ANNUAL REPORT
2006-07

सत्यमेव जयते

Ministry of Power

Government of India

MAP OF INDIA

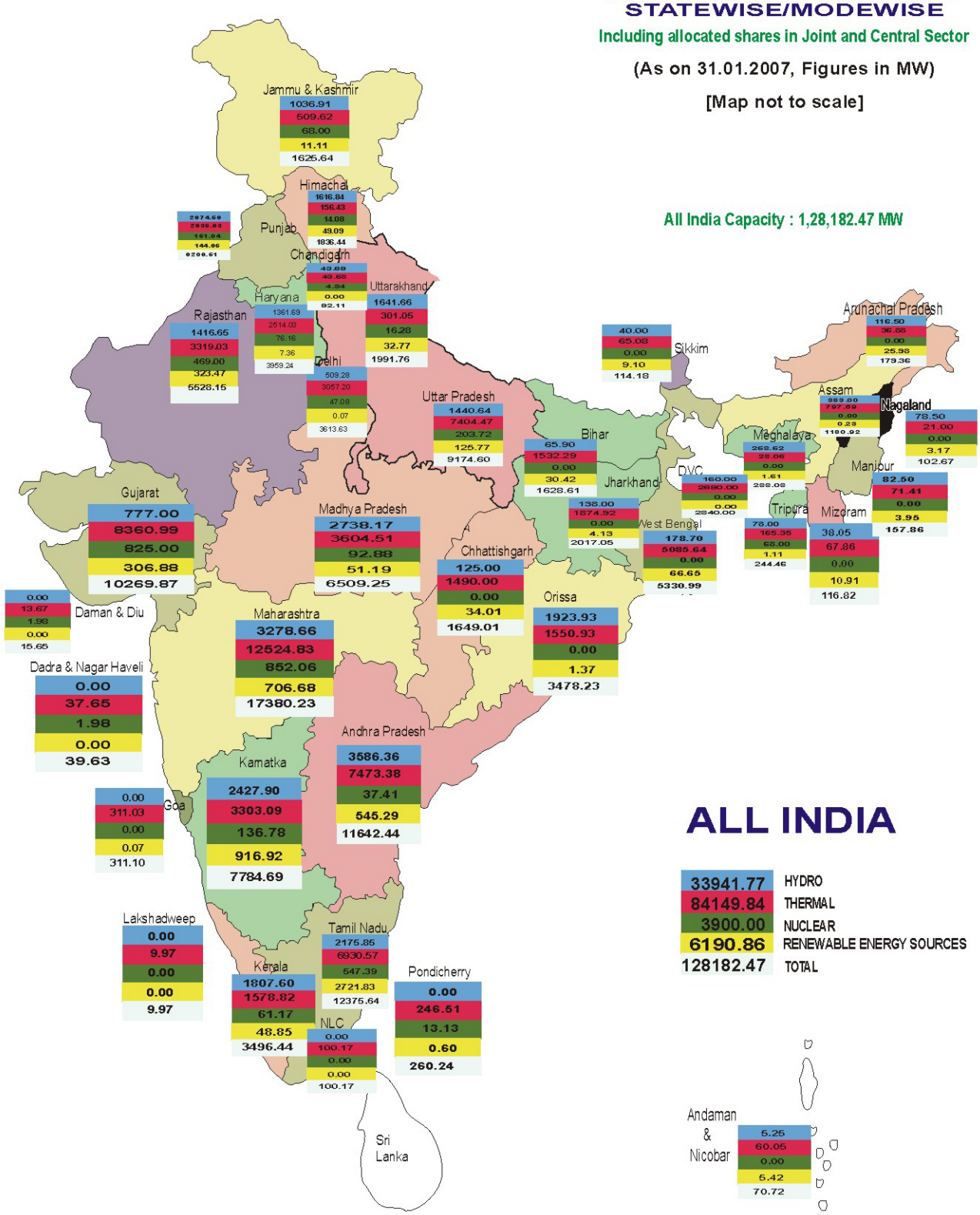
SHOWING

INSTALLED GENERATING CAPACITY STATEWISE/MODEWISE

Including allocated shares in Joint and Central Sector

(As on 31.01.2007, Figures in MW)

[Map not to scale]



ALL INDIA

33941.77	HYDRO
84149.84	THERMAL
3900.00	NUCLEAR
6190.86	RENEWABLE ENERGY SOURCES
128182.47	TOTAL

ANNUAL REPORT 2006-07

Ministry of Power

Government of India

Shram Shakti Bhawan, Rafi Marg, New Delhi

Website : www.powermin.nic.in

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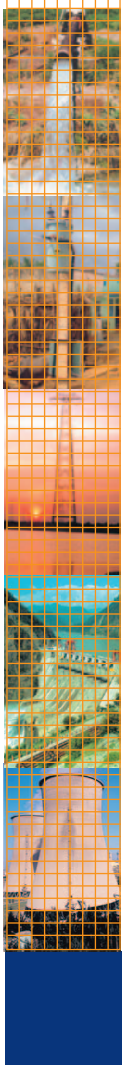


CHAPTER – 1

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

- All States have signed Memorandum of Understanding, Memorandum of Agreement & Tri-partite Agreements.
- All the States except Nagaland and Arunachal Pradesh have constituted notified State Electricity Regulatory Commissions (SERCs) and 21 SERCs have issued tariff orders.
- 13 States restructured corporatised State Electricity Boards and one State i.e. Tripura corporatised Electricity Department. Delhi (2002) and Orissa (1999) privatized their SEBs.
- 100% 11kV feeder metering completed in 23 States and 4 more States have achieved more than 90% metering.
- 100% consumer metering has been completed in 8 States and 12 other States have achieved more than 90% metering.

FORMULATION OF RULES AND REGULATIONS UNDER ELECTRICITY ACT, 2003

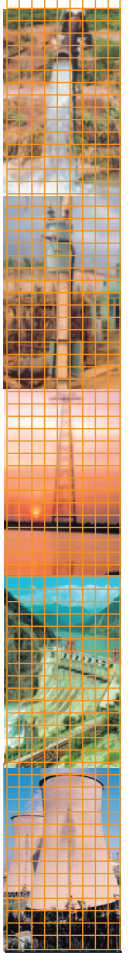
CEA has been given mandate to prepare Regulations under Section 177(1) of the Electricity Act, 2003. Regulations on 6 subjects and 2 sub-subject have necessarily to be made under Section 177(2) of the Electricity Act. The following two Regulations have been notified by the Central Government after pre-publication as required under the Electricity Act and considering the comments/ suggestions from various stakeholders in the power sector:

1) Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 – 17th March, 2006
2) Central Electricity Authority (Rules of Procedures for Transaction of Business) Regulations, 2006 – 18th August, 2006

The Regulations on Technical Standards for Grid Connectivity has been sent for notification after following the procedure of previous publication and considering the comments/suggestions of the various stakeholders in the power sector. The Regulations on Furnishing of Statistics, Returns and Information is under finalization. After considering suggestions and comments of the various stakeholders in power sector, it is likely to be notified by the end of the year. The other Regulations of CEA in respect of Grid standards, Technical Standards for construction of electricity plants & lines and suitable measures relating to safety & electricity supply are at an advance stage of formulation.

RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJNA OF RURAL ELECTRICITY INFRASTRUCTURE & HOUSEHOLD ELECTRIFICATION

Central Govt. has launched a new scheme "Rajiv Gandhi Grameen Vidyutikaran Yojna 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. The scheme would be implemented through Rural Electrification Corporation (REC).

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

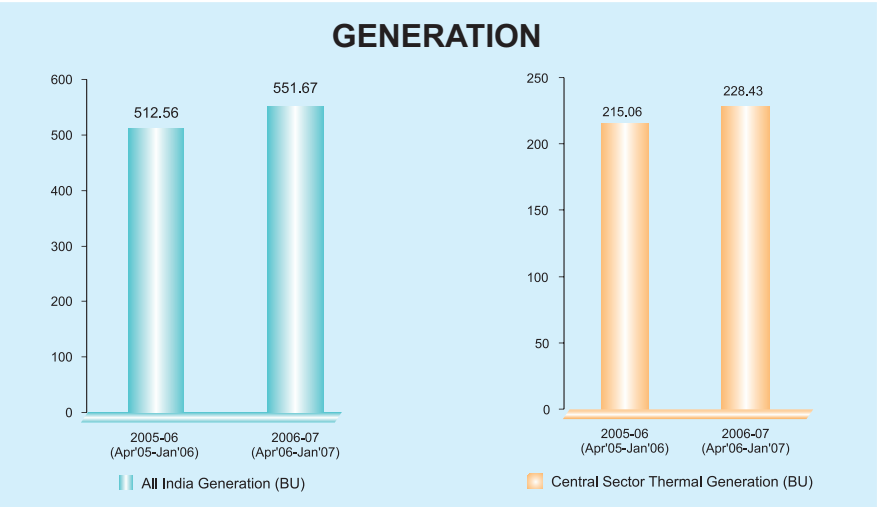
- Rural Electricity Distribution Backbone (REDB) with at least one 33/11 kV (or 66/11kV) substation in each block.
- Village Electrification Infrastructure (VEI) with at least one distribution transformer in each village/ habitation.
- Decentralized Distribution Generation (DDG) Systems where grid supply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

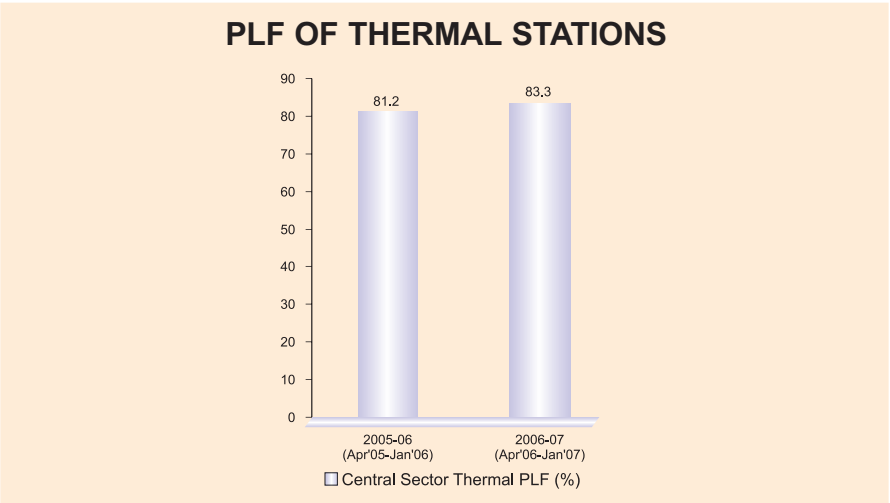
Since April, 2005, till 23rd February, 2007, 30562 villages have been electrified under RGGVY.

Generation Performance

Generation during the year 2006-07 is targeted at 663.00 BU i.e. growth of 6.7% over generation target of 621.50 BU for the previous year.

- In the current financial year during period Apr'06-Jan'07 the actual generation was 551.67 BU against 512.56 BU generated during corresponding period of previous financial year representing a growth rate of about 7.6%. Loss of generation due to shortage (mainly gas) was of the order of 18.42 BU. But for this, growth rate would have been about 11.8%.
- Overall PLF of thermal power stations during the period April 06 - Jan '07 in current financial year has been 75.6% against 72.5% in the corresponding period of last year.
- The PLF of central generating stations has improved to 83.3% during April 06-Jan '07 from 81.2% during corresponding period of previous year.





100,000 MW Thermal Initiative

To accelerate the hydro power development, 50, 000 MW hydro electric initiative was launched by Hon'ble Prime Minister of India on May 24, 2003. Keeping in view the huge power generation capacity requirement, MoP/ CEA has proposed 1,00,000 MW environment friendly Thermal initiative. CEA has identified shelf of sites for thermal power projects totaling to more than 100,000 MW capacity. Large sites are being identified through studies by Central Mines Planning and Design Institute & National Remote Sensing Agency using remote sensing. Projects totaling to about 46,000 MW to be taken up during 11th Plan. Need for capacity addition during 12th Plan to be firmed up by the end of 11th Plan.

Setting up of Ultra Mega Power Projects

The Ministry of Power, Govt. of India has launched an initiative for development of coal based Ultra Mega Power Projects (UMPPs) in India, each with a capacity of 4000 MW or above. These projects will be awarded to developers on the basis of tariff based competitive bidding.

