhi and first prize from TOLIC Fardabad. NHPC is assisting Ministry of Power in creating Power Glossary. 'Aaj ka Shabda' and 'Aaj ka Vichar' is being written and displayed on computers and boards - regularly in the Corporation.

DVC

Damodar Valley Corporation implemented all the schemes formulated under Official Language Policy of the

Government of India as per the directives received from the Official Language Department, Ministry of Home Affairs and Ministry of Power, Government of India.

A special drive is going on in DVC to fill in the vacant post of the Hindi Cell. As a result of regular training and with the recruitment of Hindi staff, there has been a remarkable increase in the implementation of Section 3.3 of Official Language Act and Rule - 5 of the Official Language Rules in DVC.

Hindi classes under the Hindi Training Scheme of Government of India are conducted to impart Hindi Training and to develop the working knowledge of Non-Hindi speaking employees of the Corporation. Some of the employees have also acquired the knowledge of Hindi through correspondence course. As per the Annual Programme received from the Government of India, Ministry of Home Affairs, Department of Official Language, DVC has already achieved the target of 65% of the training programme during the year 2007-08. Further, DVC has set the target to complete the Hindi Training by November, 2008 at Headquarters and in the field formations for those employees who could not complete the programme till November, 2007. Besides this, an in-house Typing & Stenography training arrangement has been made in DVC. For completion of target fixed by Ministry, a special training plan has been prepared to train the English Typists as well as Stenographers for disposing maximum work in Hindi. Typists engaged in typing in English Version have been short listed and are provided four months' Hindi Typing Training .. Incentive scheme has been introduced for the trained Hindi Typists & Stenographers in line with the GOI guidelines. During the year under review, 12 trainees got through the Hindi typing examinations and 8 trainees cleared the Hindi Stenography Examination.

Hindi Workshops are being organized regularly to remove the hesitation of Non-Hindi speaking Staff/Officers of DVC for conducting official work in Hindi. During the year under review, two Official Language Workshops have been organized till date in which 40 officers and staff took part.

During 2007-08, Hindi Diwas/Hindi Pakhwara has been organized. Several competitions related to Official Language have been organized to inspire employees for executing their official work in Hindi. The winners of these competitions were awarded. On this occasion, a Kavi Sammelan comprising renowned Hindi and Bengali poets has also been organized. Besides this, a wall hoarding was inaugurated and Chairman's speech was circulated among the employees of the Corporation. One Departmental Rajbhasha Shield has been awarded to the best Department on the basis of using maximum Hindi in official activities.

During the year under review (2007-08), Damodar Valley Corporation has received 1st Prize from CALTOLIC (Undertaking), Ministry of Home Affairs, Govt of India for

its excellent performance in implementation of the Official Language activities.

BBMB

Special efforts have been made by BBMB for implementation of Official Language Policy of the Union. All the documents under section 3(3) of the Official Language Act are issued bilingually and letters received in Hindi or signed in Hindi are invariably replied in Hindi. At present about 91% correspondence of Board Secretariat with region 'A' offices and 92% with region 'B' offices is being done in Hindi. Board's website is made available bilingually and discussions in the meetings of the Board's High Level Administrative Committees are held in Hindi also and their minutes are issued bilingually.

Meetings of the Official Language Implementation Committee of Board Secretariat are held regularly in which report regarding progressive use of Hindi in any subordinate office of the board is also reviewed. Almost 50% notings as per the target fixed for 'B' region are done in Hindi.

Bilingual working facilities are available on all computers of the Board. Training in Hindi typing has been imparted to all the English steno typists/clerks.

Hindi Library has been set up in Board Secretariat and since last six years, more than 50% amount of total expenditure for the purchase of books is being spent every year for the purchase of Hindi Books. Hindi workshops are organized on quarterly basis and subordinate offices are regularly inspected for effective implementation of the Official Language. A special workshop for the purpose of simplifying the use of official language Hindi in government working was organized on 11th April, 2007 which was attended by a large number of officers and staff of the Board Secretariat.

Hindi fortnight is organized in the Board Secretariat and its subordinate offices every year in the month of September during which various Hindi competitions are held in order to create awareness amongst the officers and employees to work in Hindi. Staff members doing considerable work in Hindi during the year are also encouraged with cash awards.

All magazines/journals of the Board are published bilingually. Two editions of the Board's quarterly house journal 'Bhakra Beas Samachar' are published in Hindi exclusively. Besides, 'Taqniki Shabdavali' and 'Rajbhasha Shayak Pustak' has been published and distributed to all employees so that they can work in Hindi in a more convenient and effective manner.

Board Secretariat has been awarded on a number of occasions for excellent performance in Implementation of Official Language policy of the Government by Ministry of Power as well as by Town Official Language Implementation Committee, Chandigarh. Board Secretariat has been given first prize for excellent performance in Hindi during the year 2005-06 also by Town Official Language Implementation Committee, Chandigarh.

PGCIL

POWERGRID, as a company, is sensitive towards its heritage, social and cultural concerns. In pursuance of Govt. of India's Rajbhasha policy to promote Indian languages and Rajbhasha "Hindi", POWERGRID has proved its commitment to ensure progressive use of Hindi in all its office works. To achieve the goal as laid out in the Rajbhasha Annual Plan, POWERGRID has made all efforts to integrate use of Hindi in all aspects of management in the corporation and at all levels.

To increase the use of the official language and for its continued propagation, various activities like workshops to give training, meetings, poetry session, Publication of Hindi magazines/papers, and lectures from eminent personalities are regularly organized. More than 106 offices of POWERGRID have been notified in Gazette of Govt. of India. Hindi library of POWERGRID is one of the best libraries in Public Sector Units. All records about Hindi books & magazines are kept in computer for easy access to employee of POWERGRID through internet. All computers of POWERGRID are bilingual & phonetic key board is made available in all computers. For outstanding and noteworthy contributions in Hindi, number of incentive and reward schemes are in force.

POWERGRID is sensitive towards its heritage, social and cultural concerns. The efforts made by POWERGRID in promoting the implementation of Rajbhasha has been applauded in many forums.

RURAL ELECTRIFICATION CORPORATION LIMITED

Three quarterly meetings of Official Language Implementation Committee were held chaired by CMD. In addition Hindi progress is also discussed in every weekly HOD Meetings. Six workshops organized; 45 officers and 56 non-officers participated. Eleven Sections and Four Project Offices were inspected to assess usage of Hindi. Hindi usage has increased; in correspondence from 62.7 % to 70.51% & in notings from 35% to 45% respectively.

Hindi Pakhwara was celebrated from 14.9.2007 to 28.9.2007, Nine Hindi Competitions were organised separately for the level of GM/ED, Middle Managers and Non Executives and Sulekh Competition was organized for the first time for Class Four Employees. Competitions were judged by the eminent Hindi Writers. Fifty Five prizes including ten prizes awarded for doing original work in Hindi during the year 2006-07 to the winners in a grand cultural evening organized specially on 17.12.07. Hon'ble M.P (Chief Guest), Shri Uday Pratap Singh and Member Parliamentary Committee on Rajbhasha (Second Sub. Committee) and Secretary, Rajbhasha Vibhag, Ministry of Home Affairs (Guest of Honour) and the CMD, REC amongst others were present. Artists from the Song and Drama Division, Ministry of Information & Broadcasting, presented Folk Dances of India on the Theme of "Unity in Diversity". Prize winners

were awarded Certificates and Cash Prizes by the Hon'ble M.P. and the Secretary, Rajbhasha Vibhag, Ministry of Home Affairs.

Two Hindi Books namely "Glossary of Technical & Financial Terminology" and REC (Conduct, Discipline & Appeal) Rules were formally released by the Chief Guests. Ninety Five % amount of Library budget spent on purchase of Hindi books. Monthly "e-Darpan magazine" is published by us for internal circulation with a devoted Hindi Section.

NORTH EASTERN ELECTRIC POWER CORPORATION LTD. (A GOVT. OF INDIA ENTERPRISE)

The Corporation is making all out efforts to implement effectively the Official Language Policy of the Government of India at its Corporate Office as well as Projects and other offices. Efforts were made to issue papers referred to in Section 3 (3) of the Official Language Act in bilingual. A centre of the Hindi Teaching Scheme is functioning, at Corporate office, Shillong conducting regular classes of Prabodh, Praveen and Pragya courses. During the year 90 employees were nominated for Hindi Language Training under regular course and 114 employees were nominated for Correspondence course. Apart from this 04 employees participated in the Hindi computer training organized by the NIC, Guwahati. Under the incentive scheme 62 employees were awarded cash award and 15 employees were awarded personal pay as per eligibility. To acquaint the employees with provisions of Official Language Rules and to facilitate the employees for doing their official work in Hindi, 05 nos. of Hindi workshops were organized at different offices and 100 officers/staff participated in these workshops. Training materials were provided to the employees during the Workshop. Offices were also inspected by the Corporate Office to assess the progress made in the use of Hindi and necessary guidelines were provided for proper implementation of the Official Language Policy of the Govt. of India. An inspection committee was constituted for assessing the progress made in the use of Hindi at Corporate Office. NEEPCO website is also available in Hindi. In the House Journal - '**NEEPCO NEWS**' valuable information relating to use of Hindi were provided for the guidance of the employees. Key words in Hindi with English equivalent were displayed everyday on the black board under the programme "**Today's Word**" in order to enrich the Hindi vocabulary of the employees.

Rajbhasha (Hindi) Pakhwara was observed and "Hindi Divas" was celebrated at the Corporate office as well as in the projects and other offices of the Corporation during the year to create awareness and to encourage the employees for doing their official works if in Hindi. Various competitions were conducted in Hindi and attractive prizes were awarded to the participants. A Hindi patrika "**NEEPCO JYOTI**" was published on the occasion. An exhibition was also organized where the achievements made in the use of Official Language Hindi in the Corporation were displayed.

The Akhil Bharatiya Rajbhasha Sammelan was organized by the Corporation under the guidance of Ministry of Power, Govt. of India at Guwahati (Assam) on 03.04.2007. The Corporation was awarded **Rajbhasha Shield (2nd Prize)** by Town Official Language Implementation Committee (TOLIC), Shillong and **Rastriya Rajbhasha Shield** by Rastriya Hindi Academy, Rupambara.

Rajbhasha (Hindi) Pustakalaya has been functioning at Corporate office, Shillong which was further enriched with valuable books. Dictionaries, Glossaries and other reference books are also available for the use of the employees. Hindi News Papers and periodicals are available in the Pustakalaya. New books worth Rs. 14,200/- (Rupees fourteen thousand two hundred) only were purchased during the year to enrich the pustakalaya. In Subordinate Offices also reference books in Hindi were made available for the use of the employees. Since installation of Hindi Software in Corporate office as well as other offices, a remarkable progress has been made in the use of Hindi in official works.

SJVNL

In order to ensure the implementation of the Official Language Policy of the Govt. of India, all possible efforts have been made by the company to achieve the targets as specified by the Department of Official Language. Company has received many awards in recognition for these efforts.

In-house training arrangement have been made to impart training of Hindi typing to concerned employees, under which four steno-typist/stenographers have been trained in Hindi typing during this period.

Under section 3.3(i) of Official Language Act cent percent documents were issued bilingually. All the letters received in Hindi were replied in Hindi.

To encourage executives and non-executives to do their entire work in Hindi a number of incentive scheme are under implementation namely 1) Payment of One increment every month for doing whole office work in Hindi, 2) Cash Incentive to senior officers on bi-annual basis for outstanding work done in Hindi, 3) Hindi-English and English-Hindi Shabda Gyan Pratiyogita on quarterly basis, 4) Honorarium for writing technical papers in Hindi, 5) Cash prize on passing Hindi typing examination, 6) Cash prize for giving dictation in Hindi by Officers, 7) Cash prize for best write up published in in-house Hindi journal "Himshakti" and 8) Cash prize for issuing 90% or more cheques in Hindi. Under these schemes 211 executives and non-executives have received prizes amounting to Rs.1, 84,587/- approximately.

Books amounting to Rs.37,880/- were purchased during the year out of which books purchased valued Rs.29,820/- were in Hindi. While constitutes about 78.2% of the budget for books. To impart training to the executives and non-executive to do their day-to-day work in Hindi by organising Hindi workshops/seminars is a continuous

process in the company. Five Hindi workshops/seminars have been organised and 87 no. of executives & non-executives have been trained. Organising of Hindi quiz competitions on national/important occasions is a regular feature. 370 no. of executive and non-executive were awarded cash prizes of Rs.100/- each. A number of competitions were also organised during "Hindi Fortnight" in which 102 executives and non-executives were awarded cash prizes amounting to Rs.86,900/- approximately.

To give impetus to the multi-facet talent of employees an in-house bi-annual Hindi magazine "Himshakti" was published and circulated.

MOU for the year of 2006-2007, signed between the MOP and SJVNL, was published bilingually.

The bilingual website of the Nigam had been launched in Jan., 2000 and since then it is being updated from time to time.

NTPC

Several steps were taken for the propagation and implementation of Official Language Hindi in the offices of our Corporation. The progress of the usage of Hindi in our Chennai, Koldam, Dadri, Simhadri, Faridabad, Auraiya, Talcher, Mumbai, Anta offices were inspected and proper suggestions were given to the Heads of the Offices in this regard. Meetings of Official Language Implementation Committee were held on 26.06.2007, 26.09.2007 and 11.12.2007 in which the implementation of Hindi in Faridabad, Sipat and Dadri projects along with our corporate office was reviewed thoroughly. Hindi competitions were conducted for Delhi based member offices of Town Official Language Implementation Committee (PSUs), Delhi. NTPC has hosted the 25th and 26th meetings of Town Official Language Implementation Committee (PSUs), Delhi, were held on 19.06.2007 and 10-12-2007 respectively under the Chairmanship of Shri T. Sankaralingam, CMD, NTPC in which Mrs.P.V.Valsla G.Kutti, Joint Secretary (Rajbhasha), Ministry of Home Affairs was invited Chief Guest. The Chief Guest has given Awards to the winner undertakings of Hindi magazine publication competition and TOLIC Competitions. Apart from this, Rajbhasha implementation review meeting was also conducted in Secunderabad for the projects of NTPC Limited. Various Hindi competitions were organized during Hindi fortnight from 1st to 14th September, 2007 in the corporate office as well as in all projects of NTPC. The winners of Hindi competitions were awarded in the Hindi Diwas function on 14.09.2007. Hindi workshops were conducted for the employees of Consultancy Wing, Research and Development and Finance Departments of Corporate Office and PMI as well as in the projects in which renowned Hindi scholars inspired the participants to use Hindi in day to day official work. A ballet based on "Panchtantra" was staged on the eve of NTPC Raising Day on 06.11.2007. The Second Sub-Committee of the

Committee of Parliament on Official Language had visited our Kolkata office on 01.11.2007 for Rajbhasha inspection. The 13th issue of the corporate Hindi house journal "Vidyut Swar" was published to encourage Hindi writings.

PFC

In Power Finance Corporation Limited, Rajbhasha Implementation is taken as a vital area of Management Operation. During the year, 2007-08, the meetings of the Official Language Implementation Committee of the Corporation were organized in every quarter regularly. Detailed discussions were held in these meetings with regard to the progress made in implementation of Official Language Policy and its effective implementation.

Rajbhasha Month was observed from 14th September to 12th October, 2007 in the Corporation. The messages of Hon'ble Minister of Home, Hon'ble Minister of Power and Chairman and Managing Director of the Corporation were circulated amongst the employees of the Corporation on 14th September, the Hindi Day. On this occasion, the poems written by employees of the Corporation were made available on the PFC's website.

During the year, four workshops were conducted to impart training in Hindi with a view to improve the efficiency of the employees in doing their official work in Hindi.

All Stenographers of the Corporation were trained by conducting a Hindi Stenography Refresher Course. Various competitions like 'Rashtriya Geet' and 'Rashtra Gaan Pratiyogita', 'Vartani Shodhan:Pratiyogita', 'Nibandh', 'Sansmaran' and 'Kahani' Lekhan Pratiyogita were organized during the year. During the Vigilance Awareness Week, three competitions namely, Essay Writing, Slogan and Pictorial Theme Representation were organized in Hindi & English respectively. A Chhau Dance performance was also presented on this occasion by a troupe.

During the Foundation Day Celebrations of the Corporation, a cultural programme was organized in Hindi on 16th July, 2007. On this occasion, eminent playback singer Sunidhi Chauhan performed with her troupe. On obtaining the status of 'Navratna', a Kavi Sammelan was organized. On 05th October, 2007, a comedy play in Hindi 'EK MACHINE KABADI KI' was organized in Kamani Auditorium and a Ghazal programme was organized on 15.01.2008. Inspections of various Units & Regional Offices of the Corporation were carried out for taking stock of the status of implementation of the Official Language Policy in their Units/Offices. The bilingual magazine of the Corporation 'Urja Dipti' was brought out and the Annual Report of the Corporation was published in diglot form.

The Bhartiya Rajbhasha Vikas Sansthan bestowed 'RAJBHASHA SHRI SAMMAN', on PFC in Akhil Bhartiya Rajbhasha Sammelan held in Khajuraho.

CHAPTER - 15

VIGILANCE ACTIVITIES/DISCIPLINARY CASES

1. During the year 2007-08, attention on preventive vigilance in Public Sector Enterprises of the Ministry of Power was continued. A review of the vigilance work, being done by the various Public Sector Enterprises and Offices functioning under the Ministry of Power, was undertaken by Secretary (Power) in meetings with CVOs of PSUs under this Ministry. As per CVC's instructions stress has been given on improving Vigilance Administration – by leveraging of technology for transparency.
2. A regular monitoring and watch is being kept on the cases received from CVC under Public Interest Disclosure Resolution. The CVO, Ministry of Power submitted its reports and comments on the cases referred by CVC including those under the CVC Act. CVO, Ministry of Power also held discussions in CVC for disposal of important cases. PSUs were requested to ensure greater compliance with the guidelines issued by the CVC for processing and award of tenders. Various cases of vigilance irregularities were disposed of by the Vigilance Wing. Three cases of disciplinary proceedings are pending/contemplated and are at different stages of processing. Timely disposal of vigilance clearance has been ensured in the matters pertaining to Ministry and PSUs. All CVOs are in place and no vacancy exists.
3. Vigilance Awareness Week was celebrated in this Ministry and its Attached Offices/PSUs from 12th November to 16th November 2007. On this occasion the pledge of integrity and transparent working was administered to all the officers and staff of the Ministry. A competition on "Is the existing legislation effective in combating corruption? What are the changes needed." was organized by inviting suggestions from the officers and staff of Ministry of Power to convey the message of integrity, honesty and transparency in the society.
4. The disposal of complaints has been in accordance with the time-frame prescribed by the CVC. Total 65 complaints were handled during the period. Out of this 40 complaints were carried to a logical conclusion and the remaining are under investigation. Besides that 03 complaints were received from CVC. These complaints were also taken up for investigation within the stipulated time-frame.
5. 43 officials were proceeded against for major penalty disciplinary action, 81 officials were proceeded against for minor penalty action and 98 officials were proceeded against for administrative action from April 01, 2007 to November 30, 2007. Major penalty was imposed on 10 officials and minor penalty was imposed on 19 officials. Out of the above cases 19 employees were facing disciplinary action in CVC cases as on March 31, 2007 (13 employees were facing major penalty action, 06 employees were facing minor penalty action). 02 cases of major penalty action and 06 cases of minor penalty action were disposed of during the period. During the period 06 employees were added. Hence, as on November 30, 2007, disciplinary action is pending against 17 employees in CVC cases.
4. So far as CBI cases are concerned, 02 CBI cases are under prosecution as on November 30, 2007.
5. 204 Surprise Checks were conducted. Recovery of Rs. 78,41,212/- was effected. 24 System Circulars were issued. During the period 23 Preventive Vigilance Workshops were conducted at various projects/ places in which 1049 employees participated. Property Returns relating to immovable property are obtained from employees every year. Internal Audit Reports pertaining to NTPC Projects/ Stations, Sites and Regional Headquarters received from NTPC Finance Dept. during the year were examined from vigilance angle.
6. Vigilance Awareness Week was observed all over NTPC with tremendous enthusiasm, in NTPC Project, Regions, and Sites from November 12, 2007 to November 16, 2007.

VIGILANCE ACTIVITIES/ DISCIPLINARY CASES APRIL 2007 TO NOVEMBER 2007-NTPC

1. NTPC Vigilance Department – as ISO 9001-2000 accredited Department of the NTPC, consists of four units, namely Corporate Vigilance Cell, Departmental Proceeding Cell (DPC), MIS Cell and Technical Cell (TC). These units deal with various facets of Vigilance Mechanism. Exclusive and independent functioning of these Units ensure transparency, objectivity and quality in vigilance functioning.

VIGILANCE ACTIVITIES-REC PROGRESS MADE DURING THE CURRENT YEAR UPTO NOVEMBER, 2007

The Vigilance Division is headed by the Chief Vigilance Officer. The Vigilance set up consists of a CVO and three Officers who endeavour to improve all facets of vigilance i.e preventive, detective and punitive and ensure that the guidelines issued by CVC are implemented by the Corporation.

Prevention being better than cure the Corporation continued to accord a major thrust on preventive vigilance, streamlining and strengthening systems and procedures in addition to transparency in policy matters and management functions. The message of making the officials aware of the measures towards increasing efficiency and transparency in Customers Oriented Programmes was reiterated also during the Vigilance Awareness Week programmes organized from 12.11.07 to 16.11.07 at Corporate Offices as well as at all the Project Offices of the Corporation. A special issue of REC's Newsletter 'Darpan' on vigilance activities titled 'Sajag' was also released containing articles/ poems etc. of officials of the Corporation.

As per instructions of CVC regarding increasing efficiency and transparency, a threshold value of RS. 15 lakhs has been fixed for reporting details of tenders on Website. All the enquiries for tenders are invariably placed in the Website. A system of lodging online complaint has been introduced for speedy redressal of grievances. Vigilance Division initiated measures to streamline and strengthen office systems and procedures. Sensitive areas of functioning in the Corporation have also been identified to revise the list of sensitive posts. As a surveillance measure, inspections were carried out by the Officers of Vigilance Division in various Project Offices.

Agreed List in respect of all the 18 Project Offices/Training Institute of REC were finalized in addition to its Corporate Office at Delhi after close interaction with local branches of CBI. List of Offices of Doubtful Integrity was prepared.

VIGILANCE ACTIVITIES - BBMB

The Vigilance Organisation in Bhakra Beas Management Board comprises a Chief Vigilance Officer (CVO) of the rank of Dy.Chief Engineer who is helped by six Vigilance Officers (VOs) of the rank of Superintending Engineer at various Project Stations of Bhakra Beas Management Board, viz Bhakra Dam, Nangal (Two VOs), Beas Dam, Talwara (One VO), Beas Satluj Link Project, Sundernagar (One VO), Chandigarh (Two VOs). Any complaint(s) received is got investigated through the VO and appropriate action is taken.

The Vigilance Organisation in BBMB is doing earnest efforts to inculcate in all the employees of BBMB the following as a measure of preventive vigilance:-

- I) To check and control the very tendency on one's part to delay the matters.
- II) To record speaking orders in clear terms on the files giving merits of the orders.
- III) To avoid decisions being influenced by those who might have an axe to grind.
- IV) To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.

- V) To be firm in conviction that integrity is to be safeguarded and any price paid in this regard is insignificant.
- VI) To keep a watchful eye on all breeding places of corruption.
- VII) To expose without fear those involved in acts of self gratification.
- VIII) To take pride in humble living and acts of honesty.
- IX) To follow the rules, procedures, instructions, manuals, etc. meticulously.
- X) To avoid drawing illogical and dubious inferences so as to derive undue benefits, whenever an ambiguity in rules is encountered.
- XI) To expedite the inquiries, their follow up action to get decision from parent States/State Electricity Boards.
- XII) Implementation of disciplinary actions without any delay wherever BBMB itself can take the same

Besides above, Vigilance Awareness Week – 2007 was celebrated w.e.f 12.11.07 to 16.11.07 in BBMB Offices at Chandigarh as well as at Project Stations. An interactive session on vigilance awareness was also conducted on 13.11.07 at Chandigarh.

VIGILANCE ACTIVITIES - CPRI

Chief Vigilance Officer had received two complaints from the employees on some apparent vigilance matters. The cases were investigated and disposed of after discussion with the Head of the Organization. Reports and returns on vigilance activities were submitted in time to the Central Vigilance Commission (CVC) and also to the Ministry of Power.

VIGILANCE ACTIVITIES - NEEPCO

As per directives and guidelines received from the Central Vigilance Commission, Action Plan on Anti-Corruption and Vigilance measures has been taken up. Complaints received from various sources are regularly attended to and where prima-facie evidences are found, investigations have been carried out. Emphasis is given to the aspect of preventive vigilance to streamline the rules and procedures and making all efforts to plug the loopholes detected during investigation of various cases.

VIGILANCE RELATED ACTIVITIES UNDERTAKEN IN SJVNL

Various routine vigilance administrative matters / regular vigilance activities, are being continued in SJVNL like maintaining up-to date vigilance status of the officials of SJVNL, granting vigilance clearance to SJVNL Officials for various requirements, identification of Sensitive Posts,

action on Complaints, conducting inquiry proceedings in the pending major penalty cases, preparation of the Agreed list and List of Persons of doubtful Integrity, conducting Surprise Checks / Inspections by Vigilance, conducting training / workshop on vigilance, holding of Vigilance Awareness Week w.e.f. November 12-16, 2007.

Issue regarding implementation of E - Banking for financial transactions / payments etc. at least at Corporate Offices, is also being pursued. Serious efforts are now being made by SJVNL Management to implement E - Banking, inspite of functional difficulties being faced in this regard, due to remoteness of sites and unavailability of core banking facilities, at remote locations.

Works & Procurement Policy (W &PP) is also being reviewed and revised to make systems more transparent, functional and suitable to cater to present requirements, at the behest of Vigilance Deptt. The matter is being pursued with the management for its early implementation.

Vigilance Deptt. has also suggested a proposal for creating "data base systems" that can generate "snapshot scenarios of available resources (manpower, machinery etc.) and hindrances on weekly basis, at the time of processing of claims, in order to curb / restrict huge claims raised by major, contractors for main works of Projects.

The matter regarding safe and smooth running of 1500 MW NJHPS power station, involving issues like installation of dewatering pumps, and adequacy of fire fighting mechanism installed in Transformer Hall and Power House of NJHPS, is also being emphasized to SJVNL Management, in order to tackle any such eventuality.

VIGILANCE ACTIVITIES - PFC

During the financial year 2007-08 (upto November, 2007), the Vigilance Unit functioned as an effective tool of positive management with the thrust being on preventive Vigilance. This' aspect was focused upon by Conducting periodic & surprise inspection of files and by issuing effective guidelines to streamline systems with the aim of eliminating loopholes and ensuring transparency in day to day operations so as to minimize Scope for misuse. Vigilance Unit undertook the review of operational manuals of various activities of the Corporation. A number of comprehensive manuals on different areas of company's activities have already been notified after review and some other manuals are in the process of finalization. Further, during the period, detailed investigation was carried out in seven cases of complaints out of which vice cases were closed with the approval of competent authority and the balance two are under investigation. To further reinforce preventive vigilance, compliance of Central Vigilance Commission circular No. 40/11/06 dated 22.11.06 with regard to emphasizing the need of leverage technology as an effective tool in vigilance administration by uploading

information on corporate websites regarding rules, procedures etc. besides making available. application forms and status, of application on the websites of the organizations is being ensured.

During the period, 6 complaints were handled. All these complaints were investigated and carried to a logical conclusion with the approval of the competent

In accordance with the directives of CVC, Vigilance Awareness Week was observed from 12th November to 16th November, 2007 in the Head office and Regional offices of the Corporation. In order to disseminate a strong message of integrity and transparency in public service. Interactive two days programme on 'Corporate Governance in Power Sector' was held for the benefit of the executives and customers/clients of the Corporation so as to sensitize them about the evil effects of corruption and also to educate them on the initiatives taken for improvement in systems, procedures and the complaint handling policy of the Corporation. Further, Slogan, Essay and Pictorial Theme Representation Competitions were organized on themes relating to vigilance/corruption with the aim of involving employees and encouraging them to come forward with innovative ideas in spreading awareness about the harmful effects of corruption.

10.0 VIGILANCE RELATED ACTIVITIES UNDERTAKEN IN SJVNL

Various routine vigilance administrative matters / regular vigilance activities, are being continued in SJVNL like maintaining up-to date vigilance status of the officials of SJVNL, granting vigilance clearance to SJVNL Officials for various requirements, identification. of Sensitive Posts, action on Complaints, conducting inquiry proceedings in the pending major penalty cases, preparation of the Agreed list and List of Persons of doubtful Integrity, conducting Surprise Checks / Inspections by Vigilance, conducting training / workshop on vigilance, holding of Vigilance Awareness Week w.e.f. November 12 - 16, 2007.

Besides above routine administrative matters, the prime emphasis has been mainly on the preventive vigilance rather than punitive vigilance. The preventive vigilance includes those steps which are instrumental in reducing or eliminating corruption from public services. Various initiatives towards preventive vigilance have been taken in SJVNL. In this regard, CVC instructions regarding E - Procurement are now being extensively used in SJVNL. Posting of Tenders on internet is being ensured. Uploading of details of work tenders awarded which are above a threshold value, is also being done.

Issue regarding implementation of E - Banking for financial transactions / payments etc. at least at Corporate Offices, is also being pursued. Serious efforts are now being made

by SJVNL Management to implement E - Banking, in spite of functional difficulties being faced in this regard, due to remoteness of sites and unavailability of core banking facilities, at remote locations.

Efforts are also being made to start compilation of status of bill payments to contractors / suppliers etc. and uploading of the same on SJVNL official website.

Works & Procurement Policy (W&PP) is also being reviewed and revised to make systems more transparent, functional and suitable to cater to present requirements, at the behest of Vigilance Deptt.. The matter is being pursued with the management for its early implementation.

It is also being emphasized with SJVNL Management to expedite the preparation of Finance and other related Manuals, in the best interest of the Corporation. In this context, the process of appointment of Consultant, for preparation of Manuals, has also been started by SJVNL.

Vigilance Deptt. has also been insisting on development of indigenous spares for NJHPS generating machines. In this regard, the process of setting up of workshop for development of HVOF hard coating facilities to the underwater parts of generating machines, has begun in SJVNL. The development of in-house facility in SJVNL shall not only help in reducing the costs on the same account, but will also go a long way in tackling the problems in operation and maintenance of hydro power machines in the country, arising out of high silt content present in river water.

Vigilance Deptt. has also suggested a proposal for creating "data base systems" that can generate "snapshot scenarios of available resources (manpower, machinery etc.) and hindrances on weekly basis, at the time of processing of

claims, in order to curb / restrict huge claims raised by major, contractors for main works of Projects.

Vigilance Department has advised the management to constitute Claims settlement committees at both field level and corporate level.

The matter regarding job rotation is being pursued with the Management of SJVNL. However, it is understood that, in view of the specialized nature of works in many areas, problems exist in implementation of this across the board.

The matter regarding safe and smooth running of 1500 MW NJHPS power station, involving issues like installation of dewatering pumps, and adequacy of fire fighting mechanism installed in Transformer Hall and Power House of NJHPS, is also being emphasized to SJVNL Management, in order to tackle any such eventuality.

Vigilance deptt. has also pursued with the SJVNL Management regarding manpower planning and enhancing employees morale and motivation in view of the high attrition rate being observed in SJVNL during recent times, for the survival of the Organization and to be in line with the rapid growth plan of SJVNL to develop new hydro projects in the imminent future, in the present highly competitive scenario.

VIGILANCE ACTIVITIES

Vigilance activities at NPTI are carried out by a Director as an additional responsibility.

The status of vigilance activities till November, 2007 is as under:-

- Two disciplinary cases finalised.
- Vigilance Awareness Week was observed at NPTI in the Second week of November, 2007.

CHAPTER - 16

ACTIVITIES RELATING TO WOMEN EMPLOYEES

There are 43 women employees in the Ministry of Power. The representation of women employees at various levels in the Ministry of Power is indicated below :

Group	Total Employees (as on 30.11.2007)	No. of Woman Employees	Percentage of overall staff strength
A	49	08	16.32
B	120	22	18.33
C	72	11	15.27
D	66	02	3.03
Total	307	43	14.00

Employment of women in various grades in the Ministry of Power depends on the nominations received from the recruiting agencies such as the Union Public Service Commission, Staff Selection Commission etc.

A complaints Committee exists in the Ministry of Power to look into the complaints of sexual harassment by the women employees of the Ministry. A Women's Cell too exists in the Ministry to oversee various welfare activities of women employees.

PGCIL

As on November, 2007 there are 423 women employees working at different levels in the corporation out of a total of 7643 employees. Details are given below:

Category	Total no. of Employees as on 30/11/2007	No. of women Employees	% of overall staff strength
Executives	3401	158	4.64
Non-Executives	4242	265	6.25
Total	7643	423	5.53

NTPC Limited

Representation of women employees as on 30.11.2007

Group	Total Employees	Women Employees	Percentage of overall strength
A	11775	504	4.28
B	3067	245	7.98
C	8001	400	4.99
D (ES)	2251	119	5.28
D (S)	45	2	4.44
Total	25139	1270	5.05

Activities:

A complaints committee exists in NTPC to look into the complaints of sexual harassment by the women employees. Women employees participate in all the activities such as sports, recreation, council activities. They are also made members of the different Governing Bodies.

NHPC

Number & percentage of women employees in NHPC as on 30.11.2007 is as below:

Group	Total No. of Employees	No. of women employees	% of women employees
Executive	3174	230	7.25
Supervisor	1816	95	5.23
Workmen	7488	685	9.15
Total	12478	1010	8.09

Steps taken for Welfare of women employees:

- Generally women employees are not transferred except in cases of administrative exigency and even if transferred due care is taken to ensure that posting is made to the station where the spouse is posted. No woman employee is posted to hard projects.
- Special care is always taken to nominate deserving women employees to training programs / seminars organized exclusively for women employees.
- Free membership of WIPS (Women In Public Sector) at Corporation's expense.
- Creche facility is provided for women with infant children in Corporate Office.
- Suitable mechanism for prohibition of harassment of women employees at work place.
- Special committees have also been set up to look into the grievances / complaints of harassment of women employees.

THDC

Representation of women employees in THDC upto 30-11-2007 is given below

Total Employees as on 30-11-2007	Number of Women employees	Percentage of overall staff strength
2366	114	4.82 %



Knitting and embroidery training to village girls

REC

The information regarding, Representation of Women Employees as on 30.11.2007 in REC is indicated as under in the prescribed format.

Representation of women employees in REC as on 30.11.2007 is given below

Group	Total Employees as on 30-11-2007	Number of Women Employees	Percentage of overall staff strength
A	297	39	13.13
B	186	25	13.44
C	115	25	21.73
D	109	11	10.09
Total	707	100	14.14

CPRI

Employment situation of Women Employees in various post(s) in CPRI as on 01.11.2007 is as follows : 88 out of 726 employees (12.12%). The Women Cell has taken keen interest in running creche as a welfare measure to the employees of CPRI and residents of the colony.

NEEPCO

Representation of women employees in NEEPCO as on 30.11.2007 is given below:

	Total Employees as on 30/11/2007	Representation of Women Employees	
	Nos.	Nos.	%
Total	3220	343	10.65 %

NEEPCO has a Women Welfare Association to look after the interest of the Women Employees in particular besides undertaking various welfare activities with full cooperation of the Management.

BEE

Representation of women employees in BEE as on 30.11.2007 is given below:

Group	Total Employees as on 30-11-2007	Number of Women employees	Percentage of overall staff strength
A	05	-	-
B	01	-	-
C	07	03	43% (42.85%)
D	01	-	-
Total	14	03	21% (21.42%)

BBMB

Representation of women employees in BBMB as on 30.11.2007 is given below:

Group	Total Employees as on 30-11-2007	Number of Women employees	Percentage of overall staff strength
A	289	14	4.84
B	233	14	6.01
C	6257	557	8.90
D	5083	503	9.90
Total	11862	1088	9.17

PFC

Representation of women employees in PFC as on 30.11.2007 is given below:

The Company has employed women in important and critical functional areas. Women representations have gone across hierarchical levels. The Company provides equal growth opportunities for the women in line with Govt.

of India philosophy on the subject. The women are adequately represented, with 18.95% of the total work force excluding Board level employees.

Group	Total Employees as on 30-11-2007	Number of Women Employees	Percentage of overall staff strength
Group A	183	23	12.56%
Group B	52	17	32.6%
Group C	69	18	26%
Group D	2	-	-
Total	306	58	18.95%

SJVNL

Representation of women employees in SJVNL as on 30.11.2007 is given below :

Total Employees as on 30-11-2007	Number of Women Employees	Percentage of overall staff strength
932	67	7.18

EMPLOYMENT OF WOMEN

Since the inception in 1989, 92 females have been recruited at various executive / non - executing levels in the Corporation. At present, the strength of the women employee is 67 which comprises of 19 Executives and 48 Non-Executives. Their present strength accounts for about 7.18% of the total work force on the rolls of the Corporation. It is ensured that women employees get adequate representation in various activities / programmes in the Corporation. In the year 1997, a Women Cell has been setup in the Corporation with the objectives of promoting awareness among women employees about their

rights and their all round development. This cell is being headed by a female employee of the rank of an executive in the middle level management. This Cell is functioning effectively since then.

In line with Supreme Court Judgement in the matter of Vishaka and other Vs. State of Rajasthan, necessary clause has been incorporated in the conduct, discipline & appeal rules and certified Standing Orders of the Corporation besides formulating Complaint Committees – one each at Corporate Office and Project Site to look into the matters relating to Sexual Harassment of Women Employees at work place.



Sewing Classes for Village Ladies

CHAPTER - 17

PHYSICALLY CHALLENGED EMPLOYEES

MINISTRY OF POWER

Ministry of Power appreciates the requirement of providing reservation to the Physically Challenged in appointments and the various Government directives in this regard are duly followed by it. The implementation of the reservation policy for Physically Challenged persons in the Ministry of Power and various organisations under its administrative

control is monitored by the Deputy Secretary (Administration) & Liaison Officer (Physically Challenged) of the Ministry.

The representation of Physically Challenged employees in the Ministry as on 30.11.2007 is as under :

Group	Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged employees
		VH	HH	OH	Total	
A	49	0	0	0	0	00
B	120	0	0	0	0	00
C	72	0	1	1	2	2.7
Group D Excluding sweepers	62	1	0	1	2	3.2
Group D (Sweepers)	04	0	0	0	0	00
Total	307	1	1	2	4	1.3

NTPC Limited

Representation of Physically Challenged Employees

Group	Total Employees (as on 30.11.2007)	Physically Challenged Employees (As on 30.11.2007)				Percentage of Physically Challenged employees
		VH	HH	OH	Total	
A	11775	2	4	53	59	0.50
B	3067	0	0	5	5	0.16
C	8001	65	73	116	254	3.17
D (ES)	2251	27	34	61	122	5.41
D (S)	45	0	0	0	0	-
Total	25139	94	111	235	440	1.75

Activities:

- Screen reading software for visually impaired employees.
- Braille shorthand machines for visually impaired employees.
- Purchase of materials from NGOs working for physically challenged persons.
- Interactive meetings with physically challenged employees on regular basis.
- Scholarships are given to physically challenged students pursuing degree in engineering and MBA/ PGDBM course.
- Inclusive education and special school for deaf/dumb and mentally retarded children.

- Need based training imparted on regular basis to disabled employees.
- Nodal Officer (Phy. Chall.) nominated in each of the projects/ units.
- Barrier free environment has been provided in each unit of NTPC.
- Reimbursement for low vision aids, dark glasses, hearing aid etc. is allowed as per the rules.

NHPC

Number & Percentage of Physically challenged employees in NHPC as on 30.11.2007 is as under:

Cadre	Total No. of Employees	No. of Physically Challenged Employees	% of Physically Challenged Employees
Executive	3174	30	0.94%
Supervisor	1816	27	1.49%
Workmen	7488	34	0.45%
Total	12478	91	0.73%

REC

The Company has been making necessary efforts to discharge its obligations satisfactorily in terms of Presidential Guidelines in respect of Physically Challenged employees.

Group	Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged employees
		VH	HH	OH	Total	
A	297	-	-	5	5	1.68
B	186	-	-	3	3	1.61
C	115	-	-	1	1	0.86
D	109	-	-	-	-	-
Total	707	-	-	9	9	1.27

PGCIL

As on November 2007 there are 43 Physically Handicapped Employees working at different levels in the Corporation out of a total of 7643 employees. Details are given below:

Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged Employees
	VH	HH	OH	Total	
7643	5	5	33	43	0.56

BBMB

BBMB discharges its functions as laid down in Section 79(1) of the Punjab Re organization Act, 1966 for which staff for the operation & maintenance of BBMB work is provided by partner State Govts./SEBs on transfer basis. However, in the event of inability of partner States/SEBs to provide the requisite staff, BBMB resorts to direct recruitment & promotion in respect of Group C & D employees only as Officers of Class A & B category are being provided by partner States/SEBs. BBMB Class III and Class IV Employees (Recruitment & Conditions of Service)

Regulations, 1994 were approved by the Central Govt. & published in Part-III Section 4 of the Gazette of India dated 8.10.1994. As per Regulation 11 of these Regulations, the members belonging to SC, ST, BC, Ex-servicemen, Physically handicapped persons and the dependents of deceased employees in the service shall have the reservation in the service & all other concessions as prescribed by the Punjab Govt. from time to time. Accordingly, in view of provisions of Rule 6 of BBMB Rules, 1974 and Regulation 11 of BBMB Class III & Class IV

Employees (Recruitment and Conditions of Service) Regulations, 1994, BBMB is following the reservation policy of Punjab Govt. issued from time to time in regard to implementation of provision of reservation in jobs for physically handicapped persons. According to the instructions of the Punjab Govt., 3% vacancies to be filled up by direct recruitment are reserved for physically

handicapped persons 1% each in the category of blind, deaf & dumb and orthopaedically handicapped. Instructions have been issued to all CEs that the policy instructions of Punjab Govt. regarding reservation for persons with disability issued from time to time may be followed strictly at the time of making direct recruitment and also to ensure that reservation of persons with disabilities does not lapse.

BBMB

Representation of Physically Challenged Employees indicated in the format given below

Group	Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged employees
		VH	HH	OH	Total	
A	289	-	-	-	-	-
B	233	-	-	2	2	0.86
C	6257	5	2	35	42	0.67
D	5083	3	2	37	42	0.83
Total	11862	8	4	74	86	0.73

CPRI

Number of Physically Challenged employees in the Institute as on 01-11-07 is 16 out of 726

NPTI

Except one post of Steno. Gr.III all the posts reserved for Physically Handicapped are filled-up. Action has already been initiated for filling up the post of Stenographer Gr.III.

BEE

Representation of Physically Challenged Employees indicated in the format given below

Group	Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged employees
		VH	HH	OH	Total	
A	05	-	-	-	-	-
B	01	-	-	-	-	-
C	07	-	-	-	-	-
D	01	-	-	01	-	100%
Total	14	-	-	01	-	07% (7.14)

THDC

Representation of Physically Challenged Employees indicated in the format given below

Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged Employees
	VH	HH	OH	Total	
2366	02	05	16	23	0.97

NEEPCO

Representations of Physically Challenged Employees in NEEPCO are as under:

Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged Employees
	VH	HH	OH	Total	
3220	14	8	15	37	1.15

PFC

The Company has been making necessary efforts to discharge its obligations satisfactorily in items of Presidential Guidelines in respect of Physically Challenged.

Representations of Physically Challenged Employees in PFC is as under:

Group	Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged Employees
		VH	HH	OH	Total	
Group A	183	1	-	-	1	0.5%
Group B	52	-	-	1	1	1.9%
Group C	69	-	-	1	1	1.4%
Group D	2	-	-	-	-	-
Total	306	1		2	3	0.98%

SJVNL

Representations of Physically Challenged Employees in SJVNL is as under:

Total Employees (as on 30.11.2007)	Physically Challenged Employees				Percentage of Physically Challenged Employees
	VH	HH	OH	Total	
932	2	-	6	8	0.85

EMPLOYMENT OF PHYSICALLY CHALLENGED PERSONS

From the very beginning, it has been the endeavor of SJVNL to give due representation to the physically challenged persons in the employment of the Corporation. However, due to geographical conditions and peculiar construction work of the hydro electric

projects, most posts in the technical area do not suit the disabled persons. As such, their employment has mainly been in non technical posts. At present, their strength is 8 (Eight), which is about 0.85 % of the total manpower of the Corporation.

RECRUITMENT OF PHYSICALLY HANDICAPPED/SC/ST CANDIDATES

Except one post of Steno. Gr.III all the posts reserved for Physically Handicapped are filled-up. Action has already been initiated for filling up the post of Stenographer Gr.III.

During the period under report, 02 Officers belongs to SC Category and 04 belongs to OBC Category joined as Asstt. Director (Tech./Faculty) in NPTI.

CHAPTER - 18

WELFARE OF SCHEDULED CASTES, SCHEDULED TRIBES AND OTHER BACKWARD CLASSES

MINISTRY OF POWER

An SC/ST Cell has been functioning in the Ministry since the early nineties under the direct control of the Deputy Secretary (Administration) who is also the Liaison Officer for Scheduled Castes and Scheduled Tribes. SC/ST Cell also assists the Liaison Officer for OBCs. The Cell monitors the implementation of reservation policies of the Government of India in respect of Scheduled Castes, Scheduled Tribes, Other Backward Classes, Physically

Handicapped and Ex-Servicemen in the Ministry as well as Autonomous Bodies/CPSUs under the administrative control of the Ministry of Power.

The total strength of employees and representation of Scheduled Castes, Scheduled Tribes and Other Backward Classes in the Ministry of Power as on 30.11.2007 is indicated in the following statement:

Group	Total number of Employees (as on 30.11.2007)	Representation					
		SCs	SCs %	STs	STs %	OBC	OBC %
Group A	49	05	10.2	02	4.08	00	00
Group B	120	18	15	04	3.3	02	1.6
Group C	72	17	23.6	01	1.3	07	9.7
Group D Excluding sweepers	62	31	50	02	3.2	00	00
Group D (Sweepers)	04	03	75	00	00	00	00
Total	307	74	24.1	09	2.9	09	2.9

With a view to ensure proper implementation of reservation policy, annual inspections of reservation rosters maintained by the various organizations under its administrative control, were carried out by the Liaison Officer(SC/ST) and the inspection reports sent to the concerned Appointing Authorities for rectifying the discrepancies found during inspection. During inspections, LO(SC/ST) also had interactions with employees belonging to reserved

categories. These interactions helped to obviate many of their misconceptions/misapprehensions and promote better understanding of the reservation policy of the Government.

Welfare of minorities

Separate schemes do not exist in the Ministry of Power for welfare of the minorities. However, the schemes, if any, recommended for their welfare from time to time by the Government agencies concerned are implemented.

CEA

Representation of Scheduled castes, Scheduled Tribes & OBC of Group wise CEA Employees is placed below

Group	Total number of Employees (as on 30.11.2007)	Representation					
		SCs	SCs %	STs	STs %	OBC	OBC %
Group A	420	64	15.23	12	2.85	6	1.42
Group B	374	47	12.56	13	3.47	1	0.26
Group C	295	48	16.27	10	3.38	10	3.38
Group D	193	74	38.34	5	2.59	5	2.59
Total	1282	233	18.17	40	3.12	22	1.71

NTPC

Representation of SC/ST/OBC as on 30.11.2007

Group	Total employees	Representation					
		SCs	%age (SC)	STs	%age (ST)	OBCs	%age (OBC)
A	11775	1278	10.85	355	3.01	1288	10.93
B	3067	401	13.07	172	5.60	232	7.56
C	8001	1369	17.11	507	6.33	750	9.37
D (ES)	2251	420	18.65	211	9.37	242	10.75
D (S)	45	31	68.88	0	-	-	-
Total	25139	3499	13.91	1245	4.95	2512	9.99

Appointments made during calendar year 2007 (as on 30.11.2007)

Group	Total	SCs	STs	OBCs
A	693	101	52	185
B	-	-	-	-
C	53	5	1	20
D (ES)	1	-	-	-
D (S)	-	-	-	-
Total	747	106	53	205

Details of Special Recruitment Drives launched by NTPC

Period/Year	Group A		Group B		Group C		Group D		Total	
	SC	ST	SC	ST	SC	ST	SC	ST	SC	ST
1989-90	37	4	0	0	174	73	20	5	231	82
1990-91	30	6	5	0	88	27	21	7	144	40
1992	15	1	5	0	87	26	7	14	114	41
1992-94	17	3	1	0	140	76	8	24	166	103
1995	16	2	0	0	17	15	0	0	33	17
1996	25	2	1	1	10	4	0	0	36	07
2000	32	5	0	0	0	0	0	0	32	5
2001	53	3	0	0	0	0	0	0	53	3
1/ 2002	0	28	0	0	0	0	0	0	0	28
7/ 2003	27	26	0	0	0	0	0	0	27	26
8/ 2004	0	38	0	0	0	0	0	0	0	38
2005-06*	226	135	0	0	0	0	0	0	226	135
Total	478	253	12	1	516	221	56	50	1062	525

* Backlog vacancies were shown distinctly along with current vacancies in the advertisements, which were released in SC/ ST populated areas. Copy of the advertisement was sent to accredited SC/ ST Associations for wide coverage, as done in case of special drive.

Activities:

NTPC has undertaken the following activities for benefits of SCs and STs :-

- Periodical meeting of SC/ST Welfare Associations with Head of Human Resources/ Head of Project at project level and with Executive Director at regional level. 36 meetings were held in year 2006.
- Awareness Programmes for SC/ST employees at Project, Regional Headquarters and Corporate level. 33 programmes were held in year 2006.
- Structured meeting of SC/ ST employees with Liaison Officer (SC/ ST) held at all units of NTPC.
- SC/ ST employees' grievances are handled quickly and effectively at all units of NTPC. 13 SC/ ST employees had put up their grievances and all were settled.
- Pre-promotion training to SC/ ST employees are imparted. 635 SC/ ST employees have been imparted pre-promotion training in year 2006.
- Scholarship for SC/ST students pursuing degree/ diploma courses in engineering and MBA/ PGDBM in HR/ Finance are awarded every year. 57 scholarships have been awarded in year 2006.
- Gold Medal for Personnel Management Course and Rural Development Course instituted, 9 Gold Medals were given in year 2006.

PGCIL

Statement showing the number of employees and the number of SC, ST & OBC In Powergrid as on November, 2007. Details are given below:

Group	Total employees (as on 30.11.2007)	Representation					
		SC	SC%	ST	ST%	OBC	OBC%
A	3401	380	11.17	133	3.91	483	14.20
B	1575	156	9.90	56	3.56	145	9.21
C	2367	338	14.28	118	4.99	242	10.22
D	300	43	14.33	42	14	31	10.33
TOTAL	7643	917	12	349	4.57	901	11.79

NHPC

In NHPC the representation of SC/ST employees are comfortable. In the cases of recruitment and promotion, Government directives in Reservation Policies are being followed and rosters are maintained to monitor the status.

A table showing representation of SC/ST/OBC Employees is as under

Group	Total employees (as on 30.11.2007)	Representation		
		SC	ST	OBC
Executive	3174	399	204	381
Supervisor	1816	248	107	336
Workmen	7488	927	318	337
Total	12478	1574	629	1054

DVC

The programmes and facilities applicable to SC/ST and OBC are as well equally extended to the minority communities residing in the adjacent villages. The facilities for pursuing their cultural and literary interests are also

provided to them. More so, the Projects around which Minority Community people are in large number, Urdu MAJLIS have been set up, aided and maintained by DVC, which cater to the cultural need of Minority Community.

THDC

Representation of SC/ST/OBC may be indicated in proforma given below

Group	Total employees (as on 30.11.2007)	Representation					
		SC	SC%	ST	ST%	OBC	OBC%
TOTAL	2366	314	13.27%	37	1.56%	148	6.26%

BBMB

Implementation of reservation policy for SC & ST

BBMB discharges its functions as laid down in Section 79(1) of the Punjab Re-organisation Act, 1966 for which staff for the operation & maintenance of BBMB work is provided by partner State Governments/ State Electricity Boards on transfer basis. However, in the event of inability of partner States/State Electricity Boards, BBMB resorts to direct recruitment and promotion in respect of Group C & D employees only, as officers of Group A & B category are being provided by partner States/SEBs. BBMB Class III & Class IV Employees (Recruitment and Conditions of Service) Regulations, 1994 were approved by the Central Government and published in Part-III Section 4 of the Gazette of India dated 8.10.1994. As per Regulation 11 of these Regulations, the members belonging to SC, ST, OBC, Ex-servicemen, Physically handicapped persons and the dependents of deceased employees in service shall have the reservation in service and all other concessions as prescribed by the Punjab Govt. from time to time. Accordingly, in view of provisions of Rule 6 of BBMB Rules, 1974 and Regulations 11 of BBMB Class III & Class IV Employees (Recruitment & Conditions of Service) Regulation, 1994, BBMB is following the reservation policy of Punjab Govt. issued from time to time in regard to implementation of

provision of reservation in jobs for SC/ST. The prescribed percentage of reservation applicable in BBMB in favour of SC as per Punjab Govt. instructions is as under:-

- (i) Posts filled by direct recruitment = 25%
- (ii) Posts filled by promotion = 20%

There is no reservation for ST category in Punjab Govt. Therefore, no post is being reserved for ST category in BBMB.

For providing general welfare measures for SC employees, Instructions have been issued to all field Offices requesting them to provide the following facilities, if so demanded by the Members of SC on the occasion of Birthday of Dr.B.R.Ambedkar, Maharishi Balmiki Ji and Sri Guru Ravi Dass Ji:-

- (i) Bus facilities for Shobha Yatra at token charges of Re.1 per km.
- (ii) Auditorium for function on above occasions, free of charge

In addition to above, BBMB has given representations to the members of the Scheduled Castes by nominating one SC member of the rank of Addl. SE/Senior Executive Engineer in all Selection Committees.

BBMB

Representation of SC/ST/OBC given below

Group	Total Employees (as on 30.11.2007)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	289	13	4.50	-		5	1.73
B	233	28	12.02	-		13	5.58
C	6257	1258	20.11	1	0.02	274	4.38
D	5083	1656	32.58	-		250	4.92
Total	11862	2955	24.91	1	0.01	542	4.57

NEEPCO

Welfare of SC's/ST's/OBC's/minorities

Representations of Schedule Caste/ Schedule Tribe/ OBC Employees in NEEPCO are as under

Total Employees (as on 30.11.2007)	Representation of SC/ST/OBC							
	SC		ST		OBC		TOTAL	
Nos.	Nos.	%	Nos.	%	Nos.	%	Nos.	%
3220	222	6.89%	806	25.03%	549	17.05%	1577	48.97%

BEE

Representations of Schedule Caste/ Schedule Tribe/ OBC as on 30/11/07 is given below

Group	Total Employees (as on 30.11.2007)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	05	01	20%	-	-	-	-
B	01	-	-	-	-	-	-
C	07	-	-	-	-	-	-
D	01	-	-	-	-	-	-
Total	14	01	7.14%	-	-	-	-

REC

Representation of SC/ST/OBC as on 30/11/07 is given below

Group	Total Employees (as on 30.11.2007)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	297	27	9.09	6	2.02	21	7.07
B	186	22	11.82	5	2.68	-	-
C	115	20	17.39	1	0.86	3	2.60
D	109	34	31.19	5	4.58	2	1.83
Total	707	103	14.56	17	2.40	26	3.67

PFC

Representation of SC/ST/OBC as on 30/11/07 is given below

The Company has been making necessary efforts to discharge its obligations satisfactorily in terms of Presidential Guidelines, as applicable towards economically and socially weaker communities such as SC, ST & OBC.