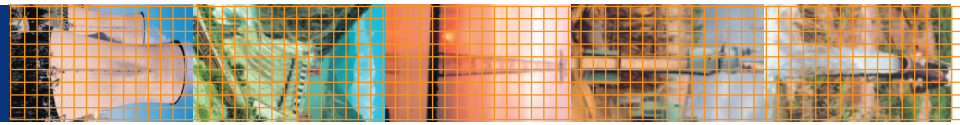
To facilitate tie-ups of inputs and clearances project specific Shell companies have been set up as wholly owned subsidiaries of the Power Finance Corporation Ltd. These companies will undertake preliminary studies and obtain necessary clearances including water, land, fuel, power selling tie-up etc. prior to award of the Project to the successful bidder.

Initially five sites were identified by CEA in five different states for the proposed Ultra Mega Power Projects. These include two pithead sites one each in Madhya Pradesh and Chhattisgarh and three coastal sites in Gujarat, Karnataka & Maharashtra. Subsequently on the request of Govt. of Andhra Pradesh & Orissa two sites one each in Orissa (Pithead) and Andhra Pradesh (Coastal) were identified for setting up of Ultra Mega Power Projects. Sites are also being identified in Jharkhand (Pit head) and Tamil Nadu (Coastal) based on requests from the state Governments. It is proposed to set up pithead projects as integrated proposals with corresponding captive coal mines. On the request of Ministry of Power, Ministry of Coal has already allocated captive coal mining block for Sasan UMPP in Madhya Pradesh and earmarked captive coal mining block for Orissa UMPP. For the coastal projects imported coal shall be used.

The projects are to be developed with a view to result in minimum cost of power to the consumers. Because of bigger size units, the cost of the project would be lower due to economy of scale. Further, the layout of the project would be compact and all systems would be optimized to result in lower cost of power. Further projects would be environment friendly adopting supercritical technology to reduce emissions.

A time bound action plan for preparation of project report, tie-up of various inputs/clearances, appointment of consultants, preparation of RFQ/ RFP have been prepared. Developers for Sasan (Madhya Pradesh) & Mundra (Gujarat) UMPPs are expected to be selected by December, 2006. Developer for Krishnapatnam UMPP (Andhra Pradesh) is expected to be selected by March, 2007. Once the developer is selected, the ownership of the Shell companies shall be transferred to the successful bidders.

Hon'ble Prime Minister, Dr. Manmohan Singh dedicating the 3000 MW Talcher-Kaniha Super Thermal Power Station from the studio of Doordarshan, Bhubaneswar in the presence of Shri Naveen Patnaik, CM of Orissa & Shri Sushilkumar Shinde, Union Power Minister



ORGANISATION STRUCTURE

SUSHILKUMAR SHINDE
MINISTER OF POWER

ANIL RAZDAN
SECRETARY (POWER)

- Central Electricity Authority
- Rakesh Nath, CPES Chairperson
- R. Dahiya, CPES Member, Thermal
- Gurdial Singh, CPES Member, Hydro
- V.S. Verma, CPES Member, Planning
- V. Ramakrishna, CPES Member, Power System
- Santosh Kumar, CPES Member, Grid Operation & Distribution
- Sunil Verma, CPES Member, Economic & Commercial

JOINT SECRETARY	JOINT SECRETARY	JOINT SECRETARY	JOINT SECRETARY & FA	JOINT SECRETARY
• Thermal	• Trans	• Hydro	• Financial Adviser	• RE
• OM	• IC	• IPC		• APDRP
• EC	• R&R	• P&P		• Distribution
• T&R	• Coord.	• V&S		• PFC
• OL				• IT
				• Admn.

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;

Hon'ble Union Power Minister Shri Sushilkumar Shinde inaugurates International Conference on O&M on February 13, 2007 seen in the picture are L to R Shri Rakesh Nath, Chairperson CEA, Shri T. Sankarlingam, CMD, NTPC, Shri Anil Razdan, Secretary (Power), Shri R.V. Shahi, Former Power Secretary & Shri Chandan Roy, Director (Operations), NTPC

- 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 Elecricity 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.

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. Power Trading Corporation (PTC) was also set up in 1999 to catalyse development of mega power projects, as well as vibrant power market and to promote exchange of power with neighbouring countries.

ORGANISATIONAL 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 five Joint Secretaries, including the Financial Adviser.

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

i) Thermal, Operation Monitoring, Energy Conservation, Training & Research and Official Language.

ii) Transmission, PTC, International Cooperation, Reforms & Restructuring and Coordination.

iii) Hydro, IPC, Policy & Planning and Vigilance & Security.

iv) FInancial matters.

v) Rural Electrification, Distribution, Power Finance Coporation, Information Technology and Administration.

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. Power Sports Control Board deals matters relating to recreation activities. The total staff strength of the Ministry is 307.

A view of 390 Dulhasti Project (J&K) - Dam

CHAPTER – 3

GENERATION & POWER SUPPLY POSITION

GENERATION

The overall generation in the country has increased from 264 Billion Units (BUs) during 1990-91 to 617 BUs during 2005-06. 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 (up to Jan.'07)	551.7

PLANT LOAD FACTOR (PLF)

The all India PLF of thermal utilities during 2005-06 was 73.6%. 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 (up to Jan.'07)	83.3	69.5	87.2	75.6

POWER SUPPLY POSITION

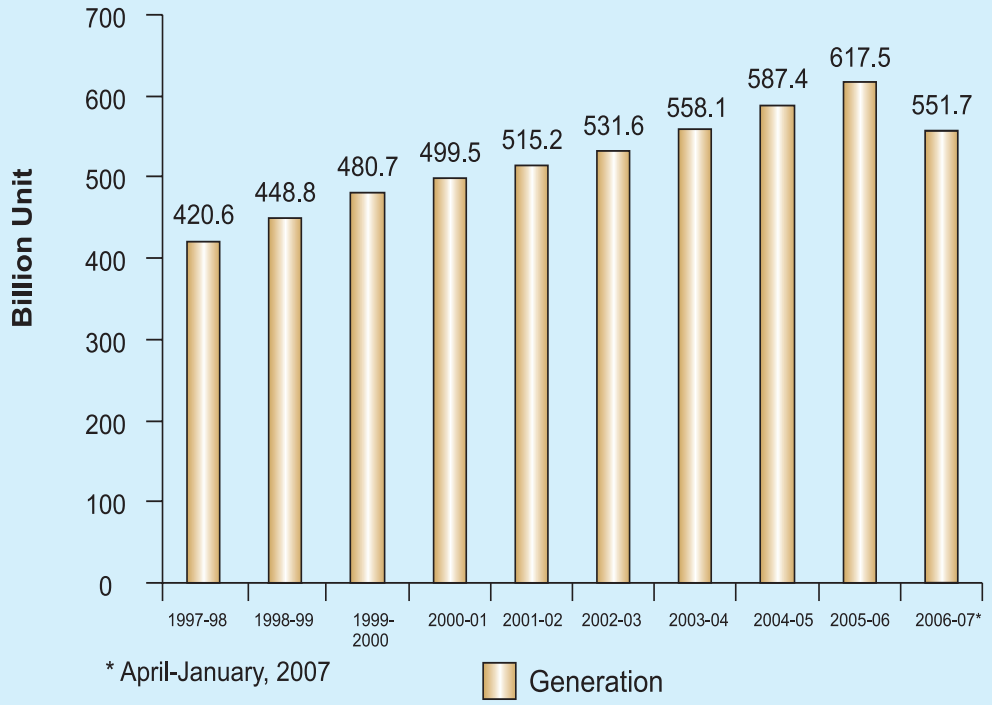
The power supply position from 1997-98 onwards are as under :

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* (*upto Jan.'07)	572812	519656	53156	9.3

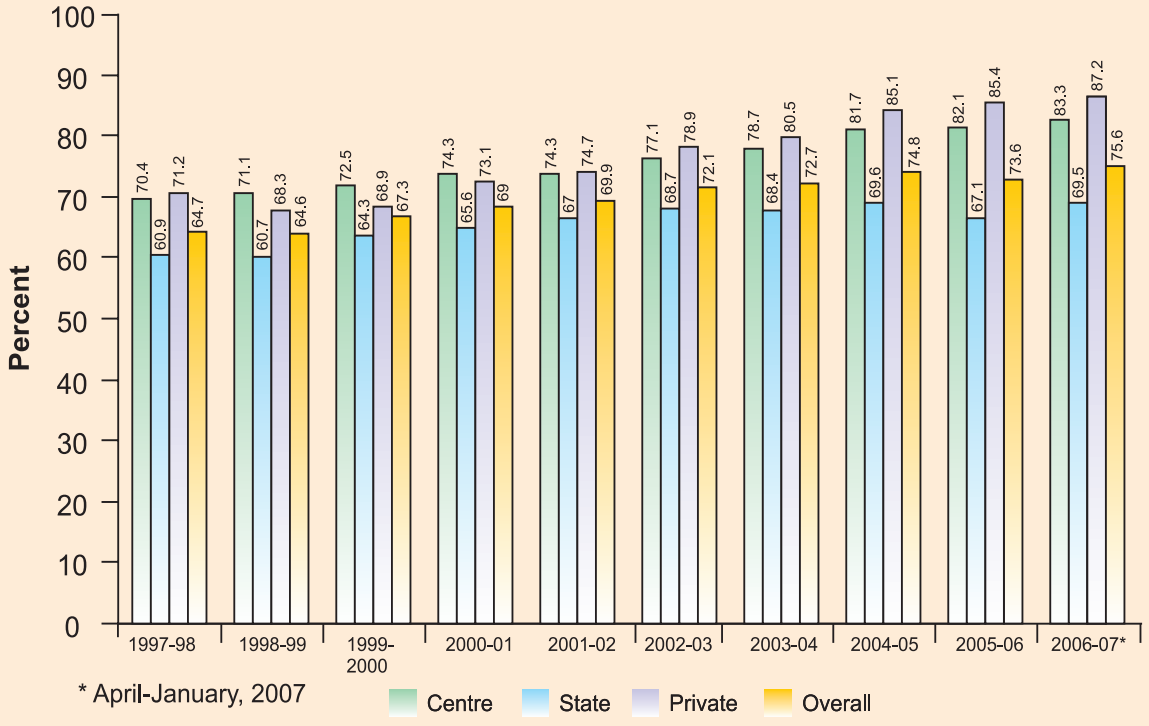
Peak Demand :

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* (*upto Jan.'07)	100403	86425	13978	13.9

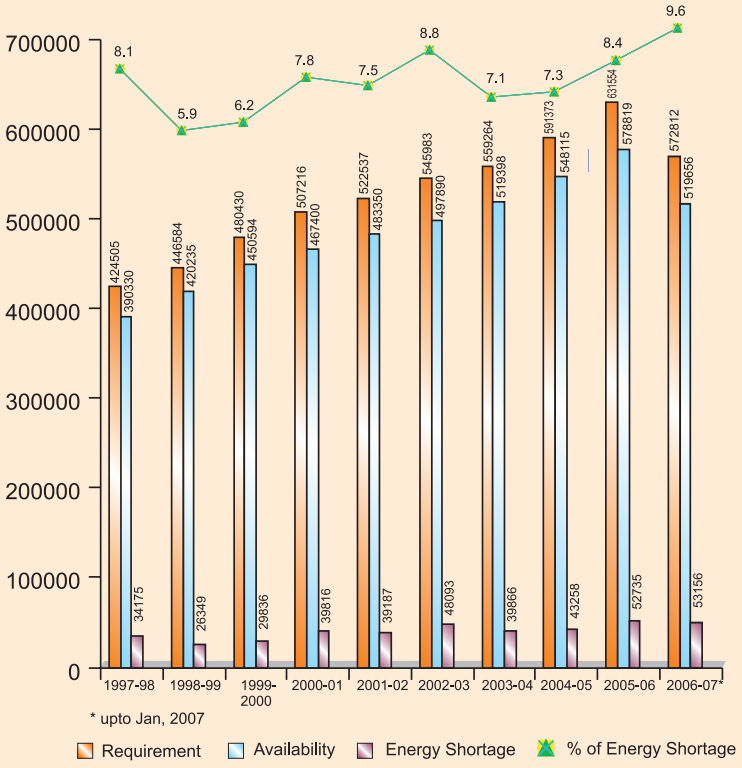
GENERATION (BU)