Group	Total Employees (as on 30.11.2007)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
Group A	183	27	14.7%	8	4.3%	6	3.2%
Group B	52	10	19.2%	1	1.9%	6	11.5%
Group C	69	13	18.8%	7	10.1%	9	13%
Group D	2	-	-	-	-	-	-
Total	306	50	16.3%	16	5.2%	21	6.86%

SJVNL

Representation of SC/ST/OBC as on 30/11/07 is given below

Group	Total employees (as on 30.11.2007)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
Total	932	194	20.87%	49	5.25%	82	8.79%

CPRI

Representation of SC/ST in the Institute as on 01.11.2007 is 24.93% SC, 10.19% ST and 64.87% others.

NPTI

During the period under report, 02 officers belong to SC Category and 04 belong to OBC Category joined as Asstt. Director (Tech./Faculty) in NPTI.

CHAPTER - 19

CENTRAL ELECTRICITY AUTHORITY

1. CONSTITUTION OF CEA

The Central Electricity Authority (CEA) is a statutory organisation originally constituted under Section 3(1) of the repealed Electricity (Supply) Act, 1948 since substituted by Section 70 of the Electricity Act, 2003. It was established as a part-time body in the year 1951 and made a full-time body in the year 1975.

As per section 70(3) of the Electricity Act, 2003, Authority shall consist of not more than 14 members (including its Chairperson) of whom not more than 8 are full-time members who are appointed by the Central Government from amongst the eminent engineers/executives having knowledge and experience in various areas of Power Sector.

CEA is headed by a Chairperson who oversees largely the development of Power Sector in the country. A Secretary, appointed by the Authority with the approval of the Central Government under section 72 of Electricity Act 2003, assists him in the discharge of CEA's statutory functions. The Secretary also assists the Chairperson in all matters pertaining to administration and technical matters including Human Resource Development and techno-economic appraisal & concurrence of power projects etc. Presently,

there are six wings namely Planning, Hydro, Thermal, Grid Operation & Distribution, Economic & Commercial and Power System each headed by a Member of the Authority. Under each Member, there are technical Divisions each headed by an officer of the rank of Chief Engineer.

2. FUNCTIONS OF CEA

The functions and duties of the Authority are delineated under Section 73 of the Electricity Act, 2003. Besides, CEA has to discharge various other functions as well under Section 3, 7, 8, 53, 55 and 177 of the Act. During the year 2007-08 (upto 30-11-2007), two regulations viz. Regulations on Technical Standards for Connectivity to the Grid and Regulations on Furnishing of Statistics, Returns and Information have been notified. Regulations on Grid Standards for Operation & Maintenance of Transmission Lines have been sent to MoP for Gazette Notification. The Regulations on Technical Standards for Constructions of Electrical Plants and Electric Lines and the Regulations on Measures relating to Safety and Electric Supply have been pre-published and are being finalized considering the comments/suggestions of various stakeholders in the Power Sector.

TECHNO-ECONOMIC APPRAISAL OF POWER DEVELOPMENT SCHEMES

The Central Electricity Authority, had been according Techno-Economic Clearance/ Appraisal to generation schemes (Hydro & Thermal) and Transmission schemes etc. under the then Electricity (S) Act, 1948 before enactment of The Electricity Act, 2003. CEA's consultation u/s 44 (2A) of repealed Electricity (Supply) Act, 1948 was also being conveyed to the concerned State Electricity Boards / Regulatory Commissions for captive power plants. The Electricity Act, 2003 came into force w.e.f.

10th June, 2003. As per The Electricity Act, 2003, concurrence of CEA is now required only for hydro Generating Schemes. Techno-Economic Clearance of CEA to Thermal generation and Transmission Schemes as well as captive power plants are not required now.

During the year 2006-07, upto 31.3.2007, Central Electricity Authority accorded Concurrence to 10 Nos. Hydro Generating Scheme aggregating to a capacity of 4855 MW. The details of these schemes are given below:-

DETAILS OF HYDRO SCHEMES APPRAISED BY CENTRAL ELECTRICITY AUTHORITY FROM APRIL' 2006 TO MARCH' 2007:

Sl. No.	Name of Scheme State Executing Agency	Installed Capacity (MW)	Estimated Cost	Date of CEA Clearance
1.	Teesta Stage-III HEP Sikkim M/s Teesta Urja Ltd.	6x200=1200	Rs. 5705.55 crs. (Estimated completion cost)	12.05.06
2.	Rammam Stage-III HEP West Bengal NTPC Hydro Ltd.	3x40=120	Rs. 633.92 crs. (Present day cost) (2/06 Price Level)	12.09.06
3.	Vishnugad Pipalkoti, HEP Uttaranchal M/s THDC Ltd.	4x111=444	US\$ 13.5 Million + Rs.2031.64 crs. (Present day cost) (3/06 Price Level) (ER : 1US\$=Rs. 44.30)	21.9.06

4.	Kotlibhel Stage-I A HEP Uttaranchal M/s NHPC	3x65=195	US\$ 4.604 Million +Rs. 1074.87 Crs. (12/05 Price Level) (ER : 1US\$=Rs. 45.40)	03.10.2006
5.	Pakal Dul, HEP J&K M/s NHPC	4x250=1000	US\$ 14.98 Million +Rs. 5024.15 Crs. (07/05 Price Level) (ER: 1 US\$=Rs. 43.20)	03.10.2006
6.	Kotlibhel Stage-1B, HEP Uttaranchal M/s NHPC	4x80=320	US\$ 5.371Million+ (Rs.1782.05 Crs.) (12/05 Price Level)	31.10.06
7.	Loktak Downstream Manipur M/s NHPC	2x33=66	Rs. 867.77 Crs. (Price Level Oct. 06)	15.11.06
8.	Kotlibhel Stage-II HEP Uttaranchal M/s NHPC	8x66.25=530	US\$ 11.51Million+ Rs.2484.87 Crs. (ER : Rs. 44.30/US\$) (Price Level Mar..06)	30.11.06
9.	Teesta Stage-VI H.E. Project Sikkim M/s Lanco Energy Pvt. Ltd.	4x125=500	Rs. 3283.08 Crs.	27.12.2006
10.	Pala Maneri HEP by M/s UJVNL in Uttaranchal.	4x120=480	Rs.1922.80 Crs. (At Dec.06 PL)	23.2.07
Total 10 Nos.		4855 MW		

Details of Hydro Schemes Appraised by CEA during 2007-08 (upto 30.11.07.)

Sl. No.	Name of Scheme/State/ Executing Agency	Installed Capacity (MW)	Estimated Cost (Rs. Crores)	Date of CEA Clearance
1.	Rangit Stage-IV HEP by M/s Jal Power Corpn. Ltd. Sikkim	3x40=120	Rs.726.16 (completed cost)	6.7.07
2.	Lower Jurala HEP by in M/s APGENCO Ltd. Andhra Pradesh	6x40=240	Rs.909.34 Crs. (At May 2007 PL)	24.7.07
3.	Pare HEP M/s NEEPCO Ltd. in Arunachal Pradesh	2x55=110	Rs.553.25 Crs. (June 2007 PL)	24.9.07
Total 3 Nos.		470 MW		

Details of Hydro Schemes expected to be cleared techno-economically by CEA during remaining period of 2007-08 (upto 31st March.08.)

Sl. No.	Name of Scheme / State / Executing Agency	Installed Capacity (MW)	Estimated cost (Rs. Crores)
1.	Gundia HEP by M/s KPCL in Karnataka	2x200=400 MW	1059.90 Crs.
2.	Kundah Pumped Storage HEP by TNEB in Tamil Nadu	4x125=500	1220 Crs.

RESEARCH AND DEVELOPMENT

IMPORTANT TASKS HANDLED DURING 2007-08 (UP TO NOVEMBER, 2007)

1. Perspective Plan for Research & Development

A Standing Committee on R&D for preparation of a Perspective Research and Development Plan for next 15 years and to make recommendations from time to time for optimum utilization of infrastructure, raising of funds and ensuring that the outcome of research results in benefits to the customers and the operational efficiency of the sector was constituted by the Ministry of Power under the Chairperson, CEA.

Five Standing Task Forces were constituted to assist the Standing Committee

- Task Force on Thermal Generation including Nuclear
- Task Force on Hydro Generation
- Task Force on Transmission
- Task Force on Distribution
- Task Force on Energy Environment Interface

These Task Forces were entrusted with identification of Area of Research for R&D in their respective field, and called for specific Research Projects and scrutinize and prioritize these Research projects. These Research projects were examined by the 'Standing Committee on R&D for Power Sector for approval.

A SFC memo for 8 such R&D schemes was forwarded to Ministry of Power for allocation of fund. The Standing Finance Committee of Ministry of Power approved 6 of these projects to be taken up for R&D. Three of these projects where the beneficiaries of the projects were contributing towards the cost of the project were approved unconditionally. Those projects have been taken up. The three projects where beneficiaries of the projects were not contributing towards the R&D effort were approved with the condition that beneficiaries should contribute 50% of the project cost. One of these project where beneficiaries namely C-DAC and BHEL, agreed to contribute towards the project cost, since been taken up. The details in regard to implementation of these projects are at annexure.

The Standing Committee on R&D in its 11th Meeting held on 22nd August, 2007 decided to revamp the existing Task Forces and also decided to constitute two new Task Forces, namely:

- Task Force on Conservation & Efficiency
- Task Force on Renewables

All the seven Task Forces in turn would identify the area of R&D in their respective fields and guide formulation of projects in the identified R&D areas, which are to be taken up during 11th Plan period.

2. CEA Chairs at IIT, Delhi

An MOU exists between CEA and the Indian Institute of Technology, Delhi for creation of two CEA Chair Professorships, one in the Center for Energy Studies alternatively Department of Mechanical Engineering and the other in Electrical Engineering Department to fulfill following objectives concerning Power Sector.

- To take part in the academic programs of IIT, Delhi, as full time professors/faculty in the Center for Energy Studies alternatively Department of Mechanical Engineering and Electrical Engineering Department and coordinate HRD programs in the frontier areas of Power Management.
- To develop R&D programs relevant to the needs of CEA and in areas defined in the appendix to the MOU (subject to need based revision.)
- To initiate and develop HRD programs relevant to the needs of CEA and to coordinate courses for any batch of students from the CEA.

Under the programme, a number of topics for research have been forwarded to IIT, Delhi.

A total number of 8 officers of CEA, Ministry of Power and NPTI are pursuing M.Tech and PhD courses at IIT, Delhi under the chairs. This would accrue benefits to the Power Sector in long run.

As regards probable anticipated work up to March, 2008, application for Ph.D for the academic year 2007-08 has been invited and interviews has been held for admission to IITD. Till date 8 No. of officers have completed M. Tech from IITD.

3. Preparation of Data Base

The data/information regarding R&D work in power sector being carried out by various agencies/organizations in Private and Government Sectors in India was obtained and compiled in the form of a Directory and is available on CEA Website. The Directory has been updated based on the revised information obtained from the Research Organizations.

4. Innovative R&D Proposals

Work regarding promotion of innovative methods of electricity generation continued and 11 proposals received from individuals/other Divisions were examined and commented upon.

NATIONAL PERSPECTIVE PLAN PROJECTS INDICATING FINANCIAL AND TECHNICAL PROGRESS

No.	Title of the Project	Project organization (Rupees Lakh)	Project Funding Sources	Funds Released to lead agencies (Rs. Lakh) Till 2007-2008	Status of the project
1	Development of Silt Erosion Resistant Material for Turbines of Hydro generators	NML	NHPC 100.00 SJVNL 50.00 MoP 149.79 Total 299.79	Rs. 15 Lakhs Rs. 23.75 Lakhs	Project team members from NML visited the field sites at Salal and Baira-Siul hydro power stations and collected the required sample and analysis is in progress. MoU to be signed as IPR issues to be resolved.
2	National Effort to develop Technology for Custom Power Devices	C-DAC & BHEL	BHEL 192.5 CDAC 125.0 MoP 317.5 Total 635.0	C-DAC Rs 15.0 BHEL Rs. 10.0	MoU signed. Preliminary measurements at site were taken. Hardware development activities started by BHEL at Bangalore & Hyderabad.
3	Development of Superconducting Transformers	EMCO	MoP 100 EMCO 100 Total 200	Rs 18.25	MoU signed. Detailed literature survey completed. Procurement of super conducting elements is in progress.
4	To develop a prototype of 132kV Optical Current Transformer for use in the 132kV system	ERDA Total 19.0	PGCIL 19.0 MoP nil Rs. 3.8 lakh.	Funds released to ERDA by CPRI	MoU signed Initial experiments for current measurement using polarization effect have been completed.
5	A study on the characteristics of different types of power coals for blending / beneficiation	CFRI		NA	SFC recommended NTPC to fund. NTPC has executed a similar project hence not being taken up.
6	R&D projects in Power system stability	IIT Kanpur		NA	SFC recommended that PGCIL to contribute 50% of the project cost.

CHAPTER - 20

CENTRAL ELECTRICITY REGULATORY COMMISSION (CERC)

The Central Electricity Regulatory Commission (CERC) an independent statutory body with quasi-judicial powers, was constituted on 25th July, 1998 under the Electricity Regulatory Commission's Act, 1998 and has been continued under Electricity Act, 2003. The Commission consists of a Chairperson and four other Members including the Chairperson, CEA as the Ex-officio Member.

FUNCTIONS :

Under the Electricity Act, 2003 the Central Commission discharges the following functions:-

Mandatory Functions -

- (a) to regulate the tariff of generating companies owned or controlled by the Central Government;
- (b) to regulate the tariff of generating companies other than those owned or controlled by the Central Government specified in clause (a), if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one State;
- (c) to regulate the inter-State transmission of electricity ;
- (d) to determine tariff for inter-State transmission of electricity;
- (e) to issue licenses to persons to function as transmission licensee and electricity trader with respect to their inter-State operations.
- (f) to adjudicate upon disputes involving generating companies or transmission licensee in regard to matters connected with clauses (a) to (d) above and to refer any dispute for arbitration;
- (g) to levy fees for the purposes of the Act;
- (h) to specify Grid Code having regard to Grid Standards;
- (i) to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees.
- (j) to fix the trading margin in the inter-State trading of electricity, if considered, necessary;
- (k) to discharge such other functions as may be assigned under the Act.

Advisory Functions -

- (i) formulation of National electricity Policy and tariff policy;
- (ii) promotion of competition, efficiency and economy in the activities of the electricity industry;

- (iii) promotion of investment in electricity industry;
- (iv) any other matter referred to the Central Commission by the Central Government.

ACTIVITIES DURING THE PERIOD 01.04.2007 TO 30.11.2007

1. Grant of permission for setting up of Power Exchange

In line with the responsibility cast under Section 66 of the Act, the Commission released Staff Paper on July 27, 2006 on "Developing a Common Trading Platform – Power Exchange (PX)" for electricity trading in the country. Power Exchange is mechanism for institutionalized, transparent and efficient trading. Creation of common platform for trading would help in further streamlining the trading process, standardization of electricity as a tradable product, provides security mechanism through a Clearing House and increase business confidence in the power sector. The functional mechanism of Power Exchange would be in line with the Indian Electricity Grid Code (IEGC) and balancing mechanism through Unscheduled Interchange (UI) rate. The Commission sought for comments and suggestions from all the stakeholders by August 31, 2006.

A public hearing was conducted on December 19, 2006 to debate possibility of setting up a Power Exchange. More than 150 stakeholders including CEA, generators, distribution utilities, State Electricity Boards, traders, commodity exchanges and IIT Mumbai participated in the deliberations and some of them made detailed presentation. In the interest of fair play and protection of consumer interest, the stakeholders recommended that the Exchange should function under regulatory oversight. It was clarified that the existing long term contracts which cater to the more than 97% of the demand shall not be disturbed and as such there was no basis to apprehend that electricity prices would increase by creation of exchange.

The Power Exchange would be a voluntarily platform for electricity trading, which will co-exist with other options for trading already facilitated through open access. The Exchange would have common price discovery principle through double sided bidding by matching the aggregated demand and supply both in terms of quantity and price. The buyer would not be compelled to buy at a price higher than the price quoted by him. Power Exchange would be a Day Ahead exchange inviting bids for each one-hour time block for the next 24 hours. The time line for the power exchange

would be aligned with scheduling and dispatch time line as per IEGC. Dispatch and drawal schedules to be released by Power Exchange to buyers and sellers respectively shall be firmed. The payment and collections for the firm trade schedule of power exchange would be settled by its financial clearing-house. The real time deviation from the net schedule of a State or a generator shall be financially settled through existing UI pool mechanism.

The Commission issued guidelines for setting up of Power Exchange on February 7, 2007. The general approach of the Commission was to allow operational freedom to the Power Exchange within an overall regulatory framework. The promoters were asked to seek permission from the Commission before start of operation. Following broad guidelines for developing Power Exchange were issued.

- De-Mutualised form of organization
- Reliable, effective and impartial management
- Ring fencing between ownership, management and participation
- Investment support from the investors including institutional investors
- Transparency in operation and decision making
- Computerized trading clearing system
- Efficient financial settlement and guarantee system
- Effective trade information dissemination system

The promoters will have the freedom to develop, manage and operate power exchange according approved rules, by-laws and procedures. Any company registered under Companies Act, 1956, or a Consortium of Companies would be eligible for applying for setting up of the Power Exchange. The applicant would be required to have adequate knowledge and understanding of IEGC, Open Access issues, Availability Based Tariff, UI mechanism, scheduling dispatch and energy accounting procedure.

Based on Commission's guidelines, Indian Energy Exchange Ltd (IEEL), JV company promoted by MCX and FTIL, applied for permission for setting up of Power Exchange. The Commission after detailed hearings, allowed IEEL to set up Power Exchange. This is the first permission given by the Commission to set up Power Exchange.

2. Levy of congestion charges to maintain grid stability

The Central Electricity Regulatory Commission (CERC) issued instructions for levy of a congestion charge on overdrawing States of the Northern Region in the event of a grid crisis with effect from 19.11.2007. The orders shall remain in force for a period of three months, but the

Commission may decide to prematurely terminate, modify or extend congestion charge scheme based on the experience gained after its implementation.

While the concept of congestion charge is not new, it is being applied in India for the first time. For the present, it shall apply only for deviations from schedules in the Northern Region (NR), where over-drawals are the highest, are likely to continue in coming months, and are the for primary cause of dangerous overloading of inter-regional links. The congestion charge shall be @ 300 paise/kWh for over-drawal, under-drawal as well as over/under injection for all grid constituents of Northern Region and shall be added to the notified frequency-linked UI rate prevailing from time to time to be notified by Northern Regional Load Dispatch Centre (NRLDC) at least 30 minutes in advance. When all the present inter-regional links are in service, the congestion charge shall be triggered only when the total import to NR exceeds 3000 MW. The levy of congestion charge shall be terminated when the conditions have normalized as indicated by NR import coming down to 2500 MW and shall be again notified by NRLDC ascertaining that there would be no flip-flop.

When NR was not synchronized with other regions, over-drawal by the State utilities was causing the regional grid frequency to go down leading to increase in UI rates, which induced the State utilities to check their over-drawal. The circumstances have radically changed with the synchronization of NR-WR-ER-NER. With the synchronized installed capacity of nearly 100,000 MW, the frequency does not fall as it used to earlier and large over-drawal by the NR States cause the inter-regional links to NR to get overloaded before the frequency has come down. In other words, the frequency does not fall to a level where increased UI rate would discourage over-drawal, but the loadings on transmission corridors reach dangerous levels. It is for this reason that the UI mechanism which has worked well so far for controlling the situation is not always effective, particularly in NR, and needs being supported by a supplementary commercial mechanism.

3. Transmission Charges to be Reduced for Use of Transmission Assets for Telecom Business

The Central Electricity Regulatory Commission (CERC) has specified a revenue sharing mechanism for use of transmission assets by POWERGRID and other inter-State transmission licensees for telecom business such as by laying and leasing of optical fibre communication cables over their transmission towers. As per the Regulation, the transmission owner shall share revenue at the rate of Rs.3,000/- per year per km of the right of way utilised for laying one optical fibre cable over the transmission towers.

Length of the right of way for communication as existing on 1st April shall be considered for calculation of revenue sharable for the period 1st April to 30th September and that existing on 1st October for the period from 1st October to 31st March of the relevant financial year. The Commission has adopted a normative formula for revenue sharing because it is simple to apply and obviates the necessity of getting into the actual profit and loss account of the company's telecom business.

The revenue calculated by applying the specified rate shall be utilised towards reduction of transmission charges payable by the beneficiaries of those assets in proportion to the transmission charges payable by them to the transmission owner and shall be adjusted on monthly basis for the bills of the respective month.

4. Show Cause Notices to UP and J&K States for Failing to Pay UI Dues

Central Electricity Regulatory Commission (CERC) issued show cause notices to Uttar Pradesh Power Corporation Ltd (UPPCL) and Power Development Department, (PDP), Govt. of J&K to explain by November 25th, 2007 as to why action should not be initiated against them for recovery of outstanding dues on account of unscheduled inter-change (UI) charges. It has come to the notice of Commission that principal amount of Rs.577.99 Crs and Rs. 410.25 Crs was outstanding against UPPCL and PDD (J&K), respectively for the period up to 2.9.2007. The arrears would further increase after addition of interest on the outstanding principal amount. The Commission has also observed that both of these entities have been defaulting in payment of UI charges in the past as well.

The capacity charge and energy charge components of tariff cover only scheduled energy and any excess drawal is paid for only through UI mechanism. Non-payment of UI charges therefore amounts to extracting energy from the grid without paying for it.

The Commission noticed with concern that UPPCL and PDD (J&K) have been continuously overdrawing from the grid and on account of non-payment of UI charges, the outstanding UI payments are growing at alarming level, and urgent remedial action is required.

5. Grant of Transmission licence to Jaypee Powergrid Ltd.

The Commission has granted transmission licence to Jaypee Powergrid Ltd., a joint venture company promoted by Jaiprakash Hydro Power Ltd., (KHPL) and PGCIL, to undertake the business of establishing, commissioning, setting up, operating and maintaining the 400 kV transmission system comprising of the following elements:

- a) LILO of 400 kV D/C Baspa-Nathpa Jhri transmission line at Wanchoo;

- b) 400 kV D/C Kancham-Wangtoo-Abdullapur transmission line (quard conductor); and
- c) 400/220 kV sub station (extension) (PGCIL) at Abdullapur

The transmission system is meant to evacuate power from a hydroelectric project, namely Kancham Wangtoo HEP is being developed by Jaiprakash Associates Ltd (JAL).

6. Commission regulated the tariff of following six Central sector hydro power generating companies having an aggregate installed plant capacity of 7500 MW during the year 2006-07:

- i) National Hydro Electric Power Corporation Ltd. (2953 MW)
- ii) North Eastern Electricity Power Corporation Ltd. (755 MW)
- iii) Satluj Jal Vidyut Nigam Limited (1500 MW)
- iv) Narmada Hydro Development Corporation Ltd. (1000 MW)
- v) Tehri Hydro Development Corporation (500 MW).
- vi) Damodar Valley Corporation (144 MW)

Commission dealt 28 petitions of the above hydro power generating companies during the year. These comprise of 15 petitions relating to approval of final generation tariff of the existing hydro stations, approval of additional capitalization of previous tariff period, provisional tariff of newly commissioned projects for the period 2004-09, 8 petitions pertaining to review of Commission's orders. Other petitions which have been dealt by the Commission are (i) Implementation of comprehensive scheme for dynamic inflow forecasting in respect of Chamara –I HEP by NHPC (ii) Implementation of ABT in respect of Indira Sagar Project (iii) Claim of SJVNL in respect of Capacity Index due to red alert in 2004-05, high silt conditions & flooding of satluj river in the year 2005-06 (iv) HPSEB petition for relaxation under Regulations 12 & 13 of CERC Tariff Regulations, 2004 in Nathpa Jhakri HE project (v) Final tariff of four out of total six units of Nathpa Jhakri HE project and four out of eight units of Indira Sagar HEP commissioned during the period 2001-04.

7. Inter-State Trading in Electricity

The Commission had, so far, issued licence for inter-state trading in electricity to total 26 applicants. Of the total, 4 licences have been issued during the current year 2007-08 i.e. upto 30th November, 2007. The CERC Order dated 26.10.2006 the trading licence of GMR Energy Ltd has been cancelled for the reason that the company has opted for surrendering its trading licence for participation in the transmission business.

The status of electricity traded by the licensees i.e. upto 30th September 2007 has been provided in the following table :

STATUS OF INTER-STATE TRADING IN ELECTRICITY

S. No.	Name of the Trading Licensee	2006-07		April-Sept. 2006		April-Sept. 2007	
		Volume of Trade (MUs)	%to total Volume	Volume of Trade	%to total Volume	Volume of Trade (MUs)	%to total volume
1	PTC India Ltd*	6575.41	43.77	4369.80	55.30	6590.60	55.18
2	NTPC Vidyut Vyapar Nigam Ltd.	2662.98	17.73	1505.94	19.06	1620.77	13.57
3	Tata Power Trading Company	1206.38	8.03	459.81	5.82	756.88	6.34
4	Reliance Energy Trading Limited	878.29	5.85	459.91	5.82	320.88	2.69
5	Adani Exports Ltd.	1844.66	12.28	619.44	7.84	497.03	4.16
6	Lanco Electric Utility Ltd.	744.00	4.95	345.81	4.38	1305.04	10.93
7	JSW Power Trading Company Ltd.	967.94	6.44	78.35	0.99	715.04	5.99
8	Karamchand Thapar and Bros Ltd.	106.47	0.71	25.96	0.33	79.57	0.67
9	Subash Kabini Power Corporation Ltd.	36.61	0.24	36.61	0.46	Nil	Nil
10	Vinergy International Pvt. Ltd.					53.74	0.45
11	Visa Power Ltd.					3.46	0.03
	Total	15022.74	100.00	7901.62	100.00	11943.61	100.00

*The volume of trade includes Cross Border Power traded by PTC India Ltd. under long-term contract i.e. 3717.63

Total volume of electricity traded during April-September 2007 was 11943.01 MU and the volume of electricity traded during the same period of the previous year was 7901.62 MUs. The growth in the volume during April-September 2007 was 51.15% when compared with the volume during the same period of the previous year. If we assume the same growth in the following six months i.e. during Oct 2007 to March 2008 the volume would be 18051.85MUs during the financial year 2007-08. The percentage increase in the volume of electricity traded would be 20.16% during the year 2007-08 when compared with the volume in the previous year 2006-07.

It is observed from the quarterly reports submitted by the licensees during the current year that all the trading licensees are strictly complying the CERC (Fixation of Trading Margin) Regulations 2006, dated 23.1.2006 and are charging trading margin of 4 paise/kwh.

8. Notification on Escalation Rates, Inflation Rates, Discount Rate and Dollar-Rupee Exchange Variation

Rate for the purpose of Bid Evaluation and Payment

As per the Ministry of Power Notification dated 19.01.2005 (as amended from time to time) on Guidelines for Determination of Tariff by Bidding Process for Procurement of Power by Distribution Licensees, the Central Electricity Regulatory Commission is required to notify every six months various escalation rates, inflation rates, discount rate and dollar-rupee exchange variation rate for the purpose of bid evaluation and payment. The Commission has notified these rates vide notification dated 4.4.2007 and 24.9.2007 respectively for the period applicable from April 2007 to September 2007 and from October 2007 to March 2008.

- 104 petitions were carried forward from the previous year, that is, 2006-2007. In addition 113 petitions were filed during 1.4.2007 to 30.11.2007, the year under report (1.4.2007 to 30.11.2007), taking the total number of petitions to 217. Out of these, 80 petitions were disposed of during 2006-2007 (up to 30.11.2007). 33 interlocutory applications were received, out of these 28 IAs have been disposed of.

CHAPTER - 21

APPELLATE TRIBUNAL FOR ELECTRICITY

The Appellate Tribunal for Electricity (APTEL) has been setup under the provisions of the Electricity Act, 2003 (section 110) with all India jurisdiction and it started functioning on 21st July, 2005. The Tribunal is presently located at 7th Floor, Core-4, SCOPE Complex, Lodhi Road, New Delhi.

APTEL is headed by the Hon'ble Mr. Justice Anil Dev Singh as Chairperson, who is a former Chief Justice of Rajasthan High Court and has been given terms of a sitting judge of the Supreme Court. Hon'ble Ms. Justice Manju Goel is the Judicial Member. There are two Technical Members, namely, Hon'ble Mr. H.L. Bajaj and Hon'ble Mr. A.A. Khan.

The Tribunal has also been conferred jurisdiction under the Petroleum and Natural Gas Regulatory Board Act, 2006 to hear appeals against the orders/decisions of the Petroleum and Natural Gas Regulatory Board set up under the Act. A new Technical Member (PNG), Hon'ble Mr. Mahesh B. Lal has assumed office on 30th July 2007.

APTEL hears and disposes of appeals filed against the orders of the Central Electricity Regulatory Commission, State Electricity Regulatory Commissions, Joint Commissions and Adjudicating Officers. Subsequent to the setting up of APTEL, the appeals pending in the High Courts of all States except the State of Jammu & Kashmir on the subject were also transferred to this Tribunal.

Proceedings are conducted in two Benches, each consisting of one Judicial Member and a Technical Member.

As on 31st December 2007, of 1165 appeals/petitions/matters etc. that have been filed to date, 947 have already been disposed of.

Thus within a short span of its operation, APTEL has become fully operational and has been successful in disposing of a large number of matters, thus expediting justice. The website of the Tribunal (www.aptel.gov.in) is providing easy access to the daily causelists and judgments/orders.



Panoramic view of NTPC Project at Talcher Kaniha (3000 MW), Orissa

PUBLIC SECTOR UNDERTAKINGS

CHAPTER - 22.1

NTPC LIMITED

1.0 The National Thermal Power Corporation Ltd., a Generating Company as defined under Section 2(4A) of the Electricity (Supply) Act, 1948, was incorporated in November, 1975 with the mandate for planning, promoting and organizing integrated development of thermal power (including Associated Transmission Systems) in the country. The Company has acquired a new identity, "NTPC Limited" in November, 2005. This new identity signifies that the Company has diversified its operations beyond thermal power segment and has added new business activities by way of forward, backward and lateral integration, to be an integrated power company with presence across entire energy value chain. Today NTPC Ltd. is the leading power generating schedule 'A' Navratna Company of Government of India with a diversified portfolio. NTPC Ltd. has a vision to become **"A World class integrated power major, powering India's growth, with increasing global presence"**. The total approved investment of the Company as on 30.11.2007 stands at Rs. 117183.78 crores.

Presently, NTPC has to its credit coal based thermal power stations at 15 locations and gas/ liquid fuel based combined cycle power stations at 7 locations, this includes Badarpur (705 MW) in Delhi which has been taken over by NTPC w.e.f. 1st June'2006 from GOI. The commissioned capacity of these NTPC owned stations is 26,850 MW. In addition to this, 1,794 MW generation capacity has been acquired/ setup by NTPC under Joint Ventures at 4 locations. **Thus total present installed generation capacity of NTPC is 28,644 MW** as on 30.11.2007 (details enclosed at **Annexure-I**).

2.0 NTPC PERFORMANCE HIGHLIGHTS (as on 30.11.2007)

- During the year 2007-08 up to 30.11.2007, a record generation of over 129631 Million Units was achieved, as against the last year's generation of 119832 Million Units during the same period registering an increase of 8.18% over the previous year's period.
- During the year 2007-08 (till November 2007), following TEN NTPC coal stations achieved more than 85% PLF : Dadri (Coal) (95.1%), Unchahar (94.9%), Korba (93.5%), Rihand (92.6%), Tanda (90.8%), Vindhyachal (90.7%), Talcher (Kaniha) (90.2%), Singrauli (89.8%), Kahalgaon (89.0%) and Ramagundam (86.2%).
- The company is at present implementing FIFTEEN power projects with a capacity of 13360 MW.

- During the year 2007-08 up to 30.11.2007, 1240 MW has already been commissioned. This includes first 500 MW Unit of Sipat Stage-II commissioned in May 2007 and 740 MW Block-III of RGPPL revived under joint venture during June-October 2007.
- So far, NTPC has been allotted 8 coal blocks by Government of India including 1 coal block allotted during the year. These blocks include 2 coal blocks for development through a 50:50 Joint Venture between NTPC and Coal India Limited. Together these blocks are expected to produce about 47 Million tonnes of coal per annum by 2017.
- During the year 2007-08, NVVN traded 2219.58 MUs upto 30.11.07 and transacted business with 24 State Utilities.
- Major awards and rankings received by NTPC during the year 2007-08 are :
 - **Golden Peacock Global Award** for Excellence in Corporate Governance 2007 to NTPC by Institute of Directors.
 - **SCOPE Meritorious Award** for Good Corporate Governance 2005-06.
 - Six NTPC Stations received coveted **CII-EXIM Excellence Award** 2007. Simhadri Station received award for 'Significant Achievement', while other five received award for 'Strong Commitment to Excel'.
- NTPC identified as the 2007 Platts **Top 250 Global Energy Company** and ranked as **no. 1 Independent Power Producer in Asia**.

3.0 NTPC STATIONS & GENERATION PERFORMANCE (as on 30.11.2007)

NTPC Stations: As on 30.11.2007, a total capacity of 28644 MW is under operation at various NTPC stations. This comprises 35 units of 200/210 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhyachal, Dadri, Unchahar, Kahalgaon, and Badarpur, 29 units of 500 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhyachal, Rihand, Kahalgaon, Talcher-Kaniha Simhadri and Sipat, 6 units of 110 MW at Tanda and Talcher, 4 units of 60 MW at Talcher, 3 units of 95 MW at Badarpur and 22 Gas Turbines and 10 Steam Turbines at Anta, Auraiya, Kawas, Dadri, Jhanor Gandhar, Kayamkulam and Faridabad combined cycle power plants and 314 MW (4x60+2x30+1x14 MW) Captive Power

Plants at Durgapur, Raurkela and Bhilai, under Joint Ventures with SAIL and 1480 MW (4x240+2x260 MW) Ratnagiri Gas And Power Private Limited under Joint Ventures with GAIL.

The generation performance of NTPC Stations has consistently been at high level. The gross generation from NTPC stations, excluding joint ventures, during the year 2007-08 (upto 30.11.2007) has been 129631 MUs as against 119832 MUs generated during the same period last year. NTPC achieved a PLF of 89.34% with availability of 89.79% during the period.

4.0 COMMERCIAL PERFORMANCE

Allocation of power from New Projects

- a. Allocation of power from Sipat STPS Stage-I (3x660MW) and Sipat STPS Stage-II

(2x500MW) was issued by MOP on 12.11.2007 and 25.09.2007 respectively. Further, reallocation of power from Talcher STPS Stage-II (4x500MW) incorporating allocation of 200 MW (10%) to State of Orissa as Home State share was issued by MOP on 19.04.2007.

- b. Allocation of power from Meja TPS (2x660MW) and Tanda expansion project (2x660 MW) for Uttar Pradesh was issued by MOP on 26.10.2007.

Status of PPAs

As part of the efforts to ensure viability of its investment, the company continued its practice of signing PPAs for sale of power from New Projects. During the year 2007-08 (till November 2007), following PPAs were signed :

Sl. No.	Project	Name of Utilities
1.	Barh STPP Stage-I (3x660MW)	Uttar Pradesh
2.	Barh STPP Stage-II (2x660MW)	Jharkhand, Maharashtra, Goa, Sikkim, Dadra Nagar Haveli, Daman & Diu, Bihar, Madhya Pradesh, Chattishgarh and Uttar Pradesh
3.	Bongaigaon TPP (3x250MW)	Meghalaya, Tripura, Manipur, Mizoram, Arunachal Pradesh, Assam, Nagaland and Jharkhand
4.	Sipat STPP Stage-I & II (3x660+2x500 MW)	Railways
5.	Simhadari STPP Stage-II (2x500 MW)	Kerala and Pudducherry
6.	NTPC's Power Stations in ER	Tripura
7.	North Karanpura STPP (3x660MW)	Uttar Pradesh
8.	NCTPP, Dadri Stage-II (2x490MW)	Uttar Pradesh
9.	Mauda TPP (2x500MW)	Maharashtra, Chattisgarh, Goa, Daman & Diu and Dadra Nagar Haveli

MOU signed with Uttar Pradesh for Power Supply from Meja TPP (2x660MW) on 22.11.2007.

Settlement of Outstanding Dues of NTPC

The amount billed for the financial year 2007-08 (upto November 2007) was Rs.21423.62 crores with realization of Rs.21323.67 crores. The balance payment is likely to be received in December 2007, leading to 100% realization of dues against the energy supplied to various beneficiaries for fifth successive year.

Government of Bihar are paying Rs. 60 Crs. per month w.e.f. April 2006 directly from RBI account to NTPC against monthly bills for energy supplied from NTPC stations to BSEB.

However, the arrears of Rs.1310.83 crores, including 40% surcharge, pertaining to the period upto 30.09.2001 payable by Govt. of NCT Delhi for DESU period to NTPC are yet to be settled. For settlement of these dues. MOP had put up a proposal to CCEA for securing the dues of DESU period applying the principal of TPA. CCEA directed that first a meeting by Secretary (Expenditure) be convened with

concerned Officials for settlement. In the first meeting convened by Secretary (Expenditure), the methodology for securitization of these dues were discussed. To finalise this, a meeting was again taken by Secretary (Exp.) Ministry of Finance with Ministry of Power on 26.07.2005. A meeting was again held on 16.01.2007 between JS & FA and Secretary (Expenditure) to resolve the issue. In this regard, a draft cabinet note has been prepared and circulated by Ministry of Power and is under finalisation.

Status of implementation of One-Time Settlement Scheme (OTS)

- a. Redemption and servicing of Bonds Under One Time Settlement

RBI has redeemed third installment (5%) due on 01.10.2007 against bonds issued on behalf of State Government. Further, full redemption under call option



Hon'ble Prime Minister Dr. Manmohan Singh handing over a trophy during National Award Ceremony for Meritorious Performance of Thermal Power Stations to Shri T. Sankaralingam, Chairman & Managing Director, NTPC. Shri Sushilkumar Shinde, Minister of Power and Shri Anil Razdan, Secretary (Power) are also present

by Govt. of Tamil Nadu (Rs. 441.8127Cr.) and Karanataka (Rs. 186.7795 Crs.) and Partial redemption by Govt. of Rajasthan (Rs. 87.00 Crs) has been done by RBI.

Delhi has also paid second installment towards long term advance due on 30.09.2007.

b. Interest on Bonds/ Long term advances

RBI has paid all interests on bonds by RBI under One Time Settlement Scheme for the period from 01.04.2007 to 30.09.2007. Delhi has also paid interest payment due on 30.09.2007.

Customer Focus Initiative

NTPC has always focused on customer care and as part of the same, Customer Relationship Management (CRM) System is one of the initiatives undertaken by NTPC towards strengthening relationship with customers. The objectives of the same include following :

- To ensure strategic relationship development with customers.
- To ensure high level of customer satisfaction.
- To get customer suggestions and foresight for NTPC's business growth.

Customer Support Services by way of workshops/ seminars are being organized for State Utilities in various areas such as O&M, HR, Finance, Planning, IT etc. About 50 nos. services have been conducted in the current year so far. In the training programs held at Power Management Institute (PMI) of NTPC, two seats are being offered to customers free of charge in every program. More than 100 executives from Customers have benefited from such programs this year.

This results in sharing of knowledge & practices for their business improvement and for overall sectorial growth.

5.0 GROSS REVENUE AND PROFIT

NTPC recorded a gross revenue of Rs. 17605.9 Crore (excluding taxes & duties) and net profit after tax of Rs. 4295.4 crore during the first six month of 2007-08 (i.e. April to Sept. '07) as compared to revenue of 15254.9 crore and net profit after tax of Rs. 3026.7 crore during same period last year (i.e. April to Sept. '06).

6.0 RAISING OF FUNDS FOR CAPACITY ADDITION PROGRAMME

6.1 Domestic Borrowings :

NTPC has tied up loans from Domestic Banks and financial institutions aggregating Rs. 23334 crores as on 30th

November 2007 for its capacity addition programme, including Rs. 1000 crore LIC bonds tied up during the year. The cumulative utilisation upto 30th November 2007 is Rs. 17789 crore. The balance of Rs. 5545 crore is yet to be drawn.

6.2 Domestic Bonds :

During the year 2006-07, the company has issued series XXII, XXIII & XXIV Bonds each having a face value of Rs. 500 crore to Life Insurance Corporation of India. The total amount of bonds issued during the 2006-07 was Rs. 1500 crores. The outstanding amount of bonds as on 30.11.2007 is Rs. 5600 crore.

6.3 Public Deposits :

As on 31.3.2007 the cumulative deposits received by the company from 604 depositors stood at Rs. 32.80 crore. An amount of Rs. 43 lakhs has not been claimed on maturity by 107 depositors as on 31.3.2007. The corresponding figures for the year 2007-08 upto 30.11.2007 are 417 depositors aggregating Rs. 14.94 crore. This excludes an amount of Rs. 87 lakhs not claimed by 94 depositors on maturity.

6.4 External Commercial Borrowing :

During 2006-07, NTPC has signed two loans viz. with Asian Development Bank for USD 300 million in September 2006 and with KFW for an amount of USD 100 million in March 2007.

The loan extended by Asian Development Bank is under their complimentary financing scheme. The loan has been extended for financing capital expenditure of Sipat (Stage I & II) and Kahalgaon (Stage II). The loan carries interest on floating basis derived from 6 months USD Libor. It has two tranches, tranche-A has a tenure of 11 years and Tranche-B has a tenure of 7 years from the signing of the loan agreement. Till 30.11.07, an amount of USD 226 million has been drawn and utilized out of the loan.

The loan extended by KFW is for financing the capital expenditure on renovation and modernization schemes of NTPC stations. Presently R&M schemes under TTPS Phase-III, Tanda, Anta, Farakka, Rihand, Vindhyachal, Singrauli Phase-II and Unchahar have been identified for funding under the loan. The loan has a maturity of 10 years with a draw down period of 3 years. The interest under the loan is payable on 6 monthly basis and is linked to 6 month USD Libor. Till 30.11.07, an amount of USD 10 million has been drawn and utilized under the loan.

Both the above loans are unsecured facilities without sovereign guarantee and are first of their kind provided to NTPC by the respective lenders.

7.0 CORPORATE PLAN

NTPC had prepared a Corporate Plan for the period 2002-2017 envisaging to become a 56,000 MW plus company by the year 2017. Encouraged by the success of its capacity addition programme and improvement in the cash flows, NTPC had decided to increase the capacity addition target from 56,000 MW to 66,000 MW. However, later the company has set for itself a revised **target of 75,000 MW by the year 2017**. This power generation portfolio would continue to reflect high share of coal-based capacity and would include around 9,000 MW in Hydro, about 2000 MW in Nuclear and about 1000 MW through Non-conventional energy sources.

To safeguard its competitive advantage in power generation business, NTPC also plans to diversify its portfolio to emerge as an integrated power major, with presence across entire energy value chain through backward and forward integration into areas such as coal mining, LNG Value chain, power trading, distribution, etc.

7.1 Capacity Addition Programme

During the year 2006-07, two units of 500 MW at Vindhyachal-III have been commissioned ahead of schedule. During the year, One 210 MW unit at Unchahar-III has also been commissioned on schedule in September 2006. One 500 MW unit at Kahalgaon-II were also commissioned during the year. In addition to this, NTPC has taken over 705 MW Badarpur TPS from the Govt. of India w.e.f. 01.06.2007. As on 31.03.2007, NTPC's own capacity was 26350 MW and capacity under joint ventures was 1054 MW.

Further in 2007-08, one unit of 500 MW at Sipat-II project has been commissioned in May 2007 and 740 MW Block-III has been commissioned at Ratnagiri (Dabhol) Joint Venture project. Thus the total installed capacity of NTPC has become 28644 MW, which includes 1794 MW under joint ventures.

A capacity addition of over 22000 MW has been envisaged for the XI Plan period (2007-2012). Out of this, 1240 MW has already been commissioned. Construction work is going on for 13360 MW capacity for benefits in XI Plan. For balance capacity, various clearances are in progress. Details of Ongoing and New projects, for which Feasibility Report (FR)/ Detailed Project Report (DPR) has been finalized, are as follows :

**DETAILS OF ON-GOING AND NEW PROJECTS
FOR WHICH FR/ DPR HAS BEEN FINALISED**

Sl. No.	Project (Fuel)/ State	Capacity	XI Plan (07-12)/ XII Plan (12-17)
A	Capacity under construction		
1	Kahalgaon-II Phase-I (Coal), Bihar	1000	500
2	Kahalgaon-II Phase-II (Coal), Bihar	500	500
3	Sipat-II (Coal), Chhattisgarh	1000	500
4	Sipat-I (Coal), Chhattisgarh	1980	1980
5	Koldam (Hydro), H.P.	800	800
6	Barh (Coal), Bihar	1980	1980
7	Korba-III (Coal), Chhattisgarh	500	500
8	Bhilai Exp. (Coal), Chhattisgarh (JV with SAIL)	500	500
9	NCTPP-II, Dadri, Uttar Pradesh	980	980
10	Farakka-III (Coal), West Bengal	500	500
11	Loharinag Pala (Hydro), Uttarakhand	600	600
12	Tapovan Vishnugad (Hydro), Uttarakhand	520	520
13	Simhadri-II (Coal), Andhra Pradesh	1000	1000
14	Indira Gandhi STPP at Jhajjar (Coal), Haryana (JV with HPGCL and IPGCL)	1500	1500
15	Vallur Stage-I Phase-I (Coal), Tamil Nadu (JV with TNEB)	1000	1000
Sub Total A			13360
B	Capacity under ordering		
1	Mauda (Coal), Maharashtra	1000	1000
2	Bongaigaon (Coal), Assam	750	750
3	Barh-II (Coal), Bihar	1320	1320
4	Nabinagar (Coal), Bihar (JV with Railways)	1000	1000
5	North Karanpura (Coal), Jharkhand	1980	1980
6	Kawas-II (Gas), Gujarat	1300	1300
7	Jhanor Gandhar-II (Gas), Gujarat	1300	1300
8	Lata Tapovan (Hydro)*, Uttarakhand	171	171
Sub Total B			8821
C	Capacity for which FR/ DPR finalized		
1	Rihand-III (Coal), U.P.	1000	1000
2	Vallur Stage-I Phase-II (Coal), Tamil Nadu (JV with TNEB)	500	500
3	Rammam-III (Hydro)*, West Bengal	120	120
4	Rupsiyabagar Khasiabara (Hydro), Uttarakhand	260	260
Sub Total C			1880
Grand Total (A+B+C)			25301
* to be implemented by NTPC Hydro Ltd.			



A view of NTPC Koldam project

7.2 Hydro Power Projects

Koldam Hydroelectric Power Project (4x200MW) : Work is in progress on all the components of project such as dam, spillway, de-silting chamber, power house and switch yard. Filling work in dam area is in progress. Erection of electro-mechanical equipment has commenced in Power House. EOT crane has been erected and commissioned in service bay. Erection of penstock is in progress. Stay ring erected in two units. Occupancy in the township has commenced.

Loharinag Pala HEPP (4x150 MW) : Work is in progress on all the main civil work packages viz. Head Race Tunnel (HRT), Barrages and Desilting Basin, Underground Power House & Penstock. Hydro Mechanical (HM) package has been awarded and mobilization is underway and Electro Mechanical (EM) package tendering is under process.

Tapovan Vishnugad HEPP (4x130 MW) : Work is in progress on all the main civil work packages viz. HRT, Barrages and Desilting Basin, Underground Power House & Penstock. HM package has been awarded in Oct. 07 and mobilization is underway and EM package tendering is under process.

Rupsiabagar Khasiabara HEPP (260 MW) : DPR has been submitted to CEA for TEC in Nov. '07. Works for land acquisition of project area and approach roads is in progress.

Further, Govt. of Arunachal Pradesh has allocated two projects namely Etalin HEP (4000 MW) and Attunli HEP (500 MW) to NTPC. Memorandum of Agreement (MOA) between

Govt. of Arunachal Pradesh & NTPC was signed on 21.09.2006 for execution of these projects.

7.3 Coal Mining and Coal Washery

7.3.1 Coal Mining :

(A) Allotment of Coal Mining Blocks :

- ❖ In addition to five coal blocks, allotted to NTPC in 2005-06, Chatti Bariatu South coal block has been allotted by Ministry of Coal on 25.07.2007. This coal block is located in North Karanpura Coalfield in the State of Jharkhand. The share of reserves in this coal block is indicated as 354 MT.
- ❖ Apart from above, 2 more mine blocks at Brahmini and Chichro Patsimal in Orissa have been allotted by Ministry of Coal, for development through a 50:50 Joint Venture between NTPC and Coal India Limited.

(B) Development of Coal Mining Blocks :

Brief Status of Activities in Pakri-Barwadih Coal Block :

- ❖ For acquisition of land in mining area, Gazette notification under Section 7(i) of CBA Act has been published on 01.10.2007.
- ❖ For acquisition of land for Township, R&R Colony, and for setting up of infrastructures like CHP, Railway Siding, etc., notifications under Section 7 & 17 of LA Act have been published during July-August 2007.

- ❖ Tendering process for infrastructures like Coal Handling Plant, Railway Siding, Main Sub-Station, etc. are under progress.
- ❖ NTPC's application for Stage-II Environment clearance was discussed in the Expert Committee meeting of MOEF on 29.08.2007.
- ❖ NTPC is going ahead with appointment of a Mine Developer-cum-Operator (MDO) through competitive bidding process.
- ❖ For obtaining of Forest Clearance, NTPC is pursuing with Hazaribagh Distt. Admn. for issuance of No-Objection Clearance on jungle-jhari land, as a pre-requisite for Forest Clearance. Physical verification of such land is under progress by them.
- ❖ For coal evacuation from this mine, NTPC requires KODERMA-HAZARIBAGH-BANADAG Railway Link, taken up by Railways, to be completed in time.

Brief Status of Activities in Other Coal Mine Blocks :

- ❖ The Talaipalli Coal Block, allotted to NTPC by Ministry of Coal, was only regionally explored whereas Dulanga block was partly explored. Accordingly, NTPC engaged M/s MECL for undertaking detailed exploration & preparation of Geological Report (GR) for these blocks. Exploration has been completed in Dulanga and draft GR has been received on 29.09.2007. In Talaipalli,

exploration is under progress. Around 33717 m of drilling is already completed.

- ❖ NTPC has already initiated action for land acquisition in these blocks. For acquisition of land for mining, Notification under Section 4(i) of CBA Act has been published for these coal blocks as under :

- Chatti-Bariatu & Talaipalli : on 22.08.2007
- Kerandari : on 26.08.2007
- Dulanga : on 18.10.2007

Application for Notification under Section 7(i) for Chatti-Bariatu Block has been submitted on 19.10.2007. For other blocks, it is under preparation.

- ❖ Feasibility Study for coal transportation and Railway siding system have been conducted in these coal blocks and finalization of routes are under progress.
- ❖ Socio-Economic Survey has been completed in Chatti-Bariatu, Kerandari and Dulanga coal blocks and reports have been received. It is in progress in Talaipalli coal block.
- ❖ NTPC has submitted Mine Plan for Chatti-Bariatu (7 MTPA) and Kerandari (6 MTPA) coal blocks to MOC on 06.11.2007 and 27.11.2007 respectively, for approval.



Smt. Sonia Gandhi, Chairperson, UPA inspecting a model of the proposed 1500 MW Indira Gandhi Super Thermal Power Project at Jhajjar (Haryana) in October, 2007

(C) Strategic Alliances :

❖ As a part of developing strategic alliances as well as deriving technical strengths, NTPC has entered into MOUs with :

Coal India Ltd. (CIL) with an intent to acquire/ identify and carry out O&M of coal blocks and integrated power project(s) in India. A Joint Business Development Group has been constituted. JV Agreement between NTPC and CIL is under finalization.

Singareni Collieries Co. Ltd. (SCCL) to take up coal mining in India and abroad. "NTPC-SCCL Global Ventures Pvt. Ltd.". a JV company has been formed with SCCL on 18.06.2007.

Bharat Earth Movers Ltd. (BEML) to maximize/ optimize coal production through deployment of fleet of equipment required for mining with the object to minimize the cost of coal. A Joint Working Group was formed on 11.04.2007.

SAIL, RINL, CIL, NMDC & NTPC for acquiring Coal Blocks (Coking Coal & Thermal Coal) outside India. CCEA has already approved the formation of a Special Purpose Vehicle (SPV) for the purpose.

7.4 Joint Ventures

7.4.1 NTPC-SAIL Power Company Private Limited

NTPC-SAIL Power Company Private Limited (NSPCL), a Joint Venture of NTPC and SAIL on 50:50 basis, incorporated on 16.03.2001. BESCL (Bhilai Electric Supply Company Pvt. Ltd.), another joint venture company incorporated in March 2002 was merged with it w.e.f. 02.08.2006. The company owns, operates and maintains Captive Power Plants (CPP-II) of 74 MW located at Bhilai Steel Plant, 120 MW at Durgapur Steel Plant and 120 MW at Rourkela Steel Plant. Total installed capacity of NSPCL is 314 MW.

These plants are supplying power to the respective steel plants on captive basis. During the year 2006-07, NSPCL achieved record generation of 2503.43 Million Units as against the last year's generation of 2454.12 Million units registering an increase of 2.01%. NSPCL is also implementing (2x250 MW) Bhilai Expansion Power Project primarily for meeting captive power requirement of Bhilai Steel Plant and other units of SAIL.

Total Income (excluding coal cost) of NSPCL during 2006-07 was Rs 200.9 Crores. Profit (after tax) of the company for the year 2006-07 was Rs 39.0 Crores.

7.4.2 NTPC Alstom Power Services Limited

NTPC Alstom Power Services Limited (NASL) is a 50:50 joint venture between NTPC and Alstom Power Generation AG, which was incorporated on 27.09.1999 for taking up

Renovation & Modernisation (R&M) assignments of power plants in India and abroad. NASL is engaged in undertaking works of Renovation & Modernization of Power Plants in India for plant life extension, performance optimization and improvement of availability & efficiency. Turnover of the company for the year 2006-07 was Rs. 46.5 crores and profit after tax was Rs. 3.0 crores.

7.4.3 Utility Powertech Limited

Utility Powertech Limited (UPL) (a 50:50 Joint Venture Company of NTPC and Reliance Energy), incorporated on 23.11.1995 to take up assignments of construction, erection and project management in power and other sectors in India and abroad is progressing satisfactorily. Profit after tax of the JVC for the year 2006-07 was Rs. 9.3 crores and the turnover was Rs. 180.9 crores.

7.4.4 PTC India Ltd

Joint Venture company formed on 23.05.2003 for trading of power, has 8% equity contribution each from NTPC, Power Grid Corporation of India Ltd., Power Finance Corporation and NHPC and the balance from Damodar Valley Corporation, Financial institutions, Banks and general public. Turnover of the company for the year 2006-07 was Rs. 3785.9 crores and profit after tax was Rs. 35.2 crores.

7.4.5 NTPC Tamil Nadu Energy Company Limited (NTECL)

NTPC and TNEB have formed a 50:50 Joint Venture Company under the name of NTPC Tamil Nadu Energy Company Limited (NTECL). The company was incorporated on 23.05.2003 to set up a coal based power station of 1000 MW capacity. NTECL has undertaken to set up a 2x500 MW power project at Ennore, in the State of Tamil Nadu since named as Vallur Thermal Power Project. All the key inputs and necessary clearance have been tied-up/ obtained for the project and the project is under implementation. Second phase of 1x500 MW has also been planned. Both the phases are targeted for commissioning in 11th plan.

7.4.6 Ratnagiri Gas and Power Private Limited (RGPPL)

Ratnagiri Gas and Power Supply Pvt Ltd has been formed on 08.07.2005 as a joint venture company between NTPC, GAIL, Maharashtra State Electricity Board and Indian Financial institutions with NTPC having a stake of 28.33% for taking over and operating Dabhol Power Project. NTPC has invested Rs 500 Cr as 28.33% equity. Generation has already started from 1480 MW (two of the three blocks), out of the total capacity of 2140 MW.