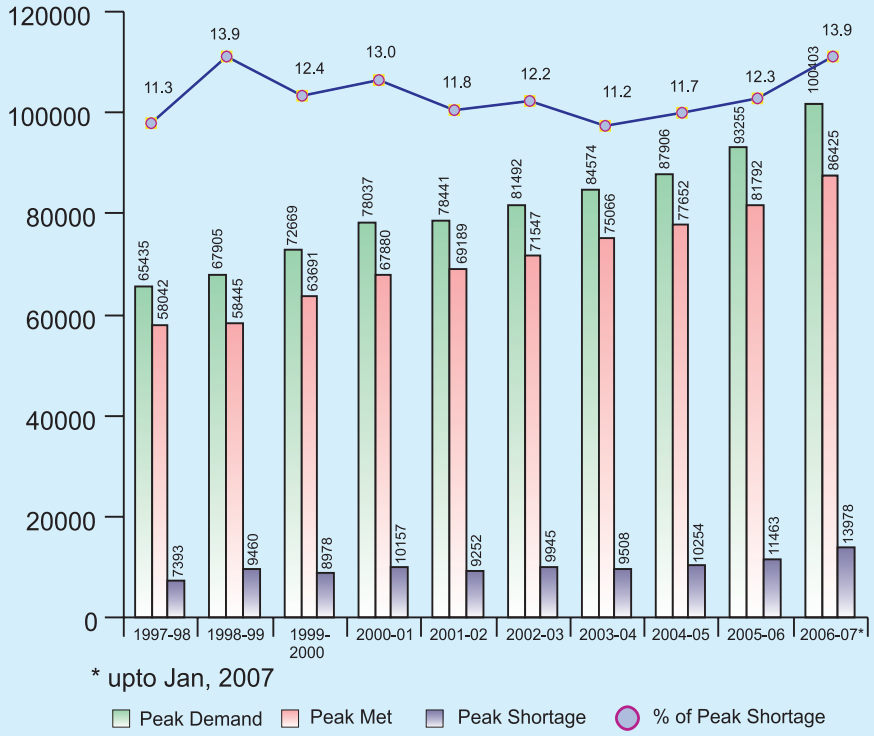
SECTOR-WISE PLANT LOAD FACTOR



POWER SUPPLY POSITION - ENERGY



POWER SUPPLY POSITION - PEAK



CHAPTER – 4

CAPACITY ADDITION: PROGRAMME AND ACHIEVEMENTS

INSTALLED CAPACITY

The All India installed capacity of electric power generation stations under utilities was 124287.17 MW as on 31.3.2006 consisting of 82410.54 MW thermal, 32325.77 MW hydro, 3360 MW nuclear and 6190.86 MW from Renewable Energy Sources (RES) which has increased to 128182.47 MW as on 31.01.2007 consisting of 84149.84 MW thermal, 33941.77MW hydro, 3900 MW nuclear and 6190.86 MW from RES.

CAPACITY ADDITION PROGRAMME FOR THE 10TH FIVE YEAR PLAN

A capacity addition of 41,110 MW has been targeted for the 10th Five year Plan. Sector-wise details are as under:

(in MW)

Source	Central	State	Private	Total
Hydro	8742	4481	1170	14393
Thermal	12790	6676	5951	25417
Nuclear	1300	-	-	1300
Total	**22832**	**11157**	**7121**	**41110**

At the time of Mid Term Appraisal, a capacity addition of 36956 MW, against the target of 41110 MW, was found feasible during 10th Plan period. The break-up are as under :

Source	Central	State	Private	Total
Hydro	6177	4248	700	11125
Thermal	11070	7992	4199	23261
Nuclear	2570	0.00	0.00	2570
Total	**19817**	**12240**	**4899**	**36956**

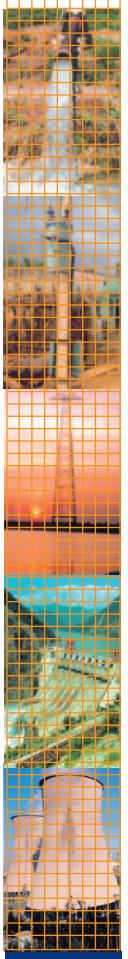
At present, a capacity of 23250.24 MW is likely to be achieved during 10th Plan. The sector-wise and type-wise break-up are as under :

Sector-wise

(in MW)

Sector	Original Target	Units commissioned	Under Execution	Works to be awarded/ under approval	Overall capacity addition now anticipated
Central	22832	11115	2610	0	*13725
State	11157	5459.64	2135	0	7594.64
Private	7121	1930.6	0	0	1930.6
Total	**41110**	**18505.24**	**4745**	**0**	**23250.24**

* Including 220 MW nuclear project under construction



Type-wise

(in MW)

	Original Target	Units commissioned	Under Execution	Works to be awarded/ under approval	Overall capacity addition now anticipated
Thermal	25417	10129.24	3535	0.00	13664.24
Hydro	14393	7196	990	0.00	8186
Nuclear	1300	1180	220	0.00	1400
Total	**41110**	**18505.24**	**4745**	**0.00**	**23250.24**

Capacity addition programme 2005-06 and achievement during 2005-06
Programme - 2005-06

(in MW)

	Central Sector	State Sector	Private Sector	Total
Thermal	1210.00	865.92	1382.60	3458.52
Hydro	1670.00	1216.00	0.00	2886.00
Nuclear	590	0.00	0.00	590.00
Total	**3470.00**	**2081.92**	**1382.60**	**6934.52**

Achievement - 2005-06

(in MW)

	Central Sector	State Sector	Private Sector	Total
Thermal	280.00	1060.00	0.00	1340.00
Hydro	500.00	428..00	660.80	1588.80
Nuclear	640.00	0.00	0.00	640.00
Total	**1420.00**	**1488.00**	**660.80**	**3568.80**

Capacity addition programme 2006-07 and achievement till 31.01.2007
Programme - 2006-07

(in MW)

	Central Sector	State Sector	Private Sector	Total
Thermal	4710.00	5292.92	3119.80	13122.72
Hydro	1900.00	1584.00	400.00	3884.00
Nuclear	760.00	0.00	0.00	760.00
Total	**7370.00**	**6876.92**	**3519.80**	**17766.72**

Achievement - 2006-07 (April, 2006 to January, 2007)

(in MW)

	Central Sector	State Sector	Private Sector	Total
Thermal	710.00	420	891.8	2021.8
Hydro	750	466	400	1616
Nuclear	540	0	0	540
Total	**2000**	**886**	**1291.8**	**4177.8**

Capacity addition (Last five years)

In the last five years including 2006-07 (April, 2006 to January, 2007), the following new capacities have been added :

(in MW)

Years	Central Sector	State Sector	Private Sector	Total
2001-02	905.00	1393.90	816.30	3115.20
2002-03	1210.00	1100.10	548.00	2858.10
2003-04	3035.00	816.62	100.00	3951.62
2004-05	2710.00	1168.92	70.00	3948.92
2005-06	1420.00	1488.00	660.00	3568.80
2006-07 (April, 2006 to Jan., 2007)	2000.00	886.00	1291.80	4177.80

Financial outlays

(Rs. in crore)

	10th Plan	2002-03	2003-04	2004-05	2005-06	2006-07
Allocation	143399 (GBS) 25000, IEBR (118399)	13483 (GBS) 3300, IEBR (10183)	14667.61 (GBS) 3500, IEBR (11167.61)	15630.32 (GBS) 3600, IEBR (12030.32)	23013.90 (GBS) 4100, IEBR (18913.90)	27623.70 (GBS) 5500, IEBR (22123.70)
Spent		8649.22 (GBS) 1830.46, IEBR (6818.76)	10740.80 (GBS) 1846.46, IEBR (8894.34)	12947.57 (GBS) 2287.78, IEBR (10659.79)	16847.54 (GBS) 2690.49, IEBR (14157.05)	13678.30 (GBS) 2276.22, IEBR (11402.08) up to 31.12.2006

SETTING UP OF ULTRA MEGA PROJECTS

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 4000 MW or above. These projects will be awarded to developers on the basis of tariff based competitive bidding.

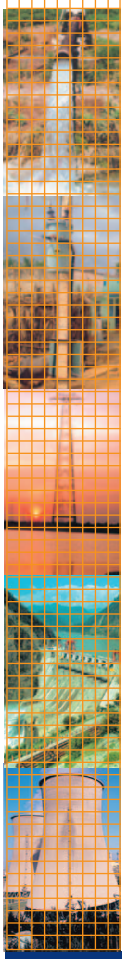
To facilitate tie-ups of inputs and clearances project specific Shell companies have been set up as wholly owned subsidiaries of the Power Finance Corporation Ltd. These companies will undertake preliminary studies and obtain necessary clearance including water, land, fuel, power selling tie-up etc. prior to award of the Project to the successful bidder.

Nine sites for development of 4000 MW each have been identified so far. These include four pithead sites, one each in Madhya Pradesh, Chhattisgarh, Jharkhand and Orrisa and five coastal sites, one each in Gujarat, Karnataka, Maharashtra, Andhra Pradesh and Tamil Nadu.

The bidding process has been initiated in respect of three projects i.e. Sasan (Madhya Pradesh), Mundra (Gujarat) and Krishnapatnam (Andhra Pradesh). In respect of first two sites of Sasan and Mundra, there has been overwhelming response as 10 developers have submitted their bids for Sasan and six have submitted their final bids for Mundra UMPPs. In respect of Sasan (Madhya Pradesh), financial bids were opened on 18th December, 2006 and the lowest tariff of Rs. 1.196 per KWh (levelised tariff for 25 years and first year tariff as 93 paise per unit) was quoted by consortium of M/s. Globeleq Singapore, PTE Ltd. and M/s. Lanco Infratech Pvt. Ltd. In respect of Mundra (Gujarat) financial bids were opened on 18th December, 2006 and the lowest tariff as Rs. 2.264 per KWh (levelised tariff for 25 years and the first year tariff as Rs. 1.91 per unit) was quoted by Tata Power Company Ltd.

Apex Evaluation Committee evaluated the financial bids on 18th December, 06 itself and its recommendations were finalized. Letter of Intent was handed to successful developers on 28th December, 2006.

As per indicated time line in respect of Krishnapatnam project, successful developer would be finalized by the end of April, 2007.



CHAPTER – 5

STATUS OF POWER SECTOR REFORMS

- All the states except Nagaland and Arunachal Pradesh have constituted/notified State Electricity Regulatory Commissions (SERCs). Some States have constituted SERC under respective State Reforms Act while others have constituted under erstwhile Electricity Regulatory Commissions Act, 1998 and Electricity Act, 2003.
- Twenty one SERCs have issued tariff orders.
- Consumer Grievance Redressal Forums (CGRF) have been constituted in 16 States by the distribution licensees for redressal of grievances of consumers. Ombudsman have been appointed in 15 States to look into the non-redressal of grievances by the CGRFs.
- 26 States have notified rural areas under section 14 of the Act, which provides for taking up composite schemes of generation and distribution without any license.
- 27 States have constituted District Committees for coordinating rural electrification, reviewing the quality of power supply and promoting energy efficiency.
- 15 States have set up Special Courts for expeditious disposal of theft related cases.
- Six States have established Special Police Stations.

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. Orissa, Haryana, Andhra Pradesh, Karnataka, Uttar Pradesh, Uttaranchal, Rajasthan, Delhi, Gujarat and Madhya Pradesh have done so under their State Electricity Reforms Acts. Assam, Mahrashtra and West Bengal have reorganized their SEBs under the provisions of the Electricity Act, 2003.

Policies/Guidelines/Rules issued under the Electricity Act, 2003 in year 2005-06

Rural Electrification Policy

The Central Goverment has notified Rural Electricity Policy under section 4&5 of the Electricity Act, 2003 on 23rd August, 2006.

The Policy aims at :

- Provision of access to electricity to all households by year 2009.
- Quality and reliable power supply at reasonable rates.
- Minimum lifeline consumption of 1 unit per household per day as a merit good by year 2012.

Guidelines for procurement of electricity

In compliance with section 63 of the Electricity Act, 2003, the Central Government has notified guidelines for procurement of power by Distribution Licensees through competitive bidding. Central Government has also issued the standard bid document containing RFQ. RFP and model PPA for long term procurement of power from projects having specified site and location.

Rules notified by Ministry of Power under the Electricity Act, 2003

- Works of Licensees Rules, 2006 notified on 18.4.2006 under section 176(2)(e) of the Act.
- Qualifications, Power and Functions of Chief Electrical Inspector and Electrical Inspectors Rules, 2006 notified on 17.8.2006 under section 176(2)(z) of the Act.
- Revised rules on Appellate Tribunal for Electricity (Procedure, Form, Fee and Record of

Proceedings) Rules, 2007 notified on 22.01.2007 under section 176(2), (t) and (z) of the Act.

Scheme for One Time Settlement of outstanding dues payable by SEBs to the CPSUs

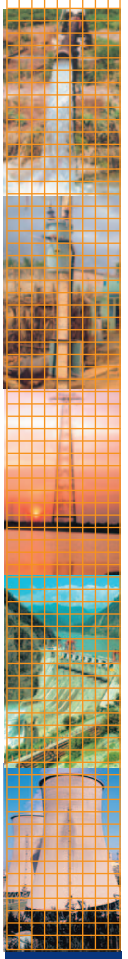
Securitisation of outstanding dues

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 Agreement (TPA) envisaged under the scheme. TPA is between the State Government, Reserve Bank of India and the Government of India.

Collection Efficiency

The scheme has resulted in improvement in collection of dues of the power sector CPSUs. The details of collection efficiency (in percentage) is shown in the table given below:

Sl. No.	CPSU	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007 (April - Sept.' 07
1.	NTPC	76.74	92.34	100.00	100.00	100.00	100.00
2.	NHPC	69.03	94.44	97.06	100.00	100.00	100.00
3.	PGCIL	88.92	95.16	98.30	99.70	100.00	100.00
4.	NEEPCO	74.78	71.49	87.50	95.23	97.00	89.06
5.	DVC	99.07	91.92	90.64	95.88	96.19	95.73
6.	SJVNL	-	-	100.00	100.00	100.00	100.00
7.	THDC	-	-	-	-	-	92.46



CHAPTER – 6

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

Distribution Reforms

The Ministry of Power took various intiatives 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. Ministry of Power signed the MOU with states to undertake distribution reforms in time bound manner. 27 states (including Delhi), so far have either constituted or notified their regulatory commission and 21 states have issued tariff orders in the direction of rationalizing the tariffs. Now the states are moving towards Multi-Year Tariff, Time of Day Metering and intra state availability based tariff. Thirteen SEBs and one Electricity Department have been unbundled & corporatised. All the states have securitized their outstanding dues towards CPSUs. Electricity Distribution has been privatized in Delhi and Orissa. At national level, 96% feeders and 93% of the consumers have been metered so far. 100% feeder metering have been achieved in 19 states.

ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME

Ministry of Power launched Accelerated Power Development and Reforms Programme (APDRP) in year 2002-03 with an outlay of Rs. 40,000 crore as additional central plan assistance to states during 10th Five Year Plan. The programme objectives are as follows.

- Reduce AT&C losses
- Bring about commercial viability in the Power sector
- Reduce outages & interruptions
- Increase consumer satisfaction

The programme has two components

Investment conponent: Under the investment component of the programme, funds are provided as Additional Central Assistance to the state Utilities through respective state Governments for the projects relatig to upgradation & strengthening of sub-transmission & distribution network (below 33kV or 66kV) for improving technical and commercial efficiencies of the utilities. In the beginning assistance to the tune of 50% of the project cost was being extended in form of 25% grant and 25% loan. For special category states, the grant was 90% and balance 10% as loan. However, on the recommendations of 12th Finance Commission, the loan component was discontinued from 2005-06. Now only 25% grant is being provided to the general category states and 90% to the special category states since April 2005. The allocation of fund to the states was not based on state quota but on the basis of their preparedness towards reforms, preparation of projects and their implementation.

The status as on 31st January 2007

Number of Projects sanctioned	:	571
Cost of projects sanctioned	:	Rs. 17033.58 Cr.
Funds released	:	Rs. 6574.89 Cr.
Counter-Part funds tied up	:	Rs. 6468.72 Cr.
Counter-Part funds drawn	:	Rs. 4225.16 Cr.
Funds Utilized	:	Rs. 10152.06 Cr.

Incentive component

Assistance under Incentive component was introduced to motivate the Utilities to reduce their cash loss as it was felt essential to integrate the investment programme in the distribution segment with an incentive mechanism linked to efficiency improvement. It was envisaged that it will help the Utilities to bring about commercial viability through improvement in billing and collection efficiency.

The state utilities are incentivised up to 50% of the actual cash loss reduction by them as grant. The year 2000-01 has been fixed as the base year for calculating the reduction of loss during subsequent years. Losses are calculated net of any subsidy & tariff compensation given by the state Government both in base as well as during the subsequent years. The revenue is considered on net realization basis only (increase in receivables in factored out). The Ministry appointed M/S CARE and M/S ICRA for independent secrutiny of the claims of the Utilities.

Incentive for reduction of cash loss amounting to Rs. 1575.02 Crore has been paid to Andhra Pradesh, Gujarat, Haryana, Kerala, Maharashtra, Rajasthan, West Bengal and Punjab for showing cash loss reduction of Rs. 3618.30 Crore.

The billing efficiency at national level has improved from 68.12% during 2001-02 to 69.87% during 2004-05. Similarly, collection efficiency improved during the same period from 91.78% to 94.72%. Due to this improvement in billing and collection efficiency, the national average AT&C loss of the distribution companies has reduced from 38.18% in 2001-02 to 33.82% in 2004-05. Further, based on provisional accounts for 2005-06, states of Andhra Pradesh, Goa and Tamilnadu have reported AT&C loss below 20% during the year. Punjab and 2 DISCOMs of Gujarat (Madhya & Uttar) have reported AT&C loss in between 20% and 25% during 2005-06 . AT&C Losses have been brought below 20% in 212 APDRP towns in the country of which 169 towns have brought AT&C losses below 15%. Similarly DT failure rate below 5% has been reported by 215 towns, out of which 71 have reported up to 1%.

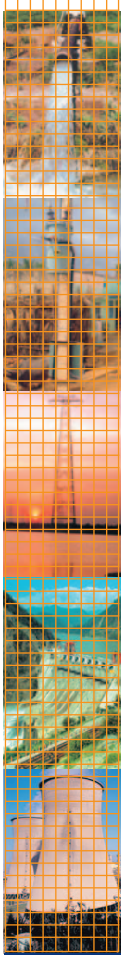
The overall commercial loss (without subsidy) of the Utilities reduced from Rs. 29,331 Crore during 2001-02 to Rs. 22,126 Crore during 2004-05 (Source: PFC). Further, Utilities in the states of Andhra Pradesh, Goa, Himachal Pradesh, Punjab, Gujarat, Meghalaya, Chattisgarh & West Bengal have reported profits during 2005-06. States of Jharkhand, Madhya Pradesh, Haryana, Rajasthan, Uttaranchal, Karnataka, Kerala and Assam have also reported reduction in their losses during 2005-06 in comparison to the previous year.

Ministry of Power constituted a Task Force headed by Shri P. Abraham with members from utilities, regulatory commissions to assess and analyze the current efforts and to suggest restructuring of the programme to achieve the objectives of APDRP during 11th Plan. The report has been submitted by the Task force and is under consideration of the Ministry.

A view of Transmission Tower

In order to evaluate performance of the state power sector utilities and to assess improvements on account of reforms and implementation of APDRP, ranking of SEBs / Utilities by independent rating agencies has been initiated. Ministry of Power has assigned the work to CRISIL & ICRA. CRISIL & ICRA have released four reports in January 2003, January 2004, March 2005 and June 2006. The ranking and score assigned to the various states are as follows:

S. No.	States	TOTAL (100)			
		Jan-03	Jan-04	Mar-05	June-06
1.	Andhra Pradesh	71.50	56.75	57.03	55.81
2.	Gujarat	51.43	50.99	53.61	54.46
3.	Delhi	52.50	57.00	51.91	50.87
4.	Karnataka	68.00	51.25	51.46	46.92
5.	West Bengal	35.88	40.89	44.60	46.24
6.	Goa	41.08	43.20	50.45	44.96
7.	Himachal Pradesh	49.38	44.16	49.91	43.09
8.	Maharashtra	60.00	37.75	37.25	35.41
9.	Kerala	32.50	34.25	31.48	31.63
10.	Tamilnadu	47.50	39.63	50.94	29.72
11.	Assam	18.20	27.43	27.32	28.46
12.	Rajasthan	64.00	41.83	37.50	27.80
13.	Punjab	45.00	46.00	36.82	27.69
14.	Chattisgarh	0.00	13.83	39.91	27.45
15.	Uttaranchal	0.00	37.75	18.60	27.06
16.	Tripura	18.70	12.60	31.65	26.51
17.	Meghalaya	24.58	23.03	26.72	24.91
18.	Uttar Pradesh	42.83	40.85	42.14	24.38
19.	Haryana	64.00	49.63	35.16	23.75
20.	Madhya Pradesh	31.50	24.75	22.79	21.97
21.	Orissa	33.00	20.31	13.63	21.25
22.	Sikkim	19.10	15.87	19.07	14.03
23.	Mizoram	12.95	10.80	7.88	7.13
24.	Jharkhand	0.00	0.00	3.00	4.00
25.	Arunachal Pradesh	12.20	9.05	9.20	3.41
26.	Nagaland	16.60	14.13	15.80	3.19
27.	Bihar	11.20	10.63	5.78	-3.06
28.	Manipur	16.33	-11.90	6.55	-6.67
29.	Jammu & Kashmir	32.50	8.50	9.43	-6.69



CHAPTER – 7

TRANSMISSION

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 centres, system strengthening and creation of National Grid. The construction targets for the year 2006-07 and achievement up to November, 2006 of Central Sector Transmission projects including Joint Venture projects are summarized below :

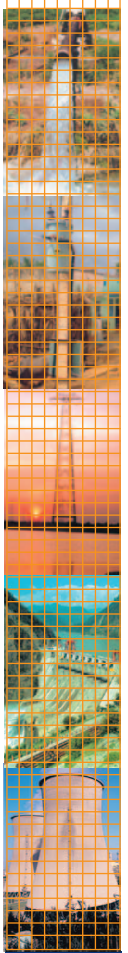
Works	Programme for the year 2006-07	Achievement upto Nov. 2006	% of Achievement
765 kV lines	660 Ckm.	292 Ckm.	44.24
400 kV lines	6509 Ckm.	3567 Ckm.	54.80
220 kV lines	268 Ckm.	78 Ckm.	29.10
765 kV Sub-Stations*	2331 MVA	0 MVA	0.00
400 kV Sub-Stations	6615 MVA	4095 MVA	61.90
220 kV Sub-Stations	900 MVA	200 MVA	22.22

* targetted for commissioning by March, 2007

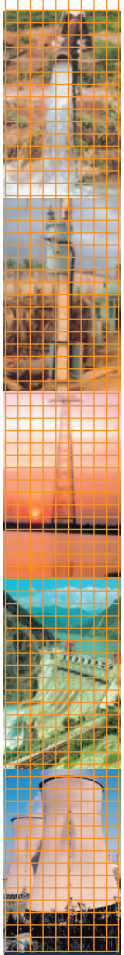
CENTRAL SECTOR TRANSMISSION

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 2006-07 (up to Nov, 06) are shown in the following table:

S. No.		Name of the line/Sub-station	Voltage
1.		**TRANSMISSION LINES**	
	a	Tehri-Meerut (Line-1) (operated at 400 kV)	765 kV
	b	Tehri-Meerut (Line-2) (operated at 400 kV)	765 kV
	c	Bhadrawati-Chandrapur Transmission System	400 kV
	d	Bareilly-Mandoula (JVPG)	400 kV
	e	LILO of Bongaigaon - Malda at Purnea	400 kV
	f	Meerut - Muzaffarnagar	400 kV
	g	Jallandhar-Amritsar	400 kV
	h	LILO of 400 kV S/C Korba - Raipur at Sipat	400 kV
	i	Neelamangla - Mysore	400 kV
	j	LILO of both ckt of Nellore - Sriperambudur at Alamathi	400 kV
	k	Siliguri - Purnea (Quad) (JVPG)	400 kV
	l	Purnea - Muzaffarpur (Quad) (JVPG)	400 kV
	m	Muzaffarpur - Gorakhpur (Quad) JVPG)	400 kV



S. No.		Name of the line/Sub-station	Voltage
	n	Gorakhpur - Lucknow (JVPG)	400 kV
	o	Gorakhpur (UPPCL) - Gorakhpur (PG)	400 kV
	p	Lucknow - Unnao	400 kV
	q	Tala-Siliguri line-2 (Circuit-I)	400 kV
	r	Vindhyachal-Satna (Ckt-I Commissioned)	400 kV
	s	Kishenpur-Wagoora	400 kV
	t	LILO of Bawana-Bhiwani at Bahadurgarh	400 kV
	u	Kanpur - Auraiya	400 kV
	v	Biharshariff - Muzaffarpur	400 kV
	w	Muzaffarpur (PG)-Muzaffarpur (BSEB)	220 kV
	x	LILO of one ckt of Kalyaneshwari-Mejia at Burnpur	220 kV
	y	Bokaro TPS-Ramgarh	220 kV
2	**OTHER SCHEMES**		
	a	Series Compensation on Purnea - Muzaffarpur	400 kV
	b	Series Compensation on Muzaffarpur - Gorakhpur	400 kV
3	**NEW SUB-STATIONS**		
	a	Amritsar (1x315 MVA)	400/220 kV
	b	Mysore (1st) (1x315 MVA)	400/220 kV
	c	Mysore (2nd) (1x315 MVA)	400/220 kV
	d	Muzaffarpur (1st) (1x315 MVA)	400/220 kV
	e	Gorakhpur (1x315 MVA)	400/220 kV
	f	Lucknow (1x315 MVA)	400/220 kV
	g	Bahadurgarh (1x315 MVA)	400/220 kV
	h	Mainpuri (new) 2nd ICT (1x315 MVA)	400/220 kV
	i	Narendra (2nd) (1x315 MVA)	400/220 kV
	j	Satna (1x315 MVA)	400/220 kV
	k	Burnpur (2x50 MVA)	220/132 kV
	l	Barjora (2x50 MVA)	220/132 kV
4	**SUB-STATION EXTENSIONS**		
	a	Purnea Extn. (1x315 MVA)	400/220 kV
	b	Gorakhpur Extn. (1x315 MVA)	400/220 kV
	c	Siliguri Extn. (1x315 MVA)	400/220 kV



FORMATION OF NATIONAL GRID

Formation of strong National Power Grid has been recognized as a flagship endeavour to steer the development of Power System on planned path leading to cost effective fulfillment of the objective of 'Electricity to All' at affordable prices. A strong All India Grid would enable exploitation of unevenly distributed generation resources in the country to their optimum potential by providing enhanced margins in inter-regional transmission system. These margins, together with open access in transmission, would facilitate increased real time trading in electricity.