7.4.7 Aravali Power Company Private Limited (APCPL)

Aravali Power Company Private Limited has been formed on 21.12.2006 as a 50:25:25 joint venture company between NTPC, HPGCL (Haryana Power Generation Corporation Ltd., a Govt. of Haryana undertaking) and IPGCL (Indra Prastha Power Generation Company, Govt. of NCT of Delhi

undertaking) to set up and operate a coal fired power plant namely Aravali Super Thermal Power Project of 1500 MW (3x500 MW), in Jhajjar District of Haryana.

7.4.8 NTPC-SCCL Global Ventures Private Limited

NTPC-SCCL Global Ventures Private Limited has been incorporated on 31.07.2007 as a 50:50 joint venture Company with SCCL for Jointly undertaking the Development & O&M of Coal Block(s) & Integrated Coal based Power Projects in India and Overseas.

7.4.9 Joint Venture with Railways (Nabinagar Thermal Power Project 4x250 MW)

A Joint Venture Company has been incorporated with Railways for setting up of 1000 MW coal based Power Plant at Nabinagar, Bihar. The equity structure of the proposed Company shall be NTPC (74%) and Railways (26%).

7.5 Business Development

Several Initiatives are being taken to develop business of the NTPC in both core as well as other related areas. Details of the same are as follows :

7.5.1 Core Sector

7.5.1.1 Setting Up of 3x250 MW coal based power plant at Bongaigaon (Assam)

A Transfer Agreement has been signed with the Govt. of Assam and Assam Power Generation Corporation Ltd. for

transfer of the existing power plant and setting up of new 3x250 MW power plant at Bongaigaon, Assam.

7.5.1.2 Joint Venture with UPRVUNL

MOU has been signed on 22.11.2007 with Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL) to set up 2x660 MW power project at Meja Teshil in Allahabad district in the State of UP

7.5.1.3 Joint Venture with the Government of Bihar and BSEB

MOU has been signed amongst NTPC, Govt. of Bihar and BSEB on 14.10.2007 for setting up 3x660 MW power project at Nabinagar, Bihar.

7.5.2 Other Related Areas

7.5.2.1 Joint Venture with CIL

An MOU has been signed with Coal India Limited on 15.03.07, under the umbrella, of which, one or more JV(s) will be promoted for jointly undertaking the Development, operation and Maintenance of Coal Blocks (including already identified Brahmini and Chichro Patsimal coal blocks in Jharkhand) and Integrated Power Projects.

7.5.2.2 Joint Venture with Rashtriya Ispat Nigam India Ltd. (RINL)

An MOU has been signed between NTPC and RINL on 27.07.07 at Vizag for setting up of around 150 MW Combined Cycle Power Plant, using Blast Furnace Gas as the fuel.



NTPC Thermal Power Project at Simhadri (1000 MW), Andhra Pradesh

7.5.2.3 Joint Venture with Bharat Earth Movers Limited (BEML)

An MOU has been signed with Bharat Earth Movers Limited (BEML) on 14.02.07 to explore the possibility of joint business development mainly in the field of contract coal mining.

7.5.2.4 Acquisition of stake in TELK

A Business Collaboration and Share Holders' Agreement has been signed on 23.06.07 amongst Govt. of Kerala, TELK and NTPC to acquire around 44.6% stake of TELK, held by Govt. of Kerala. .

7.5.2.5 Joint Venture with ADB

An MOU has been signed between NTPC and ADB on 23.07.07 for Establishment of Power Generation of about 500 MW through Renewable Energy Sources.

7.5.2.6 SPV among CIL, SAIL, NMDC, RINL and NTPC

An MOU has been signed amongst NTPC, RINL, SAIL, NMDC and CIL for sourcing Cooking coal and Thermal coal from abroad.

7.5.2.7 MOU with Society for Integrated Circuit Technology and Applied Research (SITAR) for Solid State Lighting (SSL) using White Light LED.

MOU has been signed on 7th Nov.2006 for using White lights-LED for energy conservation.

7.5.2.8 MOU with REC

MOU signed with REC on 16.08.04 to pursue MOP's programme of electrification of rural village & households under the "Rajiv Gandhi Grameen Vidyutikaran Yojana" (RGGVY) for the work related to Rural Electrification in the states of West Bengal, Chhattisgarh, Jharkhand, Madhya Pradesh and Orissa. Separate quadripartite agreement among REC, NTPC, State Government and SEB have been signed for WB, Chhattisgarh, Jharkhand and Madhya Pradesh.

7.5.2.9 MOU with The Energy & Resource Institute (TERI)

MoU signed with The Energy and Resource Institute (TERI) in March 2005 for a Joint Programme on Distributed Generation and Rural Electrification.

7.5.2.10 MOU with Kyushu Electric Power Company (KEPCO) Japan

MoU was signed on 19.02.07 to adopt best practices between NTPC & KEPCO.

7.5.2.11 JV with BHEL

An MOU has been signed on 07.09.07 for taking up EPC contracts for Power Plants.

7.6 Subsidiary Companies

7.6.1 NTPC Vidyut Vyapar Nigam Limited (NVVN)

NTPC Vidyut Vyapar Nigam Ltd. (NVVN) is a wholly owned subsidiary of NTPC, formed on 01.11.2002. The company is holding category "F" license for power trading. In view of the market potential for fly ash and fly ash related products, the company entered into ash business in the year 2005. Gross Revenue of the company for 2006-07 is Rs. 880.80 crores and Profit After Tax is Rs. 6.50 crores.

During the year 2007-08, NVVN traded 2219.58 MUs upto 30.11.07 and transacted business with 24 State Utilities. Most of the power during this year has been traded under power banking arrangements with various utilities. The major sellers / buyers of power were TNEB (Tamil Nadu), MPPTC (Madhya Pradesh), HPGCL (Haryana), KSEB (Kerala), PSEB (Punjab), APPCC (Andhra Pradesh), J&K, CSEB (Chattisgarh), MSEDCL (Maharashtra) and TSECL (Tripura).

In ash business, NVVN sold 110 MT of Cenosphere during the year 2007-08 upto 30.11.07. Sale of fly ash to domestic industries has been tied from Dadri power station of NTPC and Export orders for 22000 MT of fly ash placed from Simhadri power station of NTPC.

7.6.2 NTPC Electric Supply Company Ltd. (NESCL)

NTPC Electric Supply Company Limited (NESCL) is a wholly owned subsidiary of NTPC, formed on 21.08.2002. The business objectives of the company are to acquire, establish & operate Electricity Distribution Network in various circles/cities across India with a clear mission to create a role model in the electricity distribution business by setting new benchmarks. Further the company was also mandated to take up consultancy and other assignments in the area of Electrical Distribution Management system.

While efforts are on for having the presence in the retail electricity distribution business in the existing licensed areas, the company is also considering to realign the business focus in the green field and brown field areas of retail distribution of electricity like Industrial Parks, New Residential / Commercial Complexes and SEZs. Company is also engaged in the consultancy services to various power utilities in the area of turnkey execution of development of distribution network and third party inspection services for materials / equipments being procured by them.

With the objective of sectorial support in the area of distribution, NESCL has been assigned by NTPC the responsibility of following programs of Gol under MoP:

- Accelerated Power Development and Reform program (APDRP) as lead Advisor cum Consultant (AcC) to monitor distribution reform & implementation of APDRP schemes in the States of Uttrakhand, Punjab, Haryana,



A view of NTPC Gas Power Project at Jhanor - Gandhar (648 MW), Gujarat

Rajasthan, Madhya Pradesh, Maharashtra, Chhattisgarh, Jharkhand, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala.

- Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) to make available the project management expertise & capabilities to the states from the following three options:

- i) Project formulation, development & implementation involving system planning, design, engineering & procurement of goods and services and construct/ implement/ commission of projects covered under program.
- ii) Formulation and preparation of reports, project approvals, advisory support for procurement and project monitoring and supervision of quality of work.
- iii) Project monitoring and supervision of quality of work during construction.

Under RGGVY, NESCL is carrying out the execution of rural electrification works on turnkey basis in the states of Chhattisgarh, Jharkhand, Orissa, Madhya Pradesh, West Bengal, Kerala and UT Lakshadweep. In addition post award consultancy assignment are also being carried out for the project monitoring and supervision of quality of work during construction in the states of Uttarakhand, Madhya Pradesh and Karnataka.

Gross Revenue of the Company for the year 2006-07 is Rs. 20.70 Crs and the profit after tax of the company for the year is Rs 2.93 Crs.

7.6.3 NTPC Hydro Ltd. (NHL)

NTPC has formed a wholly owned subsidiary company on 12.12.2002 with an objective to develop small and medium hydro electric power projects up to 250 MW capacities. Presently, company is implementing two projects namely, Lata Tapovan Hydro Electric Project (171 MW capacity) in the state of Uttarakhand and Rammam Hydro Electric Project, Stage-III (120 MW capacity) in the states of West Bengal and Sikkim. In respect of Lata Tapovan HEP, all statutory clearances including Techno-economic and Environmental clearances have been obtained, majority of land has been acquired and EPC package is under award process. With regard to Rammam HEP Stage-III, majority of statutory clearances including Techno-economic and Environmental clearances have been obtained and balance statutory clearances are under process. Further, land acquisition and infrastructure development activities are under process. Both the projects are scheduled to be commissioned in early part of XII Plan.

7.6.4 Vaishali Power Generating Company Limited

A subsidiary company named "Vaishali Power Generating Company Ltd." was incorporated on 06.09.2006 with Bihar

State Electricity Board (BSEB) as per the decision of Govt. of India to take over Muzaffarpur Thermal Power Station (2x110 MW) at Kanti for Restoration, R&M, O&M. NTPC shall have a majority stake in the company, and the balance stake shall be with BSEB.

7.6.5 Pipavav Power Development Company Ltd. (PPDCL)

An MOU was signed between NTPC, Gujarat Power Corporation Ltd. (GPCL) and Gujarat Electricity Board (GEB) on 20.02.2004 for development of a 1000 MW thermal power project at Pipavav in Joint Venture with GPCL. Recently Ministry of Power has directed for discontinuation of its involvement in view of Govt. of Gujarat's decision to develop the project with another strategic partner. Accordingly, the process has been initiated for settlement of dues of NTPC on GPCL and State Govt. of Gujarat and thereafter steps will be taken for winding up of PPDCL.

8.0 RIGHT TO INFORMATION ACT, 2005

NTPC being a public authority as per Right to Information Act, 2005 has appointed the Central Public Information Officer (CPIO) and Appellate Authority and information on the same has been placed on NTPC's website. NTPC has been implementing the RTI Act since October, 2005. As on 30.11.2007, 677 applications have been received and 670 have been replied.

9.0 RISK MANAGEMENT POLICY

Since inception of NTPC, the company is having systems and practices which have helped in identifying risk and taking measures to mitigate those risks. As a further step towards institutionalising this system, a risk management policy was formulated in fiscal 2005. As an initial step, the policy identified risks being faced by the company, the short term as well as long term measures, to mitigate those risks and also to put in place a reporting system, which would enable critical risks beyond certain tolerance levels to be reported for further action. Further, the policy has been reviewed and with a view to strengthen the policy, a consultant is being appointed to suggest a detailed enterprise wide framework for Risk Management, Internal Controls and other disclosure requirements in accordance with regulatory provisions.

10.0 CONSULTANCY SERVICES

During the Current year (2007-08) up to November 2007, the consultancy wing has secured orders from Domestic Client worth Rs. 98.12 Crores. This includes assignment from DVC for preparation of Technical specification, tender document and evaluation of bids for water system package and coal handling plant package for their 2x500 MW Koderma TPS, Construction of bays at Korba STPS Switchyard for Korba-Bringsinghpur-Damoh 400 kV D/C Transmission line on deposit work for PGCIL, Development of Integrated computerized plant management system at Kota STPS and Suratgarh STPS for Rajasthan Vidyut

Utpadan Nigam Ltd. (RVUNL), Pre award & Post award engineering, Contract administration, QA&I, assistance during commissioning PG test & Project Monitoring for Aravali Power Company Pvt. Ltd. and Lender's engineer services to M/s Rural Electrification Corp. Ltd. for setting up of 2x135 MW TPP (Phase-I) by M/s Wardha Power Company Pvt. Ltd.

Overseas Business Initiative

In line with NTPC's Globalization initiatives, the company is making consistent efforts to enter the overseas markets in the Middle East, Asia-Pacific and African regions for consultancy business and has already opened its representative office in Dubai. The consultancy wing has completed an order involving Energy Audit of 15 stations of Saudi Electric Company in Saudi Arabia and has also secured order from M/s Green Energy Consultancy, Dubai for Review engineering of 2 nos 132/ 11 kV GIS sub station of Dubai Investment Park.

NTPC has signed a Memorandum of Agreement with the Government of Sri Lanka and Ceylon Electricity Board (CEB) for development of a 2x250 MW Coal based power project at Trincomalee in Sri Lanka. The project would be developed through a joint venture company between NTPC and CEB.

NTPC is also exploring a business opportunity in Nigeria for sourcing of LNG. A MOU has been signed between NTPC and the Ministry of Energy, Federal Government of Nigeria (FGN) on 22.05.07 at Abuja, Nigeria. As per the MOU, FGN shall provide at least three (3) million tones per annum of LNG to NTPC, subject to availability, for a period of 25 years at a reasonable price from existing/ future LNG projects where production is likely to commence within 5 to 6 years for use in NTPC power plants in India. Upon successful operation of above obligation by FGN, NTPC shall set up and operate a 500 MW Coal based power plant and a 700 MW Gas based power plant in Nigeria subject to techno economic feasibility.

NTPC had submitted three training proposals to Public Electricity Corporation (PEC), Yemen and one offer to a contracting company in Kuwait for supervision of erection and commissioning of 800 MW GT plant at Az Zour, Kuwait.

Further for promoting awareness about NTPC expertise, an organized campaign has been launched under which NTPC Consultancy have released two (2 nos.) advertisements in various leading technical journals and had also participated in seven (7) expos in different countries.

11.0 HUMAN RESOURCES

As on 30.11.2007, NTPC had a total of 25139 employees on the rolls of the company. Considering an exponential capacity addition plan during the next 5 years, NTPC strengthened its induction plan by campus recruitment at the premier institutes of the country for its executive trainees. The training plans/ syllabus were also reviewed to ensure the delivery of the quality training to the young graduates.

In spite of the marginal increase in attrition rate, NTPC continued to enjoy an attrition rate of less than 2% during the year. A number of initiatives were taken to ensure a robust talent pipeline to meet increasing requirement of manpower for company's growth plans.

During the year, NTPC was again ranked among the top ten Great Places to Work in India. NTPC also received the **Gold Award for Excellence in People Management** for being one of the very few companies that has been consistently rated among the top ten in the Great Places to Work For survey which was conducted by M/S Grow Talent Company and Business World.

Training and Development

NTPC is a learning organization with a strong heritage of institutionalized learning, which extends to fit the mission, values and culture of the organization. The Power Management Institute (PMI), NTPC's apex training and development center continued to play a pivotal role in individual and organizational learning. PMI offered more than 300 training programs to cover the entire gamut of need-based interventions in all disciplines ranging from managerial to technical and information technology. The programmes were open to outside participation from SEBs, IPPs, CPSUs as well.

A number of important initiatives were taken for strengthening Leadership Development schemes at different senior levels. These included "action-learning" programmes as well as structured inputs/ exposure.

With a strong relationship with renowned institutes of India like IIT- Delhi, BITS – Pilani, MDI- Gurgaon, ASCI – Hyderabad to provide B Tech, M Tech, MBA courses and continuing education to its employees, PMI enhanced it's network by signing an MOU with University of Technology, Sydney, Australia for collaboration in training, education and research.

12.0 REHABILITATION & RESETTLEMENT

NTPC is committed to help the populace displaced for execution of its projects and has been making efforts to improve the Socio-economic status of Project Affected Persons (PAPs). In line with its social objective, the company has focused on effective Resettlement and Rehabilitation (R&R) of PAPs and also community development works in and around the projects.

During the year implementation of approved Rehabilitation Action Plans (RAPs) for Koldam, Sipat and Barh projects is in progress.

Rehabilitation Action Plan for North Karanpura project and Community Development Plan for Loharinag Pala project finalized and their implementation started. A negotiated settlement with respect to R&R entitlements have also been arrived at for Hydro projects in Uttarakhand viz. Loharinag Pala and Tapovan Vishnugad projects and its implementation is in progress. Formulation of Community Development Plan for Tapovan-Vishnugad project is under progress.



Sh. Sushilkumar Shinde, Minister of Power, Shri Y.S. Rajashekhara Reddy, Chief Minister of Andhra Pradesh and senior officers at the Foundation Stone laying ceremony of Simhadri Super Thermal Power Project, Stage-II (2x500 MW), Andhra Pradesh in September, 2007



Tunnel excavation Work of Tapovan Vishnugad Hydro Power Project (520 MW) of NTPC in Uttarakhand in progress

Socio-economic Survey (SES) for ash dyke at Korba Stage-III and coal mining projects viz. Chatti-Bariatu and Kerandari has been completed. SES for Dadri Stage-II, Mauda and Jhajjar projects is in progress.

Social Impact Evaluation (SIE) for Simhadri and Sipat projects have been completed.

13.0 CORPORATE SOCIAL RESPONSIBILITY

NTPC brought out its Corporate Social Responsibility – Community Development (CSR-CD) Policy in July 2004 for expanding its horizon and social vision to make its impact felt at national level by addressing the niche domains of socio-economic issues at National level through establishing NTPC Foundation. Further a dedicated CSR group has been established in the Organization.

Keenly conscious of its social responsibilities, NTPC became member of Global Compact, the largest Voluntary Initiative of UN for Corporate Social Responsibility (CSR). NTPC confirms its involvement in various CSR activities in line with 10 Global Compact principles and share the experiences with the representatives of the world through "Communication on Progress".

As a CSR initiative in the field of Health, NTPC is providing support to Hyderabad Eye Research Foundation for three specialized Eye Centers at Bhubaneswar Eye Hospital,

Bhubaneswar, Orissa. The centers were inaugurated on October 10, 2007 by Hon'ble Union Minister of Power

Further in the field of education, NTPC is committed to provide support for setting up two technical polytechnic in Uttarakhand, one at Kaladungi, Dist. Nainital and another a Women's Polytechnic at Gopeshwar, Dist. Chamoli. Support has also been extended by NTPC for delivery Vehicles for mid-day meal programme for the children of Govt. Schools located in the National Capital Region through Food Relief Foundation of ISKCON and for assistance in self reliance for 200 tribal girls/ women in tribal area of Jhamar Kotra in Udaipur Dist. of Rajasthan.

With a view to improve the employability of the village youth residing in the vicinity of NTPC Stations/ Projects and also to improve availability of skilled manpower around Projects, NTPC is providing sponsorship to candidates from villages in the vicinity of NTPC stations/ projects for ITI training at Government/ Government recognized private ITIs in the trades of Welder/ Fitter/ Instrument Mechanic/ Electrician. More than 350 village youth have been sponsored during the financial year.

NTPC has also extended support for infrastructure works like area lighting, water treatment plant and open car parking in and around Shri Jagannath Temple, Puri; and for project "Uddhav Kyari" a 54 acre grove situated in village Nandgaon

in Mathura district of Uttar Pradesh, involving regeneration of the grove through Braj Foundation.

NTPC is also supporting the efforts of Distributed Generation (DG) for preparation of feasibility reports, project insurance and bridging the funding gap between cost of the projects and available funds, through NTPC Foundation.

NTPC's efforts in the area of CSR have been widely recognized and appreciated. During the year 2007-08, NTPC was conferred with FICCI-SEDF Certificate for commendable work in CSR from Hon'ble President of India; HR Power Forum Award (runner up) for Best Corporate Citizen and Certificate of Commendation for Significant Achievement among the Large Business Organisations under CII-ITC Sustainability Awards-2007.

14.0 BUSINESS EXCELLENCE

Total Quality Management has been adopted in NTPC as a strategic initiative for achieving excellence in all spheres of activities. Various proven TQM tools and techniques like ISO, 5S, Quality Circles, Benchmarking, Professional Circles, Performance Improvement Projects and Business Excellence Model have been deployed in varying degrees across the organization. The main aim is to develop a culture of creativity, innovation and improvement amongst employees across the organization.

The fundamental building block of TQM i.e. ISO for system standardization has taken firm roots in NTPC. Almost all NTPC power stations and Corporate Functions have been certified under the Quality Management Systems of ISO-9000. All stations have also been certified with ISO-14000 for compliance to environment norms and OHSAS-18000 for compliance to occupational health and safety norms. Some stations have also been certified with SA-8000 for adherence to Corporate Social Responsibility norms.

NTPC has a vision to become a World class organisation. In pursuit of actualizing the vision, globally recognised Business Excellence Model defining the characteristics of world class organizations was adopted in the organisation in 2003. The purpose is assessment and enhancement of excellence level of SBUs. Six Power stations (Farakka, Kawas, Korba, Talcher-Thermal, Simhadri & Unchahar) have been awarded with Business Excellence Awards in 2007 by Confederation of Indian Industry (CII). Till date 16 stations have received CII-EXIM Excellence Awards at different levels.

15.0 ENERGY CONSERVATION

Continuing its endeavour for exploiting the conservation potential in different forms of energy being consumed for operation of power plants, CEETEM (Centre for Energy Efficient Technology & Energy Management) in NTPC continued to concentrate on saving different forms of energy by consistently monitoring the consumption patterns and adopting latest technology upgradations. NTPC continued

to carry out various energy conservation activities during 2006-07 as well as 2007-08. While 105 no. of in-house energy audits were carried out during 2006-07 at different NTPC power projects, during 2007-08, total 60 nos. of in-house energy audits have been carried out till 30.11.2007.

With the increased stress on timely implementation of different energy audit recommendations and adopting other energy conservation measures, NTPC has been able to achieve savings worth Rs. 48.94 crores during 2006-07 as against the target of Rs. 37 crores.

NTPC also carried out energy audits in different power stations belonging to APGENCO (1x62.5 MW Ramagundam TPS and 4x60 MW, 2x120 MW, 2x110 MW units of Kathgudam TPS) and 1x120 MW of Tata's Power Plant at Jojobera (Jamshedpur, Bihar) during 2006-07. NTPC has also carried out the energy audit of 2x210 MW units of Panipat Thermal Power Station in Haryana. NTPC successfully completed the energy audit of 15 power plants belonging to Saudi Electricity Company in the Kingdom of Saudi Arabia during this period. A number of other bids for conducting energy audits of external utilities have been submitted.

Some of the other energy conservation measures adopted are – complete implementation of on line energy management system of all major drives in two of its power plants, adoption of polymer coating technology in old CW pumps/ other water pumps for efficiency improvement, adoption of energy efficient variable frequency drives in more equipments etc., which are also yielding good results. NTPC is also in the process of adopting super critical technology for its future units of 660 MW & above ratings.

16.0 RESEARCH & DEVELOPMENT (R&D)

NTPC R&D continued to provide technical support to the stations in terms of condition monitoring, failure analysis, corrosion studies, etc such as Condition monitoring of Fire Resistant Fluid (FRF) of Simhadri, Turbine lubricating oils of RGPPL, TG oil of Badarpur, Generator transformer of Talcher Thermal; Failure of Condenser tubes of Badarpur; High Conductivity of DM water at Badarpur; etc. R&D is being upgraded and restructured with the support of Indian Institute of Science, Bangalore. All the three projects identified under MOU with GOI for 2007-08 are progressing well and will be completed in time.

- R&D has filed four Patent Applications viz. ANN Based Expert System for Health Assessment of High Voltage Transformers, Heat Treatment Technique for Determining Constituents of Wear Particles in Lubricating Oil and Hydraulic Fluids, Ready-to-Use Fly Ash Based Product through Setting Properties Enhancement by Using a Dry Plasticizer and Fly-ash Based Utensil Cleaning Powder
- R&D along with BARC has developed the technology for detecting blade damages and also the presence of shaft crack in running turbine for



Sh. Sushilkumar Shinde, Union Minister of Power at the Foundation Stone laying ceremony of Vallur Thermal Power Project (1000 MW), Tamilnadu in September, 2007

giving warning to operator. Software has been developed in association with BARC based on R&D algorithm, and the system has been installed in one of the gas turbines at NTPC Auraiya. Machine is under continuous monitoring by the system.

- R&D is developing new advanced technologies for improving the plant performance such as technique to determine steam water ratio in boiler tubes, methodology for evaluation of mechanical properties of critical components of power plants using small punch technique, etc.
- In addition to this R&D is also developing materials to combat erosion and corrosion. Coating materials for burner tips are being developed to enhance their life. Chemical treatment & formulation are being developed for controlling scaling, fouling & corrosion problems in CW systems.
- R&D carried out health assessment studies of NTPC thermal and gas stations for taking decisions on Run/Repair/Replace.
- R&D is also extending scientific services to various other utilities such as Kota Super Thermal Power Plant, Panipat Thermal Power Plant, IP station, Ropar Thermal Power Station, Lehra Mohabat Power Station, etc.

17.0 TECHNOLOGICAL DEVELOPMENTS

New Initiatives :

The company is constantly looking to introduce new technologies in its effort to attain higher levels of efficiency and economy in its operation. Some of the technologies being introduced by the company are :

- **Introduction of 800 MW capacity units:** Presently the largest unit sizes of units being set up by the company are 660 MW which are under construction at two locations. Higher size super critical units are planned for integrated coal based thermal power projects with captive mining in the states of Orissa and Chattisgarh. This technology will not only result in improvement in thermal efficiency but also reduce emissions of greenhouse gases significantly. Such integrated plants shall have benefits of fuel availability at lower cost and low project cost due to economy of scale.
- **Energy Technologies Centre:** NTPC has set up Energy Technologies (ET) center with a well-defined mandate to develop and innovate cutting edge technologies to meet the ever-changing scenario in power sector. The center is working in both fundamental and applied fields with the ultimate objective of commercializing the technologies both within and outside. Setting up of this center by NTPC meets a long-term need of such a center in the power sector in India.

ET is being set up at 75 Acres of land at Greater Noida. The construction of the building has started and is likely to be completed by October 2008.

ET has already started its research activities in-house and through networking with established research institutes in India. In this direction ET has networked with 9 institutes for 13 research projects in the areas like carbon sequestration, power plant efficiency improvement, waste heat utilization, flue gas conditioning etc. These projects are in the different stages of development.

NTPC has recently signed a MoU with BARC, Mumbai for the Development of Automated Boiler Tube Inspection System for Coal Based Thermal Power Plants.

NTPC has also entered into a MoU with Heavy Water Board, Mumbai for the transfer of Ammonia Based Flue Gas Conditioning technology to NTPC, on non-exclusive basis, for its use in NTPC power stations.

18.0 ENVIRONMENT MANAGEMENT

NTPC with the goal of achieving sustainable development of the power sector in the country has taken a number of dedicated and growth oriented measures for improvements in the areas of Environment Management in its various business units. A number of measures have since been taken for improving environment of NTPC stations.

Emissions of pollutants through air/ water/ soil routes from any industry are obvious points of concern from environment protection point of view and therefore such emissions are to be further controlled through proper technology and management. From thermal power plants using coal as fuel, emissions and management of Suspended Particulate Matter (SPM) is very important. Although NTPC has been complying with all statutory requirements for SPM emissions, but to maintain SPM emission below statutory limits on sustained basis, the organization has signed an MOU with Heavy Water Board, Government of India for use of Ammonia based Flue Gas Conditioning (AFGC) technology in its plants. The system is under implementation at 5 stations of NTPC to assess its effectiveness in bringing down SPM emission.

NTPC has taken several initiatives for water management through water conservation and wastewater recirculation and re-use in its plants. Advanced treatment facilities, recycling plants and closed cycle cooling water systems have been installed in a number of stations to conserve water to the maximum extent. To recycle and re-use waste water, NTPC has installed recycling systems for ash pond effluent called Ash Water Recirculation System – AWRS and for main plant effluent called Liquid Waste Treatment Plants – LWTP at a number of stations. Further, NTPC has installed Sewage Treatment Plant (STP) at all stations. These plants have helped not only in complying with statutory norms but also to conserve precious fresh water.

In order to continuously monitor environmental parameters of emissions, ambient air and effluents on sustained basis, adoption of automation in monitoring techniques has been taken up in NTPC. Award has been placed for installation of continuous Ambient Air Quality Monitoring System (AAQMS) in all NTPC stations and the system is presently under execution stage. It is also proposed to install continuous Stack Emission Monitors (SEM) for SPM, NOX, SOX, CO2 etc at all NTPC plants. Further, it is also proposed to procure portable systems for monitoring of key environment parameters.

NTPC has been taking up a number of scientific studies proactively through reputed Institutes/ Consultants.

The following studies were taken up during the year 2007-08 :

- Water balance and conservation studies were conducted at a number of stations to study overall water management of the stations and to deduce further potential for water conservation through recycle and reuse to achieve near zero discharge.
- Fly ash leachate study was conducted at NTPC Badarpur which reveals that there is no contamination of ground water due to leaching of heavy metals from ash dykes.

As a result of pursuing sound environment management systems and practices, all NTPC stations have been certified with ISO 14001 by reputed accredited and certifying agencies.

19.0 SAFETY

The protection of workers against injury and disease has always been a key issue for the NTPC and Occupational Safety at workplace is one of the concerns & utmost importance is given to provide the safe working environment and create Safety awareness among the employees. Safe methods are practiced in all areas of Operations & Maintenance (O&M) and Construction & Erection (C&E) activities. Safety clauses in general conditions of contracts for C&E and O&M activities are revised and being implemented. Regular plant inspections, internal and external safety audits are carried out at each Project/ Station. Safety training to employees and contract workers is our culture.

Workers Participation in Safety Management is promoted through Safety Committees, Safety Circles, Safety Taskforces and Safety Stewards Schemes. Disasters Management Plans are reviewed and regular mock drills are conducted at all the projects/ stations to familiarize the employees and to meet any emergency. Workplace monitoring and medical examination of the employees are being carried out to create safe working conditions at work place.

Looking into the necessity and to ensure the best health and safety performance and the accident free environment, all NTPC Projects / Stations have obtained the OHSAS/ IS-18001 (Occupational Health & Safety Management Systems) certification.

NTPC has won the “Golden Peacock Occupational Health & Safety Award” for the year 2007. This is in recognition of implementation of National Occupational Health & Safety standards in the Organization.

Ramagundam, Dadri, Simhadri & Anta stations have won the “Safety Initiative Award 2007” for implementing innovative, Safety, and Quality Procedures and Practices. The award is instituted by the Safety and Quality forum of Institution of Engineers (India). The award has been conferred to Ramagundam for the third consecutive year.

Auraiya and Dadri have Safety Awards of Govt. of India National Safety Awards for the year 2005. These Awards were presented in September 2007 at New Delhi. Auraiya has received Two Safety Awards for lowest average frequency rate of accidents and Accident Free Year and Dadri has received for accident Free Year for the year 2005.

20.0 AWARDS AND ACCOLADES

NTPC has a strong work ethics and it lays great emphasis on culture building. NTPC employs over 24000 persons. NTPC has been consistently getting various Productivity, Shram, Environment and Safety Awards. NTPC has been recipient of various other awards also. Major awards and rankings received during 2007-08 (till 30.11.2007) are :

- **Greentech Environment Excellence Award 2007** by Greentech Foundation to seven NTPC stations (2 Gold, 4 Silver & 1 Bronze).

- **Golden Peacock Occupational Health & Safety Award 2007** to NTPC by Institute of Directors.
- **Gold Award for Excellence in People Management** by Grow Talent in recognition of NTPC as a national leader in the area of Human Resource Management.
- **Mother Teresa Award for Corporate Citizen 2006** by Loyala Institute of Business Administration.
- **CARE Award** for Best practices towards Promotion of **Women's Welfare, Development & Empowerment** by Power HR Forum.
- **Golden Peacock Global Award** for Excellence in Corporate Governance 2007 to NTPC by Institute of Directors.
- **SCOPE Meritorious award** for Good Corporate Governance 2005-06.
- NTPC was ranked seventh '**Great Place to Work For**' in India in the survey by Grow Talent and Business World-2006.
- NTPC identified as the 2007 **Platts Top 250 Global Energy Company** and ranked as **no. 1 Independent Power Producer in Asia**.
- Six NTPC Stations receive coveted CII-EXIM Excellence Award 2007. **Simhadri Station received award for 'Significant Achievement'**, while other five received award for 'Strong Commitment to Excel'.
- **Infraline Energy Excellence Awards 2007** NTPC awarded Jury Award for Recognising Long Standing Contribution and Service to the Nation in the Power Generation Sector.



Manufacturing Ash Bricks in the vicinity of an NTPC Plant

LIST OF NTPC COMMISSIONED STATIONS/PROJECTS

I. COAL BASED PROJECTS

Annexure-I

S.No.	Project	State	Installed Capacity (MW)
1.	Singrauli I & II	UP	2000
2.	Korba I & II	Chhattisgarh	2100
3.	Ramagundam I, II & III	AP	2600
4.	Farakka-I & II	WB	1600
5.	Vindhyachal-I, II & III	MP	3260
6.	Rihand-I & II	UP	2000
7.	Kahalgau-I & II*	Bihar	1340
8.	NCTPP-I	UP	840
9.	Talcher I & II	Orissa	3000
10.	Talcher TPS	Orissa	460
11.	Unchahar-I, II & III	UP	1050
12.	Simhadri	AP	1000
13.	Tanda TPS	UP	440
14.	Badarpur	Delhi	705
15.	Sipat-II**	Chattisgarh	500
Total (Coal)			22895

* Two more 500 MW units of Stage-II under construction.

** One more 500 MW unit of Stage-II under construction. 1980 MW Stage-I also under construction

II. COMBINED CYCLE GAS/ LIQUID FUEL BASED PROJECTS

S.No.	Project	State	Installed Capacity (MW)
1.	Auraiya-I	UP	652
2.	Anta-I	Rajasthan	413
3.	Kawas-I	Gujarat	645
4.	Dadri	UP	817
5.	Jhanor-Gandhar-I	Gujarat	648
6.	RGCCPP Kayamkulam-I	Kerala	350
7.	Faridabad	Haryana	430
Total (Gas)			3955

III. POWER PROJECTS UNDER JOINT VENTURES

S.No.	Project (JV)	State	Installed Capacity (MW)
1.	Rourkela (NSPCL)	Orissa	120
2.	Durgapur (NSPCL)	West Bengal	120
3.	Bhilai (NSPCL)	Chhattisgarh	74
4.	Ratnagiri (RGPPL)	Maharashtra	1480
Total (under JVs)			1794
GRAND TOTAL (Coal + Gas + Hydro)			28644

CHAPTER - 22.2

NATIONAL HYDROELECTRIC POWER CORPORATION LIMITED

National Hydroelectric Power Corporation Ltd. (NHPC) is a Schedule "A" Enterprise of the Government of India with an authorized share capital of Rs.15,000 Crore and an investment base of more than Rs.25,400 Crore. NHPC was set up in 1975 and has now become the largest organization for hydro power development in India, with capabilities to undertake all the activities from conceptualization to commissioning of Hydro Projects. The main objects of NHPC include, to plan, promote and organize an integrated and efficient development of hydroelectric, wind, tidal geothermal and gas power in all aspects, and transmission, distribution,

trading and sale of power generated at power stations. NHPC has signed an MoU with Rural Electrification Corporation Ltd.(REC) for formulation and implementation of projects under the programme of accelerated electrification of one lakh villages and one crore households. NHPC has also entered into an agreement with the Ministry of Rural Development for development and maintenance of rural access roads in six districts of Bihar under Pradhan Mantri Gram Sadak Yojana, a 100% centrally sponsored scheme. Works are in progress on these schemes.

PROJECTS UNDER OPERATION

NHPC has so far commissioned 12 hydroelectric projects with aggregate installed capacity of 4665 MW (which are in

operation) including 2 projects with total installed capacity of 1520 MW in Joint Venture with Govt. of Madhya Pradesh. The list of power stations is as under:

S. No.	Name of Project	State	Capacity (MW)
1	Bairasiul	Himachal Pradesh	180
2	Loktak	Manipur	105
3	Salal-I&II	Jammu & Kashmir	690
4	Tanakpur	Uttarakhand	120
5	Chamera-I	Himachal Pradesh	540
6	Uri-I	Jammu & Kashmir	480
7	Rangit	Sikkim	60
8	Chamera-II	Himachal Pradesh	300
9	Dhauliganga-I	Uttarakhand	280
10	Dulhasti	Jammu & Kashmir	390
11	Indirasagar (JV)	Madhya Pradesh	1000
12	Omkareshwar (JV)	Madhya Pradesh	520
		Total	4665

In addition to above, NHPC has commissioned 3 projects namely Kalpong (5.25 MW) in Andaman & Nicobar Islands, Sippi (4 MW) & Kambang (6 MW - 2 units out of 3 units commissioned so far) in Arunachal Pradesh on turnkey / deposit basis.

GENERATION FROM NHPC POWER STATIONS

(FIGURES IN MUs)

Name of Power Station/	Installed Capacity (MW)	Actual Generation Upto November'07 (Including Auxiliary Consumption and Transformation loss)	Likely to be Generated In Balance Period i.e Dec'07 To March'08	Total expected generation during 2007-08
BAIRASIUL	180	456.62	131.10	587.72
LOKTAK	*90	442.35	114.95	557.30
SALAL	690	2769.27	319.20	3088.47

TANAKPUR	\$94.2	383.45	51.66	435.11
CHAMERA-I	540	1775.24	234.65	2009.89
URI	480	1946.48	523.45	2469.93
RANGIT	60	275.26	52.25	327.51
CHAMERA-II	300	1238.52	242.25	1480.77
DHAULIGANGA	280	1044.66	110.00	1154.66
DHULHASTI	390	1872.43	229.05	2101.48
TEESTA-V	#510		193.58	193.58
TOTAL	3104.2	12204.28	2202.14	14406.42

Note:

1. Anticipated generation for the month of Dec'07 TO Mar'08 is as per the " GOOD RATING" of the MOU for the year 2007-08 except Tanakpur Power Station. For the Tanakpur PS, the generation target from 01/12/2007 to 04/02/2008 & 26/03/2008 to 31/03/2008 is as per the " GOOD RATING" of the MOU and from 05/02/2008 to 25/03/2008 is considered as zero due to the R&M Works of the Power Channel.
2. The COD of the first, second and third unit of the Teesta-V project has been taken as Jan'2008, Feb'2008 and March'2008 respectively.
3. * Derating of Loktak power station from 105 MW to 90 MW vide CEA letter no. CEA/PLG/DMLF/611/2006-230-243 dt 04/04/2006 till the R&M work is completed.
4. \$ Derated to 94.2 MW from 120 MW.
5. # Teesta-V not commissioned.

Capacity Index of NHPC Power Stations

(FIGURES IN %)

Name of Power Station/	Capacity Index Upto November'07	Likely to be Generated In Balance Period i.e Dec'07 To March'08	Total Expected Capacity Index During 2007-08
BAIRASIUL	98.85	83.16	93.65
LOKTAK	94.66	76.15	88.52
SALAL	97.29	99.18	97.92
TANAKPUR	90.65	64.67	82.04
CHAMERA-I	100.00	84.94	95.01
URI	99.68	97.54	98.97
RANGIT	96.49	77.16	90.08
CHAMERA-II	98.50	94.20	97.07
DHAULIGANGA	98.65	78.57	91.99
DULHASTI	98.99	73.62	90.42
TEESTA-V*		91.57	91.57
TOTAL	98.38	88.11	94.75

Note:

1. Capacity Index up to the month of Nov'07 is provisional.
2. The anticipated C.I has been calculated considering the maintenance period of ROR with pondage type stations and " GOOD RATING" of the MOU for the year 2007-08 of the ROR type stations.
3. The COD of the first, second and third unit of the Teesta-V project has been taken as Jan'2008, Feb'2008 and March'2008 respectively.
4. * Teesta-V not commissioned

PROJECTS UNDER CONSTRUCTION

The Corporation is presently engaged in the construction of the following hydro projects: -

S.No.	Name of the Project	State/ UT/ Country	Installed Capacity (MW)
1.	TEESTA-V	Sikkim	510
2.	PARBATI-II	H.P.	800
3.	SEWA – II	J&K	120
4.	SUBANSIRI LOWER	Ar. Pradesh	2000
5.	TEESTA LOW DAM-III	West Bengal	132
6.	URI-II	J&K	240
7.	CHAMERA-III	H.P.	231
8.	TEESTA LOW DAM-IV	West Bengal	160
9.	PARBATI-III	H.P.	520
10.	NIMOO BAZGO	J&K	45
11.	CHUTAK	J&K	44
12.	KISHANGANGA	J&K	330
		Total	5132



2000 MW Subansiri Lower Project (Arunachal Pradesh)-Power House Pit Excavation in progress.

The Status of on going projects is given below:-

1. Teesta HE Project Stage-V (510 MW), Sikkim

Dam concreting and HRT heading, benching, overt lining and 91.50% invert lining of Head Race Tunnel (HRT) completed. Excavation and lining of Desilting Chambers, erection of steel liners in Pressure Shafts/Penstocks are completed. Civil works of Power House and TRT have been completed. Assembly of all the 3 generating units completed. The Project is expected to become fully operational by March 2008.

2. Parbati HE Project, Stage-II (800 MW), H.P

So far 100% excavation & 55% Dam concreting has been completed. In HRT excavation of 79.50% and concrete lining of 13% length have been completed. During Nov.'06 in HRT face-4, TBM was partly buried due to heavy ingress of silt and water, causing total stoppage of work. Refurbishment of TBM has been completed. The HRT, particularly face-4 is the most critical work of the Project. Excavation of both Inclined Pressure Shafts of length 1546m each with inclined TBM has been completed. In Powerhouse excavation and 14% concreting had been completed but in Feb.'07 the back hill slope of PH suffered a slide causing a setback to the works. Slope Stabilization works are in progress. E&M works have been started. Supply of E&M and HM components is in progress.

3. Sewa HE Project Stage-II (120 MW), J & K

Complete excavation and 80% concreting of Dam is over. In HRT, so far 89.40% excavation has been completed. Face-7 of HRT is the most critical due to very bad geology. There has been re-routing of tunnel twice. Excavation of Surge Shaft and Powerhouse has been completed and concreting is in progress. Excavation and concreting of Pressure Shafts is in progress. Erection, Alignment & Boxing up of generating units and auxiliaries is in progress. Design & Engineering work of HM and fabrication of 1st stage & 2nd stage embedded parts are in progress. The project is now expected to be commissioned by June 2009.

4. Subansiri (Lower) HE Project (2000 MW), Arunachal Pradesh

Major civil works contracts were awarded in December '03 but start of works got delayed due to issues related to forest clearance by MOEF and payment of NPV. The final forest clearance was accorded on 12th of October, 2004 by MOEF. Diversion Tunnels have been completed and river has been successfully diverted. Adit to Pressure Shaft completed and excavation of Vertical Pressure shafts are in progress. 57% of Surge Chamber excavation and 97% of Power House excavation completed so far. Further work is in progress. E&M and HM works have also been awarded. The project is now expected to be commissioned by Jan. 2012.

5. Teesta Low Dam Project, Stage-III (132 MW), West Bengal.

In Barrage Bays 3 to 7, Intake and PH excavation is over and concreting is in progress. PH civil works are the most critical as slides in the PH back hill slope have delayed the civil as well as E&M works. Supply and erection of E&M and HM components is in progress. Draft Tubes for all the 4 units have been erected. On 27.07.2007 during flash floods, the Cofferdam was overtopped and breached resulting in flooding of the entire work area thus causing a severe setback to the progress of works and delaying the completion of Project. Restoration works are in progress. The Project is now expected to be completed by Sept.-Dec.'09.

6. Uri HE Project, Stage-II (240 MW), J&K

Investment approval has been accorded on 01.09.2005 with commissioning date as Nov. 2009. Major civil works have been awarded to M/s HCC Ltd. on 21-9-05 but due to major earthquake that hit the area in Oct.'05, start of major civil works was delayed. River diversion achieved on 21.01.2007. Riverbed excavation started but progress was affected due to washing away of cofferdam. All adits to HRT and TRT completed, and 89% & 57% excavation of heading completed in HRT & TRT respectively. Excavation of MAT to Power House is nearing completion. E&M works awarded to M/s Alstom on 29th Dec.'06. HM works awarded to M/s Om Metals-SPML (JV). The project is expected to be commissioned by August 2010.

7. Chamara HE Project, Stage-III (231MW), H.P

Investment approval has been accorded on 1.9.2005 with commissioning date as Aug.2010. All the major civil works awarded to M/S H.C.C Limited. The river has been diverted. HRT & TRT excavation 54% & 92% completed respectively. MAT to PH, Pilot tunnel to PH cavern and adit to PS bottom completed. 93% Power House excavation has been completed. E&M work was awarded to M/s Alstom and HM works to M/s Om Metals-SPML(JV). The project is expected to be completed as per schedule by August 2010.

8. Teesta Low Dam Project, Stage-IV (160MW), West Bengal

Investment approval has been accorded on 30.9.05 with commissioning date as Sept.2009. Civil works package was awarded to M/S HCC Ltd. with completion by Aug'09. Formal forest clearance has been received on 30/3/06 and forestland was handed over to NHPC on 20.04.06. The 1st Stage diversion was achieved on 30.1.07. So far major part of excavation for Dam component & Energy Dissipaters, PH, Cellular wall and TRC has been completed. Cellular Wall and Powerhouse works are critical. HM and E&M packages have been awarded to M/s BHEL and M/s Om Metals. During heavy floods on 17.7.2007 the Cofferdam was breached and whole Cellular Wall, Dam & Powerhouse area got inundated. Restoration Work got affected due to recurrence of flash floods on 27th July 2007. Restoration

works are in progress. Works have been restarted at some sites. The project is expected to be commissioned by August 2010.

9. Parbati HE Project, Stage-III (520MW), H.P

Investment approval has been accorded on 9.11.2005 with commissioning date as Nov.2010. Major Civil works (2 lots) were awarded on 15.12.2005 to M/s Patel-L&T consortium and M/s Jager-Gammon JV. The river has been diverted. 70% Excavation of Dam and 14% of HRT excavation completed. Adits to Desilting Chambers, Pressure Shaft, GOC, TRT and Surge Shaft bottom, GIS & Transformer caverns have been completed. In TRT, 47% excavation has been completed. E&M work has been awarded to M/s BHEL. HM works has been awarded to M/s Om Metals-SPML(JV). The project is expected to be completed as per schedule by November 2010.

10. Nimoo Bazgo HE Project (45MW), J&K

Investment approval has been accorded on 24.08.06 for completion of the project in 48 months i.e August 2010. Major civil works awarded to M/s H.C.C Ltd. on 23.9.06. E&M works were awarded to M/s BHEL on 12.06.07. The works are progressing satisfactorily in spite of difficult condition and river has been diverted on 22.11.07. The project is expected to be completed as per schedule.

11. Chutak HE Project (44MW), J&K

Investment approval has been accorded on 24.08.06 for completion of the project in 54 months i.e Feb. 2011. Major civil works have been awarded to M/s H.C.C Ltd.. Excavation of Adit-1 & 3 is completed and HRT excavation started. PH ventilation tunnel excavation has been completed. E&M works have been awarded to M/s BHEL

on 16.08.2007. The works are progressing satisfactorily in spite of difficult condition and river has been diverted on 22.11.07. The project is expected to be completed as per schedule.

12. Kishanganga HE Project (330 MW), J&K

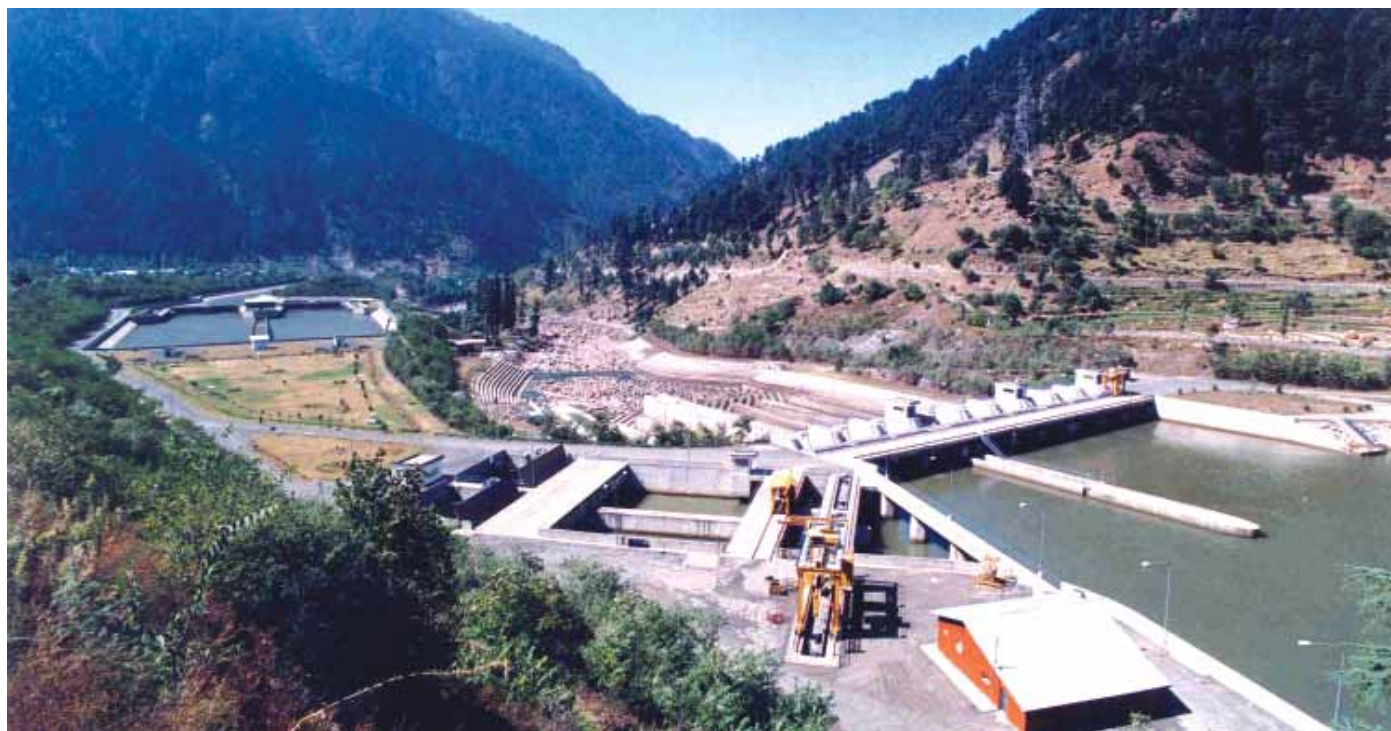
Investment approval has been accorded on 20.07.2007 for completion of the Project in seven years from the date of sanction, i.e. by July 2014. The lowest price bid for turnkey contract package was received for Rs.2961 crores against estimated cost of Rs. 1336 crores (approx.). The case is under examination for further course of action

13. Omkareshwar HE Project (520 MW), Madhya Pradesh

Investment approval has been accorded on 29.05.2003 for completion by Feb.'08 and work on turnkey basis was awarded to M/s Jai Prakash – Voith Siemens Consortium, New Delhi on 09.06.2003. The Project has been completed and all 8 units have started commercial generation from 15.11.2007 ahead of schedule. However due to ban by court on charging of reservoir above EL 189 m upto EL 196.60 m as R&R work has not been completed by the State Govt., full benefits of generation are not available.

PROPOSED XITH PLAN CAPACITY ADDITION PROGRAMME

NHPC has proposed to commission 12 projects to add 5322 MW capacity during XIth plan including one project of 520 MW in Joint Venture with Government of Madhya Pradesh has already been commissioned. Two projects with total capacity of 89 MW are included in the capacity addition programme under best effort category.



480 MW URI Power Station (J&K) - Aerial view of Barrage

List of projects is as under:

S.No.	Name of the Project	State/ UT/ Country	Installed Capacity (MW)
1	Teesta-V	Sikkim	510
2	Parbati-II	Himachal Pradesh	800
3	Sewa-II	Jammu & Kashmir	120
4	Teesta Low Dam – III	West Bengal	132
5	Subansiri Lower	Arunachal Pradesh	2000
6	Uri – II	Jammu & Kashmir	240
7	Chamera-III	Himachal Pradesh	231
8	Parbati-III	Himachal Pradesh	520
9	Teesta Low Dam – IV	West Bengal	160
10	Nimoo Bazgo*	Jammu & Kashmir	45
11	Chutak*	Jammu & Kashmir	44
12	Omkareshwar (JV)	Madhya Pradesh	520
		TOTAL	5322

*Under best effort category

PROJECTS UNDER GOVT. CLEARANCE / SANCTION

Seven projects with aggregate capacity of 5231 MW including one project of 66 MW in Joint Venture with Govt. of Manipur are awaiting Govt. approval / statutory clearances. The list of these projects is as under:

S.No.	Name of Project	State	Capacity (MW)
1	Loktak Downstream \$\$	Manipur	66
2	Pakal Dul	Jammu & Kashmir	1000
3	Kotli Bhel-IA	Uttarakhand	195
4	Kotli Bhel-IB	Uttarakhand	320
5	Kotli Bhel-II	Uttarakhand	530
6	Vyasi	Uttarakhand	120
7	Dibang	Arunachal Pradesh	3000
		TOTAL	5231

\$\$ Joint Venture project between NHPC and Govt. of Manipur

The status of project under Government clearance / sanction is given below:

1. Loktak Downstream (66 MW) Manipur:

Investment approval was accorded on 30.12.1999 with installed capacity of 90 MW but no major works could be taken up due to adverse law and order situation. In a meeting taken by Secretary (Power), GOI on 17.7.06, it has been decided that the project shall be executed in Joint Venture partnership between NHPC and Govt. of Manipur. Accordingly a revised DPR with installed capacity of 66 MW, was techno-economically cleared by NHPC. Formalities for formation of Joint Venture Company are in process. As directed by MOEF, NHPC has to obtain fresh environmental clearance for the revised proposal.

2. Pakal Dul (1000 MW), J&K

The project has been cleared by MOWR from Indus Water Treaty angle on 23.3.06. DPR of the project has been Techno Economically approved by CEA on 3.10.06. Forest clearance (311.042 ha) for forest area falling outside the KHANP has been accorded by Govt. of J&K vide letter dated 16.6.05. The proposal regarding de-notification of forest land has been recommended by the Standing Committee of NBWL as communicated by MOEF on 4.10.07. Environmental clearance proposal was discussed by Expert Appraisal Committee of MOEF in its meeting held on 14.11.07.

3. Kotli Bhel IA (195 MW), Uttarakhand

Implementation Agreement for the project has been signed with Govt. of Uttarakhand on 8.6.06. DPR of the project has been accorded Techno Economic clearance by CEA on 3.10.06. The forest proposal has been forwarded by State Govt. to MOEF. The site inspection report is awaited.

4. Kotli Bhel IB (320 MW), Uttarakhand

Implementation Agreement for the project has been signed with Govt. of Uttarakhand on 8.6.06. DPR of the project has been Techno Economically cleared by CEA on 31.10.06. Ministry of Defence has conveyed No Objection to project. Environmental clearance has been accorded by MOEF. The forest proposal has been submitted to State Forest Department.

5. Kotli Bhel II (530 MW), Uttarakhand

Implementation Agreement for the project has been signed with Govt. of Uttarakhand on 8.6.06. DPR of the project has been Techno Economically cleared by CEA in its meeting held on 31.10.06. Ministry of Defence vide letter dated 22.6.07 has conveyed No Objection to project. Environmental clearance has been accorded by MOEF on 23.8.07. Forest proposal is under formulation and is yet to be forwarded by State Govt. to MOEF. PIB has recommended the project.

6. Vyasi (120 MW), Uttarakhand

NHPC had prepared the DPR of the project on stand alone basis and submitted to CEA, which is under scrutiny. MOEF has accorded Environmental clearance to the project. The state Govt. is yet to forward the Forest proposal to MOEF. Government of Uttarakhand has provided draft implementation agreement for development of Lakhwar Vyasi Project as integrated project, in which Vyasi is proposed to be developed in first stage. NHPC has sent its major concerns on the clauses proposed in the draft implementation agreement to Government of Uttarakhand on 4.12.2007.

7. Dibang Multipurpose (3000 MW), Arunachal Pradesh

Dibang Multipurpose project has been transferred to NHPC vide Govt of India order dated 4.12.2002 under section 18 A of the then ES Act, 1948. For accord of TEC, DPR has been submitted to CEA, which is under scrutiny. EIA & EMP reports have been finalized and submitted to MOEF on 13.2.07 for initiating the process of Public consultation. Memorandum of Agreement (MoA) signed with Govt. of Arunachal Pradesh on 24.06.07 for execution of the Project on ownership basis by NHPC alone. This MOA supercedes the earlier MOU signed on 21.9.06, which interalia stated that the project will be implemented under Joint Venture between NHPC and State Govt. PIB clearance of this Project was done on 28.01.2008 and on 31.01.2008 the Hon'ble Prime Minister laid the foundation stone of the project.

PROJECTS UNDER FR/ DPR PREPARATION

Further, S&I works are being carried out by NHPC on following 10 projects with total capacity of 7750 MW for preparation of FR / DPR:

S.No.	Name of Project	State	Capacity (MW)
1	Teesta-IV	Sikkim	495
2	Bursar	Jammu & Kashmir	1020
3	Chungar Chal	Uttarakhand	240
4	Garba Tawaghat	Uttarakhand	630
5	Khartoli Lumti Tulli	Uttarakhand	55
6	Lachen	Sikkim	210
7	Tawang-I	Arunachal Pradesh	750
8	Tawang-II	Arunachal Pradesh	750
9	Subansiri Middle	Arunachal Pradesh	1600
10	Subansiri Upper	Arunachal Pradesh	2000
		TOTAL	7750

The status of project under FR / DPR preparation is given below:

1. Teesta-IV (495 MW), Sikkim:

Agreement for implementation of the project has been signed between NHPC and state Govt. on 1.3.06. Site Clearance Stage-I & II accorded by MOEF on 6.10.05. DPR is under preparation.

2. Bursar (1020 MW), J&K:

Site clearance stage-II accorded by MOEF on 14-5-02. Forest clearance for area falling outside the KHANP has been accorded by Govt. of J&K vide letter dated 16.6.05. The proposal for de-reservation of forest land falling under



520 MW Parbati H.E. Project Stage-III (Himachal Pradesh) - Work at Diversion Tunnel Inlets in progress

KHANP was again discussed by the Standing Committee of NBWL on 14.9.06 and it was decided that a detailed study on impact of the project on Wildlife to be carried out by WII and the proposal be resubmitted for the consideration of the Standing Committee. The adverse law and order situation is causing delay in S&I work for preparation of DPR.

3. Chungar Chal (240 MW), Uttarakhand:

Agreement for implementation has been signed with Govt. of Uttarakhand on 21.11.05. Site clearance Stage-I has been accorded on 11.11.05.

4. Garba Tawaghat (630 MW), Uttarakhand:

Agreement for implementation has been signed with Govt. of Uttarakhand on 21.11.05. Site clearance Stage-I not accorded as the project area falls in ASKOT Musk Deer Sanctuary for which clearance of NBWL and the approval of Hon'ble Supreme Court is required.

5. Khartoli Lumti Tulli (55 MW), Uttarakhand:

Agreement for implementation has been signed with Govt. of Uttarakhand on 21.11.05. Stage-I site clearance applied by NHPC held up by MOEF as the project area falls in ASKOT Musk Deer Sanctuary for which clearance of NBWL and the approval of Hon'ble Supreme Court is required.

6. Lachen (210 MW), Sikkim:

Agreement for implementation of the project has been signed between NHPC and state Govt. on 1.3.06. Site clearance stage -I accorded by MOEF on 27.2.06.

7-8. Tawang-I & II (1500 MW), Arunachal Pradesh:

Revised MOA between NHPC and Govt. of Arunachal Pradesh has been signed on 24.6.07 for executing the

project on ownership basis by NHPC. This MOA supercedes the earlier MOA signed on 21.9.06. MOEF has accorded clearance for pre-construction activities and approval of terms of reference for undertaking the EIA studies for Tawang-I&II. NHPC submitted the PFRs of both the projects to CEA for establishing the commercial viability. EIA & EMP studies have been awarded and S&I are under progress for preparation of DPR.

9-10 Subansiri Middle (1600 MW) and Upper (2000 MW), Arunachal Pradesh

CEA had advised NHPC to prepare DPR and take up essential infrastructure works. Proposal for Site Clearance Stage-II was submitted to MOEF on 26.09.02. MOEF vide letter dt 19.6.03 rejected the site clearance on the basis of recommendation of IBWL in case of Lower Subansiri Project that "there will be no construction of dam upstream of Subansiri River in future". While disposing IA 966 filed against Subansiri Lower Project, Supreme Court vide its order dated 19.4.04 has directed that permission for Subansiri Lower Project may be given subject to fulfillment of condition imposed by Standing Committee of IBWL. State Govt. had filed a review petition in Hon'ble Supreme Court of India for review of its order dated 19.4.04. After hearing, Hon'ble Supreme Court directed that the matter is referred to the Standing Committee of the National Board of Wildlife to consider waiving or modifying these conditions as sought by the applicant. MOEF vide letter dated 4.10.07 has informed that a Committee has been constituted to carry out site inspection before taking a final decision on the issues raised. The inspection is likely to be conducted in Dec.07. S&I work for preparation of DPR has been suspended due to non-availability of site clearance stage-II by MOEF.

PROJECTS IN NORTH-EAST

In North-East, NHPC has already commissioned Loktak project (installed capacity of 105 MW) in Manipur, which is under operation. Subansiri Lower project (2000 MW) in Arunachal Pradesh is under active construction. 2 projects (including one project in joint venture) with total aggregate

capacity of 3066 MW, are under Govt. Sanction / clearance. In addition, 4 projects with total aggregate capacity of 5100 MW are under FR / DPR stage. List of NHPC projects in North East is as follows:

S.No.	Name of Project	State	Capacity (MW)
	Under Operation		
1	Loktak	Manipur	105
	Under Construction		
2	Subansiri Lower	Arunachal Pradesh	2000
	Under Govt. Clearance / Sanction		
3	Loktak Downstream \$\$	Manipur	66
4	Dibang	Arunachal Pradesh	3000
	Under FR/ DPR Preparation		
5	Tawang-I	Arunachal Pradesh	750
6	Tawang-II	Arunachal Pradesh	750
7	Subansiri Middle	Arunachal Pradesh	1600
8	Subansiri Upper	Arunachal Pradesh	2000
TOTAL			10271

\$\$ Joint Venture project between NHPC and Govt. of Manipur
The status of project in North-East is given below:

1. Loktak Power Station (105 MW), Manipur:

The project was commissioned in May 1983. Since commissioning, the project has generated total 11899 MUs till Nov-07.

2. Subansiri Lower Project (2000 MW), Arunachal Pradesh:

Govt. Sanction to the project was conveyed by Ministry of Power vide letter dated 9.9.2003. All major Civil, E&M and HM works stand awarded. Formal Forest Clearance was accorded by MOEF on 10.10.2004. The project is in active construction stage. The project was scheduled to be commissioned by Sept-2010 as per Govt. Sanction. However, as per the current progress of work, the project is now expected to be commissioned by Jan-2012.

3. Loktak Downstream (66 MW), Manipur:

Govt. Sanction of the project with installed capacity of 90 MW was conveyed vide MOP letter dated 30.12.1999 but no major works could be taken up due to adverse law and order situation. In a meeting taken by Secretary (Power), GOI on 17.7.06, it has been decided that the project shall be executed in Joint Venture partnership between NHPC and Govt. of Manipur. Accordingly, NHPC had prepared DPR for the revised proposal with installed

capacity of 66 MW, which was techno economically cleared by CEA on 15.11.06. PIB in its meeting held on 23.11.06 has recommended the project for CCEA approval. MOU has been signed on 14.9.07 with Govt. of Manipur for execution of the project through a Joint Venture Company. Formalities for formation of Joint Venture Company are in process. As directed by MOEF on 16.11.06, NHPC has to obtain fresh environmental clearance for the revised proposal. Clearance for pre-construction activities and approval of terms of reference for undertaking the EIA study, has been accorded by MOEF vide their letter dated 20.4.07. EIA & EMP study is in process of award.

4. Dibang Multipurpose (3000 MW), Arunachal Pradesh

Dibang Multipurpose project has been transferred to NHPC by Govt of India order dated 4.12.2002 under section 18 A of the then Electricity Supply Act, 1948. DPR has been submitted to CEA on 29.12.05 for accord of TEC, which is under scrutiny. EIA & EMP reports have been finalized and submitted to MOEF on 13.2.07 for initiating the process of Public consultation. Memorandum of Agreement (MoA) signed with Govt. of Arunachal Pradesh on 24.06.07 for execution of the Project on ownership basis by NHPC alone. This MOA supercedes the earlier MOU signed on 21.9.06, which interalia stated that the project will be implemented under Joint Venture between NHPC and State Govt.

5-6. Tawang-I & II (1500 MW), Arunachal Pradesh:

Revised MOA between NHPC and Govt. of Arunachal Pradesh has been signed on 24.6.07 for executing the project on ownership basis by NHPC. This MOA supercedes the earlier MOA signed on 21.9.06. MOEF has accorded clearance for pre-construction activities and approval of terms of reference for undertaking the EIA studies for Tawang-I&II. NHPC submitted the PFRs of both the projects to CEA for establishing the commercial viability. EIA & EMP studies have been awarded on 19.6.07. S&I are under progress for preparation of DPR

7-8. Subansiri Middle (1600 MW) and Upper (2000 MW), Arunachal Pradesh:

CEA had advised NHPC to prepare DPR and take up essential infrastructure works. Proposal for Site Clearance Stage-II was submitted to MOEF on 26.09.02. MOEF vide letter dt 19.6.03 rejected the site clearance on the basis of recommendation of IBWL in case of Lower Subansiri Project that "there will be no construction of dam upstream of Subansiri river in future". While disposing appeal filed against Subansiri Lower Project, Supreme Court vide its order dated 19.4.04 has directed that permission for Subansiri Lower Project may be given subject to fulfillment

of condition imposed by Standing Committee of IBWL. State Govt. had filed a review petition in Hon'ble Supreme Court of India for review of its order dated 19.4.04. After hearing, Hon'ble Supreme Court directed that the matter is referred to the Standing Committee of the National Board of Wildlife to consider waiving or modifying these conditions as sought by the applicant. MOEF vide letter dated 4.10.07 has informed that a Committee has been constituted to carry out site inspection before taking a final decision on the issues raised. The inspection is likely to be conducted in Dec.07. S&I work for preparation of DPR has been suspended due to non-availability of site clearance stage-II by MOEF.

COMMERCIAL PERFORMANCE OF THE CORPORATION

During the financial year 2007-08 (up to November, 2007), 96.59% realization has been achieved (Rs. 1835.67 Crore realized against the bills raised amounting to Rs. 1900.40 Cr. during the FY 2007-08). The current outstanding dues as on 30th November 2007 are Rs. 75.07 Cr. which is equivalent to 0.41 months of average billing. Also, there is no default by State Governments / beneficiaries in payment of interest on bonds and long term advances and during FY 2007-08 an amount of interest of Rs. 221.92 Crore has been earned up to October, 2007.

R&D ACTIVITIES

The following activities have been taken up during the year 2007-08 and their progress up to 30th November 2007 is given below:-

S. No	Activity	(a) Progress upto 30th Nov.2007	Anticipated progress upto 31.3.08
1	Energy Audit of Power Stations	Field study and measurement regarding Energy Audit of Rangit and Chamera-I Power stations has been completed by CPRI, Bangalore and the draft reports for both the power stations have been received for comments/consideration.	Final report on Energy Audit of Rangit and Chamera-I power stations be expected in the month of January 2008.
2	Durgaduani Mini Tidel Power Project, Sunderbans, West Bengal	MNES has requested NHPC to explore the possibilities for implementing Tidal Power Project in West Bengal. In this regard an MOU has been signed between NHPC and WBREDA for the implementation of Durgaduani Mini Tidal Power Project, Sunderbans. In compliance with the provision of MOU, NHPC has revised the DPR in association with foreign consultant and the same was submitted to WBREDA on 5.11.07.	Target for the year 2007-08 has been achieved. Further action to be taken only after receiving go ahead for project implementation from WBREDA
3.	Promoting use of New & Renewable sources of Energy.	To promote environmental friendly use of solar energy solar heating and solar lighting equipment, are being considered	Implementing the use of solar energy at Residential Colony is being under active consideration.

		<p>for remote locations where grid power is either not available or has limitations.</p> <p>Nimmo Bazgo Project is one such location which was chosen as a Pilot project. The site offers greater availability of sun light and is dependent on diesel power which is not only costly but has adverse effect on the environment. With the active support of the Project, 25 kWp Solar Power Plant and stand alone lighting system was commissioned successfully.</p> <p>Similar powered lightning arrangement for NHPC colony is being under active consideration</p>	
4	Techno-economic studies for selection of appropriate Turbine Generator Units for Tidal Power Stations	Techno-Economic Studies have been completed and the report has been prepared.	Target for the year 2007-08 has been achieved
5	Development of Geothermal Power	<p>Recently an Expert Group consisting of representatives from CEA, MNRE, NHPC, GSI, NGRI & M/s Geo-syndicate has been constituted to examine & compile the information available with various agencies involved in the areas of geothermal energy for assessment and development of the geothermal potential at the puga valley, J&K.</p> <p>1st meeting of the expert group was held in CEA on 17.10.07 and a decision to take up the deep drilling has been taken. The expert group has visited the site at Puga during 11th to 15th of Nov.07.</p>	Recommendations of the Expert Group shall be submitted to MNRE for exploration of Puga Geothermal Fields, J&K
6	Coordination with IRTCES China	An MOU between IRTCES, China and NHPC has been signed in Nov, 2006 for co-operation on various research areas. Specific research areas relevant to NHPC needs have been identified and Interaction for separate agreements for different areas of research with IRTCES, China is under process. For Joint cooperation research on management of high sedimentation in short reservoir, detailed discussions was held between Representative from IRTCES, China and NHPC on 20th September 2007 at NHPC, Faridabad and the methodology, & terms & conditions of the research cooperation is being finalized.	Individual agreements on specific areas of expertise to be formulated & signed.
7	Clean Development Mechanism (CDM)	The Clean Development Mechanism (CDM) is one of the three flexibility	Validation of both Nimmo Bazgo & Chutak Projects is under

		<p>mechanisms under the Kyoto Protocol (KP), 1997 that enables developing countries to assist developed countries in meeting their green house gas (GHG) emissions reduction targets. The ultimate objective of this mechanism is to stabilize GHG concentration. It has created an additional source of income for the promoters of projects that reduce green house gas emissions.</p> <p>NHPC has actively considered the Clean Development Mechanism (CDM) for its hydro power projects. Project Idea Notes (PINs) for 15 (Fifteen) projects have been prepared. Host Country approval for Nimoo-Bazgo (3X15 MW) and Chutak Project (4X 11 MW) in J&K State have been obtained from National CDM Authority in August 2007 .The Project Design Document (PDD) of both the projects were put on NHPC website for stake holder comments from 31.10.07 to 29.11.07. Validation meeting DNV (Designated Operational Entity)to validate and verify the documents for Nimoo Bazgo and Chutak projects was held on 3.12.07.</p>	process & will be submitted to CDM EB for registration.
8	Ecological study of Teesta River at Teesta V HE Project.	Ecological Study of hydro reservoir has been taken up to assess the role of reservoir in GHG emission and its contribution to climate change. Phase-I Ecological study of Teesta river at Teesta Stage-V Hydroelectric Project has been got done by National Environmental Engineering Research Institute (NEERI), Nagpur and Phase-II ecological study is under process.	Phase-II Ecological Study shall be taken up.
9	National R&D Project-Development of Silt Resistant Material for Turbines of Hydro Generators	<p>National R&D Project for “Development of Silt Erosion Resistant Material for Turbines of Hydro Generators” for which NML (National Metallurgical Laboratory) Jamshedpur is the lead agency and NHPC is one of the participating agencies.</p> <p>Rs. 36 Lakhs as the initial contribution of NHPC was paid to CPRI, Bangalore during the FY 2005-06.</p> <p>NML has visited the Salal & Baira Siul Power Stations of NHPC to inspect the silt affected under water components.</p> <p>The matter regarding Patent & Technology Transfer Mechanism has been discussed in the 11th Meeting of the SCRD held on 22.8.07.</p>	Signing of the MOU between the participating organizations is under process.

10	Preliminary study of downstream release of water of hydro power projects	Preliminary study of down stream release of water of hydro power projects has been taken up as a research project. Report of preliminary study of D/S release of water of hydro projects has been prepared.	Target for the year 2007-08 has been achieved and detailed study is being planned for the year 2008-09.
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CO-OPERATION WITH IRTCES, CHINA

In India and China, with increase of frequent human activities, soil loss in the drainage basin becomes a very serious problem, and a lot of heavily-laden rivers such as the Yellow River and the Yongding River etc., have been formed. The characteristics of incoming water and sediment of these heavily-laden rivers are their annual runoff with large annual sediment load, and this kind of imbalance between water flow and sediment load not only leads to substantial deposition in the river channel, but poses a big negative impact on the hydraulic-projects on the rivers, causing serious deposition and reservoir storage loss, which directly influence the benefits of reservoirs. Therefore, a large amount of research works on reservoir sedimentation management have been carried out in China.

The reservoir deposition and storage loss is an important issue NHPC must face up with, and it is also one of the key technologies needed to be considered and solved by NHPC.

Whereas, IRTCES has interest in research and training to solve scientific and engineering problems related to erosion and sedimentation. IRTCES welcomes future cooperation and collaboration with organisations all over the world to promote the international development on erosion and sedimentation, engineering problems related to erosion and sedimentation.

An MOU has been signed on the 28, November, 2006 between NHPC and IRTCES for cooperation on various research areas. A research project on sedimentation management of reservoirs on heavily-laden sediment rivers was proposed for further cooperation.

On 20.09.2007 representatives of IRTCES, China visited NHPC and a meeting was held with NHPC in the Office Complex, Faridabad, for detailed discussion on collaborative research on management of sedimentation in reservoir as per MOU. The methodology, terms & conditions of the research cooperation are being finalized.

CONSULTANCY SERVICE

NHPC is providing consultancy services in the various fields of hydro power viz. river basin studies, survey works, design and engineering, geological studies, geotechnical studies, hydraulic transients studies, hydrological studies, contract management, construction management, equipment planning, underground construction, testing, commissioning, operation & maintenance etc. to leading organizations of the

country like A&N Administration, BBMB, BHPC, CEA, CSEB, CWC, DVC, Govt. of Arunachal Pradesh, Govt. of Bihar, Govt. of Goa, Govt. of Mizoram, Govt. of Nagaland, JKPDC, KPA, KRCL, KSEB, LAHDC, MEA, NHDC, Northern Railways, NTPC, PIDB, PGCIL, REC, SJVN, THDC, THPA, UJVNL, J&KPDD, WBPDC and various private organizations like CES, ICICI, IFCI, Jaiprakash Hydro Power Ltd. & Athena Demwe Power Pvt. Ltd.

NHPC is registered with World Bank, Asian Development Bank, African Development Bank and Kuwait Fund for Arab Economic Development, Central Water Commission and Consultancy Development Centre as a Consultant.

NHPC has signed MOU with Montgomery Watson Harza Americas Inc., International Energy & Water Resources Group, USA for providing consultancy & management services jointly in the field of hydro power in India and abroad.

CO-OPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

• MANGDECHHU HE PROJECT (672 MW), BHUTAN

NHPC has undertaken the work of preparation of Detailed Project Report (DPR) for Mangdechhu H. E. Project at a cost of Rs.7.59 Crores under the Govt. of India project tied assistance to Bhutan. Subsequent to signing of the implementation agreement between Department of Energy (DoE), Ministry of Trade & Industry, Royal Government of Bhutan (RGoB) and NHPC on 29.9.2006, NHPC carried out survey & investigation works at the project and same is nearing completion. Preparation and submission of DPR to RGoB is expected to be made by Feb 2008.

• VARZOB HYDRO POWER PLANT – I (2X3.67 MW), TAJIKISTAN

Govt. of India decided to undertake the rehabilitation of the Varzob – I hydropower station in Tajikistan on the lines of the feasibility report jointly prepared by NHPC & BHEL team in Sep'06. A tripartite agreement for Renovation, Modernization and Upgrading of Varzob Hydro Power Plant – I (2X3.67 MW) has been signed between Barki Tojik, Tajikistan and NHPC and BHEL on 7th December 2006. The MOU proposed to be signed between MEA, NHPC and BHEL is under process by MEA.

NHPC has also commissioned 2 projects with aggregate capacity of 74.1 MW on deposit / turnkey basis. The list of projects is as follows:

S.No.	Name of Project	State	Capacity (MW)
1	Devighat	Nepal	14.1
2	Kurichu	Bhutan	60
TOTAL			74.1

ACTIVITIES RELATING TO WOMEN EMPLOYEES

No. & percentage of women employees in NHPC as on 30.11.2007 is as below:

Group	Total No. of Employees	No. of female employees	% of female employees
Executive	3174	230	7.25
Supervisor	1816	95	5.23
Workmen	7488	685	9.15
Total	12478	1010	8.09

Steps taken for Welfare of women employees:

- Generally women employees are not transferred except in cases of administrative exigency and even if transferred due care is taken to ensure that posting is made to the station where the spouse is posted. No women employee is posted to hard projects.



A view of 510 MW Teesta-V H.E. Project (Sikkim)

- Special care is always taken to nominate deserving women employees to training programs / seminars organized exclusively for women employees.
- Free membership of WIPS (women in Public Sector) at Corporations expense.
- Crèche facility is provided for women with infant children in Corporate Office.
- Suitable mechanism for prohibition of harassment of women employees at work place.
- Special committees have also been set up to look into the grievances / complaints of harassment of women employees.

GRIEVANCE CELL

NHPC has its own internal Grievance Redressal Machinery for expeditious Redressal of grievances of the general public as well as its own employees. The functioning of the machinery is monitored periodically to ensure efficacy of the system.

The Grievance Redressal Machinery is given extensive publicity among the employees and members of the public and all possible efforts are made to ensure expeditious Redressal of the grievances as and when received. A monthly and quarterly report / return on Redressal of public grievances are being sent regularly to the Ministry of Power.

TRAINING PROGRAMMES IN NHPC

During the year 2006-2007 HRD Centre for Excellence focused its efforts to enhance the competencies of the employees to develop competent, trained and multi-disciplinary human capital in NHPC so as to meet the challenging assignments.

The Division strived hard to keep the employees abreast with the changes happening in the global market. With an aim of offer the best training to the employees, NHPC has entered into strategic alliance with the premier Academic Institutes like IIM-Ahmedabad, IIT-Roorkee, MDI-Gurgaon, Amity, IMI-New Delhi, IMT-Ghaziabad and agencies like ABB, AREVA (T&D), NCB, CSMRS, VA-Tech, , BHEL etc.

Training Programmes were designed comprehensively incorporating interventions for meeting Organizational Challenges and addressing the individual Training Needs for the Short Term and Long Term.

The Core areas identified for training to augment the competencies of employees are Managing, Self, Groups, Organization, Career Building, Organizational Development Programmes, Productivity enhancement, Technical Programmes and IT Skill upgradation etc.

Key Achievements in 2006-2007

- 73.06% of the total manpower has been trained against the target of 60% of manpower for achieving excellent rating vide MOU signed with MOP for 2006-2007.
- A total of 686 Training Programs were conducted across the organization during 2006-2007, in which 9323 employees of various levels have been trained.
- Out of 73.06% of the total manpower trained, 35.51% were executives and 37.55% were non-executives.
- Out of 73.06% of the total manpower trained, 10.85% were SC, 3.58% were ST, and 8.97% were from OBC Category.
- 2.01% of the gross salary of the employees has been invested in Training & Development activities against the MOU target of 2% for 2006-2007 for achieving excellent rating.
- NHPC Training & HRD Policy has been approved by Board of Directors and implemented across the organization.
- “OD Interventions” like Competency Mapping for Executive Directors and General Managers, Climate Survey across the organization, Performance Management System incorporating performance planning through KRA fixation and their periodic review have been initiated.

CHAPTER - 22.3

POWER GRID CORPORATION OF INDIA LTD. (POWERGRID)

Power Grid Corporation of India limited (POWERGRID) was incorporated on October 23, 1989 with an authorized share capital of Rs. 5,000 Crore as a public limited company, wholly owned by the Government of India.

POWERGRID started functioning on management basis with effect from August, 1991 and it took over transmission assets from NTPC, NHPC, NEEPCO and other Central/Joint Sector Organizations during 1992-93 in a phased manner. In addition to this, it also took over the operation of existing Regional Load Despatch Centers from CEA, in a phased manner, which have been upgraded with State of-the-art Unified Load Despatch and Communication (ULDC) schemes. According to its mandate, the Corporation, apart from providing transmission system for evacuation of central sector power, is also responsible for Establishment and Operation of Regional and National Power Grids to facilitate transfer of power within and across the Regions with Reliability, Security and Economy on sound commercial principles.

Based on its performance POWERGRID was recognized as a **Mini-ratna** company by the Government of India in October 1998. POWERGRID, notified as the Central

Transmission Utility of the country, is playing a major role in Indian Power Sector and is also providing Open Access on its inter-State transmission system.

ACHIEVEMENTS OF POWERGRID

As on November 2007, POWERGRID is operating around 64,300 ckt. kms. of transmission lines along with 108 Sub-stations with transformation capacity of about 66,000 MVA. With the use of state-of-the-art preventive maintenance techniques, average availability of transmission systems during the year 2006-07 was maintained above 99%. Based on the network size and operational efficiency, POWERGRID ranks among one of largest and best-managed transmission utilities in the World. POWERGRID continues to wheel about 45% of total power generated in the country through its gigantic transmission network.

In the year 2006-07, Company registered a Turnover of Rs. 4,082 Crore and earned a Net profit (After tax) of Rs. 1,229 Crore thereby recording a Net profit margin of 30.10%. The company's Gross asset base at the end of the financial year 2006-07 stood at Rs. 29,015 Crore as against



Men toiling on Transmission Tower

Rs 24,888 Crore at the end of last financial year. The Return on Net Worth for the company was at 11.50% in 2006-07, creating significant value for the shareholders.

The company undertook capital investment of Rs. 6,383 Crore during the financial year 2006-07 and the required funds were tied up from internal resources, bonds/term loan from the domestic sources, grant from Government of India and ECB/Supplier's Credit. POWERGRID continued to implement its projects with economy and within stipulated time frame to derive maximum economic benefits. Its advanced and cost effective Integrated Project Management and Control System (IPMCS) for total project review and perpetual monitoring, has contributed significantly.

Recently, Company entered the capital market with an IPO of 573.9 million equity shares of Rs. 10 each. The issue closed with responses from both domestic and global investors that surpassed the most optimistic expectations. Overall, the issue was subscribed 64 times; the institutional investors segment - 116 times and the high-net worth individuals - 41 times. The global enthusiasm for the issue (\$30 billion in bids) has particularly been historic. This tremendous response shows the growth potential of the Corporation and the faith of people/investors in the Indian Power Sector in general and Corporation in particular.

In the year 2007 upto November 2007, POWERGRID has commissioned about **3691 Ckm.** of transmission lines, **06 new sub-stations** and has added transformation capacity of about **5980 MVA**. Major projects commissioned include: Kahalgaon-II (Phase-I) Transmission System, Northern Region System Strengthening Scheme-I, Unchahar-III Transmission System, Vindhyaachal-Korba Transmission Line, Bina – Nagda Transmission Line, Vindhyaachal-III Transmission System & System Strengthening-III of Southern Region.

BUSINESS DEVELOPMENT

POWERGRID, an ISO 9001 certified company, has acquired in-house expertise at par with global standards in the field of Planning, Engineering, Load Despatch and Communication, Telecommunication, Contracting, Financial and Project Management. POWERGRID is executing various consultancy assignments in these areas as a part of its Business Development Activity. During the year 2007-08, POWERGRID has secured 20 nos. of new consultancy assignments with a project cost (including POWERGRID consultancy fee) of about Rs. 2,000 Crore (upto Nov., 07). The Company has realised consultancy fee of Rs. 111 Crore (upto Nov., 07) from its ongoing consultancy projects.

POWERGRID's first International Consultancy Contract with Bhutan Telecom for establishment of OPGW system on turnkey basis in the Royal Kingdom of Bhutan was successfully completed on schedule. All other ongoing consultancy assignments are progressing ahead of schedule.

As a result of on-going initiatives being undertaken in POWERGRID to make its presence felt internationally in dealing with all facets of power system, POWERGRID in association with M/s Sigma Enterprises-a Dubai based Co. has recently secured the prestigious international Consultancy assignment against stiff competition from Dubai Electricity & Water Authority (DEWA) for providing **Engineering Consultancy Services for 2 nos. 400kV GIS Sub-stations and associated Overhead Transmission Lines**. Scope of consultancy includes all activities viz. design, planning, engineering, EIA studies, preparation of tender documents, evaluation, assistance in pre-award discussions & negotiations, preparation of award letters, inspection and witnessing of type testing, site supervision, project management, payment certification and resolution of corridor and outage requirement and co ordinate for approval from various concerned authorities in Dubai.

Consolidating its position in Afghanistan, POWERGRID has recently bagged following two consultancy assignments in Afghanistan against stiff competition from other international consultants:

- a. (a) Consultancy to AEAI (Advance Engineering Associates International, inc) for **Engineering design and environmental assessment services for Sheberghan – Mazhar – Naibabad Transmission Line funded by USAID** with POWERGRID's consultancy fee of USD 3,00,000. Scope of Services include walk over survey and finalize alignment; Identification of suitable sites for 500/220 kV substation and general layout and location of substation to be provided; Assessment of Demining/ROW needs; Engineering and Environmental Assessment
- b. (b) Consultancy to MEW for **220/20 kV Aybak Substation and Bay Expansion work of Mazhar-e-Sharif Substation** funded by World Bank for a consultancy fee of USD 98,000. Scope of Services include Complete Design, Engineering, preparation of Bidding documents, assistance to MEW during Bid Clarifications, and Complete Bid Evaluation of Aybak 220/20kv Substation and Bay Expansion work of Mazhar-e-Sharif Substation

These projects have strengthened Indian presence and involvement in the reconstruction process in Afghanistan and have also enhanced international profile of POWERGRID.

On Domestic Front also, some of the major assignments secured (up to November 2007) by POWERGRID are as detailed below :

- Quadripartite agreement signed amongst **Ministry of Power, Govt. of Bihar, Bihar State Electricity Board and POWERGRID** for Consultancy work of strengthening of sub-transmission scheme under Phase II, Part II. The estimated project cost is Rs. 1240.86 Crore.

- **New Delhi Municipal Council (NDMC)** has awarded consultancy work for Turnkey execution of System Strengthening Works in NDMC areas at a project cost of Rs. 200 Crore. The Project includes construction of new 66/11kV & 33/11 kV GIS stations, augmentation of existing stations, U/G cabling works etc. with time schedule of 30 months.
- **Meghalaya State Electricity Board (MeSEB)** has awarded consultancy work for Turnkey execution of 220 kV D/C line from Misa to Byrnihat alongwith 2x160 MVA, 220/132 kV New Sub-station at Byrnihat and associated Bay extension works at 220 kV Misa POWERGRID Sub-station on cost plus basis. Estimated project cost is: Rs.150 Crore.
- An Agreement has been signed with **M/s JPL (JAYPEE POWERGRID LIMITED)** for Engineering Consultancy for complete design, drawing, engineering (including post award) for Transmission Lines associated with 1000 MW Karcham Wangtoo HEP.

22.3 UNIFIED LOAD DESPATCH & COMMUNICATION FACILITIES

The unified approach for planning, engineering, procuring, and implementing the Load Despatch and dedicated Communication system is paying rich dividend in the form of timely completion of projects and enhancing in-house capability of handling these complex and gigantic schemes.

Planned rapid expansion of regional grids and their integration to form National Grid poses great challenges in Grid Operation & Management. Modernization of Regional Load Despatch Centres along with State/ Sub-State Load Despatch Centres and dedicated communication schemes in all the regions Northern, Southern, North-Eastern, Eastern and Western Regions have been successfully completed. These centres have become epitome of technological excellence in grid operation through three tier hierarchical system, a unique feature in grid operation in the world. These are world's one of the largest and most complex projects. These complex projects involving the state-of-the-art technology have resulted in real time monitoring and control of the grid to enhance safety, security, reliability and stability in all regions of the country. These facilities minimize grid disturbance/failure and facilitate quick grid restoration, in case of failure.

22.4 RESEARCH & DEVELOPMENT

POWERGRID is constantly striving to excel in its technological leadership which is essential for sustainable business growth and to maintain competitive edge over others in national and international market. The organization through its technological leadership is catering to diverse geographical climatic and terrain conditions utilizing existing transmission infrastructure along with creating new transmission capacities in a cost effective manner. Towards

technological advancement, POWERGRID has established several fully automated remote controlled 400 kV substation like Bhiwadi, Kolar, Gajuwaka, Chandrapur etc. Many more sub-stations are being planned on similar lines with a view to optimise upon operational costs.

POWERGRID has also introduced 'INVAR' power conductors, which can sustain high temperature upto 200°C against the normal 85°C. This can wheel electric power more than two times the normal line. POWERGRID is also using Thyristor Controlled Series Compensation (TCSC) and uprating/ upgradation of lines, etc. to enhance power carrying capacity of existing lines. Further, in order to conserve the precious Right of Way, width of 765 kV transmission towers has been reduced from usual 85 mtrs. to 64 meters for the first time in the world. Further, at selected location the tower height was raised to 75 mtrs., which makes it taller than the Qutab Minar, to save precious forests and protect wildlife. POWERGRID commissioned 400kV Gas Insulated Substation (GIS), first time in the country at Maharani Bagh New Delhi, which reduces 75% land requirement over conventional EHV Air Insulated substation. Besides, 765kV Single Circuit Sipat–Seoni transmission line was commissioned to evacuate bulk power from pit head power station at Sipat, which is first time at 765 kV level, operating in the country

POWERGRID envisages establishing a "Centre for Power Transmission Research and Application" which shall supplement the facilities of existing Research Institutions and provide opportunities for applied research in power transmission sector. POWERGRID has also constituted an advisory body consisting of eminent experts from power utilities, research and academic institutions and consultants from India as well as from Canada, USA, and Brazil to facilitate adoption of latest technologies for construction, monitoring and maintenance of transmission system suiting Indian conditions.

22.5 E-GOVERNANCE

POWERGRID is systematically developing competency to deploy Information Technology for efficient and effective discharge of its functions. Some of the salient achievements are Web based Enterprise wide Information Portal as a step towards E-Governance, State-of-the-Art Multi Locational Video Conferencing System, Inspection Management System on internet based B2B platform, Engineering Project management system developed in-house, Enterprise wide Converged IT and Communication System, Establishment of state-of-the-art 1200 node IT network infrastructure at its Gurgaon office complex with innovative features like Wi-Fi. POWERGRID has also initiated action for implementation of ERP.



Men at work on Transmission Tower

Achievements of POWERGRID, in this area, have been recognized externally through:

- a. "IT usage award 2003" conferred by Computer Society of India.
- b. Microsoft Windows Server 2003 challenge award (International competition participated by 75 countries)
- c. IT consultancy for Implementation of IT Policy at Delhi Transco
- d. POWERGRID implemented Video conferencing facility in the capacity of technical expert cum co-ordinator for MoP and CPSUs under MOP.

22.6 CONTRIBUTING TO DISTRIBUTION REFORMS UNDER APDRP

Under this scheme, POWERGRID is acting as Advisor-cum-Consultant (AcC) to lend its managerial and technical expertise for improvement of distribution system and their financial performance in 178 distribution circles/ towns/ schemes spread over 18 States costing about **Rs. 7,450 Crore** which have been approved by Ministry of Power, Govt. of India on the recommendation of POWERGRID. These are under different stages of implementation.

Further, POWERGRID is also executing distribution strengthening schemes of about **Rs. 1,315 Crore** on behalf

of States such as Bihar, Goa, Uttar Pradesh, Gujarat, Meghalaya, Tripura and Mizoram on deposit work basis under bilateral arrangements.

These schemes once implemented are expected to bring qualitative change in the functioning of distribution sector in the country.

Under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY), POWERGRID has been assigned the responsibility of implementing rural electrification projects in 9 States namely Bihar, Uttar Pradesh, West Bengal, Rajasthan, Gujarat, Orissa, Chhattisgarh, Assam and Tripura involving approximately 88,290 villages of 68 Districts. These works are estimated to cost about **Rs. 9,400 Crore.**

In 2006-07, POWERGRID successfully created infrastructure for electrification of 14,640 no. (30% of National achievement) of villages of Bihar, Uttar Pradesh, West Bengal, Gujarat and Rajasthan out of country-wide achievement of 40,000 villages. It is a matter of pride for POWERGRID that despite it not being its core area of functioning, excellent performance is displayed and is being lauded by one and all.

These are very challenging assignments for POWERGRID, it being a transmission company. However, POWERGRID has taken up the challenge in right earnest and innovative

measures for the same have been adopted. Its construction being a short term activity, to avoid permanent liability of additional manpower, POWERGRID has decided to deploy existing manpower & recruited retired experienced personnel from SEBs.

22.7 ENCOURAGING GRID DISCIPLINE

POWERGRID, in its efforts to ensure delivery of quality power and to maintain grid discipline, implemented "Availability Based Tariff (ABT)" in all the five regions. This has stabilized the frequency to the prescribed band as per IEGC i.e. 49.0 Hz to 50.5 Hz for large percentage of time in all the five regions.

ABT has also encouraged inter-State and inter regional bilateral trading resulting in meeting higher demand from the existing sources. Merit order operation of generating units is gaining importance and many States are utilizing this facility to utilize the system commercially. There is overall improvement in Grid stability and partial blackouts have been drastically reduced, while it has been possible to save the grid from total blackouts.

POWERGRID has envisaged establishment of an integrated **National Grid** in the country by the year 2012 with an inter-regional power transfer capacity of over 37,000 MW details at **Annexure-I**. A perspective transmission plan has been evolved for strengthening the **regional grids** with ultimate objective of establishment of strong & vibrant **National Grid** to support the generation capacity addition program of about 78,000 MW during XI Plan.

With the development of vital inter-regional transmission links, surplus power of Eastern Region is being gainfully utilized by the power deficit regions. POWERGRID was able to facilitate transfer of 38,000 MU of energy across the regions during the year 2006-07, an increase of about 10% compared to previous year (i.e. 34,800 MU during 2005-06), which is likely to be exceeded in current financial year. In FY 2007-08, till Nov,'07 POWERGRID was able to facilitate transfer of 28,500 MU of energy across the regions.

Efforts made by POWERGRID in modernizing the Regional Load Despatch Centers (RLDCs), implementation of Availability Based Tariff (ABT), power transfer through inter-regional links and effective Operation & Maintenance measures using State-of-the-Art technologies have led to overall improvement in power supply position in all parts of the country. **It is demonstrated by the fact that there has been no major grid disturbance during in any part of the country in the last 5 years.** The trippings per line were lowest ever & the system availability in FY 2006-07 was as high as 99.20%.

22.8 LEVERAGING HUMAN CAPITAL TO ACHIEVE EXCELLENCE

POWERGRID believes that its human resource consisting of about 7643 employees (as on Nov.'07) is the most

important asset and accordingly, its policies are focused on development of human potential through skill upgradation, career enhancement and job rotation to achieve organizational objectives. An effective work culture has been established in the organization through empowerment, transparency, decentralization and innovative practice of participative management through 'Open House' interaction. POWERGRID's growing productivity through an average annual growth of about 48% in the asset base of the company is witnessed with a manpower growth of only about 1.3% per annum.

Human Resource Development (HRD) is considered as a strategic function in POWERGRID. During the year, the company has designed and executed business aligned management development, technical training and competency enhancement programmes on its own and also in collaboration with reputed management development institutes such as IIMs, XLRI, ASCI, MDI and technical training institutes that include IITs, NPTI, and Hotline Training Centre.

To motivate the employees further, a committee of eminent experts is envisaged to be set up to examine the grievances of the employees and to suggest remedial measures. Besides, common dining facilities in its new and modern office building at Gurgaon have been set up, which has had a positive impact on the work ethos and team spirit of the employees.

Further, to ensure a quality living for the employees, group housing society was set up and a residential POWERGRID township in Sector-43 and Sector 46 at Gurgaon has already been completed and occupied. To further add value to the quality of life, a full fledged Higher Secondary School, well equipped Medical/ Health centre and a Recreation centre with all the facilities including gymnasium/ swimming pool etc. have been established in the township.

CITIZEN'S CHARTER

POWERGRID formulated its Citizen's Charter providing a visible front of its objectives, mission, commitments, terms of service and its obligation to the stakeholders. This is also intended to provide all information on schemes, plans and practices to users outside the organisation as well as information about accessing the services.

SOCIAL JUSTICE

The Corporation has faithfully implemented the Govt. directives to take care of the interests of Scheduled Castes, Scheduled Tribes and Other Backward Classes. For monitoring the same, POWERGRID has nominated Liaison Officers in the Corporate Centre and Regional Establishments. Appropriate funds have been earmarked for the welfare of the SC/ST community and a number of welfare schemes have been implemented in the SC/ST populated villages near its establishments.



A view of 765 kV Compact Tower of Sipat - Seoni Transmission Line

22.9 MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ISSUES

Creating Sustainable Corporate Values

POWERGRID, being in the infrastructure sector, is in an enviable position to directly contribute to the society. Power, today drives all the economic activities in the society. POWERGRID, as the provider of inter-state transmission facilities and as operator of the countrywide electrical grids, has a pivotal role in country's power sector.

The sustainability of corporate values is proven by the fact that they are in consonance with the values cherished by the society. The objectives of the company are in alignment with the requirements of its stakeholders. End results of such value system are witnessed in all-round performance of the company, which has surpassed the targets. The company continues to make conscious efforts not only for sustaining such value-system but also inculcating desirable values.

ENVIRONMENT AND SOCIAL MANAGEMENT

POWERGRID has within the overall corporate ethics internalized the principles of sustainable development. Towards its commitment of a responsible corporate citizen POWERGRID has also been a forerunner in number of areas. A corporate “**Environmental and Social Policy & Procedures (ESPP)**” has been developed and adopted in

1998 to address the environment and social issues arising from its activities. The policy outlines POWERGRID's approach and commitment to deal with environmental and social issues, relating to its transmission projects, and lays out management procedures and protocols to mitigate the same. Similarly the company towards its social responsibility missions ensure that it acts as socially responsible corporate entity with thrust on environment protection, community development, and energy conservation.

POWERGRID believes that ESPP is a dynamic and living document, which has been upgraded conforming to the demands made by the continuously evolving social and environmental governance in the country and modified in the light of the experiences, gained with field implementation of POWERGRID projects. It is a special purpose vehicle to give a human face to the corporate functioning and moves away from a classical cost-benefit approach to the larger realm of corporate social responsibility, while mainstreaming and up scaling environmental and social concerns. ESPP is dedicated to the firm commitment of POWERGRID to paradigm of sustainable development and appropriate supporting processes.

ESPP implementation in last 8 years has drawn many appreciations/awards from various stakeholders. Even The World Bank has awarded POWERGRID “**Green Award' 2006**” on the commendable work done in the field of

sustainability and has also recognized POWERGRID's **"Corporate Leadership in sustainability"** in its report **"Strengthening Institutions for Sustainable Growth – Country Environment Analysis for India": August, 2007.**

POWERGRID has been the trendsetter in number of areas especially in the field of environment protection and towards its commitment to the development and well being of the community. **It has achieved the distinction of being the first Power company in World certified with PAS: 99, 2006 based Integrated Management System comprising of ISO: 9001 for Quality Management, ISO: 14001 for Environment Management and OHSAS 18001 for Occupational Health & Safety.** Apart from this, POWERGRID has taken many initiatives towards sustainability, like:

- Tremendous reduction in forest involvement in implementation of transmission lines.
- Developing compact substations to have barest minimum land requirement to minimize social impact.
- Innovative tower designing have been able to reduce the adverse ecological impacts especially in ecologically sensitive regions.
- POWERGRID has become the first Company in India to introduce 400 kV Compact Single Pole type Tower to tackle Right-of-way (ROW) and other environmental and Social problems. Erection work of the first pole of this tower commenced at NOIDA in Jan.'07.

POWERGRID believes in total transparency in dealing with these important issues. It ensures that all stakeholders are well informed and involved through a positive and open relationship. It has adopted well defined public consultation mechanism to inform all stakeholders including the general public about the project at every stage of its implementation. POWERGRID's social entitlement framework for its Project affected Persons is based on progressive trends in Indian policies and National Policy on Resettlement and Rehabilitation (R&R), with respect to the inclusion of Project Affected People (PAPs), and the nature and extent of compensation and rehabilitation measures.

POWERGRID is of firm opinion that to succeed require the highest standards of corporate responsibility not only towards our employees but to the consumers, societies and world in which it operates. Therefore, we shoulder community responsibility as part of our social responsibility through various community development activities in areas around our establishments as well as promoting socio-economic development and enriching the quality of life of the community. As a socially responsible organization POWERGRID have taken many initiatives towards community empowerment by providing basic infrastructure facilities to affected population. POWERGRID is committed to carry forward such activities of community development to augment resource base through people's participation.

Emergency Restoration

POWERGRID, consciously endeavours to discharge its broader social responsibilities. It has taken many steps including faster restoration of transmission system belonging to State Power Utilities, which are damaged during Natural calamities like flood, earthquake, cyclones, etc. POWERGRID demonstrated its competence in restoring power in emergency through deployment of Emergency Restoration System (ERS) during the Gujarat cyclone in 1998, Orissa super cyclone in 1999, Gujarat earthquake in 2001, Tsunami in 2004 and snow avalanche in J & K in 2005. The efforts were applauded by one and all and the Hon'ble Prime Minister appreciated the efforts of POWERGRID while dedicating the reconstructed sub-stations to the people of Gujarat.

Transparency in operation

In POWERGRID, System & Procedure Manuals have been developed for most of the functional areas like Construction, O&M, Human Resource, Quality, etc. and well defined "Works & Procurement Policy and Procedure" (WPP).

POWERGRID is the first utility in Indian power sector to develop Environmental and Social Policy & Procedures (ESPP) with public consultation. Committees of eminent independent experts have been constituted to advise POWERGRID on various strategic issues related to Environmental and Social Safeguards, financial management, procurement and project execution.

POWERGRID follows fair, equitable and transparent policies for all stake holders. Towards maintaining transparency in the procurement process, the invitations for bids (IFB) are widely published in National Dailies, Trade Journals and webcast on websites of the company/ MOP/CEA. Copies of the same are sent to all qualified contractors associated with POWERGRID in the past. In addition, the IFBs related to ICB are also published in international newspapers along with copies to Embassies / High commissions.

To continue this process further, committees of eminent experts have been constituted to advise on various issues related to procurement, project implementation, financial and environmental & social safeguards aspects etc. The purpose of such committees is to bring more transparency & efficiency in our decision making process. The committees would not only provide guidance but critically evaluate POWERGRID's working.

22.11 CONVERGENCE WITH TELECOM

The synergic convergence between transmission and telecom technologies promises unique opportunities as has already been established worldwide in developed and developing countries. Opening up of the domestic long distance telecom sector in India offered an opportunity to POWERGRID in line with worldwide trend to exploit telecom

market through convergence of power and telecom sector by making available a cost effective, high quality telecom infrastructure on its existing and planned transmission infrastructure and “to create value” for its business. Thus, to exploit the synergy of transmission business with advantages of inherent communication infrastructure, POWERGRID diversified into Telecom business.

POWERGRID is in unique advantageous position in the telecom industry as it is establishing its broadband optical network on its overhead transmission lines, which is sturdy, secure and free from any interference by pests or vandalism. This is obvious because the optical network would run along with EHV power transmission lines which would be impossible to interfere with. On the other hand, other telecom players are establishing underground networks, which could suffer from problems of interference, deliberate or otherwise. Added to this, POWERGRID has provided overhead links with self resilient rings to ensure highest availability of the network.

Out of the total planned telecom network of 20,660 Kms, POWERGRID has already established a network of over 19,800 Kms (As on October, 2007) and enroute has connected all the metros and major cities viz Delhi, Mumbai, Chennai, Kolkotta, Bangalore, Hyderabad etc. rural and remote areas in the country.

It is worth mentioning that POWERGRID connectivity covers remote areas and other cities in various regions, which will be of strategic interest to various telecom players viz.

- North-Eastern: Agartala, Guwahati, Imphal, Itanagar, Kohima, Shillong, Tezpur, etc.
- Northern: Jammu, Pathankot, Srinagar, Udhampur, Ambala, Chandigarh, Jalandhar, etc.
- Western: Bhopal, Indore, Nagpur, Jabalpur etc.
- Southern: Cochin, Trivenderum, Trichur, Coimbatore etc.

The complete network is expected to be fully operational soon.

POWERGRID has deployed state-of-the-art Dense Wave Division Multiplexing (DWDM)/ Synchronous Digital Hierarchy (SDH) technology and is utilizing the latest G 652 fibres for its Optical Fiber Composite Overhead Ground Wire (OPGW) which is installed on Extra High Voltage (EHV) 400/220 KV transmission lines. The deployment of flexible network architecture of high capacity DWDM/ SDH is compatible with all the upper layer equipment including Infrastructure Provider (IP) routers, Asynchronous Transfer Mode (ATM) equipment etc. and can be integrated with the system. The network is scalable from present capacity of 120 Gbps to 15 Terabit capacity and is capable of both Layer 1 - DWDM/ SDH and Layer 2 - switching using Ethernet over SDH. The network supports Ethernet over DWDM/ SDH on fast Ethernet and Gigabit Ethernet levels. The bandwidth capacity can be enhanced to terabit level and can be provided as and when required.

An Integrated Network Management System (NMS) with National level control center in Delhi alongwith Regional level control centers at Kolkotta, Bangalore, Mumbai provides real time monitoring of the telecom network. NMS can monitor each and every customer trail and provide online information for quick remedial measures. The NMS is also capable of working with third party equipment through interface for third party Element Management System (EMS) system. The network management system provides real time monitoring of the network and the services are available round the clock in the event of any problem and for quick remedial measures.

POWERGRID is also exploring Joint Venture opportunities with potential telecom players for enhancing its business. POWERGRID's Broadband Telecom network can provide the “convergence” of various traffic viz. voice, fax, data and multimedia over a single multipurpose network. The telecom services that can be provisioned include:

- Leasing of bandwidth capacity
- Internet Access Lines
- Ethernet private leased line (Point to Point & Point to Multi-Point)
- Video-conferencing
- Virtual Private networks
- MPLS (Multi Protocol Label Switching) based VPNs
- Voice over Internet Protocol (VOIP)

Based upon the high availability and competitive prices, POWERGRID has leased out capacities to various customers which include NLDOs, ILDs, ISPs, Call Centers, Government Agencies, Corporates etc. who are extremely satisfied customers.

In addition to the already obtained Infrastructure Provider license-I (IP-I), IP-II license and ISP category ‘A’ license to provide internet services in the country, POWERGRID has obtained National Long Distance Operator (NLDO) License in year 2006 which will help to broaden up its customer base by reaching directly establishments such as Govt. Agencies/ departments, Defence Services and Corporates etc. Telecom services are being provided to various leading telecom players.

POWERGRID is also exploring strategic alliances with various State Electricity Boards (SEBs), which shall enable it to reach rural, uneconomic and backward areas by utilizing their T&D system and fulfilling their E-governance needs. This will supplement Government of India's effort to accelerate the application of Information Technology and in bridging the digital divide gap and providing telecom services at most economic prices for the benefit of common man.

POWERGRID is committed to play a vital role in the economic development of the country and shall be relentlessly pursuing the responsibilities bestowed on it.

Existing/Proposed Inter-Regional Tr. Capacity (MW)

	Existing (Nov.'07)	Addition in XI Plan (Balance)	At the end of XI Plan
EAST-NORTH			
Dehri-Sahupuri 220 kV S/c	150		150
Sasaram HVDC back-to-back	500		500
Muzaffarpur-Gorakhpur 400 kV D/c (with Series Cap)	2000		2000
Patna – Balia 400kV D/c (Quad)	1600		1600
Biharshariff – Balia 400kV D/c (Quad)	1600		1600
Barh – Balia 400kV D/c (Quad)		1600	1600
Sasaram - Fatehpur 765 kV S/c (DVC, NK, Maithon Tr. System-Private)		2100	2100
Gaya - Balia 765 kV S/c (DVC, NK, Maithon Tr. System)		2100	2100
Sub-total	5850	5800	11650
EAST-WEST			
Budhipadar-Korba 220 kV 3 ckt.	450		450
Rourkela-Raipur 400 kV D/c with series comp.	1400		1400
Ranchi –Sipat 400 kV D/c with series comp.		1400	1400
Rourkela-Raipur 400 kV D/c (2nd) with series comp.		1400	1400
Ranchi - WR Pooling Pt. 765kV 2xS/c [DVC,NK, Maithon Tr. System]		2300	2300
Sub-total	1850	5100	6950
WEST- NORTH			
Vindhyachal HVDC back-to-back	500		500
Auriya-Malanpur 220 KV D/c	250		250
Ujjain – Kota 220 KV D/c	250		250
Gwalier-Agra 765 kV S/c (charged at 400kV)	1300	400	1700
Gwalier-Agra 765 kV S/c 2nd ckt (charged at 400kV)		1300	1300
Zerda-Kankroli 400 KV D/c		1000	1000
Sub-total	2300	2700	5000
EAST- SOUTH			
Gazuwaka HVDC back-to-back	1000		1000
Balimela-Upper Sileru 220kV S/c	150		150
Talcher-Kolar HVDC bipole	2000		2000
Upgradation of Talcher-Kolar HVDC Bipole	500		500
Sub-total	3650	0	3650

WEST-SOUTH			
Chandrapur HVDC back-to-back	1000		1000
Kolhapur-Belgaum 220kV D/c	250		250
Barsur – L. Sileru 220kV HVDC Monopole	200		200
Ponda – Nagajhari 220kV D/c	250		250
Solapur-Raichur 765 kV S/c (charged at 400kV)		1100	1100
South - West HVDC link		1000	1000
Sub-total	1700	2100	3800
EAST- NORTH EAST			
Bongaigaon-Malda 400 kV D/c	1000		1000
Birpara-Salakati 220kV D/c	250		250
Bongaigaon-Siliguri 400 kV D/c (Quad)		2000	2000
Sub-total	1250	2000	3250
NORTH EAST-NORTH			
NER Pooling point - Agra HVDC Bipole		3000	3000
Sub-total	0	3000	3000
TOTAL	16,600	20,700	37,300
Various 132kV Inter-regional links	400		400
Total (Cumulative)	17,000	20,700	37,700

CHAPTER - 22.4

POWER FINANCE CORPORATION LTD.(PFC)

1. OBJECTIVES & STATUS

The Power Finance Corporation Limited (PFC) was incorporated in 1986 as a Development Financial Institution (DFI) dedicated to Power Sector. Since then, PFC has been playing an increasingly important role in mobilizing financial resources from domestic and overseas sources at optimum cost and providing various kinds of funding to power projects. As a DFI, PFC also focuses on the institutional development of its borrowers in the state power sector. Reserve Bank of India registered the Corporation as Non-Banking Financial Company in February 1997.

1.2. The Corporate Headquarter of PFC is located at New Delhi. It has two regional offices at Chennai and Mumbai.

1.3 The main objectives to be pursued by PFC are enumerated in the Memorandum of Association of PFC and are as under:-

- To Finance Power Projects, in particular, Thermal and Hydro Projects.
- To Finance Power Transmission & Distribution works.
- To Finance Renovation & Modernisation of power plants.
- To Finance System Improvement and Energy Conservation schemes.
- To Finance maintenance and repair of capital equipment etc.
- To Finance survey and investigation.
- To Finance studies, schemes and experiments.
- To Finance other energy sources.
- To Promote and organise consultancy services.