Asynchronous connection between the Regional Grids were provided during 90s and early 2000s to enable exchange of regulated quantum of power. HVDC back-to-back links of 500 MW between the Northern Region and the Western Region at Vindhyachal. 1000 MW between Western Region and Southern Region at Bhadrawati, 1000 MW between Eastern Region and Southern Region and 500 MW between Eastern Region and Northern Region at Sasaram were provided during this phase. The Eastern Region and the North-Eastern Region have been synchronously operating since 1992, being connected by a 220 kV double circuit transmission line and more recently by a 400 kV D/C transmission line. The Western Region was interconnected to ER-NER system synchronously through 400 kV Rourkela-Raipur D/C line in 2003, operationalizing the Central India system consisting of ER-NER-WR. With installation of TCSC, the transmission capacity of Rourkela-Raipur 400 kV D/C line was increased to 1400 MW.

The Northern Region, which till August 2006 had asynchronous radial mode and HVDC back-to-back inter-regional transmission connectivity of 600 MW with the Eastern Region and 1000 MW with the Western Region, was also synchronously integrated with the ER/NER/WR system. With the commissioning of the 400 kV Muzaffarpur- Gorakhpur line on 26th August, 2006, the Muzafarpur-Gorakhpur 400 kV D/C quad line with fixed series capacitor and TCSC has added 2000 MW to the ER-NR inter-regional transmission capacity. Thus, as on date, except the Southern Region, the entire country is on one synchronous grid.

The Southern region had asynchronous interconnections of 1700 MW to WR and 600 MW to ER providing a total of 2300 MW of inter-regional transmission capacity existing at the beginning of the 10th Plan. With 2000 MW Talcher-Kolar HVDC Bipole line and second 500 MW HVDC back-to-back module at Gazuwaka, both between SR and ER, the total inter-regional capacity connecting to SR has increased to 4800 MW. As of now all inter-regional transmission links of the Southern Region are either asynchronous radial mode lines or HVDC inter-connections. Synchronous integration of the Southern Region with rest of Indian grid would be firmed up after having experience of synchronous operation of NR+ER+NER+WR system. One point AC interconnection through Parli-Raichur 400 kV link supplemented with HVDC links has been proposed for this. The target is to firm up this scheme in the first year of 11th Plan so that synchronous interconnection of All India system could be realized within the 11th Plan period.

At present, inter-regional power transfer capacity of 11450 MW is available in the country. It is envisaged to increase the inter-regional power transfer capacity to around 37,000 MW by 2012. The details in this regard are at Annex.

PRIVATE SECTOR PARTICIPATION IN TRANSMISSION

Tala Transmission System - POWERGRID's first Joint Venture project with Tala Power, has been completed successfully in August, 2006. POWERGRID envisages to implement some more transmission projects in Joint Venture with private sector.

In addition, steps have been initiated for implementation of Western Region System Strengthening Scheme-II (Projects B&C) (estimated cost Rs. 1600 crore) with 100% equity to be owned by private investors (IPTC route).

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. Expression of interest for four transmission projects have been invited by PFC and REC for tariff based competitive bidding.

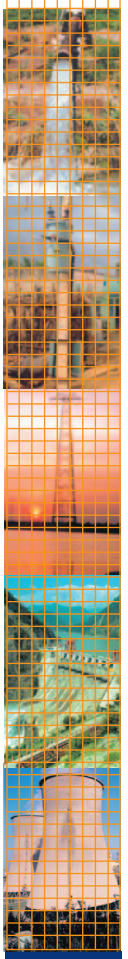


Table-I

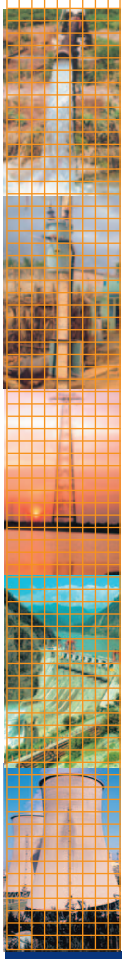
National Grid-Details of Inter-Regional Transmission Capacities - Existing and Programmed for completion by End of 10th Plan (March, 2007):

Name of System	Existing Transmission Capacity(as on Oct 2006)	Additional Capacity under construction to be added during Nov'06-Mar'07	Transmission Capacity at the end of 10th Plan (end of 2006-07)
ER-SR:			
Gazuwaka HVDC back-to-back	1000		1000
Balimela-Upper Sileru 220kV S/C	100		100
Talcher-Kolar HVDC bipole	2000		2000
ER-SR total	**3100**		**3100**
ER-NR:			
Muzaffarpur-Gorakhpur 400 kV D/C (Quad Moose) with series comp	2000		2000
Dehri-Sahupuri 220 kV S/C	100		100
Sasaram HVDC back - to - back	500		500
Biharsharif-Balia 400kV D/C quad increased loadability with series capacitor in associated lines in NR system		1600	1600
Patna - Balia 400kV D/C quad increased loadability with series capacitor in associated lines in NR system		1600	1600
ER-NR total	**2600**	**3200**	**3200**
ER-WR:			
Rourkela-Raipur 400 kV D/C (without SC)	1000		1000
TCSC on Rourkela-Raipur 400 kV D / C	400		400
Budhipadar-Korba 220 kV D/C + S/C	400		400
ER-WR total	**1800**		**1800**
ER-NER:			
Birpara-Salakati 220 kV D/C	250		250
Malda-Bongaigaon 400 kV D/C	1000		1000
ER-NER total	**1250**		**1250**
NR-WR:			
Vindhyachal HVDC back-to-back	500		500
Auriya-Malanpur 220 KV D/C	250		250
Kota - Ujjain 220 KV D/C	250		250
Agra-Gwalior 765 kV S/C line-1 400kV op.	1100		1100
NR-WR total	**1000**	**1100**	**2100**
WR-SR:			
Chandrapur HVDC back-to-back	1000		1000
Barsur-L. Sileru 200kV HVDC monopole	200		200
Kolhapur-Belgaum 220kV D/C	250		250
Ponda - Nagajhari 220 kV D/C	250		250
WR-SR total	**1700**		**1700**
TOTAL ALL INDIA (end of 10th Plan)	**11450**	**4300**	**15750**

Table-II

National Grid-Details of Inter-Regional Transmission Capacities - Transmission Capacities for Addition during 11th Plan (2007-12):

Name of System	Additions during 11th Plan i.e. 2007-12
ER-SR:	
Upgradation of Talcher-Kolar HVDC bipole	500
ER-SR total	**500**
ER-NR:	
Barh - Balia 400kV D/C quad increased loadability with series capacitor in associated lines in NR System	1600
Sasaram - Fatehpur 765kV S/C (40% SC)	2300
Sasaram - Balia 400kV D/C quad increased loadability with series capacitor in associated lines in NR System	1600
ER-NR total	**5500**
ER-WR:	
Ranch - Sipat 400 kV D/C (40% SC)	1000
Ranchi-Rourkela-Raipur 400 kV D/C	1400
North Karanpura - Sipat 765kV S/C	2300
ER-WR total	**4700**
ER-NER:	
Bongaigaon-Siliguri 400 kV D/C quad	1000
ER-NER total	**1000**
NR-WR:	
Agra-Gwalior 765 kV line - 1 765 kV	1200
Agra-Gwalior 765 kV line-2	2300
Kankroli - Zerda 400 kV D/C	1000
RAPP-Nagda 400 KV D/C	1000
NR-WR total	**5500**
WR-SR:	
Parli-Raichur 400 kV D/C	1000
WR-SR total	**1000**
NER-NR/WR	
Bishwanath Chariyali-Agra HVDC bi-pole + 800 kV	3000
NER-NR/WR total	**3000**
TOTAL ALL INDIA (during 11th Plan)	**21400**



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 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 Gramodaya Yojana (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- 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 New and Renewable Energy 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 financing 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.

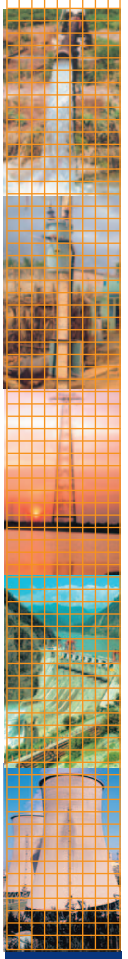
STATUS OF RURAL ELECTRIFICATION UNDER RGGVY

All the states except Delhi & Goa have signed Agreements under RGGVY. CPSUs are implementing the scheme in 134 districts. Projects for 316 districts have been sanctioned at the cost of Rs. 11514.22 crore covering 69534 un-electrified villages and 2750784 BPL households. Since April 2005, till 23rd February, 2007, 30562 unelectrified villages in Rajasthan, Uttar Pradesh, Uttaranchal, Karnataka, Bihar and West Bengal have been electrified under this scheme. Besides above intensive electrification of 7175 already electrified villages has also been achieved.

In 2006-07, 20743 unelectrified villages have been electrified as on 23.02.2007.

Franchisees are in place/operation in 12 states namely, Uttar Pradesh, Uttaranchal, Karnataka, West Bengal, Assam, Nagaland, Haryana, Orissa, Madhya Pradesh, Andhra Pradesh, Rajasthan and Bihar covering 39113 villages. Revenue collection has improved in the states where franchisees are in operation.

All the 27 states participating in RGGVY have notified constitution of district committees & all the 26 states except Manipur have notified rural areas.



CHAPTER – 9

ENERGY CONSERVATION

1. Introduction

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 too low which needs to be increased to meet out economic and social development. The installed power generation capacity has grown up 85 times since independence and the total installed capacity of power generation in India has reached 1,27,672.97 MW (as on 31.10.2006). However, there is still a peak demand shortage of around 12% and an energy deficit of 8% 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. Also, 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 development of a draft Energy Conservation Building Code for large, new commercial buildings; the launch of energy labeling scheme for appliances; the initiation of a 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.

2. Indian Industry Programme for Energy Conservation

BEE has taken a voluntary initiative in 2002 to launch the Indian Industry Programme for Energy Conservation (IIPEC), under its Action Plan. The programme is aimed at assisting Indian industries to improve competitiveness through improved energy efficiency, as well as to enable them to meet the mandatory provisions of the EC Act.

IIPEC has provided a forum for cooperation between the Government and industries to work together to explore ways to improve energy efficiency through exchange of information on best practices, to identify energy efficiency potential, establish efficiency targets, implement and manage conservation programmes and to report on the progress. Further, it supports the Indian Industries in developing the specific energy consumption norms. The participating units are expected to achieve significant annual improvement in their specific energy consumption by setting their own targets on energy saving.

This voluntary program of sharing of best practices, undertaking and specific energy consumption targets has full acceptance in the 7 sectors of industry including aluminium, cement, chlor-alkali, fertilizer, pulp & paper, petrochemicals & refinery and textile sector. Best practices have been recorded and published through CDs and also incorporated in BEE's website which is being updated periodically for use of designated consumers.

Task force workshops for Cement (at Beawar & New Delhi), Pulp & paper (at Ballarpur & New Delhi), Petrochemical and Refinery Sectors (at Mumbai & Vadodara), Aluminium (at Hirakud & Renukoot) & Textile (at Chhindwara & Hooghly), Fertilizer & Chlor-alkali (at Mumbai) during the last 3 years were organized by BEE. About 1000 energy professionals from industry, and other organizations participated in these four workshops in which information on Best Practices and energy efficient technologies were shared.