1.4 PFC's vision is to be the lead Institution in financing the sustainable development of Indian Power Sector and its linkages with Global Operations.

1.5 PFC had received MoU "Excellence" Award for (5) five times for being amongst the Top 10 PSUs and consistently rated "Excellent" by Government of India based on MoU Performance since 1993-94 (Very Good" in 2004-05). For FY 2006-07 also the MoU rating is "Excellent

1.6 PFC is a Schedule "A" PSE according to the DPE guidelines and declared a "Navratna" Company on

22nd June 2007 by the Government of India, keeping in view PFC's continued impeccable financial and operational performance and its contribution to the development of Indian Power Sector. This feat has been accomplished by PFC in less than a decade as it was earlier a Mini-Ratna Category-1 PSE in the year 1998... "Navratna" status shall provide PFC a greater flexibility and autonomy in terms of making investment and operational decisions. This status would help further consolidate position in the Power Sector for meeting the ever growing needs of Indian Power Sector.

1.7 PFC has been providing financial assistance to State Power Utilities and Municipal Utilities, besides playing a catalytic role in bringing about overall improvement in the power sector performance. In line with the GOI policy initiatives, PFC has expanded its lending portfolio to cover the joint, central and private sector. The corporation has widened its range of services/facilities by introducing bridge loan, leasing, supplier's credit assistance for studies/consultancies/trainings, bill discounting and rediscounting, working capital schemes, bonds, shares, guarantee services etc.

1.8 PFC's clients include state electricity boards and state departments engaged in the development of power projects (like irrigation department), state power utilities, central power sector utilities, state power departments, private power sector utilities (including independent power producers), joint sector power utilities, power equipment manufacturers and power utilities run by local municipalities. These clients are involved in various aspects of the generation, transmission and distribution and related activities in the power sector in India.

1.9 Funds by PFC are not pre-allocated to the states PFC's funding criteria are based on borrower's credit worthiness and project viability.

1.10 PFC's primary activities consist of funding power projects and advisory services to the Indian power utilities. Consistent with its developmental role, PFC places emphasis on the institutional development of state power utilities. PFC also conducts training programs and workshops on various topics and critical issues affecting the Indian power sector.

1.11 PFC has been enjoying highest ratings both from domestic as well as international credit ratings agencies.

DOMESTIC RATING AGENCY	Rupee Borrowing	
	Long Term	Short Term
CRISIL	AAA	P1+
ICRA	LAAA	A1+
International Rating Agency		
Moody's	Baa3	At par with "Sovereign" Rating
Fitch	BBB-	
Standard & Poor's	BBB-	

2.0 PFC'S ROLE IN THE POWER SECTOR

- 2.1 PFC in its role of financial institution funds most of the power utilities and helps them in completing their generation projects (Hydro as well as Thermal), transmission projects and system improvement projects in time. Distribution networks of number of towns in various states have been strengthened with PFC's financial assistance. PFC has demonstrated consistent growth in business and profitability.
- 2.2 PFC has also been providing grant / interest free loans/ soft loans to State Govts./ State power utilities and State Electricity Regulatory Commissions to carry out reform related studies. Technical assistance from multilateral agencies is also channelised as grant to support further studies. PFC has been conducting workshops/ seminars for dissemination of vital information concerning the improvements in the power sector and the emerging requirements, and also conducting training for power sector personnel.
- 2.3 PFC provides financing products and fee-based services to projects related to the power sector. PFC generally disburses funds either directly to a supplier or contractor of a project or by way of reimbursement to the borrower against satisfactory proof of eligible expenditure on the project. In case of independent power projects, PFC disburses funds through a trust and retention account. PFC provides the following products and services for its clients:
- rupee term loans, foreign currency loans, bridge loans, short term loans and reform-linked transitional loans;
 - bill discounting, equipment leasing, buyers' line of credit, loans to equipment manufacturers, line of credit for the import of coal;
 - debt refinancing;
 - letters of comfort; and
 - non-fund based products such as guarantees.
 - consultancy & advisory services.

3.0 FINANCING OF POWER PROJECT

3.1 PFC is financing all types of power projects including Hydro/Thermal and Transmission Projects, Captive & Co-generation Plants, urban Distribution Systems including installation of energy meters, renovation and modernisation of Generation and Transmission projects.

- Besides the above, PFC is also financing installation of Capacitors, Communication & Load Despatch, Non-Conventional Energy Sources, Studies, Consultancy & Training and Computerisation.
- PFC is funding all types of power utilities including State Electricity Boards, State sector power utilities like state generation, transmission and distribution corporations/companies, State Power Development, State Electricity Departments and other State Departments associated with the development of power projects. Besides this PFC is financing the Central sector power utilities, Joint sector utilities, Cooperative sector power utilities, Municipal utilities, Private sector utilities and Independent power producers. The major beneficiaries of PFC financing continue to be the state power utilities.
- PFC is also complementing the **Accelerated Development & Reform Programme (APDRP)** of Govt. of India by providing funding support to the power utilities for the schemes identified under APDRP

3.2 PFC's Performance(cumulative) during last two decades (since inception) as on 30th Nov 2007 is as under

Sanctioned	Rs.1,56,322 crore
Disbursement	Rs. 83,928 crore

3.3 The Corporation earned net profit of Rs.986 crores during 2006-07.

4.0 PERFORMANCE HIGHLIGHTS

- 4.1 PFC has been a profit-making enterprise right since inception and has registered impressive growth in its net profit every year. It posted a net profit of Rs.986 crores during the financial year 2006-07. As on 30th Nov, 2007, PFC had sanctioned loans of the order of Rs. 36,363 crore (during FY 2007-08) for a wide range of power projects in various parts of the country and disbursements were to the tune of Rs. 8,074 crore.
- 4.2 PFC has consistently maintained a high rate of recovery of more than 95%. In FY 2006-07, the recovery rate of the principal amount works out to be 99.47%, and the overall recovery rate was 97.27%. In FY 2007-08 as on 31st Oct 2007, recovery rate of the principal amount is 98.35%, and the overall recovery rate is 95.50%.
- 4.3 In the FY 2006-07, PFC had paid a dividend of Rs. 259.78 crore to Government of India.
- 4.4 A glance of PFC's financial performance for the past 3 years, is as under:

(Rs. crore)

	2004-05	2005-06	2006-07
Sanctions	18,573	22,502	31,146
Disbursements	9,409	11,681	14,055
Profit before tax	1,396	1,265	1,512
Profit after tax	984	971	986
Dividend	385	361.53	259.78

5.0 OPERATIONAL HIGHLIGHTS

The Company issued Sanctions for Rs.36,363 crore of loans and grants during the financial year 2007-08 upto 30th Nov. 2007 compared to Rs.20,453 crore Sanctioned during the last year. An amount of Rs.8,074 crore was Disbursed during the same period to State, Central and Private Sector entities, compared to Rs.8,119 crore Disbursed during similar period last year. With this, cumulative Sanction of Rs.1,56,322 crore and Disbursement of Rs.83,928 crore of loans and grants have been made by the Company as on 30.11.2007, apart from Sanction of Guarantees worth Rs.1,380 crore

6.0 INITIAL PUBLIC OFFERING (IPO) OF SHARES

During the 4th quarter of FY 2006-07, PFC made an Initial Public Offering (IPO) of 11,73,16,700 fresh equity shares of Rs.10/- each through 100% book building process with price band of Rs.73-85 per share. Total fresh capital raised through the IPO was Rs.997.19 crore.

The issue got a phenomenal response and was subscribed 77.16 times. The QIB portion got subscribed 137.17 times, Non-Institutional portion 48.81 times, Retail portion 8.54 times and Employees category 1.15 times. The total number of applications received were 6,24,609. The Company's shares got listed on NSE and BSE on 23rd February, 2007.

Post-issue, the holding of the Government of India stands reduced from 100% to 89.78% of the paid up equity capital and the balance is held by various investors.

The issued and paid-up share capital increased from Rs.1,030.45 crore to Rs.1,147.77 crore and an amount of Rs.851.09 crore (net of issue expenses) was credited to Securities Premium Account. The proceeds of the issue



Dr. V.K. Garg, CMD, PFC receiving the prestigious "Golden Peacock Award for Excellence in Corporate Governance" (National Award category) for the year 2007 from Mr. Ola Ullsten, former Prime Minister of Sweden and the Chairman of the Golden Peacock Global Awards jury at the DTI Conference Centre in London on 20.9.07

have been utilized fully for general business purposes as specified in the prospectus.

7.0 SHARE CAPITAL

After the IPO of the Company, the paid-up share capital has increased from Rs.1,030.45 crore (1,03,04,50,000 equity share of Rs.10/- each) to Rs.1,147.77 crore consisting of 1,14,77,66,700 equity shares of Rs.10/- each as on 31st March, 2007.

In the post-issue scenario, the holding of Government of India has reduced from 100% to 89.78% of the paid-up equity capital.

8.0 RESOURCE MOBILISATION – DOMESTIC

PFC mobilizes funds from the domestic and international markets at competitive rates through Bonds, Term loans from Banks and other Financial Institutions. In FY 2007-08, as on 30th Nov, 2007, Company has raised Rs.6,862.34 crore out of which Rs.1,662.40 crore were raised through long and medium term loans from banks, Rs.2,118.64 crore as short-term loans from various banks and Rs.3,081.30 crore by way of Taxable Bonds. In addition Term loans of Rs.1,025 crore were rolled over.

9.0 POWER LENDERS' CLUB

PFC had established the Power Lenders' Club with Life Insurance Corporation of India, HUDCO and 10 Indian Banks to provide "single window" financing solutions for clients in the power sector and enable projects to achieve faster financial closure. During the FY 2007-08, 8 more banks are likely to join Power Lenders' Club.

10.0 EXTERNAL CREDIT UTILISATION

10.1 EXTERNAL COMMERCIAL BORROWINGS

In September 2007, PFC mobilized funds amounting to USD 180 Million through private placement in US debt market having bullet maturity of 10 years. The debt carries a fixed coupon rate of 6.61 % p.a. payable semi annually.

10.2 ASIAN DEVELOPMENT BANK (ADB)

Asian Development Bank had approved a second line of credit to PFC for an amount of US dollar 150 million for the Power Projects in the reform-oriented States and the agreement has been signed on 11th December 2003. Presently, Power Utilities of West Bengal and Maharashtra State are utilizing this line of credit. For these two States, 30 projects amounting to US dollar 25 million has been identified and approved by ADB. US dollar 15.68 million has been utilized as on 30th Nov, 2007.

10.3 EXPORT DEVELOPMENT, CANADA

Export Development Canada (EDC) has approved a line of credit to PFC for an amount of US dollar 75 million for the Power Projects. The facilities expired on June 6, 2006.

USD 4.38 million has been sanctioned by EDC and USD 3.85 million has been utilized till date. PFC is in the process of negotiating with EDC for renewing the line of credit facility. Power Utilities of Uttaranchal are the prospective sub-borrowers for this line of credit.

10.4 KfW-GERMAN FINANCIAL COOPERATION

PFC has signed a Line of Credit (LoC) of Euro (€)100.56 million with KfW under "German Financial Cooperation with India- Renewable Energy Program PFC II" on December 28, 2005, for undertaking Rehabilitation and Modernization of 9 old Hydro Power Plants of Uttaranchal Jal Vidyut Nigam Ltd. (UJVNL). The total loan under this LoC facility consists of a soft portion of Euro (€) 35.56 million and a commercial portion of Euro (€) 65 million amounting to a total of Euro (€) 100.56 million. The facility also envisages a grant of Euro (€) 3.33 million for undertaking feasibility studies and organizing training programs. UJVNL is in the process of awarding of contract for feasibility studies.

11.0 INSTITUTIONAL DEVELOPMENT OF BORROWERS

PFC is supporting reforms, institutional strengthening and development of State Power utilities (SPUs). PFC leverages its financial assistance to SPUs to undertake reforms, implementation of Electricity Act etc. for efficient and sustainable development of power sector. The major initiatives taken by PFC are as follows:-

11.1 CATEGORIZATION OF POWER UTILITIES

PFC classifies State power utilities, into categories as A+, A, B and C based on the reform status and operational & financial performance parameters of the utilities. This categorization is carried out biannually. The categorization enables PFC to determine credit exposure and differential loan pricing mechanism. As on 1st October 2007, 10 utilities were in category "A+", 39 utilities were in category "A", 24 utilities were in category "B" and 15 utilities were in category "C". PFC is also stipulating appropriate conditions relating to implementation of reforms and improvement of performance while sanctioning financial assistance to its borrowers.

11.2 GRANT / SOFT LOANS FOR STUDIES

PFC provides grants and soft loan for studies for reforms and restructuring, institutional strengthening and development, implementation of Electricity Act 2003 etc. to State Power Utilities aiming at improvement in performance in the areas of financial, technical and commercial operations. During the year, as on 30th Nov, 2007, an amount of Rs.2.80 crore has been sanctioned to Jaipur VVNL and Rs.0.99 crore to Meghalaya State Electricity Board for institutional development and reform implementation schemes.

11.3 ANNUAL AND QUARTERLY PERFORMANCE REPORT OF POWER UTILITIES

PFC brought out the 4th edition of report on the "Performance of the State Power Utilities for the year 2003-04 to 2005-06." The number of utilities covered in the report for the years 2003-04, 2004-05 and 2005-06 are 70, 71 and 90 utilities respectively. This document provides a valuable insight into the progress and areas of concern in the financial and operational performance of State power utilities. The report is also useful in gauging the pace of reforms and the results associated with it. As per the analysis in the performance report for 2005-06, the book losses (on accrual basis) of all State power utilities reduced significantly from Rs.12,609 crore in the year 2004-05 to Rs.7,533 crore in 2005-06. The aggregate losses for all the utilities in State power sector (without accounting for subsidy) reduced from Rs.23,880 crore in the year 2004-05 to Rs.19,546 crore in 2005-06, indicating a significant reduction of Rs.4,334 crore.

PFC has commenced bringing out a one page Research Report on the performance of each of the State Power Utilities (SPUs) on a quarterly basis. The report contains key operational and financial performance parameters, reform status, implementation of Electricity Act 2003, areas of concern and conditions for improvement etc. The first quarterly research report was brought out for April-June 2006 quarter covering 11 States and 20 Power Utilities and since then have been regularly preparing the quarterly report of Power Utilities. The report is sent to the stakeholders in the power sector and is acknowledged as good effort and is useful in flagging the key issues for review and timely corrective actions / measures for improvement of performance of SPUs. During the current financial year, report for April-June 2007 quarter has been brought out covering 12 States and 27 Utilities. The report for 2nd quarter is likely to be completed and published by December 2007.

11.4 INFORMATION TECHNOLOGY

PFC has taken various steps aiming at utilizing Information Technology for automating its operations and to foster technology enabled quality work environment for achieving better productivity and efficiency. In this direction, several initiatives have been taken including:

- Gigabit LAN with Fibre Optic backbone with Layer 3 switching technologies has been installed.
- State-of the-art security and content filtering solutions have been implemented to provide secure and productive environment.
- To taken automation further to the door-steps of the customers, "On-line loan application system" has been

implemented by PFC. This facilitates borrowers to submit on-line application. To further encourage submission of Online applications, customer training programmes have been organized by PFC covering various utilities in all the Regions.

- Integrated applications covering most of the operations had been in place. It is also envisaged to upgrade these applications by deploying end-to-end ERP based enterprise solution.

12.0 FINANCING OF STATE AND CENTRAL SECTOR GENERATION PROJECTS

12.1 HYDRO PROJECTS

In order to improve upon the declining share of Hydro Power in countries total installed capacity, the Company is proactively identifying and providing financial support to Hydro Generation Projects. During the year 2007-08 as on 30th Nov., 2007, loans amounting to Rs.4056 crore were Sanctioned and an amount of Rs.921 crore was Disbursed. The cumulative Sanction for Hydro Generation Projects has Rs. 21,710 crore out of which Rs.13,329 crore had been disbursed till 30th Nov., 2007.

12.2 THERMAL PROJECTS

The Company is providing financial support to the Thermal Generation Projects for their timely completion. During the year 2007-08, as on 30th Nov., 2007, the Company has Sanctioned loans amounting to Rs.25,869 crore and Disbursed an amount of Rs.4,118 crore. The cumulative financial support provided by the Company for Thermal Generation Schemes was Rs.79,219 crore out of which Rs.31,262 crore had been Disbursed till 30th Nov., 2007.

12.3 RENOVATION MODERNISATION & LIFE EXTENSION OF THERMAL & HYDRO PLANTS

The funding for Renovation & Modernization of old Thermal & Hydro Plants continues to be the thrust area of the company. During the year 2007-08, as on 30th Nov., 2007, the Company had Sanctioned loans amounting to Rs.255 crore and Disbursed an amount of Rs.189 crore. The cumulative financial support provided by the Company was Rs.8,698 crore out of which Rs.4610 crore had been Disbursed till 30th Nov., 2007.

12.4 FINANCING OF PRIVATE SECTOR POWER PROJECTS

The Company is supporting private power projects for participating in the power development, based on the recommendations of the various High level Committees and so far had supported more 11,000 MW of generation capacity through various types of Thermal plants including Coal, Gas / Naphtha, Furnace oil or DG set based, Hydro plants, Wind Power Plants, T&D network, etc.

During the year 2007-08, as on 30th Nov., 2007, loans amounting to Rs.1,675 crore had been Sanctioned and Rs.615 crore had been Disbursed. Major projects Sanctioned are 820 MW natural gas based CCPP at Devarapalli of Konaseema in Andhra Pradesh, 300 MW coal based TPP of KVK Nilanchal in Chattisgarh and 350 MW TPS of RKM PowerGen in Chattisgarh.

The Company has so far cumulatively Sanctioned loans worth Rs.10,456 crore and Guarantees worth Rs.1,096 crore out of which an amount of Rs.5,200 crore has been Disbursed till 30th Nov., 2007.

13.0 ULTRA MEGA POWER PROJECTS/ SPECIAL PURPOSE VEHICLES

PFC has been working for the development of UMPPs, each with a capacity of about 4,000 MW. Nine such projects were identified to be located at Sasan in MP, Mundra in Gujarat, Akaltara in Chattisgarh, Tadri in Karnataka and Girye in Maharashtra. Krishnapattam in Andhra Pradesh, Tilaya in Jharkhand, Cheyyur in Tamil Nadu and Sundergarh in Orissa.

The projects in Madhya Pradesh, Chhattisgarh, Orissa and Jharkhand are to be located at coal pit heads with captive coalmines. The other five (5) are to be located at coastal areas

PFC had incorporated nine (9) wholly owned subsidiary Companies for these UMPPs to act as Special Purpose Vehicles (SPVs) for the Projects. These SPVs in coordination with Central Electricity Authority (CEA) undertake all activities necessary to obtain the appropriate clearances required to establish these projects. Ministry of Power is acting as the facilitator for development of these UMPPs. These SPVs shall be transferred to successful bidder (s) selected through tariff based international competitive bidding process for implementation and operation.

13.1 Two SPVs namely Coastal Gujarat Power Ltd. (CGPL) for Mundra UMPP in Gujarat and Sasan Power Limited for Sasan UMPP in Madhya Pradesh have been transferred to the successful bidder on the dates indicated below :

Name of SPV	Successful bidders	Date of transfer
Coastal Gujarat Power Limited (CGPL) for Mundra UMPP in Gujarat	Tata Power Company Limited	22.04.07
Sasan UMPP in Madhya Pradesh	Reliance Power Limited	07.08.07

Letter of Intent (LoI) for Krishnapattam UMPP in Andhra Pradesh was issued to the successful bidder i.e. Reliance Power Limited on 30.11.07. This also been transferred on 29th Jan. 2008.

The bid process for Tilaiya UMPP in Jharkhand is in progress.

14.0 TRANSMISSION PROJECTS/ SPECIAL PURPOSE VEHICLES (SPVS)

14.1 Ministry of Power has initiated similar process i.e. tariff based competitive bidding process for development of Transmission system through private sector participation for evacuation of power from the Generating Stations, transmission of power from pooling stations to other grid station up to load centers and system strengthening etc.

The objective of this initiative is to develop transmission capacities in India and to bring in the potential investors after developing such projects to a stage having preliminary survey work, identification of route, preparation of Survey Report, initiation of the process of land acquisition, initiation of process of seeking forest clearance, if required and to conduct bidding process etc.

15.0 ACCELERATED POWER DEVELOPMENT AND REFORM PROGRAMME

During FY 2007-08 as on 30th Nov, 2007, PFC committed counterpart-funding amounting to Rs.32.52 crore for Distribution schemes in the State of Uttar Pradesh. The cumulative sanction of APDRP counterpart loans by PFC stands at Rs.2320.47 crore. Counterpart funds amounting to Rs.131.46 crore were Disbursed and loan documents for 12 schemes with the loan amount of Rs.192.71 crore were executed during the year. Distribution network in major cities for which PFC has Sanctioned counterpart funding during 2007-08 include Ghaziabad, Meerut, Saharanpur etc.

16.0 VIGILANCE ACTIVITIES & ACHIEVEMENTS

During the financial year 2007-08 (upto November 2007), the Vigilance Unit functioned as an effective tool of positive management with the thrust being on preventive vigilance. This aspect was focused upon by conducting periodic & surprise inspection of files and by issuing effective guidelines to streamline systems with the aim of eliminating loopholes and ensuring transparency in day to day operations so as to minimize scope for misuse. Vigilance Unit undertook the review of operational manuals of various activities of the Corporation. A number of comprehensive manuals on different areas of company's activities have already been notified after review and some other manuals are in the process of finalization. Further, during the period, detailed investigation was carried out in seven cases of complaints out of which five cases were closed with the approval of competent authority and the balance two are under investigation. To further reinforce preventive vigilance, compliance of Central Vigilance Commission circular No. 40/11/06 dated 22.11.06 with regard to emphasizing the need of leverage technology as an effective tool in vigilance administration by uploading information on corporate websites regarding rules, procedures etc. besides making

available application forms and status of application on the websites of the organizations is being ensured.

During the period, 6 complaints were handled. All these complaints were investigated and carried to a logical conclusion with the approval of the competent authority.

In accordance with the directives of CVC, Vigilance Awareness Week was observed from 12th November to 16th November 2007 in the Head office and Regional offices of the Corporation in order to disseminate a strong message of integrity and transparency in public service. Interactive two days programme on 'Corporate Governance in Power Sector' was held for the benefit of the executives and customers/clients of the Corporation so as to sensitize them about the evil effects of corruption and also to educate them on the initiatives taken for improvement in systems, procedures and the complaint handling policy of the Corporation. Further, Slogan, Essay and Pictorial Theme Representation Competitions were organized on themes relating to vigilance/corruption with the aim of involving employees and encouraging them to come forward with innovative ideas in spreading awareness about the harmful effects of corruption.

17.0 HUMAN RESOURCE MANAGEMENT AND TRAINING

17.1 HUMAN RESOURCE MANAGEMENT

The Company has put in place effective human resource acquisition and maintenance function, which is benchmarked along best corporate practices designed to meet the organizational needs.

The Industrial Relations within the organization has been very cordial and harmonious with the employees committing themselves entirely to the objectives of the organization. There was no man days lost during the year under review.

17.2 WELFARE MEASURE

In order to encourage employees to participate in the general governance of the Company, a suggestion scheme is in vogue, which provides employee participation through constructive suggestions on the improvement of the functioning of the Company. They could also drop-in their suggestions in the Suggestion Box.

The employees of the Company have access to the top management officers and can meet them regarding their grievances, if any on a stipulated day in the week.

A cafeteria is being run by the Company, where employees get balanced nutritious meals and provides informal platform for interaction with each other in a free environment.

The Company believes that only an able effective workforce can meet the highest level of productivity. Keeping this focus, management has also provided state-of-the-art

facilities at the workplace by opening a Gymnasium and the employees are encouraged to work out on a regular basis.

Company also provides world class medical facilities for employees and their family members. An in-house doctor has also been engaged for consultation by the employees for their minor ailments.

17.3 HUMAN RESOURCE DEVELOPMENT AND TRAINING

Training & Human Resource Development have been accorded very high priorities by the Company. This enables the employees to update themselves and keep abreast with the latest development in their respective knowledge spheres. Not forgetting its social commitments, the Company has been imparting training in the technical areas of Power Management, Electricity Distribution, IT etc to the employees of the Electricity Boards and other Entities in the Power Sector.

PFC has also been selected as the nodal agency for channelizing the funding of USAID under the DRUM (Distribution Reform, Upgrades and Management) Projects. The DRUM Project will cover 20,000 Utility Personnel by September 2008, through a combination of short-term, long-term and distance-learning courses. It is also the agency to ensure quality norm enforcement and maintaining of a data base for the above trainings.

Employees are sent to update their knowledge through Technical, Financial, Commercial and other functional Training and Conferences. Six in-house training programmes were conducted for PFC employees during the FY 2007-08 as on 30th Nov, 2007.

In addition, in its Institutional Development role PFC assists State Utilities to identify their training requirements and also designs and conducts appropriate training as per the Utilities' convenience. The cost of these training programmes was met by PFC from its own budget. A total of three such programmes were organized at the behest of State Utilities. A total of 5,173 personnel of SEBs / Power Utilities have been imparted training till Nov 2007.

18.0 DISTRIBUTION REFORMS, UPGRADES & MANAGEMENT (DRUM)

The Distribution Reform, Upgrades and Management (DRUM) project is an Indo-US initiative designed jointly by the Ministry of Power (MoP) and United States Agency for International Development (USAID) that complements the MoP's Accelerated Power Development and Reform Programme (APDRP). DRUM addresses the critical development challenge of providing commercially viable and dependable power.

The overall goal of the DRUM project is to demonstrate commercially viable electricity distribution systems that provide reliable power of sufficient quality to consumers

and to establish a commercial framework and a replicable methodology adopted by Indian Financial Institutions for providing non-recourse financing for DRUM activities and programmes.

PFC has been appointed as Principal Financial Intermediary responsible for technical assistance and training under DRUM components. The roles and responsibilities of PFC for DRUM Project are to i) provide management and implementation support, ii) co-ordinate with all stake holders, iii) act as a financial intermediary and banker for controlling and directing funds (loans and grants) and iv) design mechanism for leveraging resources of other FIs / Bankers.

18.1 DRUM TECHNICAL ASSISTANCE

DRUM team consists of USAID, MoP, PFC, Consultants and respective beneficiary States like Maharashtra, Delhi, Gujarat and Karnataka. The team has prepared detailed Project Reports (DPRs) for creating Centre of Excellence in Distribution for two rural areas viz. Dodaballapur of Bangalore Electricity Supply co. Ltd. (BESCOM), Karnataka and Umreth (Anand) of Madhya Gujarat Vij Co. Ltd. (MGVCL), Gujarat and two urban areas viz. Sakti Nagar of North Delhi Power Ltd. (NDPL), Delhi and Aurangabad (Urban I) of Maharashtra State Electricity Distribution Co Ltd (MSEDCL), Maharashtra.

PFC has sanctioned a financial assistance of Rs.165.33 crore to BESCOM, MGVCL and MSEDCL. The projects are under various stages of implementation.

19.0 OFFICE AUTOMATION

In order to keep close liaison with its borrowers in the States, video conferencing facility is provided in the rooms of senior board level officials. Desktop computers / Laptops have been provided to individual officials for computerization of business processes so as to render improved customer-related services to its borrowers.

20.0 CONSULTANCY SERVICES

PFC's Consultancy Services have grown in operations manifold and has generated an atmosphere of competitive pricing and confidence in its clients in the areas where PFC has been providing such services.

During the year 2007-08, PFC has further enhanced its reputation as a premier consultancy organization. The turnover of PFC Consultancy services for the year 2007-08 (as on 30th Nov 2007) has increased by 1300% over the turnover for the corresponding period during the year 2006-07.

The pioneering assignments awarded to PFC show the high degree of trust and confidence manifested by the clients in the Unit. PFC has been appointed as advisors for assisting in the selection of developers in line with the Tariff Based Competitive Bidding Guidelines issued by Ministry of Power by Punjab State Electricity Board for two thermal power

projects viz. Talwandi Sabo Power Project and Rajpura Power Project. Out of these projects, PFC has successfully completed the RFQ stage for Talwandi Sabo Power Project (1800 +- 10% MW) to be set up in Punjab.

PFC, as part of its Consultancy Services has so far worked with '34' Clients across '20' States and Union territories. The Clients include '14' State Power Utilities, '8' Licensees/ IPPs, '4' PSUs, '3' SERCs and '5' State Governments. Some of the assignments are repeat orders which exhibits Client's satisfaction with the services provided.

PFC is focussing on assignments in the following areas among others:-

- Selection of developer through Tariff Based Competitive Bidding Guidelines issued by MoP, Gol
- Overall advisory services for a new Thermal Power Station.
- Computerization of Accounting Systems for State Utilities.
- Restructuring / Implementation of reforms for State Utilities.

21.0 CLEAN DEVELOPMENT MECHANISM (CDM)

PFC has been nominated as nodal agency by Ministry of Power for assistance to State Power Utilities in preparation of CDM projects for R&M of old thermal and hydro generation units.

PFC is sourcing a grant from ADB to enable state generation utilities to tap opportunities for exploiting 'carbon finance' potential of R&M and RM&U projects. ADB has approved a technical assistance of US \$ 1 Million towards this purpose. The agreement in this regard shall be executed shortly.

22.0 FUNDING OF RENEWABLE ENERGY PROJECTS

The Company gives priority to funding of Power Projects of Renewable Energy sources like Wind Farms, Small Hydro Projects, Bio-mass Projects etc. and provides financial assistance to state as well as private utilities at competitive interest rates.

To further give a fillip to financing of new projects, PFC has signed MOU with Maharashtra Energy Development Agency (MEDA), (nodal agency of Maharashtra), and Karnataka Renewable Energy Development Ltd. (KREDL) (nodal agency of Karnataka) so as to provide single window service for financing of renewable energy generation projects. Discussions are also under advance stage in the State of Tamil Nadu and Rajasthan for signing of similar MOU's with the States nodal agencies i.e. Tamilnadu Energy Development Agency (TEDA) & Rajasthan Renewable Energy Corporation Ltd. (RRECL).



Conferment of Navratna status to PFC in the presence of Shri P. Chidambaram, Finance Minister, Shri Sontosh Mohan Deb, Minister of Heavy Industries and Smt. Kanti Singh, MOS (HE & PE)

23 MEMORANDUM OF UNDERSTANDING WITH GOVT. OF INDIA (2007-08)

PFC has signed an MoU with the Govt. of India for FY 2007-08, on 30th March 2007. The MoU sets an “Excellent” level target of Rs.27,720 crore against Sanctions, Rs.14,440 crore against Disbursements and 12.50% against Net Profit to Net Worth ratio.

A new parameter has been introduced this year aiming on “Training Programme”, i.e. Utilities Personnel, focusing PFC’s proactive role for development of manpower in the Power Sector. Larger emphasis has been attached to the parameter on value of new Consultancy assignments by substantially enhancing the target to Rs.18 crore.

24 FUTURE PERSPECTIVE

In the years ahead, PFC’s efforts will be directed towards further consolidating its position as the premier Financial Institution for the Power sector. As a financial institution that focuses on power projects. PFC intends to continue to assist State power utilities to adhere to the policy directives of the Government.

PFC shall strengthen its presence in its existing business portfolio of Generation, Transmission, Distribution, R&M etc. with increased focus on funding of T&D Network particularly strengthening / expansion of sub transmission and distribution system for integrated development of towns/ cities.

CHAPTER - 22.5

RURAL ELECTRIFICATION CORPORATION LIMITED (REC)

1. Rural Electrification Corporation Limited (REC) was incorporated as a Company under the Companies Act, 1956 in the year 1969 with the main objective of financing rural electrification schemes in the country. Subsequently, in the year 1992, REC was notified as a Public Financial Institution under Section 4A of the Companies Act, 1956. In the year 1998, REC was registered as a Non-Banking Financial Company (NBFC) under Section 45 IA of the RBI Act, 1934. The Government of India upgraded REC as a Schedule "A" Enterprise in the year 2001. REC was granted Mini Ratna Grade-I Status by Govt. of India in the year 2002. The mandate/object clause of REC was expanded in the year 2002 to include financing of all projects including transmission and generation without any restriction on population, geographical location or size.
2. REC has continued to grow, since its inception in 1969, as a lead institution for financing schemes for providing extension and improvement in the supply of electricity in the rural areas, electrification of villages, dalit bastis and households Below Poverty Line (BPL), and energisation of agricultural pumpsets.
3. Besides attending to its core objectives of financing schemes for extending and improving the rural electricity infrastructure, REC has started funding large/mega generation projects, and transmission and distribution projects, which are critical to the projected addition of installed capacity during the Tenth and Eleventh Plans.

4. HIGHLIGHTS OF PERFORMANCE

- 4.1 Over the last five years, REC recorded substantial growth in its performance parameters. The highlights

of performance of REC for the year 2006-07 along with the comparative figures for the preceding four years are given below :-

(Rs. in Crore)

	2002-03	2003-04	2004-05	2005-06	2006-07
Loan sanctioned	12125	15978	16316	18771	32925
Loan Disbursed	6607	6017	7885	8007	13733
Recovery of Dues	6673	5003	6817	5434	6585
Resource Mobilisation	4213	3988	8501	9063	9438
Profit before Tax	768	803	1038	831	1006
Profit after Tax	578	612	801	638	660
Networth	2862	3264	3779	4198	4013
Dividend	174	183	235	191	177
Business per employee	15.07	16.55	21.98	19.01	29.11

4.2 Memorandum of Understanding

The performance of the Corporation in terms of Memorandum of Understanding signed with the Government of India in the Ministry of Power for the financial year 2006-07 has been rated as "Excellent". This was the 14th year in succession that the Corporation has received "Excellent" rating since the year 1993-94 when the first MOU was signed with the Government.

4.3 Share Capital

There was no additional subscription to the Equity Share Capital during the year 2006-07 and the Paid-up Equity Share Capital of REC as on 31st March, 2007 stood at

Rs.780.60 crore, which is wholly subscribed by the Govt. of India, against the Authorised Share Capital of Rs.1200 crore

4.4 Mobilization of Funds

The amount mobilized from the market during the year 2006-07 was Rs.9437.74 crore, which includes Rs.899.80 crore by way of syndicated loan from commercial banks, Rs. 7352.89 crore by way of capital gains tax exemption bonds, and Rs. 314.80 crore by way of non-priority sector bonds. The domestic debt instruments of REC continued

to enjoy “AAA” rating – the highest rating assigned by CRISIL, CARE and FITCH. For day to day operations, the Corporation also arranged cash credit limits to the tune of Rs.1030 crores.

For the first time, the Corporation also raised long term funds by way of its maiden External Commercial Borrowing (ECB) of JPY 23.570 billion, equivalent to Rs.870.26 crores. REC enjoys international credit rating equivalent to sovereign rating of India from International Credit rating agencies such as Moody’s and FITCH (which are “baa3” and “BBB-” respectively).

PROGRESS MADE DURING 2007-08 (Upto 30.11.2007) & Anticipated Targets to be achieved during the remaining period of the year i.e. upto 31.3.2008

5. Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)– Scheme for Rural Electricity Infrastructure and Household Electrification

5.1 Government of India, in April 2005, has launched the scheme “Rajiv Gandhi Grameen Vidyutikaran Yojana–Scheme of Rural Electricity Infrastructure and Household Electrification” for the attainment of the National Common Minimum Programme (NCMP) goal of providing access to electricity to all households in five years. Rural Electrification Corporation (REC) is the nodal agency for the scheme. Ninety per cent capital subsidy is provided for overall cost of the projects under the scheme excluding the amount of state or local taxes, which will be borne by the concerned State/State Utility. 10% of the project cost would be contributed by states through own resources/loan from financial institution.

- (i) The States will finalize their Rural Electrification Plans in consultation with Ministry of Power and notify the same within six months. Rural Electrification Plan will be a roadmap for generation, transmission, sub-transmission and distribution of electricity in the state which will ensure the achievement of objectives of the scheme.
- (ii) For projects to be eligible for capital subsidy under the scheme, prior commitment of the States would also be obtained before sanction of projects under the scheme for :
 - (a) Guarantee by State Government for a minimum daily supply of 6-8 hours of electricity in the RGGVY network with the assurance of meeting any deficit in this context by supplying electricity at subsidized tariff.
 - (b) deployment of franchisees for the management of rural distribution in projects financed under the scheme and to undertake steps necessary to operationize the scheme.
- (iii) Under the scheme, projects could be financed with capital subsidy for provision of:
 - (a) Rural Electricity Distribution Backbone (REDB) Provision of 33/11 KV (or 66/11 KV) sub-stations of adequate capacity and lines in blocks where these do not exist.
 - (b) Creation of Village Electrification Infrastructure (VEI)



School Children learning Computers

- Electrification of un-electrified villages.
 - Electrification of un-electrified habitations.
- (c) Provision of distribution transformers of appropriate capacity in electrified villages / habitation(s).
- (d) **Decentralized Distributed Generation (DDG) and Supply**
- Decentralized distribution-cum-generation from conventional or renewable or non-conventional sources such as biomass, bio fuel, bio gas, mini hydro, geo thermal and solar etc. for villages where grid connectivity is either not feasible or not cost effective. The funding will be on the pattern of 90% subsidy from Government of India and 10% loan from REC or from own funds of the state /loan from financial institutions. The Monitoring Committee of RGGVY, while sanctioning DDG projects under RGGVY, shall coordinate with MNRE to avoid any overlap. The provision for subsidy requirement for DDG is Rs. 540 crore.
- (e) REDB, VEI and DDG would indirectly facilitate power requirement of agriculture and other activities including irrigation pump sets, small and medium industries, khadi and village industries, cold chains, healthcare, education and IT etc. This would facilitate overall rural development, employment generation and poverty alleviation.
- (f) **Rural Household Electrification of Below Poverty Line Households:**
- (i) BPL households will be provided free electricity connections. The rate of reimbursement for providing free connections to BPL households would be Rs.2200 per household.
 - (ii) Households above poverty line would be paying for their connections at prescribed connection charges and no subsidy would be available for this purpose.
 - (iii) Wherever SC/ST population exists amongst BPL households and subject to being eligible otherwise, they will be provided connection free of cost and a separate record will be kept for such connection.
- 6.6. The over-all subsidy of components from Paras 6.1, 6.2, 6.3 and 6.5 taken together should be kept within 90% of the over-all project cost.
- (g) **Implementation of a three-tier Quality monitoring mechanism.** The projects under the scheme will be subject to Quality Monitoring Mechanism. The details of the Three Tier Quality Control Mechanism are at Annexe-I.

(h) **Service Charges/Fees**

- (a) The State Utilities and Central Public Sector Undertakings will be provided 8% and 9% respectively of the project cost as charges for implementing the scheme and also for meeting additional expenditure on compulsory third party monitoring at the first tier of the Quality Control Mechanism.
- (b) Rural Electrification Corporation Limited (REC) will be given 1 % of the project cost as the fee for establishing frameworks for implementation, meeting the scheme related expenditure, appraisal and evaluation both at pre-award and post award stage , monitoring and complete supervision of the programme from concept to completion of the scheme and for quality control of projects at second tier (REC Quality Monitors) of the Quality Control Mechanism
- (c) For supporting activities and Quality Monitoring at Third Tier (National Quality Monitors) to be undertaken by Ministry of Power, a provision of 1% of the outlay would be kept. The supporting activities would be in the nature of capacity building, awareness and other administrative and associated expenses, franchisee development and undertaking of pilot studies and projects complementary to the rural electrification scheme.

(i) **Monitoring Committee**

The Monitoring Committee constituted by the Ministry of Power under the Chairmanship of Secretary (Power), Government of India will sanction the projects, including revised cost estimates, monitor and review the implementation of the scheme in addition to issuing necessary guidelines from time to time for effective implementation of the scheme;

(j) **Franchisees**

The management of rural distribution would be through franchisees who could be Non-Governmental Organisations (NGOs), Users Association, Panchayat institutions, Cooperatives or individual entrepreneurs. The franchisee arrangement could be for system beyond and including feeders from substation or from and including Distribution Transformer(s). The franchisees should be preferably input based to reduce AT &C losses so as to make the system revenue sustainable.



A view of an electrified village street

(k) **Revenue Sustainability**

Based on the consumer mix and the prevailing consumer tariff and likely load, the Bulk Supply Tariff (BST) for the franchisee would be determined after ensuring commercial viability of the franchisee. Wherever feasible, bidding may be attempted for determining the BST. This Bulk Supply Tariff would be fully factored into the submissions of the State Utilities to the State Electricity Regulatory Commissions (SERCs) for their revenue requirements and tariff determination. The State Government under the Electricity Act is required to provide the requisite revenue subsidies to the State Utilities if it would like tariff for any category of consumers to be lower than the tariff determined by the SERC. While administering the scheme, prior commitments may be taken from the State Government regarding -

- a. Determination of bulk supply tariff for franchisees in a manner that ensures their commercial viability.
- b. Provision of requisite revenue subsidy by the State Government to the State Utilities as required under the Electricity Act.

- (l) The services of Central Public Sector Undertakings (CPSUs) have been offered to the states for assisting them in the execution of Rural Electrification Projects as per their willingness and requirement. With a view to augment the implementation capacities for the programme, REC has entered into Memorandum of Understanding

(MOUs) with NTPC, POWERGRID, NHPC and DVC to make available CPSUs' project management expertise and capabilities to states wishing to use their services. This is being operationalised through a suitable Tripartite/Quadrupartite Agreement.

5.2 Progress upto 25.01.2008

The details of progress in respect of implementation of the projects under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) are as under:

5.2.1. Village and Household Electrification

Under the scheme electrification works in 10,169 villages in 2005-06 (including electrification of 350 villages) and 40,233 villages (including intensive electrification of 11527 electrified villages) in 2006-07 were completed. During the year 2007-08, works have been completed for 20287 villages (including intensification of 13210 electrified villages) as on 25.01.2008. Cumulatively, works in 70689 villages have been completed under RGGVY.

Cumulatively, connections to 22.87 Lakh rural households including 18.76 Lakh BPL households have been released under the scheme as on 25.01.2008.

The state-wise details are enclosed at Annexure – I

5.2.2. Franchisee development

Fourteen states in the country have taken action so far for deployment of franchisees in rural areas. These are mainly revenue collection based franchisees. So far, 8039 franchisees are operational covering 73422 villages both in RGGVY and non-RGGVY villages in the states of West

Bengal, Uttaranchal, Uttar Pradesh, Karnataka, Rajasthan, Nagaland, Bihar, Assam, Andhra Pradesh, Haryana, Orissa, Gujarat, Chhattisgarh and Madhya Pradesh. The state-wise details are enclosed at **Annexure – II**.

5.3 Anticipated targets to be achieved during the remaining period of the year i.e. upto 31st March 2008

MOP intends to sanction all the eligible projects in the participating 27 states of the country by end of March 2008 of which projects for 234 districts (235 projects) are already under implementation.

6. TRANSMISSION & DISTRIBUTION (T&D)

6.1 Sanctions - Progress made during the period April 2007 to November 2007 and anticipated targets to be achieved by March 2008.

During the period between April 2007 - November 2007, the Corporation, under its regular activities, has sanctioned 350 projects involving a loan assistance of Rs.12528 crore under T&D, which includes 22 projects sanctioned for counterpart funding of Rs.206 crore under APDRP.

It is anticipated that during 2007-08 a total sanction of about Rs.15000 crores will be achieved under T&D projects by 31st March 2008.

6.2 Disbursement - Progress made during the period April 2007 to November 2007 and anticipated targets to be achieved by March 2008.

The Power Utilities/entities have, for the FY 2007-08, drawn a loan amount of Rs.3641 crore up to 30.11.2007, for transmission and distribution system strengthening, purchase of equipment, intensive electrification of already electrified areas, and energisation of pumpsets.

It is anticipated that during 2007-08, a total disbursement of about Rs.6500 crores will be achieved under T&D projects by 31st March 2008.

6.3. North Eastern States

A provision of Rs.15 crores has been made for the North eastern states including Sikkim, for their intensive electrification and system improvement works, based on the programme indicated by them, for the year 2007-08, which is expected to be disbursed.

7. GENERATION

7.1. Progress made during current year upto 30.11.2007

For the financial year 2007-08 (Upto 30.11.2007), REC has sanctioned term loan amounting to Rs.23374.28 crore as per details enclosed at **Annexure-III**. During this period, disbursement of Rs.2229.96 crore has been made against the on-going generation projects.

7.2. Anticipated targets to be achieved during the remaining period of the year i.e. upto 31.3.2008.

- Anticipated disbursement for the remaining period of the Financial Year during 2007-08 is Rs.3500 crore.

8. MOBILISATION OF FUNDS

8.1 The total borrowing programme of the Corporation for the year 2007-08 is Rs.14000 crores. The amount mobilized by REC during the year 2007-08 (upto 30th November, 2007) was Rs.3729.40 crore which included Rs.2046.30 crore by way of Capital Gains Bonds, Rs.883.1 crore REC Bonds, and Rs.800 crore by way of Term Loan from Banks. The balance amount of Rs.11270.60 crore is proposed to be raised during the period from December, 2007 to March, 2008.

8.2 Pre-payment of high cost Bonds

During the year 2007-08 (upto 30.11.2007), REC has so far redeemed an amount of Rs.1936.02 crores, which includes redemption / exercised call option of Rs.1684.24 crore in respect of REC Bonds, and Rs.245 crores as Terms Loans from Bank, Rs.6.78 crores as loans from Govt. of India, as a part of the process of pre-paying higher cost of borrowings with cheaper funds raised from the market.

9. INTERNATIONAL COOPERATION AND DEVELOPEMENT

9.1. Japan Bank for International Cooperation (JBIC)

An official Development Assistance (ODA) of about 21 billion yen (app. Rs.735 crores) has been negotiated with JBIC for Transmission System Project of Haryana Vidyut Prasaran Nigam Ltd (HVPNL). The loan agreement in this regard is expected to be signed in March 2008 between REC and JBIC. The objective of the project is to achieve stability in power supply and to meet the fast growing load demand by strengthening intra-state transmission systems in the State of Haryana.

The Rural Electricity Distribution Backbone project sanctioned in 2006-07 under JBIC's official Development Assistance of 21 billion yen in the states of Andhra Pradesh, Madhya Pradesh and Maharashtra are at various stages of implementation and REC has commenced drawl of funds from JBIC. The project is scheduled for timely completion.

9.2. Indo German Bilateral Cooperation (KfW)

KfW has committed Euro 70 million (app. Rs.405 crore) loan assistance along with 500,000 Euro (app. Rs.2.8 crore) grant component for REC's Energy Efficiency Programme-II for implementation of HVDS projects. The objective of the project is to promote energy efficiency by reduction in distribution losses, reduction in failures in electricity distribution and to provide higher quality of services to predominantly agricultural consumers.

The implementation of HVDS project sanctioned to APSPDCL in 2006-07 under KfW-REC's Energy Efficiency Programme-I for financial assistance of Euro 70 million is in full swing and REC has commenced drawl of funds from KfW. The project is scheduled for timely completion.

9.3. Clean Development Mechanism (CDM)

REC has signed a consulting contract agreement with Price Waterhouse Coopers in the month of January 2007 for

providing CDM Advisory consultancy services in the area of Energy Efficiency/Power Distribution Sector, which is a first of its kind in world. REC/PwC is currently working on development of Project Design Document (PDD) of HVDS Projects of APSPDCL.

10. TRAINING ACTIVITIES AT CIRE HYDERABAD

10.1 Training Programmes organized till 30-11-07 :

10.1.1 Central Institute for Rural Electrification (CIRE) of REC located at Hyderabad has conducted 47 programmes during the year 2007-08. It comprises of 6 open programmes, 30 sponsored programmes under Distribution Upgrades & Management (DRUM), 5 in-house programmes for REC Employees, two National Workshops, two International Training programmes sponsored by Ministry of External Affairs, Government of India under Indian Technical Economic Cooperation (ITEC) and Special Commonwealth Africa Assistance Plan (SCAAP) (under progress).

10.1.2 1288 Engineers / Officers from different power utilities in the Country including officers of REC have been trained. The programs are on various aspects of power distribution management ranging from energy audit, power pilferage, DSM to Power Sector Accounting, Innovative technologies for Power distribution, Metering and Billing etc. National Workshops were conducted on "training of non-executives of Power Distribution Sector" and "Clean Development Mechanism (CDM) opportunities for Power Sector."

10.2 Anticipated Programmes to be organized till 31-3-08

10.2.1 During the remaining part of this financial year, 20 programs are slated to be organized comprising 8 open programs, 10 programs under DRUM and 2 International Training programs.

11. BUSINESS DEVELOPMENT

11.1 Consortium Lending by REC

Large debt requirement in power infrastructure projects, generally requires the promoters to approach several financial institutions for funding. In order to speed up the overall finance delivery, and ensure that large projects achieve early financial closure, REC has entered into consortium arrangement with other financial institutions during the current financial year, and signed Memorandum of Understanding (MoU) with Housing and Urban Development Corporation Limited (HUDCO), and India Infrastructure Finance Company Limited (IIFCL) which makes available single window finance for power infrastructure and related areas. REC has already taken a lead role in financing certain projects where the MoU partners are co-financers.

11.2 REC co-promotes Indian Energy Exchange

REC became a strategic partner in the Indian Energy Exchange Limited (IEX), the first power exchange of the

country by subscribing to 5% equity. IEX was earlier approved by the Central Electricity Regulatory Commission (CERC) in pursuance to Section 66 of the Electricity Act 2003, and is promoted by a consortium led by MCX, Financial Technologies Limited (FTL), PTC and others. IEX is proposed as an independent demutualised, national level exchange for trading power mainly in the day-ahead market, weak-ahead and 3-month ahead markets.

12. INFORMATION TECHNOLOGY

12.1 Progress made during the current year up to 30th November, 2007

(1) Implementation of ERP based Integrated Information System: REC has initiated implementation of a full fledged ERP system for increasing the efficiency and effectiveness of the functional processes across the organization. The objective is to create a robust MIS system for all functions with seamless flow of data from various offices of the organization to provide management support at all levels. For this purpose, the oracle e-Business suite is being implemented by M/s Tata Consultancy Services (TCS) and the Management Development Institute (MDI), Gurgaon is the consultant for the project. The work on the project has started from 19th Feb, 2007 and so far 'AS-IS' process study and business blue printing has been completed. At present the conference room pilot testing of the project is under progress.

(2) The I.T infrastructure of the Corporation has been strengthened by consolidation of CO LAN and installation of latest computers (109) & printers. Another 31 are in the pipeline.

(3) The website of the Corporation has been revamped and the new website developed in-house having more attractive and dynamic features has been launched during June 2007. Process has been initiated to involve professional organization to make it more attractive and give professional look and to make it more interactive and dynamic.

(4) Information Technology Security Policy has been formulated and circulated to all the Deptts. and Zonal / Project offices.

(5) Steps initiated to connect all the Offices of the Corporation by implementation of Corporation Wide WAN.

12.2 Anticipated Targets to be achieved during the remaining period of the year i.e. up to 31st March, 2008

1) Go-live operation of the ERP project in the Corporate office

2) Re-designing of the website by involving external professional agency to make the website attractive, interactive with dynamic features.

ACHIEVEMENT OF ELECTRIFICATION OF VILLAGES & HOUSEHOLDS UNDER RGGVY

As On 25.01.08

Sr. No.	State	Implementing Agency	Reported Electrified during 2005-06	Village electrification works carried out (during 2006-07)			2007-08		Cumulative achievement As on date		Cummulative Households Electrification as on date	No. of Certificate received from Panchayat	
				in Un-electrified villages	In Electrified villages	Total	Achievement (Un-Electrified)	Achievement (Electrified)	Un-Electrified	Electrified	Total (Incl. BPL)	BPL	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Bihar												
		POWERGRID	1600	7915		7915	1432		10947	-	36362	22380	1241
		NHPC	0	500		500	657		1157	-	23576	23576	
		Total (Bihar)	1600	8415	0	8415	2089		12104	0	59938	45956	1241
2	West Bengal												
		WBSEB	44	306		306	44		394	-	14151	10061	312
		POWERGRID	136	1072		1072	438		1646	-	34972	23542	360
		DVC	72	337		337	188		597	-	20582	5937	204
		NTPC	43	125		125	44		212	-	8777	4829	162
		NHPC	57	268		268	94		419	-	9601	8300	142
		Total (West Bengal)	352	2108	0	2108	808	0	3268	0	88083	52669	1180
3	Uttar Pradesh												
		4 Discoms	6518	12603		12603	2076		21197	-	246003	246003	14508
		POWERGRID	985	4017		4017	462		5464	-	114552	114552	2314
		Total (UP)	7503	16620	0	16620	2538	0	26661	0	360555	360555	16822
4	Rajasthan												
		3 DISCOMs	230	675		675	431	173	1336	173	355299	163996	465
		POWERGRID		90	570	660	232	158	322	728	43383	29718	57
		Total (Rajasthan)	230	765	570	1335	663	331	1658	901	398682	193714	522

ACHIEVEMENT OF ELECTRIFICATION OF VILLAGES & HOUSEHOLDS UNDER RGGVY

As On 25.01.08

Sr. No.	State	Implement-ing Agency	Reported Electrified during 2005-06	Village electrification works carried out (during 2006-07)			2007-08		Cumulative achievement As on date		Cumulative Households Electrification as on date		No. of Certificate received from Panchayat
				in Un-electrified villages	In Electrified villages	Total	Achievement (Un-Electrified)	Achievement (Electrified)	Un-Electrified	Electrified	Total (Incl. BPL)	BPL	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	Jharkhand	JSEB					576		576	-	671	671	
		NTPC							-	-			
		DVC					95	78	95	78			
	Total (Jharkhand)		-	-	-		671	78	671	78	671	671	-
6	MP	NTPC					15	50	15	50			
		DISCOMs							-	-	309	309	
	Total (MP)			-	-	-	15	50	15	50	309	309	
7	Uttaranchal	UPCL	87	798	2332	3130	264		1149	2332	69933	69933	221
8	Karnataka	DISCOMs	397		8000	8000		6564	47	14914	358649	309428	47
9	Andhra Pr.	DISCOMs						5614	-	5614	867994	760779	
10	Orissa*	NTPC				0			-	-			
11	Haryana	DISCOMs						15	-	15	3628	3628	
12	Gujarat	Powergrid			625	625		284	-	909	52240	52240	656
13	Himachal Pr.	HPSEB							-	-	647	647	
14	Chhattisgarh	NESCL					29	266	29	266	68	68	
15	Maharashtra	DISCOMs						8	-	8	25419	25419	47
16	J&K	Power Deppt.			0			-	-	200	200		
17	Meghalaya	SEB			0				-	-			
	Grand Total		10169	28706	11527	40233	7077	13,210	45,602	25,087	2,287,016	1,876,216	20736

Note: 1. Total no. of villages completed during 2005-06 i.e. 10,169 villages includes intensification in 350 villages of Karnataka.

STATUS OF FRANCHISEE DEVELOPMENT

Status as on 25.01.08

S. No.	State	Type of Franchisees	Achievements up to 2006-07				Achievements During 2007-08				Cumulative Achievement			
			No. of Franchisee	Villages			No. of Franchisee	Villages			No. of Franchisee	Villages		
				RGGVY	Others	Total		RGGVY	Others	Total		RGGVY	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Andhra Pradesh	Revenue collection	2	5	3	8	3279	222	3384	3606	3281	227	3387	3614
2	Assam	Revenue collection	231		816	816	330	0	971	971	561	0	1787	1787
3	Bihar	Revenue collection	29		600	600	194	0	4650	4650	256	0	5250	5250
4	Chhattisgarh	Revenue collection	24		317	317	3	0	40	40	27	0	357	357
5	Gujarat	Revenue collection	0			0	41	579	1737	2316	41	579	1737	2316
6	Haryana	Revenue collection	2	611	173	784	20	5467	-115	5352	22	6078	58	6136
7	Karnataka	Revenue collection	3692		17925	17925	-1058	17815	-17925	-110	2634	17815	0	17815
8	Madhya Pradesh	Revenue collection	7		114	114	6	2	-100	-98	13	2	14	16
9	Nagaland	Input based	285		285	285	317	0	317	317	602	0	602	602
10	Orissa	Revenue collection	7		675	675	4	0	8915	6915	11	0	7590	7590
11	Rajasthan	Revenue collection	2	144	20	164	11	-108	114	6	13	36	134	170
12	Uttar Pradesh	Revenue collection	87	3648	6743	10391	21	-777	-1422	-2199	106	2871	5321	8192
13	Uttaranchal	Revenue collection	41		5321	5321	-10	0	4541	4541	31	0	9862	9862
14	West Bengal	Revenue collection	253	1713		1713	186	1000	7002	8002	439	2713	7002	9715
	Total		4662	6121	32992	39113	3344	24200	10109	34309	8039	30321	43101	73422

1. @ Includes 1999 villages where contracts have been reported awarded but not operational so far.

2. # Includes 3278 junior lineman as village electricity workers for a contract period of one year in Southern and Northern discoms.

3. (-) Sign indicate that some franchisees which were operational earlier, contract have now been cancelled or contract period has expired.

GENERATION PROJECTS SANCTIONED BY REC DURING 2007-08 (As on 31.12.2007)

(Amount in Rs. Crores)

S.No.	Name of the Project	Promoter	Sector	Category Sanction	Cap. (MW)	Date of	Project Cost	Loan sanctioned (REC Share)
R&M Projects								
1	R&M works of GNDTPP, Bhatinda.	M/s Punjab State Electricity Board	State	R&M-Thermal	2x110*	3.5.2007	589.45	471.56
2	RLA/CA studies for GGSSTP Ropar Stage-I	M/s Punjab State Electricity Board	State	R&M-Thermal	-	18.7.2007	16.194	12.36
3	R&M scheme of Unit No.5 (60 MW) of Harduaganj Thermal Power Station	M/s U.P. Rajya Vidyut Utpadan Nigam Limited, Lucknow	State	R&M-Thermal	60*	17.7.2007	7.50	5.25
	Sub Total				0.0		613.14	489.17
Thermal Power Projects								
1	270 MW Coal based thermal power project at Warora, MIDC, Chandrapur, Maharashtra (REC lead)	M/s Wardha Power Company Pvt. Ltd (KSK ENERGY)	Private	Coal	270.0	11.4.2007	1110.20	555.00
2	370 MW Combined Cycle TPP in Gujarat	M/s GSECL	State	Gas	370	11.5.2007	1263.00	947.00
3	Mahan Superthermal Power project in M.P. (REC lead)	M/s Essar Power M.P. Limited	Private	Coal	1200.0	11.6.2007	4860.00	1000.00
4	Additional loan for 2x250 MW GHTP(Stage-II), Lehra Mohabbat in Punjab	M/s PSEB	State	Coal	500*	27.6.2007	549.0	400.00
5	300 MW Ext. Unit at Durgapur	Durgapur Projects Limited	State	Coal	300	18.7.2007	1200.00	960.00
6	2x330 MW Thermal Power Plant at Mundra Coast in Kutch Distt.	M/s Adani Power Private Limited, Gujarat	Private	Imported Coal	660	20.7.2007	2070.00	500.00
7	Captive Power Plant for charge chrome plant of FACOR at village Randia distt. Bhadrak, Orissa	FACOR Power Limited	Private	Coal	45	14.8.2007	190.70	100.00
8	1000 MW thermal Power project in Barmer of	M/s Raj West Power pvt. Ltd.	Private	Lignite	1000	16.8.2007	5000.00	600.00
9	270 MW Coal based thermal power project - Phase-II at Warora, MIDC, Chandrapur, Maharashtra	M/s Wardha Power Company Pvt. Ltd (KSK ENERGY)	Private	Coal	270	16.8.2007	1305.00	448.00
10	2x250 MW Sikka Coal base TPP in Gujarat	GSECL	State	Imported Coal	500	16.8.2007 21.9.2007	2259.39	1694.54
11	Land acquisition for 1200 MW thermal power plants at Nabha in Punjab.	Nabha Power Limited	SPV of PSEB	Thermal		16.8.2007		256.80
12	Land acquisition for 1200 MW thermal Power plant at Talwandi Sabo in Punjab.	Talwandi Sabo Power Limited	SPV of PSEB	Thermal		16.8.2007		136.60
13	135 MW Lignite based Thermal Power Project at Bikaner in Rajasthan	M/s VS Lignite Power Pvt. Ltd. (KSK Energy)	Private	Lignite	135	16.8.2007	694	100.00
14	1000 MW Anpara-C Thermal Power Project in Uttar Pradesh	M/s Anpara Power private Limited	Private	Coal	1000	16.8.2007	3402.55	975.00
15	1000 MW Durgapur Steel thermal Power project at Durgapur in West Bengal	Damodar Valley Corporation	State	Coal	1000	23.8.2007	4457	3120.00
16	820 MW Konaseema Gas based Power Project in Andhra Pradesh	Konaseema Gas Power Limited	Private	Gas	820	19.9.2007	2782.00	750.00
17	1000 MW Vallur thermal Power Project	NTPC Tamil Nadu Energy Co. Ltd. (NTECL)	State	Coal	1000	2.11.2007	5423.553	3796.487
18	700 MW CCPP at Villagae Kovaya, Amreli distt. of Gujarat	GSPC Pipapav Power Company Ltd., Gandhinagar	State	Gas	700	2.11.2007	2428.31	1935.44
19	1x350 MW CC Ext. Power Project at Hazira in Gujarat	Gujarat State Energy Generation Limited, Gandhinagar	State	Gas	350	2.11.2007	1152.54	917.24
20	2x500 MW Anpara D Thermal Power Project in Uttar Pradesh	UP Rajya Vidyut Utpadan Nigam Limited	State	Thermal	1000	23.11.2007	5358.80	3693.00
	Sub Total				10620.0		45506.0	22885.11
	TOTAL				10620.00		46119.18	23374.28

* R&Mproject/Additional loan. Not included in capacity addition.



CHAPTER - 22.6

NORTH EASTERN ELECTRIC POWER CORPORATION LTD.

North Eastern Electric Power Corporation Ltd. (NEEPCO) was constituted in 1976 under the Indian Companies Act, 1956 with the objective of developing the power potential of the North Eastern Region of the country through planned development of power generation projects, which in turn would effectively promote the development of the North Eastern Region. Since then NEEPCO has grown into one of the pioneer Public Sector Undertaking under the Ministry of Power, Govt. of India, with an authorized share capital of Rs. 3,500 Crores. and having an installed capacity of 1,130 MW (755 MW hydro & 375 MW thermal), which meets more

than 60% of the energy requirements of the N.E. Region. The main objectives of the Corporation are to add to the power generating capacity in the North Eastern Region by ensuring optimum utilization of commissioned generation projects, to generate adequate internal resources ensuring justifiable return on investment, to continue sustained efforts to obtain the receivables from State Electricity Boards/Departments, to execute and commission power projects, both hydro and thermal, within prescribed time frames, and to undertake long term feasibility studies for optimum development of hydro power resources of the North Eastern Region.

1. POWER STATIONS UNDER OPERATION:

The following completed Projects are under Operation:

Sl. No.	Name of Project	State	Installed Capacity
(A) HYDRO			
1	Kopili H.E. Power Plant	Assam	275 MW
2	Doyang H.E. Power Plant	Nagaland	75 MW
3	Ranganadi H.E. Power Plant	Arunachal Pradesh	405 MW
Sub-Total (A):			755 MW
(B) THERMAL:			
4	Assam Gas Based Power Plant	Assam	291 MW
5	Agartala Gas Turbine Power Plant	Tripura	84 MW
Sub Total (B):			375 MW
TOTAL:			1,130 MW

2. GENERATION FROM POWER STATIONS:

Sl. No.	Name of the Power Stations	MOU Target during 2007-08	Actual Generation upto 30th Nov' '07	Balance Targets upto 30.11.2007
(A) HYDRO				
	Kopili H.E. Power Plant (275 MW), Assam.	1550 MU	1017 MU	533 MU
	Doyang H.E. Power Plant (75 MW), Nagaland.	227 MU	241 MU	Targets already achieved

Sl. No.	Name of the Power Stations	MOU Target during 2007-08	Actual Generation upto 30th Nov '07	Balance Targets upto 30.11.2007
	Ranganadi H.E. Power Plant (405 MW), Arunachal Pradesh	1510 MU	1328 MU	182 MU
Sub-Total (A):		3287 MU	2586 MU	701 MU

B. THERMAL:				
iv)	Assam Gas Based Power Plant (291 MW), Assam.	1820 MU	1110 MU	710 MU
v)	Agartala Gas Turbine Power Plant (84 MW), Tripura.	611 MU	431 MU	180 MU
Sub-Total (B):		2431 MU	1541 MU	890 MU
TOTAL:		5718 MU	4127 MU	1591 MU

Capacity index for hydro plants up till Nov' '07 is 93% against yearly target of 85% and Availability for the thermal plants is 80% against yearly target of 80% for the same period.

3. PROJECTS UNDER EXECUTION:

- KAMENG H.E.P. (600 MW), ARUNACHAL PRADESH:** Kameng H.E. Project envisages installation of 4 (four) units of 150 MW each in West Kameng District of Arunachal Pradesh. The investment approval of the project was accorded on 02.12.2004 at an estimated cost of Rs. 2,496.90 Crores. The project is scheduled to be commissioned by March 2011. Work order for all major Civil, Hydro-Mechanical & Electro-Mechanical works awarded in December 2004 and all the major works are in progress. Finalization of contracts and award of works for 132/400 KV Switch Yard and Transformers is in progress. Progress as on 30/11/06 is 83.18% of Bichom dam excavation, 12.75% of Tenga Dam excavation, 1.38% of Bichom Dam concreting, 26.42% of HRT boring, 45.06% of Surge Shaft boring, 8.99% of HPT boring and 90.70% Power Pit excavation.
- TUIRIAL HYDRO ELECTRIC PROJECT (2X30 MW), MIZORAM:** All the works are stoped w.e.f. 09/6/2004 due to illegal demand of crop compensation on forest land and huge time and cost overrun on account of design changes. For decision on continuation of the project, the matter is being referred to the PIB.

4. PRESENT STATUS OF PIPELINE POWER PROJECTS IN THE NORTH EASTERN STATES:

A) HYDRO POWER PROJECT

- TIPAIMUKH H.E. (MULTIPURPOSE) PROJECT (1500 MW), MANIPUR:** Located in the Churachandpur district of Manipur, the estimated firm power of the project is 434.44 MW and the annual design

energy is 3,806 MU at 90% dependable year. In addition, the project would provide flood moderation in Barak Valley of Assam as secondary benefit. PIB meeting was held on 25.10.2005 and 31.01.2006 and the Revised Cost estimate has been cleared by CEA for a total cost of Rs. 5,855.83 Crores including IDC of Rs 828.99 Crores at November 2005 Price Level considering rate of interest on loan as 9.75%. The above cost does not include the cost components of External Security for Rs. 246 Crores., Flood Moderation for Rs. 445.80 Crores and Diversion of National Highway for Rs. 166.61 Crores, which have been agreed, 'In Principle', to be borne by the respective Ministries of the Govt. of India. The project is scheduled to be commissioned within 87 months from the date of CCEA clearance. Notice Inviting Bids has been floated on 30.11.2005 with submission of Bids on 31.03.2008. Upon obtaining environmental and forest clearances, the project will be placed for CCEA clearance.

- PARE HYDRO ELECTRIC PROJECT (110 MW) IN ARUNACHAL PRADESH:** MOA signed with the Govt. of Arunachal Pradesh on 21.09.2006 for execution of the Project. The MOE&F, GOI accorded environmental clearance to the project on 13.09.2006. Techno Economic Clearance (TEC) accorded by CEA, GOI on 24.09.2007 at an estimated cost of Rs. 553.25 Crores at June 2007 Price Level with the 1st Year tariff and levellised tariff of Rs. 2.38 and Rs. 2.01 per unit respectively. Commissioning Schedule is 4 (four) years from the date of CCEA clearance. PIB clearance of the project was given on 28.1.08. The Hon'ble Prime Minister laid the foundation stone of the project on 31.1.08

- **MAWHU HYDRO ELECTRIC PROJECT (90 MW), MEGHALAYA:** The MoA for execution of the Project has been signed with Govt. of Meghalaya on 20.12.2007. The Project is a run of the river scheme and located in the East Khasi Hills District of Meghalaya. The project with a proposed installed capacity of 90 MW (2x45 MW) would afford an annual energy generation of 346.82 MU in 90% dependable year on 95% plant availability basis. The cost of the project has been assessed at Rs. 408.23 Crs. at March, 2007 price level including IDC of Rs. 51.04 Crs. The Project is scheduled to be commissioned within 4½ years from the date of CCEA clearance.

B) GAS BASED POWER PROJECT

- **TRIPURA GAS BASED POWER PROJECT (104 MW), TRIPURA:** The DPR for the project at capacity of 104 MW has been submitted and the same is under scrutiny at CEA. The project shall be completed within 32 months from the date of investment decision. ONGC has given firm commitment to supply 0.5 MMSCUMD of the gas for the entire life of the project. NEEPCO has requested ONGC for conclusion of Gas Supply Agreement.

C) COAL BASED THERMAL PROJECTS

In view of abundant coal reserves with high calorific value in the North East, NEEPCO proposes to take-up the following coal based thermal power projects.

Sl. No	Name of Project	Coal Reserve (MMT)	Coal Field	Coal Requirement (MMT/Year)	Generation cost per unit
1	Garo Hills Thermal Power Project (500 MW)	127	Simsang Coal Field	1.7	Rs.2.26
2	West Khasi Hills Thermal Power Project (240 MW)	50	Langrin Coal Field	0.8	Rs.2.10
3	Margherita Thermal Power Project (480 MW)	316	Makum Coal Field	1.7	Rs.2.18

The MoA for execution of Garo Hills Thermal Power Project (500 MW) in Meghalaya has been signed with Govt. of Meghalaya on 20.12.2007. Draft MoA for execution of other 2 projects have been submitted to the respective State Government.

5. SURVEY AND INVESTIGATION WORKS OF NEW HYDRO PROJECTS:

- DPR of Badao H.E. Project (70 MW), Ranganadi H.E. Project, Stage-II (130 MW) and Talong H.E. Project (160 MW) in Arunachal Pradesh and

Mawhu H.E. Project (90 MW) in Meghalaya have been submitted to CEA during 2006-07.

- Survey & Investigation works for the following projects including preparation of DPR during 2007-08 are in progress
- Kapak Leyak H.E. Project (160 MW), Arunachal Pradesh.
- Kameng-I H.E. Project (1120 MW), Arunachal Pradesh.

CHAPTER - 22.7

SATLUJ JAL VIDYUT NIGAM LIMITED

(Formerly Nathpa Jhakri Power Corporation Ltd.)

1.0 About SJVNL

The Satluj Jal Vidyut Nigam Limited – SJVNL (formerly Nathpa Jhakri Power Corporation Limited - NJPC) was incorporated on May 24, 1988 as a joint venture of the Government of India (GOI) and the Government of Himachal Pradesh (GOHP) to plan, investigate, organize, execute, operate and maintain Hydro-electric power projects in the river Satluj basin in the state of Himachal Pradesh and at any other place. The present authorized share capital of SJVNL is Rs 4500 crores.

The Nathpa Jhakri Hydro – Power Station – NJHPS (1500 MW) was the first project undertaken by SJVNL for execution.

2.0 The Nathpa Jhakri Hydro – Power Station – NJHPS (6 X 250 MW)

The Nathpa Jhakri Hydro – Power Station – NJHPS (1500 MW) (the country's largest underground hydro - electric power Project) was the first project executed by SJVNL,

which has already been commissioned, as per the following schedule :

Unit	Synchronization	Commercial Generation
Unit – 6	November 23, 2003	January 02, 2004
Unit – 5	September 20, 2003	October 06, 2003
Unit – 4	January 22, 2004	March 30, 2004
Unit – 3	February 13, 2004	March 31, 2004
Unit – 2	March 09, 2004	May 06, 2004
Unit - 1	March 31, 2004	May 18, 2004

3.0 NJHPS Project Benefits

Besides the social and economic up-liftment of the people in its vicinity, the 1500 MW NJHPS has been designed to generate 6950 MU of electrical energy in a 90% dependable year. It also provides 1500 MW of valuable peaking power to the Northern Grid.



A view of the intakes of 412 MW Rampur HE Project, Himachal Pradesh

Out of the total energy generated at the bus bar, 12 percent is to be supplied free of cost to the home state i.e. Himachal Pradesh. From the remaining 88% energy generation, 25% is to be supplied to HP at bus bar rates. Balance power has been allocated to different beneficiary states / UTs of Northern Region by the Ministry of Power, Govt. of India.

Power Purchase Agreements (PPAs) have been signed with Eight beneficiaries i.e. with Punjab, Chandigarh, Haryana, Rajasthan, Delhi, Jammu & Kashmir, Uttar Pradesh and Himachal Pradesh, in respect of the sale of power being generated by the 1500 MW NJHPS. However,

the state of Uttarakhand have refused to buy its share of power from the 1500 MW NJHPS, which has been reallocated by MOP, GOI, to other beneficiary states.

Since its commissioning the NJHPS has generated around 21889 MUs (Ex – Bus Bar Energy Generation) up to November 30, 2007 and earned revenue of Rs5433 crores up to October 2007. SJVNL has paid dividends to Govt. of India (GOI) and Govt. of Himachal Pradesh (GOHP), the equity partners of SJVNL a total of Rs. 537.59 crores, the year wise details are as under:-

Sr. No.	Dividend Paid (Year wise)	GOI (Rs. in crores)	GOHP (Rs. in crores)	Total (Rs. in crores)
1	2003-04**			-
2	2004-05	100.212	42.948	143.160
3	2005-06	111.601	47.829	159.430
4	2006-07	164.500	70.500	235.000
	TOTAL	376.313	161.277	537.590

**** SJVNL has started the commercial generation only in the year 2003 – 04.**

Besides, indirect benefits has also accrued to the region by way of increase in agriculture and industrial production. In addition, the project has also provided gainful employment to a large number of skilled and unskilled workers and has also opened the landlocked hinterland by providing essential facilities such as schools, hospitals etc. for the people of the area. Thus, NJHPS envisaged the social and economic upliftment of the persons living in the vicinity of the Project i.e. of society at large.

4.0 Financial Parameters of SJVNL

The financial position of SJVNL, for the last 4 years, is as under:

(Rs. in Crores)					
S.No.	Description	2006-07	2005-06	2004-05	2003-04*
A.	INCOME DETAILS				
I	Sales	1618.23	1371.50	1098.27	216.93
II	Other income	47.53	20.28	22.72	6.60
III	Total income (I+II)	1665.76	1391.78	1120.99	223.53
IV	Profit before Depreciation, Interest & Finance Charges and Taxation	1525.66	1256.39	1049.43	211.61
V	Profit before tax	825.81	543.97	323.85	(-)93.09
VI	Profit after tax	732.71	498.22	298.43	(-)93.09
VII	Dividend	235.00	159.43	143.16	-
VIII	Tax on Dividend	37.96	22.36	14.25	-
IX	Reserves and Surplus	818.54	358.788	43.406	(-)93.09
B.	SOURCES OF FUND				
I	Share Capital	4108.81	4108.81	4108.81	4045.51
II	Reserve & Surplus	818.54	358.788	43.406	(-)93.09
III	Net Worth	4927.35	4467.60	4152.22	3952.41
IV	Borrowings	2524.20	3082.735	3631.701	3812.31
	TOTAL	7451.55	7550.33	7783.921	7764.72

(Rs. in Crores)

S.No.	Description	2006-07	2005-06	2004-05	2003-04*
C. APPLICATION OF FUNDS					
I	Gross Fixed Assets	8177.71	7972.614	7980.288	6722.289
II	Less Depreciation (-)	1367.26	909.40	579.26	217.81
III	Net Block	6810.45	7063.215	7401.024	6504.48
IV	Total Fixed Assets	6989.23	7183.84	7476.48	7746.02
	(including capital work in progress, investments etc.)				
V	Net Current Assets	460.26	364.09	307.09	17.41
VI	Misc. Expenditure	2.06	2.41	0.346	1.29
	TOTAL	7451.55	7550.34	7783.92	7764.72

* SJVNL has started the commercial generation only in the year 2003-04.

5.0 Generation

Generation during the year 2004 – 05 has been 5171 MUs (Gross) out of which 5108 MUs (Ex – Bus Bar Energy Generation) supplied to the Northern Grid.

Gross Energy Generation during the year 2005 – 06 was 4104 MUs, out of which 4055 MUs (Ex – Bus Bar Energy Generation) supplied to the Northern Grid.

Gross Energy Generation during the year 2006 – 07 was 6014 MUs, out of which 5942 MUs (Ex – Bus Bar Energy Generation) supplied to the Northern Grid.

The Gross Energy Generation during the year 2007 – 08, up to November 30, 2007, has been 5615 MUs, out of which 5548 MUs (Ex – Bus Bar Energy Generation), have already been supplied to the Northern Grid.

The Nathpa Jhakri Power Station has generated 21889 MUs (Ex – Bus Bar Energy Generation Approx.) of electricity since beginning up to November 30, 2007.

6.0 Progress Made During 2007 – 08:

The details of the Progress made during the year 2007 – 08, in respect of Energy Generation and Capacity Addition by SJVNL, are as under:

Description	Target Up to Nov. 30, 2007	Actual Achievement Up to Nov. 30, 2007	Balance Target w.e.f. Dec. 1st, 2007 to March 31, 2008	Total Target during 2007 – 08.
Gross Energy Generation During 2007 – 08.	5318 MU	5615 MU	1402 MU	6720 MU
Capacity Addition	NIL	NIL	NIL	NIL

7.0 Project Under Construction:

(A) Rampur Hydro – Electric Project – RHEP (412 MW) (located on river in Shimla district of Himachal Pradesh)

SJVNL, has already taken up the execution of the proposed 412 MW Rampur HE Project (RHEP). The proposed RHEP is a downstream development of the existing 1500 MW NJHPS and shall use the de-silted waters of the NJHPS under operation.

The Salient Features of 412 MW RHEP, in brief, are as under :

Head Race Tunnel	- 15.088 km long, 10.50 m dia circular concrete lined
Power House	- Surface type 138 m L x 23.50 m W x 48 mH
Capacity	- 6 x 68.67 MW each = 412 MW
Energy Generation	- 1770 Million Units during a 90 % dependable year.

SJVNL, through its intense and concerted efforts, has secured all statutory clearances including Environmental, Forest, PIB and finally CCEA clearance on January 11, 2007, for its 412 MW Rampur Hydro Electric Project. Subsequent to CCEA clearance SJVNL has awarded major civil works on February 01, 2007. Construction works of Rampur HE Project are in full swing and all the six units of the project are scheduled to commission by January 2012. Total cost of project at March 2006 price level is 2047.03 crores.

8.0 Corporate Plan

SJVNL has drawn a comprehensive 10 year plan to achieve a target of approximately 6700 MW by 2014 - 15 and emerge as a major contributor in Hydel Power generation. SJVNL has already taken up the execution and subsequent operation and maintenance, of the following projects in the states of Himachal Pradesh and Uttarakhand :

- (1) Luhri HE Project (775 MW)* located on river Satluj in Shimla district of Himachal Pradesh.
- (2) Khab HE Project (1020 MW)* located on river Satluj in Kinnaur district of Himachal Pradesh.
- (3) Devsari Dam HE Project - 300 MW, on river Pindar, located in district Chamoli of Uttarakhand state.
- (4) Naitwar Mori HE Project – 34.5 MW, on river Tons (a tributary of river Yamuna), located in district Uttarkashi of Uttarakhand state.

- (5) Jakhol Sankri HE Project - 36 MW, on river Supin, located in district Uttarkashi of Uttarakhand state.

(* Note :- The Implementation Agreements for the execution of Luhri HE and Khab HE Projects have yet not been signed by Govt. of Himachal Pradesh with SJVNL.)

SJVNL is also making all out efforts to take up the execution of more projects in the other states of the Country.

9.0 Organizational Status

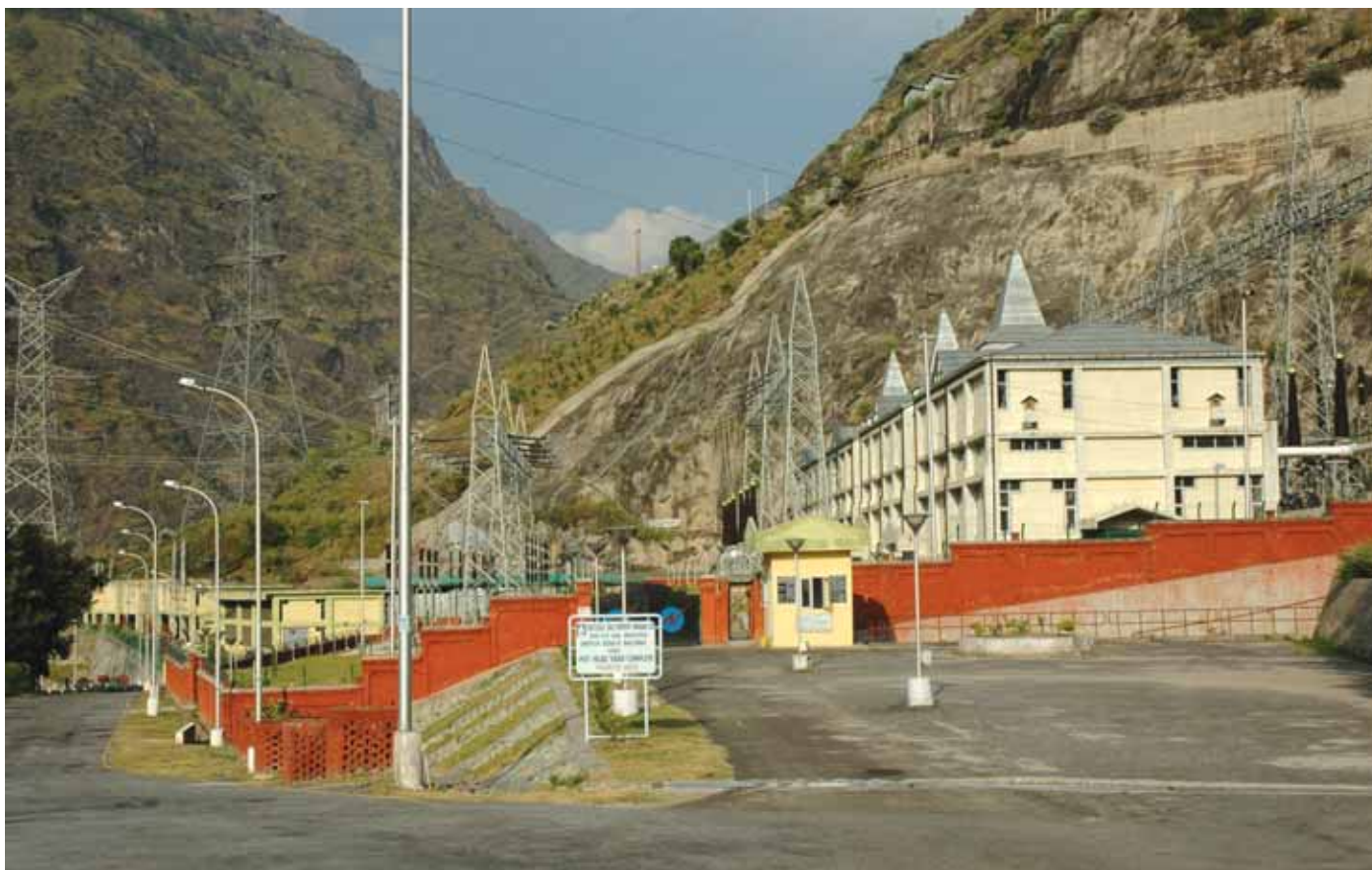
9.1 Human Resources

The total man power on the rolls of SJVNL was 935 as on 31st March 2007 as against 875 as on 31st March 2006. The strength of HPSEB / HP Govt. on deputation on the above date was 800. The strength of SC, ST and OBC employees as on the above date was 194, 49 and 85 respectively.

9.2 Human Resources Development

SJVNL believe that employees are its most valuable assets and has evolved growth oriented human resource development strategy.

Empowerment of manpower skills through training received utmost importance all the time. The Company has well established strategy for imparting training to the employees and involved other professional people to motivate the employees for good working. The training imparted is two-



A view of Pot Head Yard of 1500 MW Nathpa Jhakri HE Power Station In Himachal Pradesh

dimensional i.e. by giving in-house training and through external professional institutions as well. We also facilitate the professional candidates of various institutions for undergoing vocational training in this organization.

9.3 Industrial Relations

Regular interactions with the representatives of the Unions / Associations are held with the representatives of the various Associations / Unions. The thrust area for discussions are related to policies as well as issues concerning with enhancing production, efficiency and improving organizational climate. The above actions of the Management paved the way for better employee - employer relations and the industrial relations during the year remained cordial. Recreational cultural and sports activities are being organized during different occasions for improving inter – personal relations and also to bring out the talent of employees and their family members.

9.4 Environment, Resettlement & Rehabilitation

Environment

412 MW Rampur Hydroelectric project has been conceived to be a run of the river project working in tandem with one of the most eco-friendly projects in the country i.e. 1500 MW NJHPS. Being run of the river projects, they will have minimum impact on the ecology of the area and least disturbances to the flora and fauna. To substantiate this,

further environmental studies on Terrestrial Biodiversity, Cumulative Impact Assessment of projects, Managed River Flow Study have also been got conducted. Afforestation of 139 hectares of degraded forest land is being taken up in comparison to 69 hectares of forest land acquired for Rampur Hydroelectric project. The Environment Management Plan for RHEP has an estimated out lay of Rs. 45.5 crores which consists of CAT Plan, muck disposal plan, fisheries plan, control of pollution from labour camps, sewage treatment facilities for near by towns, public awareness programmes, environment monitoring plan, disaster management plan and environment training programme. So far an amount of Rs. 9.0 crores has already been spent. The dumping of excavated material for RHEP has been taken up in pre-identified areas and suitable construction measures for the dumping of excavated material are being taken up to ensure the project's harmony with the environment.

1500 MW Nathpa Jhakri Hydroelectric Power Project a comprehensive environment management plan was launched with an estimated out lay of Rs. 33 crores approx. So far an amount of Rs.13.60 crores, have already been spent. In addition to above, due to the recent high silt problems faced by Nathpa Jhakri Hydro electric Power



A view of Intakes of the 1500 MW Nathpa Jhakri HE Power Station in Himachal Pradesh

Project a comprehensive Satluj Basin Catchment Area Treatment Plan study has been taken up to identify the likely sources of this high silt and their locations and further remediation of the same. The above study is likely to be completed by March 2008.

Resettlement & Rehabilitation

SJVNL, as a responsible corporate citizen, takes utmost care for the resettlement and rehabilitation of the Project Affected Families (PAFs) whose land or house or shop get affected due to construction of the hydro electric projects. Further, appropriate compensation to all the PAFs in accordance with the extant policies of the Government and SJVNL, have been / are being made.

As a result of vigorous pursuit for ensuring a fair Rehabilitation and Resettlement of the Project Affected Families, the World bank has lauded SJVNLs efforts as under :

‘THE SUCCESS OF THE RESETTLEMENT ACTIVITY UNDERTAKEN IN THIS PROJECT IS QUITE RARE FOR INDIA, AND CAN BE CONSIDERED AS ONE OF THE BEST EXAMPLES OF RESETTLEMENT IMPLEMENTATION IN BANK ASSISTED PROJECTS IN INDIA. IT SHOULD BE CONSIDERED AS AN EXAMPLE FOR OTHER PROJECTS.’

Environment & R&R Policy

SJVNL (NJPC) has adopted an environment, resettlement & rehabilitation policy which reiterates company's commitment to sustainable development which is within the carrying capacity of the eco-system and which promotes the improvement of the quality of life.

CHAPTER - 22.8

TEHRI HYDRO DEVELOPMENT CORPORATION LTD.

Tehri Hydro Development Corporation Ltd. (THDC), a Joint Venture Corporation of the Govt. of India and Govt. of U.P., was incorporated as a Limited Company under the Companies Act, 1956, in July'1988, to develop, operate and maintain the Tehri Hydro Power Complex and other Hydro Projects.

The Corporation has an Authorised Share Capital of Rs. 4000 Cr. and the Paid up Capital is presently Rs 3184 Cr. The cost of the Projects is being shared in the ratio of 75:25 (Equity portion) by Govt. of India & Govt. of U.P. for Power Component.

During the year, THDC has crossed a major milestone. The 1000 MW Tehri Power Station was fully commissioned and THDC contributed capacity addition of 1000 MW during the Xth Plan. The Tehri Project is a Storage scheme, which would offer the advantage of peak power and irrigation & drinking water benefits round the year.

The total installed capacity of THDC owned station as on 31.10.07 is 1000 MW while work on the other hydro power projects entrusted to the Corporation are under various stages of implementation.

PERFORMANCE HIGHLIGHTS (As on Nov.'07)

The year 2006-07 has been a landmark year for the Company. The first Unit, after successful synchronization, was inaugurated by the Hon'ble Minister of Power on 30th July'06. The 1000 MW Tehri Power Station was fully commissioned and contributed capacity addition of 1000 MW during the Xth Plan.

The 1000 MW Tehri Pumped Storage Plant, the first Central Sector PSS, was accorded Govt. approval, after resolving complex technical & commercial issues.

For the Vishnugad Pipalkoti HEP (444 MW), THDC obtained Techno- economic Clearance from Central Electricity Authority and PIB clearance during the year. MoEF clearance has also been accorded and the Project is now awaiting Investment Approval.

The Corporate Plan of the Organisation, including financial projections for the next ten years was finalized, setting the roadmap for the future growth of the Company.



A view of Gas Filled Switchyard - THDC



A view of Machine Hall- THDC

Financial Performance

THDC has reported a Net Profit of Rs. 1309.13 Million in the first year of commercial operations. The total sale of energy during the year was Rs. 4441.59 Million.

Operational Performance

During the year 2006-07, three units of the Tehri Power Station of 250 MW each were put under commercial operation while the fourth unit of 250 MW has started commercial generation in July' 07. The Irrigation and Drinking water benefits from the Project have also started to flow to Uttar Pradesh and Delhi.

Tehri Power Station generated 891 MUs of energy during 2006-07 while the target for 2007-08 is 2649 MU. During 2007-08, 1776 MU of energy has been generated from the Tehri Power Station till Nov.'07. During 2006-07, the Capacity Index achieved by the Plant was 86%. For the year 2007-08, Tehri Power Station is operating at a Capacity Index of above 90%.

Commercial Performance

During financial year 2006-07, Revenue of Rs. 258.37 Cr. has been realized from the beneficiaries from the sale of Power from Tehri Power Station against the billing of Rs. 262.89 Cr. as per Interim order of CERC.

Further, during the current fiscal 2007-08, revenue of Rs. 501.79 Cr. has been realized from the beneficiaries from the sale of electrical energy generated between 01.04.2007 & 31.10.2007 against the billing of Rs. 550.15 Cr.

PROGRESS OF ON GOING PROJECTS

Koteshwar HEP (400 MW):

Koteshwar Project comprises a 97.5 m high concrete Dam and Surface Power House, housing 4 units of 100 MW each and is located around 22 Km downstream of Tehri Dam. Koteshwar Project is a run-off-river scheme with minimum diurnal storage. The Project had encountered some delay in the evacuation of the affected villages. With the evacuation of all villages by Mar-07, the progress of works has gained momentum. After completion of the excavation work in the major areas, concreting work has been taken. The Project is scheduled for commissioning by December'10.

Tehri PSP (1000 MW):

Government approval for the 1000 MW Tehri Pumped Storage Plant, the first Central Sector PSS, was another major landmark for THDC during the year 2006-07. The Tehri PSP involves the arrangement of banking transaction of power, which has been adopted for the first time in the development of PSS in the Country. Under this arrangement, the beneficiaries, who supply input power for the pumping operation of the Tehri PSP, would receive power in return, after adjusting for losses, during peak hours, when the demand is maximum. This pioneering arrangement has set a model for development of the large potential of over 94,000 MW in PSS in the Country.

The essential works of Tehri PSP approved along with Tehri Stage-I have already been completed. Major works have been planned to be executed through an EPC package.

In Jan' 07, THDC has engaged International Consultants i.e. COYNE –ET – BELLEIR (France) for the consultancy services for Tehri PSP.

Global bids have been invited for the EPC package under ICB in Aug-07. Meanwhile, works of Approach Adits, have been taken up. The Project is scheduled to be commissioned by Dec' 11.

PROJECTS AWAITING INVESTMENT APPROVAL

Vishnugad Pipalkoti HEP (444 MW):

The Project envisages construction of 65 m high Gated Diversion Dam, on the river Alaknanda near village Helong in Chamoli Distt., Uttarakhand and an underground Power House with installed capacity of 444 MW (4 x 111 MW). The Implementation Agreement for the Project was signed with the Govt. of Uttarakhand in June' 06. Techno Economic Clearance to the Project was accorded by CEA during Sept.' 06. Power Purchase Agreements (PPAs) have already been signed for the full rated capacity of the Project with five States and the commercial arrangements firmed up for off-take of entire power from the Project. Consultations with other States of Northern Region are under progress to sign agreements for their share. The Public Investment Board (PIB), during Feb' 07 has recommended the Project for the consideration of CCEA. Environmental Clearance to the Project has also been accorded by the Ministry of Environment & Forests in August' 07 and the Project has been posed for Investment sanction.

PROJECTS UNDER FR/DPR PREPARATION

Govt. of Uttarakhand had allotted six Projects to THDC, with a total installed capacity of 695 MW, for which Implementation Agreements were signed in Nov' 05. Of the six Projects, Bokang Bailing (330 MW) falls in Askot Musk Deer Sanctuary, while Karmoli (140MW) and Jadhganga (50 MW) H.E. Projects fall under the "Gangotri National Park". Prior permission of Hon'ble Supreme Court is required for taking up activities on the three Projects. Necessary IA has been filed by THDC in the Hon'ble Supreme Court seeking clearance for taking up work on the Bokang Bailing HEP while the matter relating to Karmoli and Jadhganga Projects is taken up with the State authorities. Work of Survey & Investigation and preparation of Feasibility Report (FR) is under progress on Malari Jhelam (60 MW) and Jhelam Tamak (55 MW). The FR of Gohana Tal (60MW) has however been kept in abeyance pending decision of Govt. of Uttarakhand on the optimum utilization of the head available for the Project.

ENGINEERING CONSULTANCY

THDC is engaged in the engineering consultancy work for stabilization of Varunavat Parvat in Uttarkashi entrusted by Government of Uttarakhand. The work involves providing the complete engineering solution to the major hill stabilization problem and also supervising the execution works at site. The work is at an advance stage of completion.



A view of New Tehri Township - THDC

REHABILITATION & RESETTLEMENT

The Tehri Project involved construction of one of the highest Dams in the World, with large submergence and consequential large scale displacement. The social aspects of R&R of affected population of nearly 15,000 families have been handled with a humane and understanding approach towards relocation. The measures taken by THDC for the rehabilitation and resettlement of the population have been aimed at the social and economic upliftment of the displaced people.

The R&R work is being implemented by the Rehabilitation Directorate, Govt. of Uttarakhand under the overall supervision and control of Commissioner, Garhwal and adequate funds have been provided by THDC.

The Tehri Reservoir was filled up to EL 816 m during the year 2007-08. It is planned to fill the reservoir up to FRL i.e. 830.0 m from June'2008, as such R&R and evacuation of balance families between EL 815.0 m to EL 835.0 m is under process by State Government.

With the coming up of Tehri reservoir the problems of population residing in the cut off areas were duly attended to and measures such as additional bridges and connectivity, ferry services, schools and health centres in the cut off areas were provided additionally.

For all the New Projects under implementation / to be implemented, the R&R Policy to be framed in consultation with State Government, shall not be inferior to the National Rehabilitation & Resettlement Policy, and would be suitably adapted to suit the requirements of the area.

ENVIRONMENT MANAGEMENT

The Tehri reservoir has a submergence of 42 sq km. The systematic and scientific approach towards environmental issues has been focused towards environmental upgradation of the area apart from environmental protection.

An extensive Catchment Area Treatment Plan has been undertaken for arresting soil erosion in the upper reaches of the catchment and reducing silt ingress into the reservoir. The CAT Plan of Tehri project has been implemented upto Gangotri in an effective manner and in a huge area of 52,204 ha. This is not only useful for the longevity of Tehri Project but also for the life of various other projects coming within the catchment area and downstream of Tehri Project. A Green Belt is also being created along the rim of reservoir. Tehri Project is an ideal example of storage based projects where almost all possible environmental concerns based on result of studies carried out by the expert institutions like BSI, ZSI, NEERI etc. have been addressed. The environmental upgradation achieved from Tehri Project will play an important role in the development of surrounding areas & in improving the quality of life by providing employment opportunities and additional source of revenue in the form of fishing, tourism, water sports etc.

A Botanical Garden has been established in an area of 14.28 ha. and plantation of special species coming under submergence has been done in the Botanical Garden. Also, a Mahseer Fish hatchery & fish farm site has been developed near Koteshwar Dam under the technical assistance of National Research Centre on Cold Water Fisheries Station, ICAR, Bhimtal, which is already in operation.

CORPORATE PLAN

The Corporate Plan prepared by THDC, which includes the financial projections for the next decade, has revealed that the Company could endeavor to take up additional projects of at least 2500 MW capacity over the next ten years from its own resources. The Company could also look to the SPV route with JV partners.

THDC has set a target of capacity addition of 1400 MW during the XIth Plan, i.e. by 2012. For the XIIth Plan, the Company is pursuing Projects totaling 1739 MW of Installed Capacity.

MoU WITH NPCIL

An MoU has been signed between Nuclear Power Corporation of India Ltd. (NPCIL) and THDC in Feb 2007 in the august presence of the Hon'ble Union Minister of Power with a view to synergise the respective strengths and competencies of the Organisations for the development of Pumped Storage Schemes and Hydro Projects in India and abroad.

Govt. of Maharashtra has been approached for allotment of Malshej Ghat (600 MW) & Humbarli (400 MW) PSS in Maharashtra, two viable schemes, to the JV of THDC & NPCIL for implementation.

PROJECT FINANCING

The present commitments with the Corporation and the future plans entail huge capital investments. The future strategy would be to fund the equity portion through internal accruals as far as possible. For the 444 MW Vishnugad Pipalkoti Project, 50% of the equity is proposed to be funded through the Corporation's own funds, while the balance would be contributed by the Govt. of India and Govt. of Uttar Pradesh. The Project is also under consideration for World Bank funding. In addition, the Joint Venture route would also be used as in the case of Pumped Storage Schemes being taken up in partnership with NPCIL.

HUMAN RESOURCE MANAGEMENT

THDC has always given highest importance to the Human Resource for maintaining effectiveness of the Organisation. On this notion our HR initiatives are designed and strategized. Manpower strength of the Company as on 30.9.07 is 2350 which includes 664 Executives, 261 Supervisors and 1425 Workmen.

IIM, Ahmedabad in order to identify areas of immediate concern for Organizational effectiveness, carried out a study. As a part of the Organisation transformation, Performance Management System (PMS) is being reviewed.

THDC has recruited Engineer Trainees and Executive Trainees to infuse young blood in the Organisation. Their Training & Learning has been given due priority and an arrangement has been made with Power Management Institute (PMI), Noida to impart them the best of training. Various HR Policies have been reviewed to bring satisfaction amongst the employees.

For promoting Career development, and avenues in executive cadre, Diploma Engineers have been enabled opportunities to pursue BS Power Course for which a tie up has been made with Birla Institute of Technology, Pilani.

TRAINING & DEVELOPMENT

In pursuance of the National Training Policy for the Power Sector enunciated by the Union Power Ministry, THDC has formulated a Training & Learning Policy for the Organisation, which is being implemented to impart training to employees through leading organizations. Employees were deputed for specialized O&M Training at N.H.P.C. / ASTIN. Also external training programmes were conducted through prestigious management/ professional

organizations like Administrative College of India, Hyderabad, Engineering Staff College of India, Hyderabad, National Productivity Council, New Delhi etc. Employees belonging to SC/ST/OBC categories were given due consideration for imparting training.

EXCELLENCE IN CORPORATE COMMUNICATION

THDC participated in the IITF' 2006 at New Delhi and won the second prize in IITF-2006. THDC was first among the PSUs of the Ministry of Power.

In addition to THDC's in-house publication, the Gangavataranam, a special publication titled 'THDC-An Insight', a comprehensive document giving an insight into THDC, particularly the trials and tribulations of the prestigious Tehri Project was also released.

On the historic achievement of commissioning of Tehri Project, Central Board of Irrigation and Power (CBIP) has brought out a special issue of its Journal "Water & Energy International" on the Tehri Dam Project, which was released by the Hon'ble Minister of Power during a function in Feb.'07. In the special publication all the aspects of the Tehri Project have been compiled and documented by THDC engineers and others who have been associated with the Tehri Project.



A view of Main Dam of Tehri Hydro Electric Power Station

CHAPTER - 22.9

DAMODAR VALLEY CORPORATION

Damodar Valley Corporation (DVC), one of the major infrastructure projects of independent India, came into being on the 7th July 1948 by an Act of the Central Legislature.

DVC's Organizational Structure

The Corporation consists of the Chairman and two part-time Members appointed by the Central Govt. in consultation with the State Governments of Jharkhand and West Bengal. The Chief Executive Officer is the Secretary who along with the Financial Adviser of the Corporation is appointed by the Central Govt. The Heads of the Engineering Wing are the Director (Technical), Director (Project), Director (System) and Director (Commercial). They are assisted by Sr. Chief Engineer/Chief Engineer who heads the different groups in the engineering wings, viz. Generation, System, Projects, Civil Engineering etc.

FUNCTIONS/OBJECTIVES OF DVC

- Promotion and operation of schemes for irrigation, water supply and drainage.
- Promotion and operation of schemes for the generation, transmission & distribution of electrical energy, both hydro electric and thermal.
- Promotion and operation of schemes for flood control in the Damodar River and its tributaries and the channels and navigation.
- Promotion of afforestation and control of soil erosion in the Damodar Valley.
- Promotion of the agricultural, industrial, economic and general well being in the Damodar Valley and its area of operation.



2 X 500 MW Mejia TPS Unit 7 & 8 under construction for supply of power during the Commonwealth Games



DVC Fly Ash Brick manufacturing Plant

PERFORMANCE HIGHLIGHTS 2007-08 (UPTO NOV'07)

POWER GENERATION – PHYSICAL

- All time high Peak system generation of 2179 MW achieved at 18.30 hours of 28.06.2007.
- All time high Peak thermal generation of 2050 MW corresponding to 92.8% PLF achieved at 18.30 hours of 28.06.2007.
- Gross Energy Generation by DVC Generating Units during Apr-07 to Nov-07 was 9960.955 Million Units, an improvement of 11.59% compared to 8925.998 Million Units generated during the corresponding period of 2006-07.
- Energy generation by all Thermal Stations touched 9596.426 Million Units (PLF – 74.15%) during Apr-07 to Nov-07, as against 8620.493 Million Units (PLF- 66.61%) during the corresponding period of 2006-07, an increase of 11.32%.

FINANCIAL (PROVISIONAL)

- Revenue from sale of power during 2007-08 (till Nov'07) was Rs. 3015.96 Crores as against Rs. 2522.66 Crores during the corresponding period of 2006-07, an increase of 19.55%.
- Profit before tax on power during 2007-08 (till Nov'07) increased by about 29% to Rs. 1170.33 Crores from Rs. 907.22 Crores earned last year upto Nov'06.
- Net profit after irrigation and flood control losses was Rs. 1122.33 Crores during Apr'07 to Nov'07 against Rs. 875.22 Crores of last year for the same period, an increase of about 28.23%.
- Profit after tax also increased to Rs. 939.35 Crores in 2007-08 (till Nov'07) from Rs. 720.06 Crores during the corresponding period of previous year.

GENERATION AND POWER SUPPLY POSITION

Particulars	2006-07 (till Nov'06)	2007-08 (till Nov'07)	Target (Dec'07 to Mar'08)
1. Generation (MU)			
(i) Thermal	8620	9596	5312
(ii) Hydel	306	365	41
TOTAL	8926	9961	5353
2. Thermal PLF (%)	66.61	74.15	-
3. Purchase of Power (at DVC Bus) (MU)	737	554	-
4. Total Stock (at DVC Bus)(MU)	8503	9572	-
5. Saleable Units (at DVC Bus) (MU)	8303	9361	5311

CAPACITY ADDITION PROGRAMME AND ACHIEVEMENTS

10th Plan Power Projects of DVC

Project	Capacity (MW)	Progress Status as on 30.11.2007 & January 2008.		Target COD
		AS on 30.11.07	As on January 2008	
Mejia TPS Extn. Unit # 5 & 6 (LOA placed on 15.6.04)	500 (2x250)	Unit 5: Coal synchronization done on 24.11.2007. Unit 6: Oil synchronization done on 01.10.2007.	Unit 5 COD: January 2008 Unit 6 COD: February 2008	Unit 5 : January 2008. Unit 6 : February 2008.
Chandrapura TPS Extn. Unit # 7&8 (LOA placed on 30.6.04)	500 2x250	Construction is under progress. Boiler Drum lifting of U#7 completed on 25.04.06 & for U#8 on 14.08.06. Unit 8: Boiler Hydro Test done on 02.11.07.	Unit 7: Boiler Light up by Jan., 2008 Oil synchronization by March 2008. Unit 8: Boiler Light up by May, 2008 Oil synchronization by August 2008.	Unit #7: 31.08.07 Unit #8: 30.09.07

11th Plan Power Projects of DVC

Project	Capacity (MW)	LOA	Target to be achieved by 31.3.08	Target COD**
Mejia TPS Ph-II				
Main Plant Package	1000 (2 x 500)	Letter of Acceptance placed on 14.12.06 and Letter of Award on 08.1.07. Zero Date: 31.12.06.	Boiler Drum Lifting	Unit 1: 12/2009 Unit 2 : 03/2010

11th Plan Power Projects of DVC

Project	Capacity (MW)	LOA	Target to be achieved by 31.3.08	Target COD**
		LOA placed on 27.7.07.		
Bokaro 'A' TPS	500/600 (1 x 500+ 20%)	Expected by Feb.'08	Placement of LOA	Unit 1 : 08.2011
Koderma TPS (Stage-I)	1000 (2x500)	LOA placed on BHEL on 29.6.07. Zero Date: 21.7.07	Placement of LOA of CHP and water system package.	Unit 1 : 06/2010 Unit 2 : 09/2010
Durgapur Steel TPS	1000 (2 x 500)	LOA placed on BHEL on 27.7.07. Zero Date: 03/8/07	Placement of LOA of CHP and water system package.	Unit 1: 08/2010 Unit 2: 11/2010 (Best effort: 10/2010)
Raghunathpur TPS (Stage-I)	1200 (2 x 600)	LOA placed on REL on 11.12.07.		Unit 1: 11/2010 Unit 2: 02/2011

** The target COD are tentative and may change after placement of Order/LOA.

JOINT VENTURE PROJECTS

Maithon RB TPS Unit 1&2 (JVC of DVC and TPC)	1050 (2 X 525)	LOI for BTG Pkg. Placed on BHEL on 17.8.07.	-	Unit 1: 08/2010 Unit 2: 02/2011 (Best effort)
Bokaro Steel TPS (JVC of DVC and SAIL)	750 (3 X 250)	Pre-project activities in progress.		

TRANSMISSION PROJECTS

In order to distribute power to the various consumers at different load distribution centres from DVC Grid, a network of Transmission and Distribution lines has been established which is being reinforced according to need. Expansion of existing network along with new 400 KV system has been planned to be implemented during 11th plan period.

PROGRESS UPTO NOVEMBER 2007 & TARGET UPTO MARCH 2008

On-going Projects

Sl.no.	Schemes	Progress upto 11/07	Target upto 3/08	Remarks
1.	220 kV Mejia-Durgapur Line	100%	NA on 27.7.2007.	Line has been charged
2.	220 kV Mejia-Ramgarh Line via Gola	10%	40%	Work under progress.
3.	220 kV CTPS-MTPS LILO at Kalyaneswari	13%	50%	Work under progress.
4.	132 kV CTPS-DTPS LILO at Jamuria	35%	100%	Work under progress.
5.	132 kV Patherdih-Govindpur 3rd & 4th circuit.	60%	100%	Work under progress.

Sl. no.	Schemes 11/07	Progress upto	Target upto 3/08	Remarks
6.	3rd Ckt. Between MHS & Kalyaneswari S/S	85%	100%	Work under progress.
7.	132 kV CTPS-BIADA Line	20%	100%	Work under progress.
8.	132/33 kV Jamuria S/S	90%	100%	Work under progress.
9.	Belmuri S/S-50MVA Tr. & feeder bay	NA	NA	Transformer commissioned on 03.05.07.
10.	132 kV Infrastructure at Barjora S/Stn.	60%	80%	Work under progress.
11.	Reconductoring of 132 kV Bokaro-Konar-Barhi Line	98%	100%	Reconductoring work pending E/W completed in 6/07.
12.	Reconductoring of 132 kV Putki-Nimiaghat	NA	NA	Line charged after reconductoring in 5/07.
13.	Giridih S/S-2 No. 80 MVA Tr. & associated work	100%	100%	1st Transformer commissioned on 21.9.2006 & 2nd Transformer commissioned on 25.5.2007
14.	Retrofitting of Numerical relays in various substations	35%	70%	Work under progress.
15.	6 No. 220 kV Bays at Mejia, Kalyaneswari & Ramgarh S/Stn.	7%	60%	Order placed on 15.6.07.
16.	Reconductoring of 2 No. CTPS-Putki D/C line	3%	20%	Order placed on 03.8.07.

Projects initiated

1.	220 kV Dhanbad S/Stn. LILO of 220kV CTPS-Kly at Dhanbad	5%	15%	Order placed on 21.9.07.
2.	220 kV Gola S/Stn.	NA	5%	Subject to availability of land
3.	220 kV Giridih S/Stn.	NA	5%	Subject to availability of land
4.	220 kV Uluberia S/Stn.	NA	5%	Subject to availability of land
5.	Retrofitting of 31 No. breakers at various S/Stns.	NA	50%	Procurement of CB under process.
6.	System Energy Management	NA	10%	Order to be placed in 12/07.
7.	220 kV Dhanbad-Giridih Line	NA	5%	Tendering under process.
8.	220 kV Koderma-Giridih Line	NA	5%	Tendering under process.
9.	400 kV Lines -1304 ckm.	NA	5%	Tendering under process.

RURAL ELECTRIFICATION PROGRAMME

With a view to provide access to electricity to all rural households, Government of India has launched a new scheme under “Rajiv Gandhi Grameen Vidyutikaran Yojana”. The task of implementing the scheme and to augment resource capacities for implementation, Union Ministry of Power has involved CPSUs like NTPC, NHPC, PGCIL & DVC for making available their expertise and capabilities to the States willing to use the same.

DVC has been assigned the project of rural electrification in Purba Medinipore district of West Bengal and eight districts in Jharkhand, namely, Dhanbad, Bokaro, Koderma, Giridih, Hazaribagh, Gumla, Simdeaga, and Chatra as deposit work on behalf of respective SEBs. All funds in the form of subsidy and loan assistance provided by the Government for the programme would be canalised through REC. Besides this, REC will act as nodal agency for complete supervision of the programme from concept to completion. The role of DVC is in project formulation, planning, design and engineering, procurement of goods and implementation/commissioning of the project.

Project at a glance in West Bengal

DVC has been executing Rural Electrification Project under AREP (Accelerated Rural Electrification Programme) Scheme in the district of Purba Medinipore of West Bengal covering 807 Nos. un-electrified mouzas as per the project sanctioned by REC.