To begin with, Cement, Pulp & Paper sectors have been selected for the development of Specific Energy Consumption Norms. The norms for the Cement sectors are likely to be finalized very soon. Draft norms for the pulp and paper sectors have also been prepared and have been circulated amongst the stake-holders. These are likely to be discussed and finalized with the stake-holders in the next task force meeting. Thereafter Fertilizer Sector shall be taken up for development of specific energy consumption norms.

3. Demand Side Management

BEE has supported pilot Project in the state of Maharashtra and Karnataka in the areas of Municipal water pumping, street lighting and domestic lighting with replacement of ordinary lamps with CFLs.

The activities in Karnataka focused on the implementation of BESCOM Efficient Lighting Program (BELP) in which CFLs are distributed to domestic consumers and their cost was recovered from their monthly bills, and initiation of the implementation of the water pumping energy efficiency program. Efforts would be made to replicate such measures in other states. A draft manual on best practices for DSM was developed as a reference material for other utilities.

A questionnaire was sent to all distribution companies/State Electricity Boards / Electricity Commissions for seeking preliminary information in DSM activities undertaken so far and their future plans. Till now 42 Nodal Officers have been identified/ nominated from 42 utilities/state electricity commissions. The information collected was compiled and the DSM activities taken by utilities were circulated to other utilities for their use.

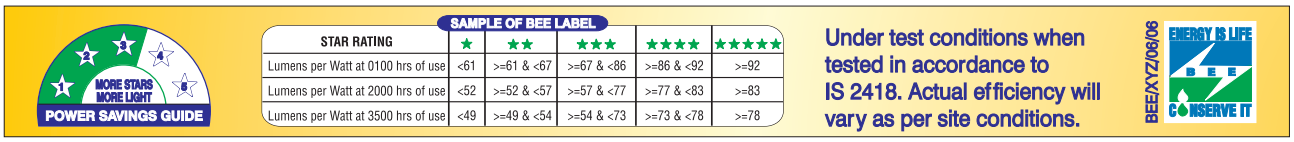
4. Standards and Labeling

The Energy Efficiency Standards and Labeling programme is a key Area for energy efficiency. Energy Labeling is the one of the most cost effective policy tools for improving energy efficiency and lowering energy cost for the consumers. These measures would encourage the manufacturers to produce Energy Efficient products and will also help consumers to make an informed choice before buying these appliances. Energy-efficiency labels and standards for appliances and equipment offer a huge opportunity to improve energy efficiency.

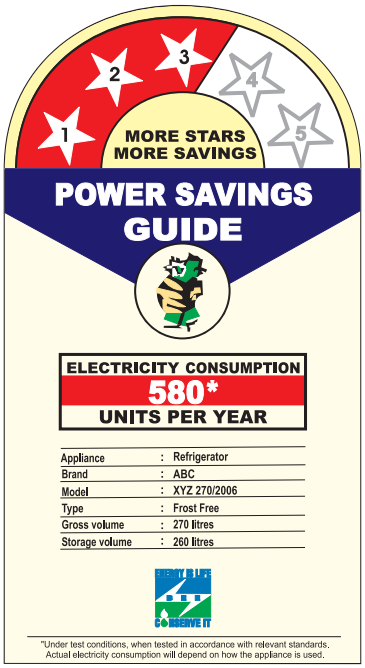
Under the BEE's Labeling Program, appliances are rated on a scale of 1 to 5 stars, with the most efficient carrying a 5 star label and the least efficient carrying a 1 star label. The program has been developed in a collaborative and consensus driven approach with active participation from all the stakeholders.

The National Energy labeling programme has been launched by Minister of Power on 18th May, 2006. Initially the labeling scheme is applicable for Frost-free (No-Frost) Refrigerator and Tubular Fluorescent

Shri Sushilkumar Shinde, Union Minister of Power and Senior officers, with the prize winners of National Level EC Painting Competition



Label for Tubular Fluorescent Lamp



Label for Refrigerator

Lamps (TFL) and other appliances like Air-Conditioners, Direct cool refrigerator, Motors and Ceiling Fans will be introduced in a phased manner. All these steps would take the country forward in achieving Energy Efficiency standards comparable to International levels.

5. Energy Efficiency in Buildings and Delivery Mechanisms for Energy Efficiency Services

Bureau of Energy Efficiency has undertaken Energy Audit studies in 9 Government buildings to set up an example for private buildings to pursue similar efforts. The buildings included – Rashtrapati Bhawan, Prime Minister's Office, Rail Bhawan, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, Delhi Airport, R&R Hospital and AIIMS. Energy saving potential between 23 to 46% has been identified in the above buildings.

Energy Audit study has been implemented in Rashtrapati Bhawan, Prime Minister's Office, Shram Shakti Bhawan, Transport Bhawan and Sanchar Bhawan. Implementation work in Rail Bhawan, and AIIMS is under progress. 17 other Government buildings had been taken up in second phase for Energy Auditing and its implementation through ESCO mode. 15 Government buildings have completed their Energy Audit study in second phase.

6. Energy Conservation Building Codes

The draft Energy Conservation Building Codes have been prepared for various climatic zones. The codes would be mandatory for commercial buildings or building complexes that have a connected load of 500 kW or more or a contract demand of 600 kVA or more. The code is recommended for all other buildings also. The draft Energy Conservation Building Code (ECBC) includes energy efficiency aspects of building envelope, Heating, Ventilation, Air-conditioning (HVAC), service hot water, pumping, lighting, electrical power and distribution system.

Bureau of Energy Efficiency coordinated India-IEA joint workshop on "Energy Efficiency in Buildings and Building Codes" on 4-5th October 2006 at Hotel Le Meridian, New Delhi. The workshop addressed various issues related to Energy Efficiency in Buildings and Building Codes in IEA countries and initiatives taken so for in India. The technical session covered Current status of Energy Efficiency in Building Codes in India, the Need for Energy Efficiency in Buildings and Building Codes. Stakeholder perspectives, Reviewing the Experience, Addressing Barriers to Implementation, institutional need and Evaluation & Financial Issues.

7. Professional Certification and Accreditation

One of the important activities mandated under the EC Act is to promote efficient use of energy and its conservation in the energy intensive industries and establishments (the Designated Consumers) and promoting the use of energy-efficient products and processes to reduce energy intensities in a financially attractive manner.

Certified energy managers and accredited energy auditors in tandem can influence top management decision on implementation of energy efficiency projects in energy intensive industries and establishments. The expertise of these two entities is para-mount to a successful implementation of energy efficiency projects and efficient operation

bringing in energy efficiency improvement in the industries and commercial establishments.

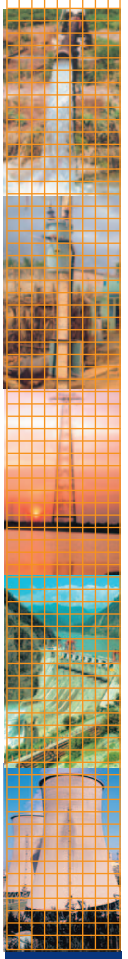
Bureau has conducted the 3 National certification examinations for energy managers & energy auditors in May 2004, April, 2005 and April 2006 in 23 centers all over the country and prepared guidebooks for the energy professionals.

The response to the programme was very encouraging and 713 Certified Energy Managers and 2023 Certified Energy Auditors are in place from three certification examinations.

The capacity building of energy managers and energy auditors through this route will have a long-term impact on the Indian economy.

State wise data on number of qualified certified Energy Managers and Certified Energy Auditors of National Certification Examination - 2004, 2005 & 2006

Name of the State	Examination 2004		Examination 2005		Examination 2006		Sub Total	
	Energy Managers	Energy Auditors	Energy Managers	Energy Auditors	Energy Managers	Energy Auditors	Energy Managers	Energy Auditors
Andhra Pradesh	16	28	10	35	22	61	48	124
Assam	9	2	3	5	2	16	14	23
Bihar	4	2	1	4	1	5	6	11
Chhattisgarh	2	9	1	16	7	13	10	38
Goa	2	2	0	4	1	5	3	11
Gujarat	53	50	35	78	17	95	105	223
Haryana	11	15	3	30	10	35	24	80
Himachal Pradesh	1	0	0	0	0	0	1	0
Jammu & Kashmir	-	0	0	1	0	1	0	2
Jharkhand	1	7	1	1	0	13	2	21
Karnataka	3	20	5	17	3	27	11	64
Kerala	12	24	5	20	3	29	20	73
Madhya Pradesh	24	23	8	42	8	45	40	110
Maharashtra	67	113	44	175	60	189	179	477
Delhi	5	17	6	52	4	54	15	123
Orrisa	3	12	3	19	10	26	16	57
Pondichery	0	1	1	2	1	2	2	5
Punjab	7	7	3	10	2	6	12	23
Rajasthan	24	21	6	39	3	49	33	109
Tamil Nadu	55	52	11	41	26	92	92	185
Union Territory (Chandigarh)	-	2	0	7	1	5	1	14
UT of D & NH	3	-	0	1	0	0	3	1
Uttar Pradesh	27	32	11	64	13	63	51	159
Uttaranchal	1	2	2	5	1	3	4	10
West Bengal	20	25	3	18	6	31	29	74
Others	-	2	0	2	0	2	0	6
Total	**350**	**468**	**162**	**688**	**201**	**867**	**713**	**2023**
Grand Total	**2736**							



7.1 Accreditation of energy auditors

Process for temporary accreditation of energy auditors for a limited period has been initiated in order to gain experience. Two separate high-level committees were constituted for evaluating the applications based on their energy auditing capabilities and institutional set up. Condition of the availability of certified energy auditors with energy auditing agencies was not considered at this stage as the certification system is under developmental phase. 64 energy-auditing agencies have qualified for temporary accreditation. Accredited Energy Auditors have carried out about 3000 energy audits on voluntary basis in the last three financial years (2003-06).

8. Manuals and Codes

The energy performance codes would provide a definite method of field testing of utility equipment in the designated consumer premises. The Energy Performance Codes would improve credibility of energy audits and provide industry and energy managers as to what from the energy audit. Best practices guides and case studies prepared would enable Energy Manager to optimize performance of the equipment through improved operation.

BEE had developed draft codes on seven technologies (equipment), namely, lighting systems; dryers; cogeneration plants; electric motors; electric transformers; fluid piping systems (network); insulation and air conditioners/ chillers (HVAC).

These draft codes were posted on the net as well as sent to energy auditors for their comments. Feedback received has been incorporated in the draft codes while finalizing codes. Hon'ble Union Minister of Power, Shri Sushilkumar Shinde, has launched the above codes on National Energy Conservation day 14th December, 2006 in a function organized at New Delhi.

9. State Designated Agencies

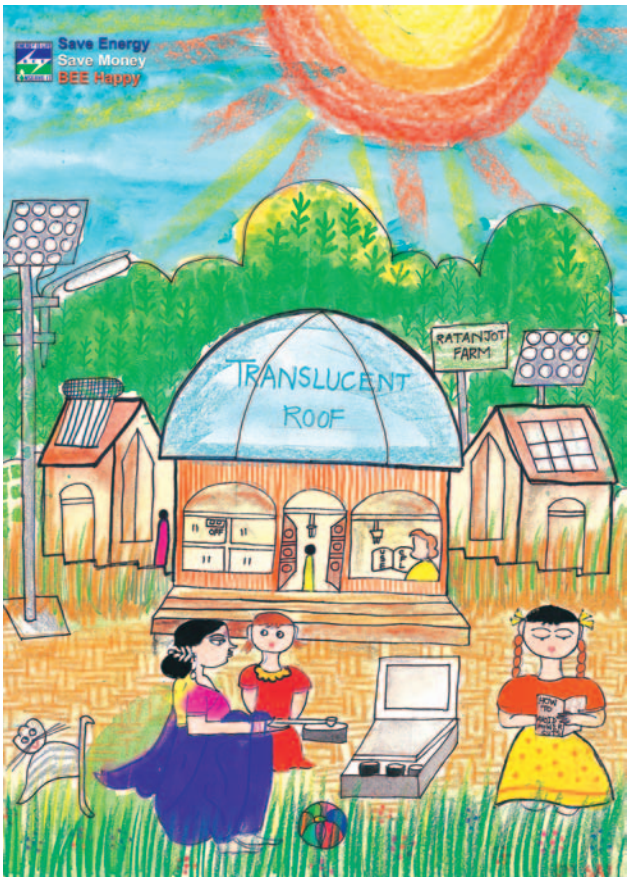
Institutional and administrative support of the State Government is essential for implementation of the provisions of Energy Conservation Act. Thirty State Governments and Union Territories have so far established State Designated Agencies to regulate, coordinate and enforce the provisions of Energy Conservation Act in their States/UTs.