The scheme has subsequently been merged with the newly formulated RGGVY Scheme and as such DVC has to undertake intensification work in already covered and sanctioned 807 Nos. mouzas for providing 100% access of electricity to all the households as per scheme stipulation for which DPR has been submitted. Further, similar intensification work has also to be undertaken for the balance 2160 Nos. partially electrified mouzas to cover the entire district. DPR for such intensification work has also been submitted to WBSEB.

Work status of ongoing project as on 30-11-07

Total No. of mouzas	:	807
Mouza energized	:	490 Nos. commercially and 4 Nos. as anti-theft measure.
BPL service connection effected	:	5455 Nos.
Renovation work at Singda S/Stn	:	Completed and commissioned on 02-11-06.
Work completed and awaiting inspection by WBSEB	:	71 Nos.

Work in progress in
balance 229 mouzas, out of which:

Pole erection completed	:	178 Nos.
Stringing completed	:	97 Nos.
DT erection completed	:	59 Nos.
Pole erection in progress	:	41 Nos.

Project at a glance in Jharkhand

The Jharkhand State Electricity Board (JSEB) on behalf of Government of Jharkhand has entrusted similar assignment to DVC for rural electrification project in the State of Jharkhand with the concurrence of REC. The project in Jharkhand will cover 8547 villages in 8 districts, namely, Dhanbad, Bokaro, Koderma, Giridih, Hazaribagh, Gumla, Simdega, and Chatra spread over 76 No. blocks under RGGVY Scheme.

Work status as on 30-11-2007:

Work Order for 5 districts viz. Dhanbad, Koderma, Bokaro, Gumla, and Simdega have been awarded on receipt of formal sanctions from REC on the basis of DPR estimated rate and scope. However, sanction is yet to be received as per L-1 offered price for which request has already been made to REC through JSEB and GOJ.

As regards balance three districts viz. Giridih, Hazaribagh & Chatra, price bids have been opened after techno commercial evaluation and the respective L-1 bidders were found to quote 25.57%, 8.72% and 19.95% above the approved costs respectively. Since the cost involvements are more than the approved costs, REC has been approached for according sanctions on the basis of L-1 offered prices. The respective LOAs will be issued on receipt of such sanctions,

Progress:

A total of 10064 No. poles (Bokaro – 3175, Dhanbad – 3499, Koderma – 3390) in the State of Jharkhand have been pitched. Out of a total of 1872 villages, work in 279 villages of Dhanbad, Koderma and Bokaro districts are in progress and a total of 50(fifty) villages (Dhanbad – 43, Koderma – 4, Bokaro – 3) have been electrified till date. Civil works in 8 Nos. PSS have been taken up in the above three districts. Work in the rest of the villages is in progress.

The reason for delay in work is attributable to late release of fund from REC, late revision of DPR scope and cost, non-issuance of road permit from JSEB and non-receipt of forest clearance.

Site mobilization and village survey in Gumla and Simdega districts are also in progress.

ENERGY CONSERVATION PROGRAMME

DVC has been making continuous efforts to induct efficient and modern practices in Energy Management System to increase the availability of power with lower Oil, Coal, Water and Aux. Power consumption. The Energy Conservation Programme and measures taken by DVC are furnished hereunder.

DVC is organizing every year school as well as state level Painting competition for students of Jharkhand & West Bengal as part of the National Awareness Campaign of the Ministry of Power, Govt. of India for promoting Energy Conservation. Competitions are conducted as per guideline from Bureau of Energy Efficiency and in close association with the respective State Education Department. This year the State level competition along with prize distribution function was held at Kolkata and Ranchi on 14.11.2007. Seminars and Workshops were held for Energy Conservation Awareness Campaign amongst employees at Plant level and residents of colony held.

For efficient Energy Management System of the Power Plant the following is in vogue:-

- a) Daily Co-ordination meeting and monitoring of various Efficiency & Conservation parameters and Monthly ORT meeting at plant level.
- b) Improved O&M practices for better and efficient plant operation.
- c) "Partnership in Excellence" program with NTPC as per directive of MOP.
- d) Formation of O&E Cell at Plant level to monitor Energy Conservation measures and carry out Energy Audit Study on a regular basis.

RENOVATION & MODERNIZATION

Renovation & Modernization wing has been renamed as Operation Services & Up-gradation (OS&U) to look into the up-gradation process / system towards improved and sustained generation of power for Power Plants.

As advised by MOP, GOI, DVC has joined hands with NTPC on 30.08.05 in Partnership in Excellence (PIE) programme for BTPS'B', CTPS & DTPS for improvement in plant performance by adopting better O&M practices and Comprehensive Overhauling of the units through short, medium and long term plans.

Towards improved and sustained generation of power from BTPS 'B', CTPS and DTPS, it has been envisaged to go for replacement of obsolete Boiler Pressure Parts, Electrical and C&I, under performing and less efficient Rotary Equipment (Motors, Pumps, Fans etc.) and Sub-Systems, up-gradation of equipment, introduction of new technology and installation of equipment related to pollution control.

For CTPS Unit 4,5&6, R&M activities have been dropped due to involvement of investment more than 1.2 cores /

MW and parameters less than the CERC norms. CEA has been approached for consideration of retirement of CTPS Unit 4, 5 & 6 in view of uneconomical generation since inception.

HYDEL POWER STATIONS:

- i) RMU/LE of the U # 2 of Maithon Hydel Power Station (MHS) completed.
- ii) R&M/LE of U# 1&3 has been initiated. NHPC approached for engagement as consultant for the same.
- iii) Refurbishment & renovation of MHS switch yard taken up. Tendering done & Price bid under process.
- iv) RLA Study of the Panchet-1 Unit has been completed. DPR for R&M/LE has been prepared.

NON-POWER ACTIVITIES OF DVC

WATER RESOURCE MANAGEMENT

Out of originally planned eight storage reservoirs in the Damodar basin, construction of multi-purpose Dams at Tilaiya (1953), Konar (1955), Maithon(1957) and Panchet(1957) by DVC has been completed in the first stage. But the designed storage levels could not be achieved due to constraints in acquiring the required land from the State Governments in respect of Maithon and Panchet reservoirs. In the first phase, total flood reserve capacity planned was 1.77 million acre feet. But due to non-acquisition of land, flood reserve capacity was only 1.05 million acre feet, which has been further reduced to 0.95 million acre feet due to progressive siltation. Maithon and Panchet, being the terminal reservoirs, play a vital role for water management in the valley. However, even with the partial implementation of the scheme, DVC over the years has played a vital role in moderation of the floods in the lower valley to a great extent.

Progress made in water resources management during the year 2007-08 upto 30th November, 2007 and anticipated target to be achieved during the remaining period of the year are as under :

FLOOD CONTROL

During in the year under consideration, southwest monsoon was active almost from beginning of June and remained active till first 10 days of October. The catchments received about 20% rainfall above normal. A combined flood peak inflow in the order of 3,92,000 cusec was observed at 09.00 Hours on 25.09.2007 at Maithon and Panchet and the moderated peak combined outflow was to the tune of 2,64,000 cusec at 00.00 Hours of 26.09.2007.

IRRIGATION:

Management and operation of irrigation infrastructure developed by DVC in the lower valley has been handed over to the Government of West Bengal in 1964 and DVC

provides water from its reservoirs, as per demand, for Kharif, Rabi as well as Boro cultivation in the lower valley. Water supply for Boro cultivation is not mandatory; this supply is made from excess storage available at the end of monsoon after meeting the committed requirements.

Water drawal in irrigation canal for Kharif crops during 2007-08 was 4.25 lakh acre-feet and the area irrigated is expected to be 8.2 lakh acres. The allocation for Rabi and Boro crops has been made to the tune of 70 and 470 thousand acre feet respectively to be released during December 2007 to April 2008. It is estimated to irrigate around 50 thousand acres under Rabi and 1.6 lakh acres under Boro.

DRAWAL OF INDUSTRIAL & DOMESTIC WATER:

Many industries have come up in the Damodar Valley in the last few decades for availability of power and water in the region. Until now DVC provides water to around 179 installations of different agencies drawing water for industrial and domestic purposes. The extent of present allocation of water to different agencies is to the tune of 453 MGD. As the demand of water for this purpose is growing up due to rapid industrialization in the States, about 20 new industries are in the fray for allocation of water.

WATER INVESTIGATION & DEVELOPMENTAL INITIATIVES:

As a part of developmental activities in water resources management, CWC was entrusted for preparation of detailed project report and survey and detailed investigation of the proposed Balpahari project in September 2006. An interim report, indicating cost and benefit parameters of the project is expected from CWC by the end of December 2007. For optimal utilization and further development of the water resources of the valley, WAPCOS has been entrusted in July 2007, for preparation of a comprehensive Master Plan study to be completed by 18 months' time. The first interim report from WAPCOS is expected by January 2008.

ECO-CONSERVATION & AFFORESTATION SOIL CONSERVATION

DVC happens to be the first river valley authority to take up watershed management and related activities on a regular & sustained basis. Watershed Management is mainly oriented to control soil erosion in the upper valley area through an integrated programme and at the same time for increasing the life of DVC reservoirs by reducing the flow of debris that lead to silt in dams. The integrated programme includes afforestation, control of soil erosion, and construction of check dams, Silt Detention Dam (SDD) land protection/reclamation and rehabilitation of denuded forests. DVC has so far constructed more than 18139 check dams and silt detention structures creating a further irrigation potential of around 48,000 hectares.

The expenditure made in Soil Conservation schemes is Rs.10 crore every year on an average at budget sharing norm of 50:50 between DVC and MoA."

DAMODAR VALLEY MISSION

DVC has initiated to venture new horizon with a view to achieve the objectives and mandate of the Organization named "Damodar Valley Mission". The Objectives of the DVC Mission are to make Damodar Valley more eco friendly for survival of its fragile eco system, making it a better place to live in. The Objective can be achieved by proper Natural Resource Management, Soil Conservation/Soil regeneration in the valley area through proper coordination between various governmental institutions and departments of the participating Governments and Central Government and people's participation.

SOCIAL INTEGRATION PROGRAMME

The projects of the Corporation have been constructed in remote area in the States of West Bengal and Jharkhand. The population of the villages in and around the projects belongs to mainly SC, ST, OBC and minority category.

Social Integration Programme (SIP), a commitment for the development of villagers/inhabitants in the areas within a radius of 10 Kms. around DVC's main projects was launched in line with Government of India's Twenty Point Programme in 1981. Initially the programme was launched in four projects at Maithon, BTPS, CTPS and DTPS covering 25 villages, which has gradually been extended to other projects at Panchet, Konar, Tilaiya and MTPS. The total number of villages covered by the programme is 375 villages spread over 267 villages of Jharkhand and 108 villages of West Bengal for Socio-economic and infrastructure (basic amenities) development.

An amount equivalent to 2% of the preceding year's net profit of the Corporation is allocated for implementing different activities under SIP. The fund allocated for SIP is a non-lapsable fund. An amount of Rs.10.11 crores has been allocated in the year 2007-08, out of which Rs.4.35 crores has been spent up to October 2007.

The programmes taken up under Socio-economic development are Primary and Non-formal Education, Primary Health, Health Awareness & Family Welfare, Self-Employment and Vocational Training, Development of Agricultural & Non-Farming Activities, Sports, Entertainment and cultural activities, Social Forestry & Fisheries, Capital Assistance and training for income generation to improve the standard and skill of rural youths. In infrastructure development, need based schemes such as Construction and Renovation of Drinking water wells, Installation of Hand Pumps & Water Tap points, Construction and Renovation of Primary School Buildings, Boundary Walls, Construction and Renovation of Community & Health Centres, Construction/Renovation of Bathing / Washing Ghats, Burning Ghats, Toilets/ Urinals etc., Construction of Roads, Culverts, Check Dam/ Embankment, Drain etc., Construction of Open-air stage, Training Centre, Passenger shelter, Market Shed and installation of Micro Lift Irrigation System have been taken up.

RECENT INITIATIVES

Guideline for Social Integration Programme has been issued to facilitate greater participation of people, SHGs, NGOs, Community based bodies etc. in the programmes improving monitoring and quality of works, forward and backward linkages, convergence, role of implementing agencies etc. For effective identification and implementation of various programmes under SIP, the centralised control has been withdrawn and the responsibilities have now been given to the respective Project Heads.

In addition to the existing Medical Mobile Unit (MMU) facilities providing free medical treatment to the villagers, DVC has started MMU services to the villages around 10 Kms. of its upcoming projects at Balpahari, Koderma, Raghunathpur and Andal. These services have become very popular to the villagers. Requests are pouring in from the villagers for increasing the frequency of mobile unit visits, and the same is being considered.

GRIEVANCE REDRESSAL

The Public Grievance Cell headed by a Sr. Joint Secretary, DVC, Secretariat is functioning at the HQ of the Corporation to attend and redress the grievances of the public. Grievance Cells for attending grievances of the employees are also functioning at various field formations consisting of representatives of the management.

WELFARE OF DVC EMPLOYEES

In every project of DVC there is a Labour & Welfare Officer and also a Welfare Centre wherefrom Books, Journals, Daily Newspapers, Sports Materials etc. are provided. Complaint Committees constituted to combat the evils of

sexual harassment of women at workplace are functioning in the projects of DVC. The respective Labour & Welfare Officer posted at the project looks after the general well being of the employees.

WELFARE OF MINORITIES

The programmes and facilities applicable to SC/ST and OBC are as well equally extended to the minority communities residing in the adjacent villages. The facilities for pursuing their cultural and literary interests are also provided to them. More so, the Projects around which Minority Community people are in large number, Urdu MAJLIS have been set up, aided and maintained by DVC, which cater to the cultural need of Minority Community.

RIGHT TO INFORMATION ACT

In accordance with the Right to Information Act, 2005, DVC have taken necessary steps to provide information to the citizens of the country. There are nine Public Information Officers (PIO) in DVC. In all the major projects, there is a PIO to take care of the applications received in the respective project for furnishing information under the Act. The PIO posted at Headquarters extends all the necessary support in this regard. All applications received are dealt with due importance by the respective PIOs. Moreover, continuous monitoring is done from the Headquarters on the functioning of the PIOs posted at different projects of DVC. In case the applicant does not receive a decision within the time specified in the Act, or is not satisfied by the response of the PIO, he/she may prefer an appeal to the Appellate Authority of DVC for redress of grievance. For more details, any one can access to DVC's website at portal.dvc.gov.in.

CHAPTER - 22.10

BHAKRA BEAS MANAGEMENT BOARD

Bhakra Management Board (BMB) was constituted under Section 79 of the Punjab Re-Organization Act, 1966 for the administration, maintenance and operation of Bhakra Nangal Project with effect from 1st October, 1967. The Beas Project Works, on completion, were transferred by the Government of India from Beas Construction Board (BCB) to BMB as per Section 80 of the Act and Bhakra Management Board was renamed as Bhakra Beas Management Board (BBMB) with effect from 15.5.1976.

FUNCTIONS

Bhakra Beas Management Board is responsible for the administration, operation and maintenance of Bhakra Nangal Project, Beas Satluj Link Project and Pong Dam including Power Houses and a network of transmission lines and grid sub-stations. The functions of Bhakra Beas Management Board are:

- To regulate the supply of waters from Bhakra- Nangal and Beas projects to the states of Punjab, Haryana and Rajasthan.
- To regulate supply of Power generated at the Bhakra-Beas Power Houses to power utilities incharge of distribution of power in the participating States

Keeping in view the technical expertise available with BBMB, the Government of India through a notification in April, 1999 has also entrusted additional functions to Bhakra Beas Management Board of providing and performing Engineering and related technical and consultancy services in various fields of Hydro Electric Power and Irrigation Projects and to carry on all kind of business related thereto either independently or as a joint venture with any Central/ State/Public Sector Undertaking(s) or Establishment(s) under the administrative Control of Ministry of Power or as a joint venture with any other agency/Organization with the approval of Government of India.

The works being managed by BBMB are broadly grouped as three large multipurpose projects viz. Bhakra Nangal Project, Beas Project Unit-I (BSL Project) and Beas Project Unit-II (Pong Dam).

The Bhakra Nangal project comprises the Bhakra Dam, Bhakra Left Bank and Bhakra Right Bank Power Houses, Nangal Dam, Nangal Hydel Channel and Ganguwal, Kotla Power Houses and associated transmission system. Bhakra Dam is a majestic monument across the river Satluj. It is a high straight gravity concrete Dam rising 225.55 meters above the deepest foundation and spanning the gorge with 518.16 metres length at the top. The Gobind Sagar Lake created by the Dam has 168.35 square kilometers area and a gross storage capacity of 9621 million cubic meters. The two power houses, one on the Left Bank and the other on the Right Bank have a combined installed capacity of 1325 mega watt. The Ganguwal and Kotla Power Houses fed from Nangal Hydel Channel have an installed capacity of 153.73 mega watt. The Beas Project Unit – I (BSL Project) diverts Beas Water into the Satluj Basin, falling from a height of 320 meters and generating power at Dehar Power House having an installed capacity of 990 mega watt. This project comprises a diversion dam at Pandoh, 13.1 kilometers long Pandoh Baggi Tunnel, 11.8 kilometers long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 kilometers long Sundernagar Satluj Tunnel, 125 meters High Surge Shaft and Dehar Power Plant. The Beas Dam at Pong is earth-fill (earth core, gravel shell) Dam 132.6 meters high with a gross storage capacity of 8570 million cubic meters. The Pong Power Plant (6x66 = 396 mega watt) is located in the stilling basin downstream of penstock tunnels.

The total installed generating capacity of the BBMB Power Houses is 2864.73 Mega Watt as detailed under :-

Power House	Installed Capacity	Mega Watt
Bhakra (Right Bank)	5x157	785
Bhakra (Left Bank)	5x108	540
Ganguwal	1x27.99+2x24.20	76.39
Kotla	1x28.94+2x24.20	77.34
Dehar	6x165	990
Pong	6x66	396



A view of Bhakra Dam

GENERATION AND TRANSMISSION SYSTEM

The generation during 2006-07 was 10090 million units. During the current year 2007-08, the generation from BBMB Power Houses has been 8425 Million Units up to 30.11.2007 against the target of 7205 Million Units. Generation of 10839 Million Units is anticipated up to 31st March, 2008 against the annual target of 10150 million units fixed by the Central Electricity Authority. The Power House wise plant availability of BBMB Power Houses for the year 2007-08 up to 30.11.2007 has been Bhakra Left Bank-99.76%, Bhakra Right Bank 98.35%, Ganguwal 94.35%, Kotla 96.15%, Dehar 80.02% and Pong 96.68%. The Power generation at BBMB Power houses is being evacuated through BBMB Power evacuation system running into 3706 circuit kilo metres length of 400 Kilo Volts, 220 Kilo Volts, 132 Kilo Volts and 66 Kilo Volts transmission lines and 24 Sub-stations. The Bhakra Beas Management Board Power evacuation system operates in an integrated manner in the Northern Grid with its transmission network spreading over the States of Himachal Pradesh, Punjab, Haryana and Delhi. The system is interconnected with transmission system of POWERGRID and the States of Uttar Pradesh, Rajasthan and Delhi. The availability of transmission system during the year 2006-07 was 98.17% whereas the

availability of transmission system during 2007-08 up to November, 2007 has been 98.72%.

IRRIGATION

At the time of partition of India, about 80% of the irrigated area of Punjab went to West Pakistan leaving India with very meagre irrigation resources. The mighty Bhakra-Nangal and Beas Projects changed the scenario and turned Northern India into granary of the Nation. The Bhakra Nangal and Beas Projects have not only brought Green Revolution in the States of Punjab, Haryana and Rajasthan, but also White Revolution by way of record production of milk. The States of Punjab, Haryana and Rajasthan are being supplied on an average about 28 million acre feet of water per year which irrigates 125 lac acres of land.

RENOVATION, MODERNISATION AND UPRATING (RM&U)

The Renovation, Modernization and Upgrading of two units each of Ganguwal and Kotla Power Houses and all the six units of Pong Power House (60 to 66 MW) has already been completed in year 2004.

The contract for renovation, modernization and uprating of Bhakra Left Bank Power House machines (5x108 mega watt) in operation for the last about 45-46 years has already

been signed with M/S Sumitomo Corp. Japan (Consortium). Under this R, M & U of all the five units shall be uprated from 108 MW to 126 MW, adding a generation capacity of 90 MW and 349.025 million units per annum. The work shall be carried out in XI and XIIth plan and shall be completed by November, 2012.

The work of Renovation, Moderation and Uprating of Unit No.1 of each of Ganguwal and Kotla Power Houses has been completed and these units have been commissioned on 20.10.2006 and 13.4.2007. With the completion of these works, the derated capacity of the machines has been uprated by 4.43 MW which shall result in additional annual generation of 38.14 million units. During renovation, replacement of major components like runner, governor, stator, unit transformer and other associated equipment has been done.

UPKEEP OF DAMS AND HYDEL CHANNELS

The upkeep of Dams and Hydel Channels by Bhakra Beas Management Board has been of high standards, which are considered benchmarks for other hydro projects in the region. Monitoring of the health and behaviour of dams with the help of instruments installed in and around the body of dams shows the normal behaviour. Underwater inspections of Dams also do not indicate any abnormality.

Nangal Hydel Channel is running continuously since its year of commissioning i.e. 1954. Inspection, repair and maintenance of Nangal Hydel Channel are being carried out online without any closure. Sand grouting of lining is done regularly and underwater repairs are done with the help of divers. This has not only helped in maintaining an uninterrupted supply of water to the Partner States but has also helped in continuous operation of Ganguwal and Kotla powerhouses for the last 53 years.

ENVIRONMENT MANAGEMENT PLAN

PLANTATION PROGRAMME

BBMB had chalked out a programme to plant trees and shrubs on vacant land at all the Project Stations every year. During the year 2007-08, against a target of plant 68,000 trees and shrubs, BBMB has already planted 53000 plants upto November, 2007. More plants will be planted in the month of January & February, 2008. At Talwara, a Green Land Project has been started on 40 acre plot in which different varieties of plants are being grown in a phased manner.

JATROPHA PLANTATION

BBMB has surplus land in Talwara Complex which was acquired during the construction of Beas Dam Project. After construction of the project, approximately 800 acres of surplus land is available at Talwara out of which 750 acres is fit for plantation purposes. To avoid encroachment by the local people on this surplus land, BBMB has made an

extensive plan to plant Jatropha plants in this land. In this regard, The Energy & Resources Institute (TERI) has submitted a comprehensive proposal for providing consultancy for Jatropha Plantation and as per this report cultivation of 4,95,000 no. of Jatropha plants can be carried out in about 300 hectare surplus land available at Talwara. During the current year (2007-08), the target of plantation of 1,65,000 Jatropha plant has been achieved. The Jatropha plantation on surplus land at Talwara would supplement bio-diesel programme in India.

The bio-mass based renewable sources of energy, like bio-diesel from Jatropha seeds when produced in an efficient and sustainable manner have various environmental and social benefits. This programme is covered under Clean Development Mechanism (CDM) under Kyoto Protocol and this mechanism of bio-diesel production also gives CDM credits to the companies/organizations doing Jatropha plantation.

ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR BEAS SATLUJ LINK PROJECT

The Environmental Management Plan (EMP) proposed for BSL Project by NEERI, Nagpur had following two components:

- i) Short-Term Measures: These were the mitigation measures for the benefit of the general public like organized promotion of fish production in Suketi Khad & its tributaries, one-time farm management in silt affected agriculture-land, tarring of road along one side of Sundernagar Hydel Channel, improvement of cross-over bridges on Suketi Khad, plantation at Baggi Control Works (BCW) and along Sundernagar Hydel Channel, provision of cattle-troughs along Suketi Khad, etc. Out of these measures, some were required to be completed exclusively by BBMB and others were to be completed by the H.P.Govt. Deptts. after getting their proposals vetted/financed by BBMB.

Status: The Short –Term measures, which were directly under the control of BBMB, were completed even before onset of monsoon 2003. The measures completed were - improvement & modification of 22 no. cross-over bridges of modified design, metalling & tarring of road along one side of Sundernagar Hydel Channel and tree plantation along Sundernagar Hydel Channel and BCW.

The project of development of fisheries in Suketi Khad and its tributaries costing ,Rs. 72 lacs was approved by BBMB and an amount of Rs. 36 lacs as 1st Installment was released to Fisheries Deptt., of HP in October, 2003. Fisheries Deptt. has executed the 1st phase of the project. The second instalment of 36 lac is being released very shortly.

The Animal Husbandry Deptt. of HP has withdrawn the proposal of making provisions of cattle troughs for animals along Suketi Khad corridor, as the dredging activity has been restricted only to monsoon season and silt free clear water is available for drinking purpose of animals in Suketi Khad during lean season.

- ii) Long-term measures: The long-term measures suggested by NEERI were to reduce the silt load at Pandoh Dam and for disposal of silt from Balancing Reservoir, Sundernagar.

The Central Pollution Control Board in consultation with Ministry of Environment & Forest constituted an Expert Committee in pursuance of the directions of Hon'ble HP High Court, Shimla in 2004, for preparing an action plan for management of silt and advise on other relevant issues with respect of BSL Project. The Expert Committee, after detailed studies for about a year submitted its final report in the Hon'ble HP High Court, Shimla on 10.05.2005, in which an 'Action Plan' has been proposed for monsoon seasons for BSL Project for next 3 to 5 years. The Hon'ble HP High Court has asked BBMB to implement the Action Plan for 5 years for which monitoring will be done by the Expert Committee'.

During this year BBMB has enhanced the dredging capacity by commissioning the 3rd dredger. The dredging is being done during the monsoon period as per recommendations of the Expert Committee and Bhakra Beas Management Board has implemented the Action Plan proposed as above during the monsoon season of 2007.

MINIMUM FLOW IN RIVERS BEAS

In respect of minimum flow from Pandoh dam, BBMB has been following Environmental Management Plan (EMP) (Dec.2000) prepared by National Environmental Engineering Research Institute (NEERI). In the EMP NEERI had recommended to maintain a minimum daily inflow in river Beas at Mandi Town to not less than 5% of minimum daily flow upstream of Pandoh Dam. It was also recommend that after accounting for all the Khads/rivers/rivulets confluencing with river Beas in the reach between Pandoh dam and Mandi and flowing under normal present condition, the shortfall, if any, may be made up by release of water from Pandoh dam. However, so far occasion has not arisen when water had to be released from Pandoh Dam downstream at the cost of power generation at DPH as the contributions from rivers/rivulets downstream the dam were adequate to meet the stipulated requirement of 5% of minimum daily inflows at Mandi Town.

The Himachal Pradesh Govt. vide Notification No. PC-F(2)-1/2005 dated 16.07.2005 and revised Notification No. . PC-F(2)-1/2005 dated 09.09.2005 has ordered to release the minimum flow downstream of

Diversion Dams throughout the year at a threshold value of not less than 15% of the minimum inflow observed in the lean season into main river body whose water is being harnessed by such projects. Accordingly BBMB has started releasing the minimum stipulated flow as desired vide above said notifications from Pandoh dam from September, 2005.

CONSULTANCY SERVICES

In an endeavour to synergies, the existing potential of BBMB to boost the interest of its Partner States, BBMB Consultancy Services were introduced.

The following works were carried out by Consultancy Services of BBMB during the year 2007-08.

- 1) L.O.I (Letter of Intent) has been signed with World Bank for development of CDM project of BBMB through sale of Certified Emission Reductions (CERs) generated by Renovation, Modernisation, and Up-rating (R,M&U) Programme of BBMB for its Hydro Power Stations . The project PDD (Project Design Document) is in final stages of Pre-validation and Host Country approval has been applied and sought from MoE & F, Govt. of India, New Delhi.
- 2) a) Successfully running training courses under Distributed Reforms, Upgrades & Management (DRUM) programme for engineers and technicians of Power Utilities of neighbouring States which has been sponsored by Ministry of Power to promote power sector reforms.
b) Imparted 'On-job Site' O&M training to 60 No.s Executive Trainee Engineers of UJVNL, Dehradun at various Power Houses of BBMB.
- 3) Provided cost effective expert services for the development of power sector infrastructure of the region.
- 4) Provided expert services for thermo-vision scanning, hotline maintenance, checking of protection schemes and stretch testing of hydrogen gas cylinders to power utilities of Haryana, Delhi, Punjab and UT of Chandigarh.

Organising a Competent Workforce:

The Operation and Maintenance personnel in BBMB is a highly motivated workforce who are generally satisfied with wages, benefits and lifestyle. BBMB has given thrust to the training of its personnel for continually improving their competencies and efficiency to support safe, reliable and cost effective operation. BBMB has framed and adopted a 'Training Policy' in line with Ministry of Power's training policy in its Board's meeting held on 24.6.2003.

Massive training programmes through Interactive Workshops/Seminars at all the Project Stations under the concerned Chief Engineers as well as in the Board Secretariat, both for workers and engineers on Technical,



A view of Pandoh Dam in Himachal Pradesh

Management, Motivational, Legal, Health and Financial matters have been taken up. Services of the serving experts, retired BBMB personnel and experts from other organizations, including manufacturers of equipment, etc. have also been gainfully utilized. In addition to this, the Institutional Training Programmes were conducted by reputed Institutes/Firms/ Organizations.

BBMB has created its own infrastructure for imparting training to its employees. A Lecture Hall at SLDC Complex, Chandigarh to arrange In-house Lectures / Workshops / Seminars has been established in the year

2003. A Training Centre with the name “Bhakra Beas Training Centre” has started working at Nangal from March 2005. The Training Centre has a Lecture Hall with all the latest learning-aids, two different model-rooms for Irrigation and Power Wings and a discussion room to impart institutional training to the power sector engineers and technicians of BBMB & other power utilities. Training programme on “DRUM” has been started at this centre since 2005-06 and every month a training on ‘DRUM’ is being imparted since then in which the engineers from the Partner States/Utilities are also participating.

CHAPTER - 22.11

BUREAU OF ENERGY EFFICIENCY

The Government of India has enacted the Energy Conservation Act 2001, and for implementing various provisions in the EC Act, Bureau of Energy Efficiency (BEE) was operationalised from 1st March 2002. The EC Act provides a legal framework for energy efficiency initiatives in the country. The Act has mandatory and promotional provisions which broadly relates to Designated Consumers, Standards and Labeling programme for equipment and appliances and Energy Conservation Building Codes (ECBC) for new commercial buildings. The Bureau is spearheading the task of improving the energy efficiency in various sectors of the economy through regulatory and promotional mechanism. Bureau of Energy Efficiency coordinates with designated consumers, Designated agencies and other organizations recognize, identify and utilize the existing resources and infrastructure, in performing the functions assigned to it under the EC Act.

Mission of BEE

The Mission of Bureau of Energy Efficiency (BEE) is to develop policy and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act (EC Act), 2001 with the primary objective of reducing energy intensity of the Indian economy. This will be achieved with active participation of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

Objectives and Strategies

The primary objective of BEE is to reduce energy intensity in the Indian economy. In order to translate the objectives into result-oriented action the broad strategies of BEE include:

- To coordinate policies and programmes on efficient use of energy and its conservation with the involvement of stakeholders
- To plan, manage and Implement energy conservation programmes as envisaged in the EC Act
- To assume leadership and provide policy framework and direction to national energy efficiency and conservation efforts.and programmes
- To demonstrate energy efficiency delivery mechanisms, as envisaged in the EC Act, through private public partnership
- To establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at the national level.

To leverage multi-lateral, bi-lateral and private sector support in implementation of programmes and projects on efficient use of energy and its conservation.

Functions of BEE

BEE co-ordinates with designated consumers, designated, agencies and other organizations; recognizes, identifies and utilizes the existing resources and infrastructure, in performing the functions assigned to it under the EC Act. The EC Act provides for regulatory and promotional functions.

Regulatory functions

The major regulatory functions of BEE include:

- ❖ Develop minimum energy consumption standards and labelling for equipment and appliances
- ❖ Develop specific energy conservation building codes
- ❖ Activities focusing on designated consumers
 - Develop energy consumption norms
 - Certify energy managers and energy auditors
 - Accreditation of energy auditors
 - Define the manner and periodicity of mandatory energy audits
 - Develop reporting format on energy consumption and action taken on the recommendations of the energy auditors

Promotional functions

The major promotional functions of BEE include:

- ❖ Create awareness and disseminate information on energy efficiency and conservation
- ❖ Arrange and organize training of personnel and specialists in the techniques for efficient use of energy and its conservation
- ❖ Strengthen consultancy services
- ❖ Promote research and development
- ❖ Develop testing and certification procedures and promote testing facilities
- ❖ Formulate and facilitate implementation of pilot projects and demonstration projects
- ❖ Promote use of energy efficient processes, equipment, devices and systems



Sh. Sushilkumar Shinde, Minister of Power at National Launch of Energy Conservation Building Code (ECBC)

- ❖ Take steps to encourage preferential treatment for use of energy efficient equipment or appliances
- ❖ Promote innovative financing of energy efficiency projects
- ❖ Give financial assistance to institutions for promoting efficient use of energy and its conservation
- ❖ Prepare educational curriculum on efficient use of energy and its conservation.
- ❖ Implement international co-operation programmes relating to efficient use of energy and its conservation.

PROJECTS AND PROGRAMMES

Bureau of Energy Efficiency has already launched many voluntary and mandatory provisions of the Energy Conservation Act which received support from all the stake holders.

Standards and Labeling .

The Hon'ble Union Minister of Power launched the National Energy labeling program on May 18, 2006 at New Delhi. To begin with, the scheme is being implemented on voluntary basis for Room Air conditioners, Refrigerators (No-Frost) Direct Cool, Tubular Fluorescent Lamps and distribution transformers. The scheme is to be extended to

other equipments as well and will be made mandatory. As the scheme was initiated in the terminal year of X plan, it is expected that direct energy savings will commence from the first year of XI plan and is likely to result in energy savings of about 18 billion units annually from 2011-12.

The equipments like Electric Motors, Agricultural pump sets, CFLs, consumer electronic products, etc. are being added in a phased manner.

National Campaign on Energy Conservation.

Hon'ble Prime Minister of India, Dr. Manmohan Singh launched a National campaign on energy conservation on the occasion of the Energy Conservation Day observed on 14th December 2004, primarily to create awareness about the meaning, need and significance of the energy conservation.

Under the National Campaign of the Energy Conservation, a painting competition on the energy conservation for the school children of 4th and 5th standards of the 35 States and the Union territories was conducted. Total number of 17560 schools and 3.43 lakh students of 4th and 5th standard participated in school level competition in year 2005, these numbers grew to 17991 schools & 3.99 lakh students and 24385 schools & 5.25 lakh



Prize Winning Painting by Yeerina Debnath, West Bengal, on the occasion of Energy Conservation Day, 14th December, 2007

students in year 2006 and 2007 respectively. This competition is aimed at motivating the children towards energy conservation and offers them a chance to explore their creativity. The Hon'ble President of India, Smt. Pratibha Devisingh Patil presented the awards to the winning children of painting competition on 14th December 2007.

Certification of the Energy Professionals

Fourth & fifth National certification Examination for Energy Managers and Auditors were conducted on 21-22nd April 2007 and 17-18th November 2007. From the last 4 National Certification Examinations, 883 Certified Energy Managers, 1188 Energy Auditors candidates certified as Energy Managers and 2986 Certified Energy Managers-cum-Auditors are in place.

Energy Efficiency in existing and New Buildings

Existing Buildings

There is a huge scope of energy savings in the existing buildings. Energy audit studies conducted in several office buildings, hotels & hospitals indicate energy saving potential of 23% to 46% in end uses like lighting, HVAC etc. Under the first phase of energy efficiency in the government building program, 9 government buildings were covered and the identified energy efficiency measures were implemented through the ESCO route. In Phase-2 of the Programme, 17 Government Buildings have been identified and taken up for implementing Energy efficiency measures by CPWD.

Energy Conservation Building Codes (ECBC) was launched on May 27, 2007 on a voluntary basis for new, commercial buildings having connected load of more than 500 kw. These codes define norms of energy requirement per square meter of area and takes into consideration, the climatic regions of the country where the building is located. The major components of the building which are being addressed through this code are walls, roofs and windows; lighting systems, HVAC systems, electrical distribution systems, water heating and water pumping systems.

Mandatory compliance of the ECBC is expected to yield annual saving of approximately 1.7 billion units.

Strengthening of the State Designated Agencies (SDAs)

SDAs are the statutory body setup under the Energy Conservation Act 2001. These were set up to implement the Act at the state level. The bureau in order to enforce and regulate provisions of the Energy Act 2001 will help in strengthening and capacity building of the SDAs. A comprehensive action plan has been evolved and most of the SDAs are in advanced stage of formulating it.

Under the XI five year plan, BEE would set up an Energy conservation information cell (ECIC) to analyze and monitor the energy consumption trends and energy conservation achievements in the country.

BEE is implementing web based online system for seamless filing of returns by the designated consumers as required under the Energy Conservation Act 2001. This would facilitate low transaction cost for filing of returns by the Designated consumers before the SDAs .

Demand Side Management

Demand side management has emerged from the supply scenarios and is further underlined by rising energy prices. BEE has evolved a strategy to achieve the Demand side management which includes establishment of DSM cells in the states, Training and technical assistance to the DSM cell staff & regulatory commissions, project development & implementation through the private sector initiative, Implementation of Pilot Projects in selected states & recommendation for tariff, driven as well as non-tariff



Prize Winning Painting by Sanpreet Singh, Punjab, on the occasion of Energy Conservation Day, 14th December, 2007

regulatory mechanism to provide incentives for the utilities. BEE has also proposed measures like ToD (Time of Day) Tariffs, power factor incentives and incentivizing of electricity purchase from the captive generation by the grid.

COM CFL Scheme

The Hon'ble Minister of Power announced the Bachat Lamp Yojana on 28th May, 2007. The basic tenet of the scheme

is to provide CFL bulbs at the cost of Incandescent bulbs. The scheme seeks to leverage CDM revenues as a result of energy consumption reduction to reduce the price of the CFLs. BEE will monitor the scheme under an approved methodology of CMD Executive Board of UNFCCC. Target replacement of 400 million incandescent bulbs with CFLs could save an estimated 6000-10000MW demand.

Designated Consumers and the Small & Medium Enterprises (SMEs)

BEE has proposed a program to improve the energy efficiency of the SMEs and promote energy conservation measures by a mix of government, financial institutions and private support. For this, BEE has initially identified 25 SME clusters in the country which have immense potential savings. The notification for the designated consumers was issued in March 2007 for 9 industrial sectors and other establishments such as Railways. They will have to appoint energy managers and submit annual returns on energy use to SDAs.

School Curriculum

Under the school education program a pilot project was undertaken by the Bureau of Energy Efficiency for the school children and as a result of BEE's efforts, NCERT has revised 9th standard science book of the NCERT scheme by incorporating text on the energy conservation.

National Energy Conservation Awards

This award scheme has motivated the progressive participating units to undertake serious efforts in saving the energy thereby preventing the anthropogenic climate change and saving the environment. A total of 384 nominations were received for 2007 National Energy conservation awards, these units collectively saved 308 MW of energy and in monetary terms 1843 crores per year by implementation of the energy efficient measures.



Prize Winning Painting by Supayan Pal, Tripura, on the occasion of Energy Conservation Day, 14th December, 2007



Prize Winning Painting by Supayan Pal, Tripura, on the occasion of Energy Conservation Day, 14th December, 2007

Energy Conservation Highlights

- CDM-CFL scheme announced on 28th May 2007 .
- In line with Bureau's energy labeling program, the energy labeling of Frost Free & Direct Cool Refrigerators, Tubular Fluorescent lamps, Room Air conditioners and Distribution Transformers is being implemented.
- About 24385 schools and 525 lakh students participated in the National Energy conservation Painting Competition in year 2007.
- ECBC launched by the MoP on 27th May 2007, energy audits studies in 17 government buildings have been successfully completed in the second phase.
- A total of 384 nominations were received for 2007 National Energy Conservation Award, these units collectively saved 308 MW of energy and in monetary terms Rs.1843 crores per year by implementation of the energy efficient measures.

CHAPTER - 22.12

Central Power Research Institute (CPRI)

An Autonomous Registered Society under the Ministry of Power, the Central Power Research Institute (CPRI) is in the service of the Nation, undertaking applied research in electric power engineering besides functioning as an independent Testing and Certification Authority for electrical equipment and components to ensure reliability and improve innovate and develop new products. The laboratories are located at Bangalore, Bhopal, Nagpur, Thiruvananthapuram, Hyderabad and Ghaziabad.

New Test Facility Created

The illumination Laboratory of Electrical Appliances Technology Division has set up a PC based Compact Fluorescent Lamp (CFL) endurance testing facility, which was recently commissioned and the testing work is in progress.

Special tests conducted at laboratories of CPRI

- 800kV High Voltage Direct Current (HVDC), Type 'A' (W:4) tower tested for the first time in the Country/World. The salient features of the tower are: Height:59m, Weight:43t & Cross arm:53m (end to end). Powergrid Corporation of India Ltd. (PGCIL) was the customer.
- Condition monitoring tests on Power House & Switchyard equipments including Hydro Generators, Generator transformers, Current Transformers, Current Voltage Transformers, Potential Transformers, Lighting Arresters for Loktak Power Station, Manipur completed.
- Diagnostic tests on 220 kV substation equipment at Durgapur sub-station, West Bengal State Electricity Board (WBSEB).
- Site testing on 220kV, 1000 sq. mm Cross-limited Polyethylene (XLPE) cable of M/s. BRUGG Cables, Switzerland at Brigade Group site at K. R. Puram, Bangalore on 3rd, 9th & 27th April 2007.
- HV test on 66kV cable for M/s. NICCO Corporation, K. R. Puram, Bangalore on 26th April 2007.
- Humidity tests with application of 7 kV on a outdoor vacuum kiosk, 12kV 630 A for one of the circuit breaker for M/s. ABB, Nasik.
- Testing of Bus Bar Protection Relay was carried out for M/s. AREVA T&D Ltd., Chennai.

Diagnostic tests at Site

- 1) Diagnostic tests were carried out on Generators and Switchyard equipment at NHPC, Uri Power Station during 8th to 20th October 2007.

- 2) Recovery Voltage Measurement (RVM) tests were carried out on 400kV class Transformers at NTPC, Farakka, West Bengal during 4th to 6th October 2007.
- 3) Diagnostic tests were carried out on Steam Turbine Generators, Generator Transformers, Auxiliary Transformers on 220kV class Current Transformers, Current Voltage Transformers (CVTs) & Las at M/s. GMR Energy Ltd., Mangalore during 29th Oct to 7th Nov. 07.
- 4) Diagnostic tests were carried out on 220kV class Current Transformers, CVTs at Durgapur Thermal Power Station (DTPS), DVC, Durgapur during 16th to 24th Nov. 07.
- 5) Diagnostic tests were carried out on 215 MV Hydro Generators and Switchyard equipments are in progress at Sutluj Jal Vidyut Nigam Ltd., Jakhri, H.P.

Condition Monitoring tests

Condition Monitoring tests were carried out on Substation equipment at Rourkela Steel Plant, Rourkela, Orissa during 20th Sept. to 14th Oct. 2007.

Field Services & Special Consultancy rendered:

- A Software for design of Earth Mat for Extra High Voltage (EHV) Substations developed by CPRI was delivered to KSEB, Thiruvananthapuram as a technology transfer to KSEB. As part of this, three Engineers from KSEB underwent one day Exposure programme in the usage of the Software and also to understand the algorithm of Earth mat design based on relevant Indian and International Standards.
- Design checking/analysis of 50m triangular base microwave tower for M/s. Tylon TSF, Canada.
- The 400kV D/C tower, Type 'SET70' of Delta configuration with major features like 58 meter height, cross arm length of 43 metre end to end, with heavy magnitude of loads per conductor points like 54 tonne in transverse, 40 tonnes in vertical and 37 tonne in longitudinal, and stub load of 460 tonnes uplift was successfully tested on 14th September 2007 for M/s. Larsen & Toubro Ltd., Chennai for their foreign customer Dubai Electricity & Water Authority.
- Carried out preliminary inspection of failure of 33kV cables and accessories during 11th & 12th September 2007 at Heavy Water Plant, Department of Atomic Energy (Manuguru), Andhra Pradesh.



Emission Test on Sample

- Pre-qualification test for Cables as per IEC 62067 on 220kV XLPE cables was discussed at M/s. Universal Cables Ltd., Satna during 15th & 17th September 2007 in the presence of experts from The Furukawa Electrica Company Ltd., Japan.
- Carried out pre-commissioning tests on 110kV XLPE 2 cable circuit for TNEB, Chennai on 30th August 2007 & on 9th September 2007.
- Grid related studies at Gudepanchganai & Brahmanvel for M/s. Vestas Wind Technology India Pvt. Ltd., Maharashtra

Capital Projects

1. ESTABLISHMENT OF TEST FACILITY FOR EAST NORTH EASTERN REGION

The Institute's Unit, Regional Testing Laboratory, Guwahati which was established under the Capital Project "Establishment of Test Facility for East/North Eastern Region" was inaugurated by Shri Pradyut Bordoloi, Hon'ble Minister of Power and Industry, Govt. of Assam, on 20th July 2007.

2. CAPACITOR CURRENT SWITCHING FACILITY

Capacitor Current Switching Facility was completed in May 2007 at a cost of Rs.435.00 lakhs at Switchgear Testing & Development Station (STDS), Bhopal to study the behaviour of MV Switchgear with interrupting capacitive currents upto 400A and assist product development for Industries in the country.

3. ESTABLISHING COMPREHENSIVE ENERGY EFFICIENCY TESTING FACILITY FOR REFRIGERATORS AND AIR CONDITIONING AT BANGALORE

The project was sanctioned at a cost of Rs.495 lakhs to help the Bureau of Energy Efficiency in their energy labeling program.

4. AUGMENTATION AND MODERNISATION OF CPRI LABORATORIES

CPRI laboratories are being augmented under the capital project "Augmentation and Modernisation of CPRI Laboratories" at a cost of Rs.2329.50 lakhs

Marketing & Publicity

The Institute participated in Institute of Electrical & Electronics Engineers **(IEEE) National Symposium** in August 2007 and displayed the services and facilities available at the Institute to the public & the participants.

The Institute participated in **India International Trade Fair (IITF)** held at Pragati Maidan, New Delhi from 14th to 27th November 2007 and displayed the services and facilities available at the Institute to the public & the participants.

Accreditation ISO certification to Research & Consultancy activities.

CPRI was one of the first major electrical laboratories to achieve the distinction of accreditation as per International Electro technical Commission (IEC)/ International Standards Organisation(ISO) 17025 more than a decade back. All the laboratories of CPRI at Bangalore, Bhopal, and Hyderabad are accredited as per this quality standard. Surveillance Audit of ISO 9001 obtained during previous year for Research & Consultancy services was conducted during last year. The implementation is aimed to improve CPRI's work performance.

CPRI has been accredited as an Indian Certifying Body (CB) testing laboratory under the Bureau of Indian Standards (BIS) as National Certification Body and to carry out testing within the IECEE CB scheme.

CPRI became the second laboratory in Asia to become a full member of the Short Circuit Liaison (STL)

CPRI laboratories have been accredited by Association of Short-circuit Testing Authorities (ASTA) – British Electro technical Approvals Board (BEAB), UK for testing of Low Voltage & Medium Voltage (LV & MV) equipment. CPRI is having its own Observers for witnessing the testing under ASTA certification Scheme at CPRI laboratories.

RESEARCH ACTIVITIES

The Institute undertakes research programmes under Plan R&D Scheme for in house activity and manages Research Scheme on Power (RSOP) for external agencies. For the year 2007-08 eleven new projects amounting to Rs. 168.70 lakhs were commenced along with 15 ongoing projects commenced during previous year. Five new RSOP projects with an out lay of Rs. 85.23 lakhs were approved during 2007-08 while 22 projects are currently under investigation at various organizations like IITs, ERDA, TNEB, PSEB, KPTCL etc.

ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (APDRP)

Central Power Research Institute (CPRI) has been functioning as Advisor-Cum-Consultant (AcC) for the purpose of capacity building in the State Electricity Boards (SEBs) / Power Utilities of Karnataka, Kerala and Andhra Pradesh under the Accelerated Power Development and Reforms Programmes (APDRP) since 2001.

Benefits due to implementation of APDRP: The Feeder outages have been reduced considerably and Quality and Reliability of the supply has improved in all the three states. The complaints disposal time has been reduced considerably.

Patents and Technology Transfer

Details of Pending Patent Applications (Filed)

PATENTS	PATENT APPLICATION NO	FILING MONTH AND YEAR	PRESENT STATUS
A DEVICE FOR CARRYING OUT INSPECTION INSIDE A SHAFT ROTOR BORE	1482/CHE/2006	21-08-2006	Published
NITROGEN HETERO CYCLE AS LAN ACCELARATOR FOR CURING OF EPOXY RESIN SYSTEM	1895/CHE/2006	12-10-2006	Complete specification filed
A SYSTEM FOR MEASURING THERMAL ENERGY GAINED BY A WATER STORAGE TANK	1437/CHE/2006	14-08-2006	Complete specification filed

TECHNOLOGY TRANSFER

Ground mat design Software to Kerala State Electricity Board : Rs 1.25 lakhs

Non Plan Expenditure

The Institute has been meeting its non-plan expenditure through revenue generated by testing and consultancy for the last nineteen years.

ACTIVITIES RELATING TO WOMEN EMPLOYEES

Employment situation of Women Employees in various post(s) in CPRI as on 01.11.2007 is as follows :

88 out of 726 employees (12.12%).

GRIEVANCE CELL

The Grievance Cell has been active and available for representing any grievance faced by the women employees.

The Women Cell has taken keen interest in running a Creche as a welfare measure to the employees of CPRI and residents of the Colony.

PHYSICALLY CHALLENGED EMPLOYEES

No. of Physically Challenged employees in the Institute as on 01-11-07 is 16 out of 726

Representation of Scheduled Caste and Scheduled Tribe in the Institute as on 01-11-07 is 24.93% SC, 10.19% ST and 64.87% others.

VIGILANCE ACTIVITIES

Chief Vigilance Officer had received two complaints from the employees on some apparent vigilance matters. The cases were investigated and disposed of after discussion with the Head of the Organization. Reports and returns on vigilance activities were submitted in time to the Central Vigilance Commission (CVC) and also to the Ministry of Power.



420 kV SF6 Gas Circuit Breaker Under Seismic Test

CHAPTER - 22.13

NATIONAL POWER TRAINING INSTITUTE (NPTI)

INTRODUCTION

National Power Training Institute (NPTI) has been set up by the Ministry of Power, Govt. of India, to function as the National Apex Body for Human Resource Development of Power Sector.

NPTI with its Corporate Centre at Faridabad operates on an all India basis through its five Regional Institutes located at Neyveli (Tamil Nadu), Durgapur (West Bengal), Badarpur (New Delhi), Nagpur (Maharashtra) and Guwahati (Assam) and specialized Centres viz., Power Systems Training Institute (PSTI) & Hot Line Training Centre (HLTC) at Bangalore, a Centre for Advanced Management and Power Studies (CAMPS) at Faridabad (Haryana). NPTI (NE-R) is at present operating from temporary site at Narangi Complex of Assam State Electricity Board, Guwahati and a few courses are being conducted. The full-fledged training Institute at a cost of Rs.18.29 crores, is being set up at Kahilipara, Guwahati. Scheme for setting up of Hydro Power Training Centre at Nangal at an estimated cost of Rs.14.75 crores has also been sanctioned which is under implementation.

HI-TECH TRAINING TOOLS

The Institutes of NPTI are well equipped with Hi-Tech infrastructural facilities for conducting different courses on technical as well as management subjects covering the needs of Thermal, Hydro and Nuclear Power Plants, Transmission & Distribution Systems, and Energy related fields of the Indian Power and allied Energy sectors.

MANPOWER TRAINING

Several long-term and short-term training programs in the areas of Thermal, Hydro, Transmission & Distribution and Management etc. are being conducted in the various Institutes of NPTI.

Besides imparting training in the areas of Thermal, Hydro and Transmission & Distribution covering nearly 10,000 power professional of various levels annually, NPTI also conducts various industry interfaced academic programs with the objective to create a pool of committed and competent professionals equipped with appropriate



A student receiving MBA (Power Management) Degree from Prof. Raj S. Dhankar, VC, MD University, Rohtak in the presence of Dr. N.S. Saxena, DG, NPTI

technical skills like:

- One Year Post Graduate Diploma Course in Thermal Power Plant Engineering
- Four Year B.Tech./B.E Degree in Power Engineering
- Two Year MBA in Power Management
- One Year Post Diploma Course in Thermal Power Plant Engineering
- Six Months O&M of Transmission and Distribution System for Engineers
- Nine Months Post Graduate Diploma Course in Hydro Power Plant Engineering
- One Year Post Graduate Diploma in GIS and Remote Sensing

IMPORTANT ACTIVITIES

Launching of One Year Post Graduate Diploma in Geographical Information System (GIS) & Remote Sensing (RS)

A Centre of Excellence in GIS has been established at NPTI Complex, Faridabad in Technical Collaboration with CES Technologies Private Limited. As an initial step, a One year Post Graduate Diploma Programme in GIS & RS has been launched for Engineering and Geo-Science Graduates to provide a sound understanding of GIS & RS concepts for those wishing to take up GIS and allied subjects as their career.

IMPORTANT TRAINING PROGRAMS

12 weeks Training Program on “Power Plant Management” for 13 transnational trainees in association with Institute of Production Management

26- Weeks Training Program for XII Batch of 148 Executive Engineer Trainees of POWERGRID.

27 Weeks Induction Training program for Asstt. Directors of Central Electricity Authority

26 Weeks Refresher Training program for 23 Asstt. Directors Gr-I of Central Electricity Authority

08 weeks Training Program on “Thermal Power Plant Appreciation Course for 20 personnel of Gujarat State Electricity Corporation.

.02 weeks Advanced Management Program for Delhi Transco Limited.

Training Program on MS Office for 100 participants of CEA

SUMMER PLACEMENT FOR MBA (POWER) MANAGEMENT STUDENTS

NPTI successfully organized summer placement for all the students of the 5th batch of MBA in Power Management in reputed power sector organizations like PWC, Feedback Ventures, ABPS Infrastructure Advisory, IL & FS, Infraline, Torrent Power, Energy Infra tech, Reliance Energy Ltd., Enercon, Subhash Projects, Lanco etc.

CAMPUS PLACEMENT

All students of MBA in Power Management, B.Tech./B.E. in Power Engineering, PGDC & PDC in Thermal Power Plant Engineering, etc., are being Campus Placed in Engineering Companies, Consultancies, Credit Rating Agencies etc., such as ABB, Adani Energy, Balco, BSES, Capital Fortunes, CARE, CRISIL, ENERCON, Enzen, Infraline, Essar, KPMG, Jindal, L & T, NDPL, Feedback Ventures, KLG Systel, KSK Energy Ventures, Noida Power, Reliance Energy, PricewaterhouseCoopers (PwC), PTC India, Satyam, Tata Power, Torrent Power AEC, Uttaranchal Jal Vidyut Nigam Ltd. (UJVNL), Vedanta Group, University of Petroleum & Energy studies, Ultima Switchgears, etc.

CONSULTANCY SERVICE

NPTI provides consultancy in the field of Human Resources development including Training need Assessment, Manpower planning, Recruitment, Setting up of Training Institutes, Development of Modular Training Programmes and Conduction of Customized Training Programmes etc. NPTI has since been assigned the consultancy assignment for Recruitment of personnel by IPGCL/PPCL and Bihar State Electricity Board.

CHAPTER - 23

OTHER IMPORTANT ACTIVITIES

23.1 OFFICE OF THE CONTROLLER OF ACCOUNTS

The Secretary is the Chief Accounting Authority. The office of Controller of Accounts functions under overall supervision of Joint Secretary & Financial Adviser. The office is headed by the Controller of Accounts with one Deputy Controller of Accounts/Assistant Controller of Accounts and seven working Pay & Accounts Officers responsible for making all the payments, expenditure control, Internal Audit and accounting of all the receipts/payments. Out of these one Pay and Accounts office is stationed in Bangalore and one is the in-charge of the Internal Audit Wing. The Principal Accounts Office is responsible for consolidation of monthly Accounts of all the Pay & Accounts Offices for the preparation of Appropriation Account, Statement of Central Transactions (SCT) and Finance Account on annual basis for submission to the Controller General of Accounts (CGA) Department of Expenditure, Ministry of Finance. It

is also responsible for the compilation of various datas and generation of report for submission to Ministry of Finance, Power, OIO C& AG and CGA etc.

The Office of Controller of Accounts also brings out an annual accounting booklet called 'Accounts at a Glance' which contains total transactions of the Ministry and its various organizations. It gives a brief overview of Accounting trends. The office of the Controller of Accounts is also responsible for preparing the Receipt Budget of the Ministry.

Internal Audit Wing

The Internal Audit Wing ensures adoption of sound procedure, regularities and financial propriety of transactions of accounts. This Wing advises the DDOs and their staff for correct implementation of rules and maintenance of proper records. I.A.W. also pursues the settlement of objections raised by Statutory Audit.

Performance of the Internal Audit Wing during the year 2006-07 is as under :

Year (Accounts Due for audit during 2006-07)	No. of Units due/inspected	No. of Paras raised	No. of Paras settled	No. of Paras outstanding upto 30-11-2007
2006-07	20/18	110	42	159

AUDIT OBSERVATIONS

The Organisation-wise break up of Outstanding Audit Observations and Inspection Reports as on 30-11-2007, for the financial year 2006-07 is as under.

S.No.	Organisation	No. of Inspection Reports	No. of Paras
1.	Ministry of Power	2	12
2.	Central Electricity Authority	17	114
3.	Controller of Accounts		
	(1) PAO. CEA, N. Delhi	1	04
	(2) PR.A.O (Admn) N. Delhi	1	14
	(3) PAO, BMCC, New Delhi	1	01
	(4) PAO, CEA, Bangalore	1	08
	(5) PAO, Sectt. New Delhi	1	06
Total		24	159

Statutory Audit Paras of MOP, PSU's etc. :

As per this office records the position of pending Audit Paras is as under :

	Pending with				Total
	MOP	Unit	Audit	COPU/ Monitoring Cell	
(i) Commercial Paras	04	20	20	04	48
(ii) Civil Paras	08	05	15	-	28
(iii) Draft Paras	07	05	40	-	52
Total	19	30	75	04	128

Computerisation

The Office of the Controller of Accounts is generating Computerised Accounts through two packages namely COMPACT (PAO-2000) for accounts of Pay & Accounts offices and CONTROLLER'S ACCOUNTING (CONTACT-OLD) for monthly accounts of Pr. Accounts Office. The Package named COMPACT (PAO, 2000) for Pre-check, Compilation, GPF and Pension etc. Modules for Pay and Accounts Offices, CPFM package for New Pension Scheme and CONTACT (OLD) for Principal Accounts Office have been working properly.

A Pay package has been developed using PAY-TRAN through which pay bills, pay slips and other reports are being generated.

23.2 SCHEME FOR ONE TIME SETTLEMENT OF OUTSTANDING DUES PAYABLE BY SEB's TO THE CPSU**(I) Securitisation of Outstanding Dues**

An Expert Group under the Chairmanship of Shri. Montek Singh Ahluwalia, the then Member (Energy), Planning Commission recommended a scheme for one-time settlement of dues payable by State Electricity Boards (SEBs) to Central Public Sector Undertakings (CPSUs) and the Railways. The recommendations were accepted by the Government of India. All the 28 State Governments signed the Tripartite Agreements with Reserve Bank of India and the Government of India. Bonds amounting to Rs. 34,958 crore have been issued by 27 States. Goa had no outstanding dues. Government of National Capital Territory of Delhi securitized its outstanding dues by converting the dues into long-term advances of Rs. 3376.69 crore payable to the CPSUs concerned under Bi-partite Agreement as they do not have power to issue Bonds.

The securitization of old outstanding 'dues for the power sector companies envisaged under the Tripartite Agreement (TPA) has been completed with the issue of Bonds, except DESU period dues, for which a draft Cabinet Note has been circulated to various Ministries/Departments for their comments. The matter of settlement of dues of DESU period will be posed to the Cabinet on receipt of the comments of MHA.

The scheme has resulted in improvement in collection of dues of the power sector CPSUs.

(II) Constitution of Sub-Committee of the Standing Group of Power Ministers to look at financing issues including up-gradation of transmission and distribution networks.

In the conference of Chief Ministers held on 28-05-2007, the Hon'ble Prime Minister had announced constitution of a Sub-Committee of the Standing Group of Power Ministers to look at financing issues particularly for upgrading transmission and distribution networks.

Accordingly, a Sub-Committee of the Group of Ministers has been constituted on 31-08-2007 to look at financing issues including up-gradation of transmission and distribution networks. The constitution of the Sub-Committee is as under:-

Deputy Chairman, Planning Commission	-	Chairman
Minister of Power, Govt. of Andhra Pradesh	-	Member
Minister of Power, Govt. of Assam	-	Member
Minister of Power, Govt. of Maharashtra	-	Member
Minister of Power, Govt. of Orissa	-	Member
Minister of Power, Govt. of Uttar Pradesh	-	Member
Secretary, Financial Services	-	Convenor

Permanent Invitees

Secretary, Ministry of Power
Chairperson, Central Electricity Authority
Chairman & Managing Director, Power Finance Corporation Ltd.

The terms of reference of the Sub-Committee are as follows:-

To make appropriate recommendations on various issues to ensure timely availability of funds for achieving the target

of attaining a capacity addition of about 80,000 MW in the XI Plan, initiating action on XII Plan projects, and providing electricity to all households by 2012, with particular reference to issues such as :-

- (i) Constraints of state power utilities and private sector utilities/ companies in securing funds;
- (ii) Re-defining exposure limits, wherever necessary;
- (iii) Identifying the specific needs of transmission, sub transmission and distribution;
- (iv) Indicating broad policy measures and instruments for mobilizing long tenure finances for meeting investment requirements of the sector, particularly the hydroelectric projects; and
- (v) The possibility of including power funding under priority sector lending.

The constitution and Terms of Reference of the Sub-Committee have been ratified by Group of Ministers on 24-09-2007. Two meetings of the Sub-Committee have been held under the chairmanship of Deputy Chairman, Planning Commission on 17.10.2007 and 07.01.2008.

23.3 PUBLIC GRIEVANCES REDRESSAL AND MONITORING (PGRAMS)

An online system for handling Public Grievances was implemented in the Ministry. The Grievances Cell staff was trained on the application and data entry for all the grievances has been ensured. The system is also being implemented in the Organizations under the Ministry viz; PSUs and Autonomous bodies. Implementation has already been done in NHPC and action has been initiated in REC, PGCIL, NEEPCO, NPTI etc.

In the year 2007, Deptt. of Administrative Reforms and Public Grievance (DARPG) with technical support from National Informatics Center (NIC) has developed a revised version of the Public Grievance Redress & Monitoring System (PGRAMS) and has launched Centralized Public Grievance redressal & Monitoring System (CPGRAMS) for prompt and effective redressal of grievances of the citizens. The System is a single window grievance portal for the Ministries/Departments/Organizations to record and receive the grievances on-line and redress them indicating actions at different levels. The portal also facilitates receipt of the grievances lodged online through internet by the citizens from any geographical location.

The Grievance staff has attended the Training on the application and data entry. Login and ID Passwords have been created for Ministry of Power as well as its organizations viz. PSUs and Autonomous bodies. The system has been made functional with the technical support of NIC officials of the Ministry.

RIGHT TO INFORMATION ACT. 2005 PORTAL

RTI-MIS is an online web enabled System for on-line processing/monitoring of Requests and Appeals received from citizens by the concerned Public Authority. The implementation of RTI-MIS in the Ministry of Power as well as 16 organizations under the Ministry has been initiated and Training-cum-Awareness Programme was specially organized for the PIOs of all the Organizations under the Ministry.

RTI Portal - A gateway to Citizens for easy access to information (**URI: <http://rti.gov.in>**)

23.4 GRIEVANCE REDRESSAL MECHANISM IN NTPC

NTPC has a public grievance redressal mechanism in place for dealing with grievances of public at large. The Company Secretariat Department is the nodal point for redressal of Public Grievances and the Company Secretary has been designated as Director (Grievances) for the Corporation. Grievance Officers have also been appointed in all Projects/ Regional Offices. Grievances received from the public are being processed as per guidelines issued by Department of Administrative Reforms and Public Grievances and a monthly report is furnished regularly to the Department. Grievances from employees are being dealt as per staff grievance procedure framed in this regard.

23.5 POWERGRID's TRANSMISSION SYSTEM FOR DEVELOPMENT OF NORTH EASTERN REGION (NER)

At present, POWERGRID has a transmission network at different voltage levels viz. 400kV, 220kV and 132kV level for dispersal of power from various central sector generating stations to different States in North-Eastern Region as well as for Export/Import of power with neighboring States/ Region. POWERGRID's transmission system in NER consists of about 5,070 ckt. kms. of transmission lines including 864 ckt. km. of inter-regional lines between NER & ER and 14 sub-stations. POWERGRID has already invested over Rs. 1500 Crore in NER for development of transmission network. The transmission system comprises of high capacity lines viz. 400kV D/c Misa – Balipara – Bongaigaon – Malda corridor, which is operational since early 2000. However, on account of pegging of transmission tariff in NER at 35p/kwh POWERGRID has already incurred a revenue loss of Rs. 712.12 Crore till the end of X Plan (i.e. FY 2006-07).

POWERGRID has already completed the execution of 132kV Ziro-Daporijo-Along transmission system and 220kV Kathalguri-Deomali transmission system on deposit work of Arunachal Pradesh. Further, execution of Balipara-Khupi-Kimi 132kV line have also been completed as a deposit work of NEEPCO. In addition, for improvement of power supply to Mizoram, stringing of 2nd circuit of Aizawal-Zemabawk 132kV line has also been entrusted to POWERGRID as a deposit work of Deptt. of Power,

Govt. of Mizoram. The project has been awarded in Sept'07 and expected to be completed by Aug, 08. Further, 220 kV Misa – Byrnihat transmission line alongwith 2x160MVA, 220/132kV sub-station at Byrnihat is proposed to be executed as deposit work of Meghalaya State Electricity Board with funding from DONER / Planning Commission.

In order to ensure secure and reliable supply of power to the States of the North-Eastern region, POWERGRID Board has approved the proposal for "NER Strengthening Scheme-I" with a total cost of Rs. 58.93 crore. The project has been awarded in Sept'07 and scheduled to be completed by March' 09.

The transmission system for evacuation of power from future projects of about 50,000MW in NER and 15,000MW in Sikkim/Bhutan have been planned keeping in view of the fact that power from the above mentioned projects would be utilized partly in NER, Sikkim and Bhutan while major part of this power would have to be exported to power deficit regions like NR & WR. The transmission lines from these generating sources will be traversing through the narrow transmission corridor of Chicken Neck Area, in the north of West Bengal, between the international borders of Bangladesh and Nepal, having a length of about 18 km and a width of only about 22 km. Keeping in view the generation and growth of power demand in NER and Sikkim/Bhutan, the capacity of transmission system required through the chicken neck area would be of the order of 50,000 MW. As a large quantum of power is to be transferred through the limited corridor in Chicken Neck area, it is envisaged that the power transfer capacity of each of the transmission corridor should be at least 5000-6000MW. After detailed study of various alternatives in this regard, it is found that the hybrid system of 800kV HVDC with 400kV AC lines is the most optimal one considering the Right-of-Way requirement, transmission cost and line losses. Looking at the total power evacuation requirement through Chicken neck area, it is found that to meet the contingency & reliability needs, about 5-6 nos. of HVDC lines and 3-4 nos. of EHVAC lines would have to be established through Chicken Neck Area.

The transmission system for evacuation of power from the projects to be commissioned in XI plan/early XII plan has also been developed. The power from the projects like Kameng HEP (600 MW) of NEEPCO and Lower Subansiri (2000 MW) of NHPC is proposed to be pooled to a common substation in NER for onward transmission to NR/WR via hybrid system of ± 800 kV HVDC and 400kV AC links. In fact till date, ± 600 kV HVDC is the highest operating voltage in world. India is one of the few countries considering adoption of ± 800 kV HVDC for transfer of bulk power over long distance. For evacuation of Gas Based Power Project in Tripura (740 MW) project, separate transmission corridor has been planned to be commissioned ahead of Lower Subansiri and Kameng project.

In addition to this, as decided in the meeting held between Hon'ble Minister of Power with Hon'ble Minister of DONER on April 19, 2007, a comprehensive scheme for

strengthening of transmission system in North Eastern Region has been evolved in consultation with Central Electricity Authority and representatives of all concerned States. Under this scheme, the transmission and sub-transmission system for NER States are planned in two parts viz. intra-State and inter-State lines. The scheme has been evolved keeping in view the long term requirement of NER so as to ensure secure and reliable supply of power and cater to the load growth for more than 10 years. A pre feasibility report prepared by PGCIL in consultation with the CEA and representative of all concerned States and sent to the Ministry of DONER recently.

23.6 Recreation Activities :

The Ministry has a Recreation club for its staff for looking after the cultural and sports activities. The Hon'ble Minister of Power and the Secretary(Power) are its Chief Patron and Patron, respectively. The teams from Ministry of Power have been taking part in different disciplines in various tournaments and cultural meets organized by Power Sports Control Board(PSCB), and Inter-Ministerial tournaments organized by Central Civil Services and Sports Board (CCSCSB), Department of Personnel and Training, Government of India.

Major Achievements :

Randhir Singh Toor won the Second position in the Inter-Ministry Wrestling Competition organized by the Central Civil Services Culture and Sports Board at Delhi, held during 27th to 28th February 2007. Wrestlers from all over India took part in the Competition. It is worthwhile mentioning that Randhir Singh Toor won Silver and Bronze medals in various categories in an earlier competition organized by Veteran Athletic Association at Jawahar Lal Nehru Stadium, Delhi on 28th January 2007

Consultative Committee of Members of Parliament

During the year 2007, the Ministry of Power coordinated and organized four meetings of the Consultative Committee of Members of Parliament for the Ministry of Power. The subjects for discussion at these meetings were :

- (i) "National Grid Development: Present Status and Future Perspective"
- (ii) "Development and Operation of National Grid"(10.5.2007)
- (iii) "Power Generation Capacity Addition Programme for 11th Plan – with special reference to existing domestic capacity for Plant and Equipment manufacturing" (8.8.2007 – New Delhi)
- (iv) "Ultra Mega Power Projects"

(A meeting of the Consultative Committee is scheduled to be held on 12th February, 2008 at Tehri hydroelectric power project. The subject "Hydro Power Development in the Country with Special Reference to 11th Plan Targets" will be discussed in this meeting).

CHAPTER - 24

E-GOVERNANCE / IT INITIATIVES IN MINISTRY OF POWER

The National Informatics Centre, Ministry of Power is providing all round ICT support to the Ministry for pursuing its goals for using E-Gov./ IT in a more integrated and intensive manner which includes implementation of various E-governance applications for G2G & G2E services for bringing in transparency and accountability in functioning of the Ministry. The applications include conceptualization, initiation, format finalization and implementation of Decision Support and Management Information Systems which help strengthening the monitoring of Projects by the Ministry, implementation of standard E-Gov. Applications developed by NIC & design, development and maintenance of web sites/web portals. The services of the NIC in the Ministry also include creation of network backbone, ensuring efficient network services, requirements assessment, provision of suitable ICT solutions and thus total Informatics support through use of state-of-art ICT tools and technologies.

Major Projects/ Activities during 2007-08

The following are some of the key e-Governance Initiatives/ Applications taken up in the ministry.

Management Information Systems / Decision Support Systems :

Following MIS/ DSS applications have been implemented/ maintained/ enriched during this period:-

- **Hydropowernet Project:**

Web based Application implemented on NICNET server for monitoring of Hydro Projects by the Ministry of Power & data sharing by Hydro utilities and CEA. The formats of the application were finalised and decisions for further enrichment of the application were taken by the Ministry with the assistance of Project Coordinator (NIC) and CEA. The system was given Cyber Security Audit clearance by NIC. The system has remote data updation facility and is presently being updated by Hydro Utilities and CEA. It is in the GOV.IN domain and is available at **URL: [http:// hydropowernet.gov.in](http://hydropowernet.gov.in)**. It contains comprehensive information related to Generation Projects, Projects under Construction, Projects under Development, Billing and Collection etc. besides CEA data about PFR of Schemes under 50, 000 MW initiatives , HE Schemes under Survey and Investigation, Appraisal status of HE schemes, All India Hydrogeneration etc. This web based application has been formally launched by the Hon'ble Minister of power on 10th August, 2007.

- **Thermopowernet Project**

Web based Application for monitoring of Thermal Projects by the Ministry and data sharing between Thermal utilities and CEA with remote data updation facility was conceptualized, data formats finalized by the Ministry with the assistance of Project Coordinator (NIC) and CEA and the system implemented on NICNET server on permanent **URL: <http://thermopowernet.gov.in>** after the Cyber Security Audit has been completed by NIC and audit clearance has been given. The system has remote data updation facility and is presently being updated by central Hydro Utilities and CEA. The State Utilities also have been asked for remote data updation.

- **Web-based File Tracking System (FTS)**

An online File/Receipt Tracking and Monitoring System developed by NIC had been implemented in the Ministry to monitor the pendency of cases, tracking of files, accounting of receipts and timely disposal of important cases. A Bar Code Module in FTS for easy and quick handling of recording of files and receipts using a hand held scanner has been designed and is under development for pilot implementation for making its use possible through a normal laser printer instead of special bar code printer for economy. The File Tracking System (FTS) has been maintained and re-customized time to time as per the information provided by Admin section viz; creation of new user, deleting/merging/creation of section etc. In-house training has been provided to ministry officials time to time as per their convenience. Queries raised by the users have been solved.

- **Public Grievances Redressal and Monitoring System (PGRAMS) & Centralised PGRAMS (CPGRAMS)**

An Online system for handling Public Grievances earlier implemented in the Ministry has been maintained and supported. The Grievances Cell staff was given due support on the application and data entry for all the grievances available has been ensured. The system will also be implemented in the Organisations under the Ministry viz; PSU s and Autonomous bodies and the implementation has already been done in NHPC and NEEPCO and action initiated by REC, PGCIL, NPTI etc.

A Centralised version CPGRAMS has been implemented during this year. CPGRAMS facilitates the system generated unique registration number upon the online

submission of grievances from aggrieved citizens to DPG/ DARPG or concerned Ministries/Departments/ Organizations, GOI or State Govts. through Internet using any Browser Interface. Automatic Online Data transmission between Ministries/Departments/Organisations and the subordinate organizations is facilitated by CPGRAMS. CPGRAMS can be implemented by Ministries/Departments/ Organizations by accessing the centralized server hosted in NIC SAN without any requirement of dedicated hardware and software at their end.

- **Transpowernet Project:**

Web based Application for monitoring of Transmission Projects by the Ministry and data sharing between Transmission utilities and CEA with remote data updation facility conceptualized data formats finalised by the Ministry with the assistance of Project Coordinator (NIC), and CEA and implemented on NICNET staging server. The analysis and decision making regarding data availability and posting is underway. The permanent URL: <http://transpowernet.gov.in> has been allocated for this application and the application will be shifted to this after data posting and Auditing.

- **ACC Vacancy Monitoring System (AVMS)**

AVMS is a web-based application, which helps to know the status of ACC Vacancies falling under the purview of ACC. The application enables the users (Ministries/Departments) to maintain a record for the Vacancies falling under the purview of ACC, either DPC Based or NON DPC Based.

The system has been designed in such a manner that the controlling officer of an organization can view the status of the vacancy and could take appropriate decisions. This has been achieved by putting rigorous efforts while designing of the database for the application

- **MIS for APDRP :** The System Study for development of MIS has been initiated after the consent of concerned JS.

- **Intra Portal:**

The Portal, a tool towards less paper office, has been implemented in the Ministry to facilitate the officials of the Ministry in accessing various information in an authorized manner from a single window. This Portal available at URL: <http://intrapower.nic.in> is a one-stop source of G2G and G2E services and enables the officers/officials of the Ministry to access Online comprehensive information. The Portal facilitates the officers/officials to access online the recent Circulars/Notices, News, upcoming events, Bulletin board, Instant Messaging, Telephone/E-Mail directory and minutes of meetings. Portal facilitates the printing of forms (Leave, LTC, Medical, GPF, Higher Education, HBA, Loans, Pensions, Tour, Income Tax, General stores etc.), Personal Profile, ACR status and Forms, Guidelines of LTC/HBA rules, Leave/Tour information, Generation/Printing of Pay

Slips, GPF statements etc. The portal provides the access to e-Governance applications like File Tracking System, Telephone billing System, NPMC reports etc. The information under Intra Power web portal is being updated on regular basis.

- **Bharat Nirman Web Portal and web based MIS for Rajiv Gandhi Grameen Vidhyutikaran Yojana (RGGVY)**

Rajiv Gandhi Grameen Vidhyutikaran Yojana (RGGVY) was introduced by the Ministry which aims at providing electricity in all villages and habitations in four years and provides access to electricity to all rural households. This programme has been brought under the ambit of Bharat Nirman and a web portal has been developed for the same. Status of Rural Electrification under RGGVY has been updated on regular basis on the Bharat Nirman web portal available at URL: <http://bharatnirman.gov.in>. Web based MIS for Rajiv Gandhi Grameen Vidhyutikaran Yojana (RGGVY), a key component of Bharat Nirman portal, has been designed and developed by NIC in consultation with MOP & REC. This system generates MIS reports and National Broadsheet with drill-down features. The accessibility of the system is through authenticated user-ids. A web portal of RGGVY has also been developed to facilitate G2C interface of the programme. The web Portal and the web based MIS are undergoing Cyber Security Audit by NIC.

- **State Profile Information System :**

Maintained and supported for containing State Related data for Planning, OM, RE, APDRP, Transmission in formats meeting the requirements with data updation facility only to concerned Directors. This system is an MIS for meetings between the Minister and State CMs and data entry is going on.

- **TBPMS (Telephone Bill Payment Monitoring System)**

This Web based application implemented earlier has been maintained and supported for use by the Ministry. The target user is the Admin Division for maintaining the records related to Telephone Bills and monitoring the payment.

- **Right to Information Act, 2005 Portal**

RTI-MIS is an online web enabled System for on-line processing/ monitoring of Requests and Appeals received from citizens by the concerned Public Authority. The implementation of RTI-MIS for the Ministry of Power as well as the Organisations under the Ministry has been done.

RTI Portal – A gateway to Citizens for easy access to information (URL: <http://rti.gov.in>) updated

- **Composite Payroll System**

Implementation of Composite Payroll System having several modules like Salary Module, DA Arrears module, Income Tax Module, Honorarium Module, OTA Module GPF Module,

Bonus Module and Tuition Fee Module etc. in the Cash section of Ministry of Power has been further extended.

- **Personal Information System** – Implementation has been furthered by ensuring further data entry.
- **MIS on Power Sector Scenario**

A Management Information System – A web-enabled application system on various issues of Ministry of power for monitoring & data sharing on Power Sector Scenario has been developed. This application is hosted on intranet and having the information related to Operation & Monitoring, Planning Division, Reforms & Restructuring, Transmission, Distribution, Rural Electrification, Energy Conservation, etc divisions.

- **Web based Tour / Leave Information system**

Online tour and leave information system is developed and implemented for viewing the availability of the officers of the rank of Deputy Secretary and above in the Ministry. The system helps the officials to make various meeting schedules knowing in advance the availability of the officers in office.

Other Major Activities are :-

- **Monitoring of Projects using Video Conferencing system**

The Ministry was given required support in conducting Videoconferencing for Review of various remote Power Projects by Secretary (Power) through Video conferencing which includes IP based VC using NICNET.

- **Network services & LAN Management, maintenance**

The Network Services in the Shram Shakti Bhawan are provided by NIC with a Proxy server, Patch Server and Anti-virus server installed at NIC-MOP Unit. Internet connectivity has been extended through, a 34 Mbps OFC pipe with present allocation of 10 Mbps bandwidth between SS Bhawan and NIC Hqs with backup of 2x2 Mbps leased lines from MTNL besides RfLink. LAN is upgraded with OFC, fibre switches & centralised UPS supply to all the backbone switches and operational in the Ministry connecting about 275 Users with Email and Internet facility round the clock. A few sections and officers of the Ministry located at Nirman Bhawan have also been provided LAN connectivity with Internet and email facilities.

- **MOP Website enhancement, updation and maintenance**

The necessary support is being extended for enhancement, updation and maintenance of the official bi-lingual website of the Ministry. Summary of Monthly Accounts of the Principal Accounts Office is also posted.

- **Advanced Computer Training programme for Ministry Officers/ officials:**

As per discussion with/ decision of Secretary (P) all required help had been provided earlier to the Admin div. by devising Course curriculum of Three different levels of

Computer Training Programme for making the Ministry staff IT enabled, required interaction with training agency DOEACC for acceptance of specialized training module as per approval of Secy(P). The matter was followed up for action by the Ministry.

- **National Power Monitoring Center (NPMC)**

National Power Monitoring Center (NPMC) has been established at Shram Shakti Bhawan, New Delhi, which has computer facilities which incorporates data acquisition from different sources for monitoring of real time operational data of Generation & Transmission system as well as off line data regarding progress/ achievement of Generation capacity addition, implementation of various transmissions and distribution systems including Accelerated Power Development and Reforms Programme (APDRP), financial aspects and Rural Electrification schemes. NPMC reports are also being displayed on Intranet of Ministry.

- **Government Policies Portal**

As per the directives of Cabinet Secretariat action has been initiated for uploading the Policies of Ministry of Power on the specified URL: <http://policies.gov.in> viz; National Electricity Policy, Tariff Policy, Hydro Development Policy, Policy guidelines for Private Investment in Transmission, Rural Electrification Policy

Projects/Activities planned during Annual Plan 2008-09

The following projects/activities are targeted for the year 2008-09

MIS/ DSS Related:-

- Implementation of the Bar Code Module for File Tracking System
- Further enrichment of Intra Portal
- Hydropowernet Project to be managed further and this MIS/DSS already in use by the Ministry is to be enriched further and action to be initiated to include State Utilities
- Enrichment of Thermopowernet, its formal launch, ensuring of participation by State Utilities.
- Implementation of Transpowernet Project, actions for data entry, its further enrichment and Cyber Security Audit.
- **Targeted Training** for increasing the ICT & Computer Security awareness among concerned officers/officials of the ministry.
- Implementation of more modules of Composite Payroll System.
- Implementation of Web-based Parliament Question & Answer Information System.
- Implementation of Web-based Court Cases Monitoring System.
- MIS for APDRP to be developed after sourcing required resources.

REGION-WISE INSTALLED CAPACITY

STATEMENT - I

ALL INDIA INSTALLED CAPACITY (IN MW) OF POWER STATIONS LOCATED IN THE REGIONS OF MAIN LAND AND ISLANDS

(As on 31.01.2008)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	
		Coal	Gas	Diesel					
Northern Region	State	11527.50	1231.20	14.99	12773.69	0.00	6615.15	571.87	19960.71
	Private	0.00	0.00	0.00	0.00	0.00	786.00	699.41	1485.41
	Central	7050.00	2311.99	0.00	9361.99	1180.00	5498.00	0.00	16039.99
	Sub Total	18577.50	3543.19	14.99	22135.68	1180.00	12899.15	1271.28	37486.11
Western Region	State	15325.50	1430.72	17.28	16800.50	0.00	5234.50	311.89	22346.89
	Private	2540.00	1658.00	0.20	4198.20	0.00	444.00	2698.95	7341.05
	Central	5860.00	3512.00	0.00	9372.00	1840.00	1520.00	0.00	12732.00
	Sub Total	23752.50	6600.72	17.48	30370.70	1840.00	7198.50	3010.74	42419.94
Southern Region	State	8282.50	735.80	362.52	9380.82	0.00	10646.18	846.32	20873.32
	Private	510.00	2500.50	576.80	3587.30	0.00	0.00	5374.37	8961.67
	Central	7890.00	350.00	0.00	8240.00	1100.00	0.00	0.00	9340.00
	Sub Total	16682.50	3586.30	939.32	21208.12	1100.00	10646.18	6220.69	39174.99
Eastern Region	State	6508.50	100.00	17.06	6625.56	0.00	3144.93	200.36	9970.85
	Private	1441.38	0.00	0.14	1441.52	0.00	0.00	0.05	1441.57
	Central	7710.00	90.00	0.00	7800.00	0.00	204.00	0.00	8004.00
	Sub Total	15659.88	190.00	17.20	15867.08	0.00	3348.93	200.41	19416.42
North Eastern Region	State	330.00	372.00	142.74	844.74	0.00	256.00	145.98	1246.72
	Private	0.00	24.50	0.00	24.50	0.00	0.00	0.03	24.53
	Central	0.00	375.00	0.00	375.00	0.00	860.00	0.00	1235.00
	Sub Total	330.00	771.50	142.74	1244.24	0.00	1116.00	146.01	2506.25
Islands	State	0.00	0.00	50.02	50.02	0.00	0.00	5.25	55.27
	Private	0.00	0.00	20.00	20.00	0.00	0.00	0.86	20.86
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub Total	0.00	0.00	70.02	70.02	0.00	0.00	6.11	76.13
ALL INDIA	State	42001.00	3869.72	604.61	46475.33	0.00	25896.76	2081.67	74453.76
	Private	4491.38	4183.00	597.14	9271.52	0.00	1230.00	8773.57	19275.09
	Central	28510.00	6638.99	0.00	35148.99	4120.00	8082.00	0.00	47350.99
	Total	75002.38	14691.71	1201.75	90895.84	4120.00	35208.76	10855.24	141079.84

Renewable Energy Sources (RES) includes SHP, BG, BP, U&I, Solar and Wind Energy

Abbreviation : SHP=Small Hydro Project, BG=Biomass Gasifier, BP=Biomass Power, U&I=Urban & Industrial Waste Power, RES=Renewable Energy Sources

Note : (i) The SHP capacity of 1168 MW which was covered under the conventional Hydro capacity has been transferred to RES. 59.97 MW of captive capacity has been deducted from total SHP capacity under RES. Similarly wind capacity of 148.67 MW covered under captive capacity has also been deducted from wind power capacity under RES.

(ii) The Shares of Sipat TPS (NTPC) are proposed shares, still to be approved.

(iii) (**) Based on data as on 30.09.2007 as furnished by MNRE.

(iii) Figures at second place of decimal may not tally due to rounding off by computer.

STATEMENT - II

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN NORTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.01.2008)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	
		Coal	Gas	Diesel					
Delhi	State	320.00	612.40	0.00	932.40	0.00	0.00	0.00	932.40
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	1920.50	204.30	0.00	2124.80	47.08	585.06	0.00	2756.94
	Sub-Total	2240.50	816.70	0.00	3057.20	47.08	585.06	0.00	3689.34
Haryana	State	1902.50	0.00	3.92	1906.42	0.00	884.24	62.70	2853.36
	Private	0.00	0.00	0.00	0.00	0.00	0.00	6.00	6.00
	Central	375.57	532.04	0.00	907.61	76.16	447.16	0.00	1430.93
	Sub-Total	2278.07	532.04	3.92	2814.03	76.16	1331.40	68.70	4290.29
Himachal	State	0.00	0.00	0.13	0.13	0.00	393.60	141.62	535.35
	Private	0.00	0.00	0.00	0.00	0.00	386.00	0.00	386.00
	Central	95.41	60.89	0.00	156.30	14.08	761.24	0.00	931.62
	Sub-Total	95.41	60.89	0.13	156.43	14.08	1540.84	141.62	1852.97
Jammu & Kashmir	State	0.00	175.00	8.94	183.94	0.00	330.00	111.83	625.77
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	198.59	127.09	0.00	325.68	68.00	689.50	0.00	1083.18
	Sub-Total	198.59	302.09	8.94	509.62	68.00	1019.50	111.83	1708.95
Punjab	State	2380.00	0.00	0.00	2380.00	0.00	2319.82	119.70	4819.52
	Private	0.00	0.00	0.00	0.00	0.00	0.00	33.53	33.53
	Central	546.21	259.72	0.00	805.93	151.04	711.75	0.00	1668.72
	Sub-Total	2696.21	259.72	0.00	3185.93	151.04	3031.57	153.23	6521.77
Rajasthan	State	2545.00	443.80	0.00	2988.80	0.00	987.84	30.25	4006.89
	Private	0.00	0.00	0.00	0.00	0.00	0.00	510.95	510.95
	Central	567.49	217.74	0.00	785.23	469.00	468.98	0.00	1723.21
	Sub-Total	3112.49	661.54	0.00	3774.03	469.00	1456.82	541.20	6241.95
Uttar Pradesh	State	4380.00	0.00	0.00	4380.00	0.00	527.40	25.10	4932.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	148.88	148.88
	Central	2373.31	541.16	0.00	2914.47	203.72	1078.09	0.00	4196.28
	Sub-Total	6753.31	541.16	0.00	7294.47	203.72	1605.49	173.98	9277.66
Uttanchal	State	0.00	0.00	0.00	0.00	0.00	1172.25	80.67	1252.92
	Private	0.00	0.00	0.00	0.00	0.00	400.00	0.05	400.05
	Central	232.80	68.25	0.00	301.05	16.28	307.48	0.00	624.81
	Sub-Total	232.80	68.25	0.00	301.05	16.28	1879.73	80.72	2277.78
Chandigarh	State	0.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	26.51	15.07	0.00	41.58	4.84	47.04	0.00	93.46
	Sub-Total	26.51	15.07	2.00	43.58	4.84	47.04	0.00	95.46
	Central -	713.61	285.73	0.00	999.34	129.80	401.70	0.00	1530.84
	Unallocated								
Total Northern Region	State	11527.50	1231.20	14.99	12773.69	0.00	6615.15	571.87	19960.71
	Private	0.00	0.00	0.00	0.00	0.00	786.00	699.41	1485.31
	Central	7050.00	2311.99	0.00	9361.99	1180.00	5498.00	0.00	16039.99
	Grand Total	183577.50	3543.19	14.99	22135.68	1180.00	12671.15	1271.28	37486.01

STATEMENT - III

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN WESTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.01.08)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	
		Coal	Gas	Diesel					
Goa	State	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
	Private	0.00	48.00	0.00	48.00	0.00	0.00	30.00	78.00
	Central	274.18	0.00	0.00	274.18	0.00	0.00	0.00	274.18
	Sub-Total	274.18	48.00	0.00	322.18	0.00	0.00	30.05	352.23
Daman & Diu	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	12.99	4.13	0.00	17.12	1.98	0.00	0.00	19.10
	Sub-Total	12.99	4.13	0.00	17.12	1.98	0.00	0.00	19.10
Gujarat	State *	4369.00	518.72	17.28	4905.00	0.00	772.00	24.30	5701.30
	Private	640.00	1430.00	0.20	2070.20	0.00	0.00	772.75	2842.95
	Central	1204.29	417.40	0.00	1621.69	825.00	0.00	0.00	2446.69
	Sub-Total	6213.29	2366.12	17.48	8596.89	825.00	772.00	797.05	10990.94
Madhya Pradesh	State	2657.50	0.00	0.00	2657.50	0.00	1703.67	51.76	4412.93
	Private	0.00	0.00	0.00	0.00	0.00	0.00	58.00	58.00
	Central	1402.10	252.91	0.00	1655.01	92.88	1520.00	0.00	3267.89
	Sub-Total	4059.60	252.91	0.00	4312.51	92.88	3223.67	109.76	7738.82
Chhatisgarh	State	1780.00	0.00	0.00	1780.00	0.00	120.00	18.05	1918.05
	Private	250.00	0.00	0.00	250.00	0.00	0.00	103.80	380.80
	Central	288.90	0.00	0.00	288.90	0.00	0.00	0.00	288.90
	Sub-Total	2318.90	0.00	0.00	2318.90	0.00	120.00	148.85	2587.75
Maharashtra	State	6546.00	912.00	0.00	7458.00	0.00	2638.83	217.73	10314.56
	Private	1650.00	180.00	0.00	1830.00	0.00	444.00	1707.30	3981.30
	Central	1787.00	2617.28	0.00	4404.28	852.06	0.00	0.00	5256.34
	Sub-Total	9983.00	3709.28	0.00	13692.28	852.06	3082.83	1925.03	19552.20
Dadra & Nagar Haveli	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	15.19	26.61	0.00	41.80	1.98	0.00	0.00	43.78
	Sub-Total	15.19	26.61	0.00	41.80	1.98	0.00	0.00	43.78
	Central - Unallocated	875.35	193.67	0.00	1069.02	66.10	0.00	0.00	1135.12
Total western Region	State	15352.50	1430.72	17.28	16800.50	0.00	5234.50	311.89	22346.89
	Private	2540.00	1658.00	0.20	4198.20	0.00	444.00	2698.85	7341.05
	Central	5860.00	3512.00	0.00	9372.00	1840.00	1520.00	0.00	12732.00
	Grand Total	23752.50	6600.72	17.48	30370.70	1840.00	7198.50	3010.74	42419.94

STATEMENT - IV

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN SOUTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.01.08)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	
		Coal	Gas	Diesel					
Andhra Pradesh	State	3342.50	272.30	0.00	3614.80	0.00	3494.93	186.90	7296.63
	Private	0.00	1603.40	36.80	1640.20	0.00	0.00	472.63	2112.83
	Central	2377.38	0.00	0.00	2377.38	37.41	0.00	0.00	2414.79
	Sub-Total	5719.88	1875.70	36.80	7632.38	37.41	3494.93	659.53	11824.25
Karnataka									
	State	1970.00	0.00	127.92	2097.92	0.00	3288.20	449.10	5835.22
	Private	260.00	220.00	106.50	586.50	0.00	0.00	1109.38	1695.88
	Central	1072.67	0.00	0.00	1072.67	190.90	0.00	0.00	1263.57
Kerala	Sub-Total	3302.67	220.00	234.42	3757.09	190.90	3288.20	1548.48	8794.67
	State	0.00	0.00	234.60	234.60	0.00	1769.10	100.12	2103.82
	Private	0.00	174.00	21.84	195.84	0.00	0.00	0.03	195.87
	Central	765.38	350.00	0.00	1115.38	80.09	0.00	0.00	1195.47
	Sub-Total	765.38	524.00	256.44	1545.82	80.09	1769.10	100.15	3495.16
	State	2970.00	431.00	0.00	3401.00	0.00	2093.95	110.20	5605.15
Tamil Nadu	Private	250.00	503.10	411.66	1164.76	0.00	0.00	3792.30	4957.06
	Central	2299.81	0.00	0.00	2299.81	657.39	0.00	0.00	2957.20
	Sub-Total	5519.81	934.10	411.66	6865.57	657.39	2093.95	3902.50	13519.41
NLC	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	100.17	0.00	0.00	100.17	0.00	0.00	0.00	100.17
	Sub-Total	100.17	0.00	0.00	100.17	0.00	0.00	0.00	100.17
Pondicherry									
	State	0.00	32.50	0.00	32.50	0.00	0.00	0.00	32.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
	Central	207.01	0.00	0.00	207.01	17.09	0.00	0.00	224.10
	Sub-Total	207.01	32.50	0.00	239.51	17.09	0.00	0.03	256.63
	Central - Unallocated	1067.58	0.00	0.00	1067.58	117.12	0.00	0.00	1184.70
Total Southern Region	State	8282.50	735.80	362.52	9380.82	0.00	10646.18	846.32	20873.32
	Private	510.00	2500.50	576.80	3587.30	0.00	0.00	5374.37	8961.67
	Central	7890.00	350.00	0.00	8240.00	1100.00	0.00	0.00	9340.00
	Grand Total	16682.50	3586.30	939.32	21208.12	1100.00	10646.18	6220.69	39174.99

STATEMENT - V

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.01.08)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	
		Coal	Gas	Diesel					
Bihar	State	553.50	0.00	0.00	553.50	0.00	0.00	50.40	603.90
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	1142.69	0.00	0.00	1142.69	0.00	21.00	0.00	1163.69
	Sub-Total	1696.19	0.00	0.00	1696.19	0.00	21.00	50.40	1767.59
Jharkhand	State	1260.00	0.00	0.00	1260.00	0.00	130.00	4.05	1394.05
	Private	360.00	0.00	0.00	360.00	0.00	0.00	0.00	360.00
	Central	303.72	0.00	0.00	303.72	0.00	8.00	0.00	311.72
	Sub-Total	1923.72	0.00	0.00	1923.72	0.00	138.00	4.05	2065.77
West Bengal	State	4275.00	100.00	12.06	3877.06	0.00	1022.00	99.50	5508.56
	Private	1081.38	0.00	0.14	1081.52	0.00	0.00	0.05	1081.57
	Central	684.31	0.00	0.00	684.31	0.00	17.00	0.00	701.31
	Sub-Total	6040.69	100.00	12.20	5642.89	0.00	1039.00	99.55	7291.44
DVC	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	3100.00	90.00	0.00	3190.00	0.00	150.00	0.00	3340.00
	Sub-Total	3100.00	90.00	0.00	3190.00	0.00	150.00	0.00	3340.00
Orissa	State	420.00	0.00	0.00	420.00	0.00	1992.93	7.30	2420.23
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	1388.08	0.00	0.00	1388.08	0.00	0.00	0.00	1388.08
	Sub-Total	1808.08	0.00	0.00	1808.08	0.00	1992.93	7.30	3808.31
Sikkim	State	0.00	0.00	5.00	5.00	0.00	0.00	39.11	44.11
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	66.03	0.00	0.00	66.03	0.00	8.00	0.00	74.03
	Sub-Total	66.03	0.00	5.00	71.03	0.00	8.00	39.11	118.14
Total Eastern Region	Central -	1025.17	0.00	0.00	1025.17	0.00	0.00	0.00	1025.17
	Unallocated								
	State	6508.50	100.00	17.06	6625.56	0.00	3144.93	227.76	9970.85
	Private	1441.38	0.00	0.14	1441.52	0.00	0.00	0.05	1441.57
	Central	7710.00	90.00	0.00	7800.00	0.00	204.00	0.00	8004.00
	Grand Total	15659.88	190.00	17.20	15867.08	0.00	3348.93	200.41	19416.42

STATEMENT - VI

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN NORTH-EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.01.08)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES (MNRE)	
		Coal	Gas	Diesel					
Assam	State	330.00	244.50	20.69	595.19	0.00	100.00	2.11	697.30
	Private	0.00	24.50	0.00	24.50	0.00	0.00	0.00	24.50
	Central	0.00	178.00	0.00	178.00	0.00	331.00	0.00	509.00
	Sub-Total	330.00	447.00	20.69	797.69	0.00	431.00	2.11	1230.80
Arunachal Pradesh	State	0.00	0.00	15.88	15.88	0.00	0.00	45.24	61.12
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
	Central	0.00	21.00	0.00	21.00	0.00	98.00	0.00	119.00
	Sub-Total	0.00	21.00	15.88	36.88	0.00	98.00	45.27	180.15
Meghalaya	State	0.00	0.00	2.05	2.05	0.00	156.00	31.03	189.08
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	26.00	0.00	26.00	0.00	73.00	0.00	99.00
	Sub-Total	0.00	26.00	2.05	28.05	0.00	229.00	31.03	288.08
Tripura	State	0.00	127.50	4.85	132.35	0.00	0.00	16.01	148.36
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	33.00	0.00	33.00	0.00	62.00	0.00	95.00
	Sub-Total	0.00	160.50	4.85	165.35	0.00	62.00	16.01	243.36
Manipur	State	0.00	0.00	45.41	45.41	0.00	0.00	5.45	50.86
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	26.00	0.00	26.00	0.00	81.00	0.00	107.00
	Sub-Total	0.00	26.00	45.41	71.41	0.00	81.00	5.45	157.86
Nagaland	State	0.00	0.00	2.00	2.00	0.00	0.00	28.67	30.67
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	19.00	0.00	19.00	0.00	53.00	0.00	72.00
	Sub-Total	0.00	19.00	2.00	21.00	0.00	53.00	28.67	102.67
Mizoram	State	0.00	0.00	51.86	51.86	0.00	0.00	17.47	69.33
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	16.00	0.00	16.00	0.00	34.00	0.00	50.00
	Sub-Total	0.00	16.00	51.86	67.86	0.00	34.00	17.47	119.33
	Central - Unallocated	0.00	56.00	0.00	56.00	0.00	128.00	0.00	184.00
Total North-Eastern Region	State	330.00	372.00	142.74	844.74	0.00	256.00	145.98	1246.72
	Private	0.00	24.50	0.00	24.50	0.00	0.00	0.03	24.53
	Central	0.00	375.00	0.00	375.00	0.00	860.00	0.00	1235.00
	Grand Total	330.00	771.50	142.74	1244.24	0.00	1116.00	146.01	2506.25

STATEMENT - VII

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE ISLANDS

(As on 31.01.08)

Region	Ownership Sector	Modewise Breakup							Grand Total
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	
		Coal	Gas	Diesel					
Andaman & Nicobar	State	0.00	0.00	40.05	40.05	0.00	0.00	5.25	45.30
	Private	0.00	0.00	20.00	20.00	0.00	0.00	0.10	20.10
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	0.00	0.00	60.05	60.05	0.00	0.00	5.35	65.40
Lakshadweep	State	0.00	0.00	9.97	9.97	0.00	0.00	0.00	9.97
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.76
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	0.00	0.00	9.97	9.97	0.00	0.00	0.76	10.73
Total Islands	State	0.00	0.00	50.02	50.02	0.00	0.00	5.25	55.27
	Private	0.00	0.00	20.00	20.00	0.00	0.00	0.86	20.86
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grand Total	0.00	0.00	70.02	70.02	0.00	0.00	6.11	76.13

AUDIT OBSERVATIONS OF C&AG

- The primary objective of APDRP of reducing Aggregate Technical and Commercial Loss (A T & C Loss) by 9 per cent per annum was not achieved, as the reduction between 2001-02 and 2004-05 was just 1.68 percent per annum. Further, there were significant deficiencies in the maintenance of records relating to AT & C Loss, including absence of proper guidelines and supporting records, billing on assessment basis and incorrect reporting of AT & C Loss by the States. Consequently, the data reported by the Ministry could not be regarded as authentic and accurate.
- The programme envisaged 100 per cent metering of feeders, Distribution Transformers (DTs) and consumer connections. The audit showed that the progress in metering of DTs, which is an essential tool to control AT & C losses, was not adequate as only 3 States had shown 80 to 100 per cent metering. As regards feeder and consumer metering, despite the Ministry's reports showing a high percentage of metering in most States, audit examination at the State level showed significant deficiencies, in addition to misreporting of data on installation of meters.
- There were significant deficiencies in the quality and reliability of power supply, which was targeted under APDRP. The number of feeder trippings and duration of outage, as well as failure rate of Distribution Transformers, was much higher than permissible in most States.
- Effective energy accounting and auditing had not been possible in most States, primarily due to lack of 100 per cent system metering, lack of accountability at the circle and feeder levels, and inadequate computerisation.
- The objective of elimination of the gap between Average Revenue Realisation (ARR) and Average Cost of Supply (ACS) was far from being achieved. Only 3 out of 29 States had achieved this target, and in fact, in 8 States, the gap between ARR and ACS had shown a deteriorating trend.
- There was no mechanism for release and monitoring of APDRP funds on a project-wise basis. 17 out of 29 States where the programme was being implemented, either did not operate separate account heads and bank accounts for APDRP funds, or did not operate them correctly.
- The Guidelines did not specify submission of Utilisation Certificates, supported by detailed Statements of Expenditure. Audit of 294 projects involving utilisation of funds reported to be Rs. 5617.64 crore as of March 2006, revealed instances of incorrect financial reporting amounting to Rs. 676.09 crore.
- Audit revealed instances of diversion of funds amounting to Rs. 181.78 crore by 10 States for unauthorised purposes, and diversion of Rs. 432.23 crore by 7 States for adjustment against various dues of the utilities, which was effectively equivalent to short release of APDRP funds.
- As of March 2006, three States did not return surplus funds amounting to Rs. 51.07 crore, while eight States failed to release Rs. 412.03 crore of APDRP funds to the SEBs/ utilities.
- The incentive mechanism of APDRP was not successful, with just Rs. 1575.02 crore released as of January 2007, against the 10th Five Year Plan provision of Rs. 20,000 crore. Further, most of the claims pertained to the years 2001-02 to 2003-04, which indicated that the objective of reducing cash losses of SEBs/ Utilities through an incentive mechanism had largely not been achieved. Audit examination also revealed a number of deficiencies, such as allowing an ineligible claim, disallowance of incentive claims on grounds not reflected in the guidelines, and lack of a mechanism for verifying utilisation of the incentive grant for improvement of the power sector.
- The administrative intervention envisaged under APDRP of ensuring accountability at the circle and feeder level by redesignating Distribution Circles as independent profit centres and feeders as business units was not successful. While many States had designated the Circle Superintending Engineer and Junior Engineer as Circle CEO and Feeder Manager, no administrative measures were taken to ensure accountability and responsibility.
- The Ministry did not have a mechanism for monitoring periodically the effectiveness of vigilance and legal measures in different States to prevent theft of energy. The percentage of registering theft cases was low ranging between 0.28 per cent to 14.08 per cent, and the percentage of conviction was even lower, ranging between zero and 10.61 per cent.
- There were significant weaknesses in 'the project planning, management and implementation process. There was inadequate examination of DPRs by the Steering Committee, with 641 projects being approved

in just 9 meetings. Most SEBs/ Utilities had not adopted turnkey contracting, and had executed the works departmentally or on semi-turnkey basis; in some cases, the turnkey packaging was so distorted that it negated the concept of single point responsibility, which was the objective of turnkey contracting. In addition, the audit also detected numerous deficiencies in individual projects across different aspects, covering execution of out-of-scope items, lack of economy in procurement and execution, excess payments to contractors and other inefficiencies.

- There was lack of direct linkage between physical and financial progress of APDRP projects at the Ministry's level. The mechanism for inspection of APDRP implementation was inadequate.

MINISTRY OF POWER

Audit Report No. 11 of 2007 (Regularity Audit)

National Hydroelectric Power Corporation Limited

Due to lack of proper coordination among its various divisions, the Company could not make the contractor liable for bearing the extra cost towards lowering the foundation level and had to make avoidable payment of Rs.1.06 crore to the contractor. (Para 14.1.1)

NTPC Limited

The Company made irregular payment of ex-gratia in the form of special incentive amounting to Rs.116.88 crore to its employees whose wages/salary exceeded the limit stipulated under the Payment of Bonus Act. (Para 14.2.1)

Due to continuing with two loans at higher rates of interest despite the downward trend in interest rates, the Company incurred extra expenditure of Rs.4.72 crore till September 2006 and incurred future liability of Rs.3.91 crore over the remaining tenure of loans. (Para 14.2.2)

Power Finance Corporation Limited

The Company sanctioned a loan to a private party without proper appraisal and adequate securities. As a result, an amount of Rs.8.20 crore remained outstanding for more than three years, recovery of which was not assured. (Para 14.3.1)

The Company signed a loan agreement with the Asian Development Bank for taking a loan of US\$ 150 million. In view of the reluctance of the State Electricity Boards to utilise the loan, the Company foreclosed the loan to the extent of US\$ 100 million. Consequently, it had to incur an expenditure of Rs.7.39 crore on payment of upfront fee and commitment charges. (Para 14.3.2)

DEPARTMENT OF PUBLIC ENTERPRISES

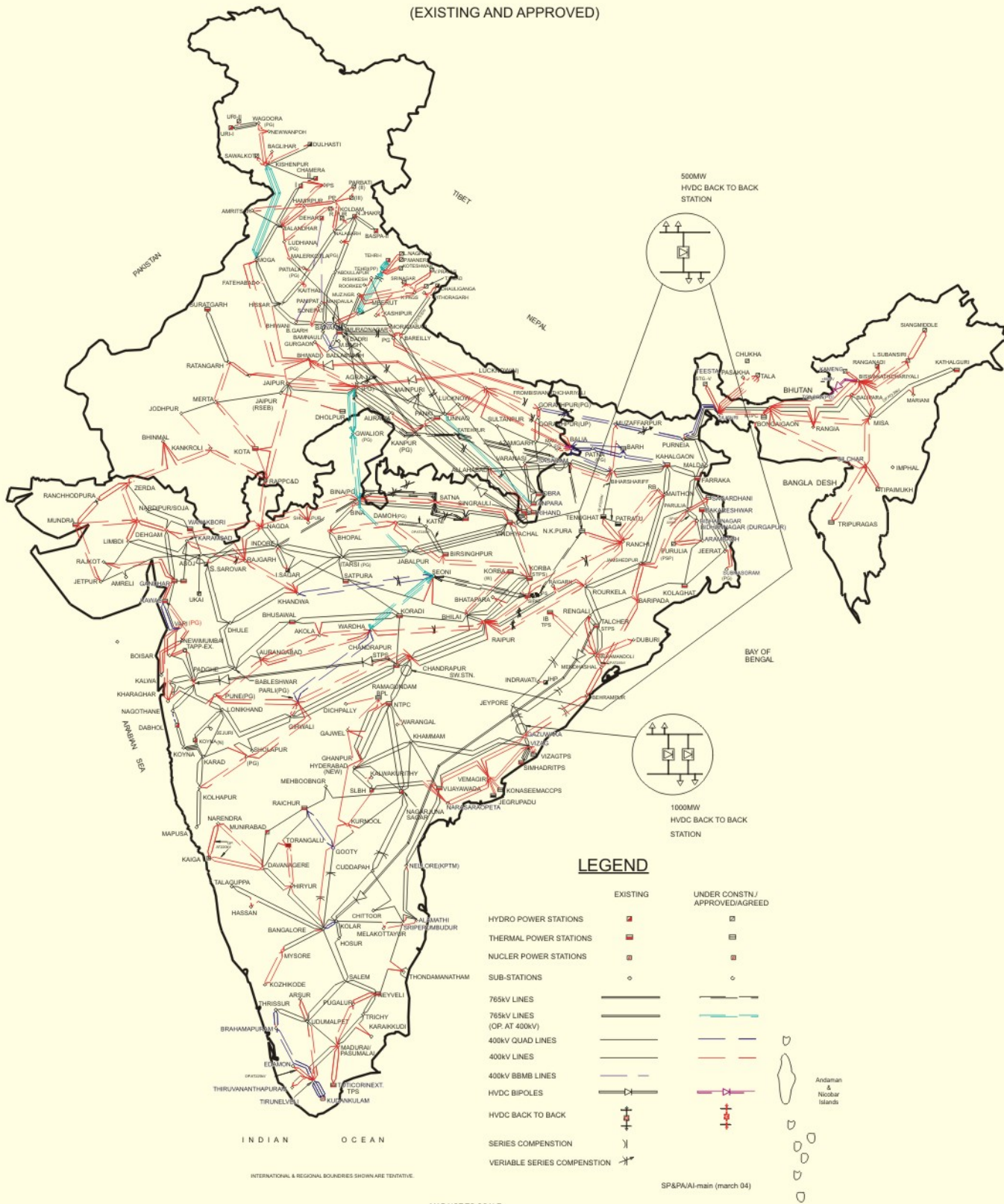
Audit Report No. 11 of 2007 (Regularity Audit)

Airports Authority of India, Air India Limited, Northern Coalfields Limited, Coal India Limited, Export Credit Guarantee Corporation of India Limited, Food Corporation of India, The New India Assurance Company Limited, National Insurance Company Limited, United India Insurance Company Limited, The Oriental Insurance Company Limited, Oil and Natural Gas Corporation Limited, Hindustan Petroleum Corporation Limited and National Hydroelectric Power Corporation Limited .

During test check in Audit, several cases relating to non billing, non receipt, short recovery, excess payment, undue benefit to private parties etc. in case of Central PSUs were pointed. In 21 such cases pertaining to 13 PSUs, where Audit pointed out an amount of Rs.22 crore for recovery, the Management of the PSUs recovered an amount of Rs.15.52 crore during 2005-06.

MAJOR TRANSMISSION NETWORK OF INDIA

(400kV AND ABOVE)
(EXISTING AND APPROVED)





सत्यमेव जयते

Ministry of Power

Government of India

Shram Shakti Bhawan, Rafi Marg, New Delhi
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