A meeting with State Designated Agencies (SDA) was held on 1st August, 2006 at New Delhi, and interactions were held with Secretary (Power) on Scheme for providing financial assistance to the State Designated Agencies (SDAs) for implementation of the programmes and activities for achieving the purposes and objectives of Energy Conservation Act in their respective States.

9.1 List of Designated Agency to coordinate, regulate and enforce the provisions of Energy Conservation Act 2001

1. Andaman and Nicobar UT: Electricity Department, UT of Andaman and Nicobar, Port Blair;
2. Andhra Pradesh: Non-Conventional Energy Development Cooperation of Andhra Pradesh Ltd. (NEDCAP);
3. Arunachal Pradesh: Arunachal Pradesh Energy Development Agency (APEDA);
4. Assam: Electricity Department, Government of Assam, Guwahati;
5. Bihar: Bihar Renewable Energy Development Agency (BREDA), Bihar;
6. Chandigarh (UT): Superintending Engineer (Electrical), Electrical Circle, UT Chandigarh;
7. Chhattisgarh: Chhattisgarh State Renewable Energy Development (CREDA), Raipur;
8. Delhi: Delhi Transco Limited, Delhi;
9. Gujarat: Gujarat Energy Development Agency (GEDA), Gujarat;
10. Haryana: Department of Non-conventional Energy Sources (DNES), Chandigarh;
11. Himachal Pradesh: Director (Enforcement & Energy Audit), Office of the Chief Engineer (Commercial), H.P. State Electricity Board, Shimla;
12. Jharkhand: Chief Engineer-cum-Chief Electrical Inspector, Energy Department, Government of Jharkhand, Ranchi;
13. Karnataka: Karnataka Renewal Energy Development Limited (KREDL);
14. Kerala: Energy Management Centre, Kerala, Thiruvananthapuram;
15. Lakshadweep UT: Department of Electricity, Union Territory of Lakshadweep, Kavaratti;
16. Madhya Pradesh: M.P.Urja Vikas Nigam Limited (MPUVNL);

17. Maharashtra: Maharashtra Energy Development Agency (MEDA), Pune;
18. Manipur: Office of the Chief Engineer (Power), Government of Manipur, Secretariat: Power Department, Manipur;
19. Meghalaya: Senior Electrical Inspector, Government of Meghalaya Power Department: Electricity Branch, Meghalaya, Shillong;
20. Mizoram: Chief Engineer (Power), Power & Electricity Department, Government of Mizoram, Mizoram;
21. Nagaland: Electrical Inspectorate, Department of Power, Government of Nagaland, Kohima;
22. Orissa: Electricity-cum-Principal Chief Electrical Inspectorate, Bhubaneswar;
23. Pondicherry: Renewable Energy Agency of Pondicherry (REAP), Pondicherry;
24. Punjab: Punjab Energy Development Agency, Chandigarh;
25. Rajasthan: Rajasthan Renewable Energy Cooperation, Jaipur;



Riddhi Jain, Class : V, Delhi Public School, Bhopal

Prize Winning Painting, 2006 National Level Painting Competition on Energy Conservation

26. Tamil Nadu: Electrical Inspectorate Department, Chennai;
27. Tripura: Department of Power, Tripura, Agartala;
28. Uttarakhand: Electricity Safety Department, Government of Uttarakhand, Haldwani;
29. Uttar Pradesh: Non-Conventional Energy Development Agency Ltd., Lucknow
30. West Bengal: West Bengal State Electricity Board, Kolkata;

A programme has been taken to strengthen the capacity and capability of State Designated Agencies for promoting the objectives and implementing the provisions of the Act in their States/ Union Territories. The programme is planned to be executed in the first phase in 10 States. Other States could be covered after the successful implementation of the phase-1.

Some of State Governments like Haryana, Punjab, Nagaland and Delhi have issued Notification for mandatory use of CFLs and ISI Mark equipments to be used for certain category of user to promote energy conservation.

10. Energy Efficiency and Conservation in School Education

BEE had commissioned TERI to prepare a pilot project on "Building Awareness on Energy Conservation" among school Children. At the pilot stage, 30 schools in Delhi were selected as the target group. Through the project two specific areas of work were targeted. These were

(i) Development of a national curriculum on energy and conducting a series of events and competitions with the aim of sensitization and awareness building on energy related issues.

(ii) To replicate the activities that had already been conducted in Delhi so as to ensure maximum sensitization on issues related to Energy Conservation and efficiency. The programme targets students from classes 6 to 9 from 10 selected schools in one city/ town from two states of each of the five zones North, South, East, West, and Northeast of the country. 3000 school students from 100 schools and 200 teachers will be the direct beneficiaries from Government, Public and Private schools.

The proposed cities for project implementation are in North – Chandigarh and Allahabad, in South –

Trivandram and Chennai, in West – Mumbai and Bhopal, in East – Kolkatta and Ranchi and in North East – Guwahati and Shillong.

The proposed languages for project implementation are Malayalam, Tamil, Marathi, Bengali, and Assamese.

NCERT has agreed in principle to introduce a chapter on "Energy Conservation" in the school curriculum of 7th and 8th Standard.

11. National Energy Conservation Awards, 2006

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 2006 at New Delhi. These annual 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.

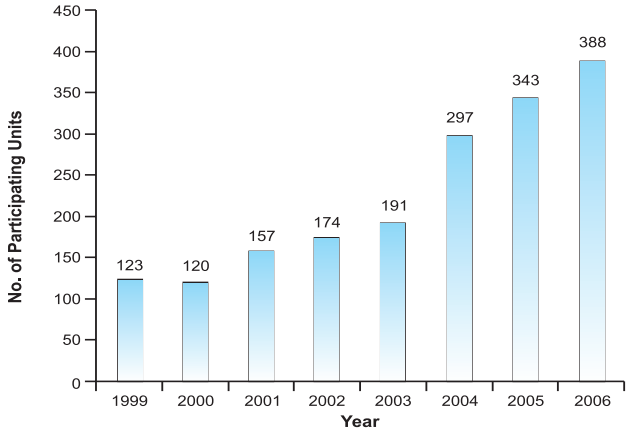
The Union Minister of Power, Shri Sushilkumar Shinde, gave away the Energy Conservation Awards to Award winning units. Sixty one (61) units in the industries, office buildings, hotels and zonal railways have been selected from 388 nominations received for the National Energy Conservation Award 2006. This year 1 Top Rank Award, 17 First Prizes, 24 Second Prizes and 19 Certificate of Merits were awarded.

The Award Scheme has motivated the participating units to undertake serious efforts in saving energy and environment. The data pertaining to 388 participating units indicated that these units have been able to collectively avoid generation of 1288 million kWh/year of electrical energy, which is equivalent to the energy generated from a 245 MW thermal power station at a PLF of 60% in 2005-2006. In the monetary terms, these units have been able to save Rs.1135 crores per year on account of electrical and thermal energy saved during the year 2005-2006.

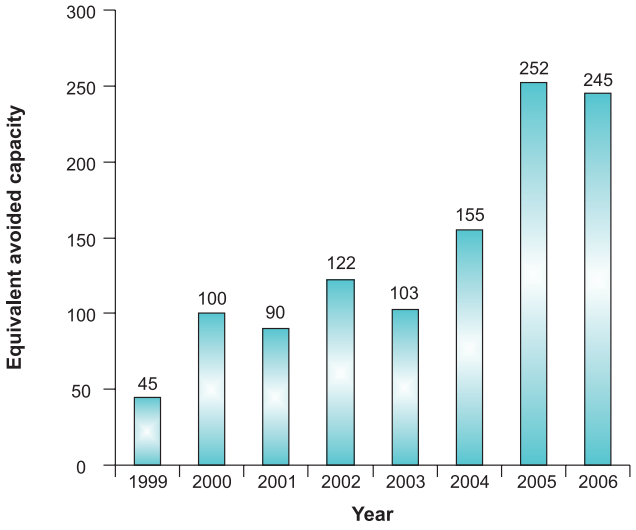
Gourab Ghosh, Class : V, St. Paul's Mission Schoo, Kolkata

Prize Winning Painting, 2006
National Level Painting Competition on Energy Conservation

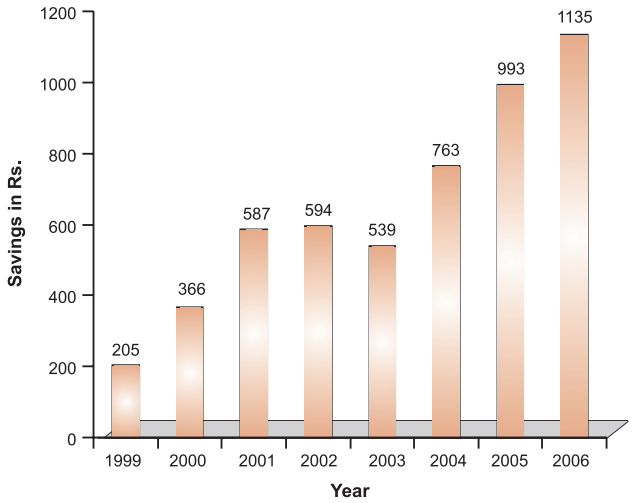
Encouraging Response from Indian Industry in the EC Award Scheme (1999-2006)



Electrical Energy Saving Equivalent to Avoided Capacity in MW



Money savings achieved by participating units in the EC Award Scheme (1999-2006)



In the last 8 years of Award scheme of the period 1999-2006, the participating industrial units have collectively saved Rs. 5182 crores per year and the investment made on energy efficiency projects was recovered back in 17 months time period. In energy terms, 1112 MW of electrical power, 15.14 lakh kilolitre of oil, 45.75 lakh metric tonne of coal and 17.66 billion cubic metre of gas was saved during the above period.

YEAR WISE ENERGY SAVINGS ACHIEVED BY PARTICIPATING UNITS IN MINISTRY OF POWER'S ENERGY CONSERVATION AWARD SCHEME

Year	No. of Participating units	Annual Savings in Rs. Crores	One time Investment in Rs. Crores	Electrical Energy Savings		Furnace Oil Savings in Lakhs KL	Coal Savings in Lakh Metric tonnes	Gas Savings in Lakh Cubic Metres
				Million kWh	Equivalent Avoided Capacity in MW			
2006	388*	1135	1266	1288	245	1.19	5.17	29044
2005	343*	993	1319	1327	252	2.40	7.58	13122
2004	297	763	1364	814	155	2.49	5.37	18585
2003	191	539	1071	542	103	2.21	12.65	73181
2002	174	594	691	641	122	1.7	7.4	35588
2001	157	587	659	485	90	2.21	4.79	3929
2000	120	366	630	524	100	1.327	0.64	707
1999	123	205	940	205	45	1.62	2.15	2444
Total 8 years		**5,182**	**7,940**	**5,826**	**1,112**	**15.147**	**45.75**	**1766,00**

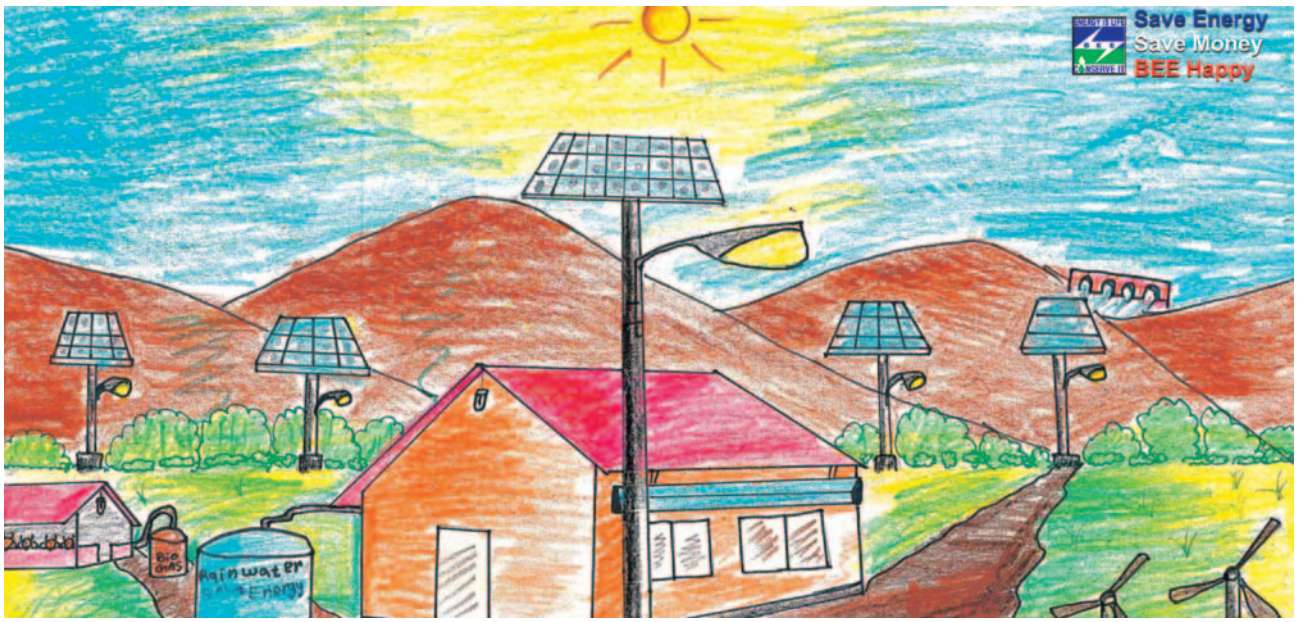
* Participating units include industrial units, buildings and other establishments

12. Painting Competition on Energy Conservation, 2006

Ministry of Power has undertaken National Campaign on Energy Conservation 2006. Under this campaign, Painting Competition on Energy Conservation at School, State and National level was conducted. 17991 no. of Schools and 3.99 lakhs students of 4th & 5th standard participated in the School Level Painting Competition, which was quite encouraging. The state level painting competition was held on 14th November 2006 and the two first winners from 35 States and UT participated in the National Painting Competition on 12th December 2006 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.

Minister of Power also gave away the prizes to 10 children whose paintings were selected for 1st, 2nd and 3rd Prize, 5 consolation prizes constituted by the Ministry of Power and 2 special prizes constituted by the Bureau of Energy Efficiency, in the National Painting Competition.



Mohammed Thamjid Ali-K.K., Class : V, Govt. J.B.S. Centre, Lakshdweep

Prize Winning Painting, 2006
National Level Painting Competition on Energy Conservation

13. National Campaign on Energy Conservation 2006

The National Campaign on Energy Conservation launched by Ministry of Power 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.

The National Campaign on Energy Conservation was launched by the Hon'ble Prime Minister of India on 14th December 2004. Bureau, along with partner industries and educational institutions, has undertaken various outreach measures and activities during 2005 and 2006. 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.

State wise activities – January to December 2006 (under National Campaign on EC)	
Tamil Nadu	61
Maharashtra	87
Gujarat	36
Uttar Pradesh	11
Kerala	7
Delhi	23
Haryana	11
Andhra Pradesh	25
Orissa	12
Madhya Pradesh	15
Karnatak	12
Assam	10
Rajasthan	3
West Bengal	22
Chattisgarh	10
Punjab	32
Total	**371**

Bureau of Energy Efficiency participated in the following exhibitions held in Mumbai and Delhi in 2006.

Sl. No.	Name of the Exhibition and place	Date
1.	FICCI-Energy Technologies Forum in Mumbai	10th-11th October, 2006
2.	Power India 2006, in Mumbai	12th-14th October,2006
3.	PowerGen, in Delhi	25th-27th October 2006
4.	India International Trade Fair, in Delhi	14th-27th November,2006

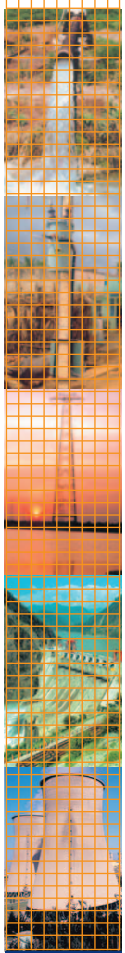
In these exhibitions, BEACON booklets and folders were distributed.

Shri Sushilkumar Shinde, Union Minister of Power in the National Energy Labeling Programme.
Sitting L to R are Shri G.B. Pradhan, Shri V.S. Verma, Shri R.V. Shahi, Shri Santosh Mohan Deb and Shri T. Sankaralingam

In India International Trade Fair, scales, pencils, small telephone diaries were distributed and cartoon films and TV spots on Energy Conservation were displayed. Two touch screens were kept for enabling visitors to calculate their approximate electricity bill and know Energy Conservation tips.

The major achievements are :

- 64 energy auditing agencies have been accredited on the basis of their energy auditing capabilities and institutional set up.
- 713 Certified Energy Managers and 2023 Certified Energy Auditors are in place from the 3 examinations.
- 4 Guidebooks prepared to assist energy professionals.
- 7 Sector specific Task Forces for Aluminium, Cement, Chlor alkali,fertiliser, Pulp & paper, Petrochemical & Refinery and Textile were constituted and regular workshops are being held.
- 7 Manuals and energy auditing codes for utility equipment have been put in place.
- Savings of about 1112 MW of electric power, as equivalent avoided capacity, achieved during 1999-2006 through National Energy Conservation Award Scheme.
- Standards and Labeling scheme has been announced for Frost Free Refrigerator, Tubular Fluorescent Lamps and schedule have been prepared for direct cool refrigerator, air conditioners, motors.
- 30 State Governments and Union Territories have notified State Designated Agencies for the purpose of implementing EC Act within the state.
- Draft Energy Conservation Building Codes (ECBC) prepared.
- Energy audit studies completed in 9 Government buildings to set up an example for private buildings to pursue similar efforts. Savings potential between 23 to 46 % identified in the above buildings.
- Substantial completion of implementation of energy saving measures in 4 buildings had been made through ESCO route.
- 17 more Government buildings are being taken up in second phase for energy auditing and its implementation through ESCO mode.



CHAPTER – 10

RENOVATION AND MODERNISATION

RENOVATION AND MODERNISATION OF THERMAL POWER STATIONS

In order to improve the performance of existing Thermal Power Stations, a Renovation and Modernisation (R&M) Programme called Phase-I R&M Programme was launched by the Government of India all over the country 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 nos. 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 for R&M works. All the schemes were identified by the Roving teams comprising of engineers from CEA, BHEL and concerned utilities. An expenditure of Rs.862 crores was incurred and an additional generation of 5000 MU/ year had been achieved. Also, the Life Extension 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 were taken up for R&M and another 25 units (1685 MW) for Life Extension (LE) at an estimated cost of Rs.1700 crores.

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

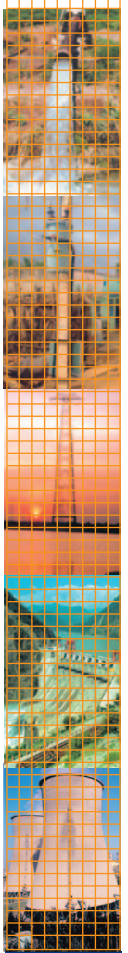
10 th Plan Programme

During the 10th plan, 106 old thermal units with a total capacity of about 10413 MW at an estimated cost of Rs. 9200 crores have been identified for Life Extension Works. Out of 106 units, Life Extension works on 26 units (1698 MW) have not been found economically viable. Out of the balance 80 units, Life Extension works of 10 units have been completed and further action is being taken by concerned SEBs/ utilities to carry out the works on remaining units. After implementation of life extension (LE) schemes, the economical 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 have been identified for improvement of their performance.

Improvement of Performance of existing Thermal Power Stations

A 3-phase Programme named 'Partnership in Excellence' (PIE) programme, in which 26 Thermal Power Stations comprising of 80 units (8455 MW) having PLF below 60% were identified to have partnership with better performing utilities viz. NTPC, Tata Power. Out of these 26 stations the programme on 4 station was not found feasible and on the another 4 stations improvement is being carried out by self O&M by the concerned utilities. On the balance 18 Power Stations (57units of capacity 6707.5 MW) for improving their performance NTPC & Tata Power have been chosen as Partners to guide these power stations. NTPC have been chosen as Partners in respect of 15 stations under PIE Programme and 2 stations, Barauni (units 6&7) TPS each of 110 MW and Muzzafarpur (units 1&2) TPS of 110 MW each under Rashtriya Sam Vikas Yojana (RSVY) programme. In the case of Dhuvaran TPS (units 5&6) of 140 MW each M/S Tata Power have been selected as partners under PIE Programme.

In the first phase, the PLF of the stations 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 Manufacturer (OEM), by carrying out comprehensive Capital Overhauling and doing essential R&M. In the third phase, the major Renovation & Modernisation (R&M)/Life Extension (LE) works based on Residual Life Assessment (RLA) studies would be taken up, if found techno-economically viable. In the case of the units



not found to be techno-economically viable for carrying out major R&M/LE works, replacement of such units with new units of higher size and better efficiency would be considered.

The programme has started showing results at a number of power stations in the form of improvement in PLF and availability by streamlining the O&M procedures. The action for implementation of the second phase of 'PIE" programme has already been initiated. The second and third phase of this "PIE" programme are expected to be completed during 11th plan period.

Programme for the year 2006-07

During the year 2006-07, LE work on units 1&2 (2x60MW) of Ennore TPS have already been completed and the execution of LE works on another 9 thermal units (584 MW) are in progress. Out of these 9 units the works on 6 units are expected to be completed during the year 2006-07 and the LE works on units 3,4 & 5 of 40 MW each of Obra TPS for which orders has already been placed and dismantling started for execution of LE works, are not likely to be taken up now as UPRVNL has proposed to replace these units with higher size unit.

RENOVATION AND MODERNISATION OF HYDRO ELECTRIC POWER PROJECTS

a) R&M Phase-I Programme

Based on recommendations of the National Committee set up in 1987 and subsequent review, a programme for renovation, modernization and uprating of Hydro Power Stations was formulated by Central Electricity Authority in which 55 schemes were identified with an aggregate installed capacity of 9653 MW. The total cost of these schemes was estimated as Rs. 1493 Crores and expected benefit as 2531 MW. The number of these schemes was, thereafter, reduced from 55 to 50 since six schemes were dropped and one scheme has been split into two schemes.

b) R&M Phase-II Programme

As per the hydro policy declared in 1998, renovation & modernization of Hydro Power Plants have been accorded priority. Accordingly, 67 hydro RM&U schemes including already identified some schemes under Phase-I, having an aggregate installed capacity of 10318 MW were finalized to be undertaken under Phase-II programme till the end of Xth Plan to accrue a benefit of 3685 MW at an estimated cost of Rs. 2161 Crores.

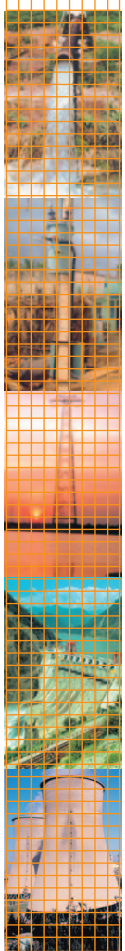
c) National Perspective Plan

National Perspective Plan was formulated by C.E.A in the year 2000 including the R&M proposals under Phase-II programme along with the left out schemes of the National Committee (Phase-I programme) which were under implementation/yet to be implemented at that time. This Plan indicated a benefit of about 7755 MW during the IXth, Xth and XIth Plans through R&M of 117 schemes having an aggregate installed capacity of 19370 MW at an estimated cost of Rs. 4654 Crores.

d) Revised Xth, XIth & XIIth Plan Programmes

The status of hydro R&M schemes, identified by CEA under the National Perspective Plan and later on, is being regularly discussed with the concerned utilities during the annual review meetings convened by C.E.A. During the year 2005-06 it was observed that some of the Xth Plan schemes were not taken up for implementation due to non-availability of shutdown or their satisfactory operational performance. This led to a gap in the programme and actual achievement. Therefore, review meetings were held and 47 hydro R&M projects/schemes having an installed capacity of 7449.20 MW at an estimated cost of Rs. 1613.48 Crores were firmed up for completion during the Xth Plan to accrue a benefit of 1012.08 MW. Out of the above 47 projects/ schemes, R&M works on 21 projects/schemes with an aggregate installed capacity of 2457.75 MW have been completed by the end therefore of May, 2006. Therefore the status of R&M works on the remaining 26 projects/schemes which were in progress for completion during the remaining period of Xth Plan i.e. by March 2007, were thoroughly reviewed during June, 2006 & July, 2006 in CEA. Based on the review meetings it is expected that only 16 schemes with an aggregate installed capacity of about 2800.0 MW may be completed by the end of Xth Plan. Out of the above 16 schemes, five schemes (four schemes in the State Sector and one in Central Sector) have been completed during June, 2006 to Dec., 2006 and work on remaining 11 schemes are in advance stages of implementation.

For the XIth Plan (2007-12), a total of 60 hydro R&M projects having an installed capacity of about



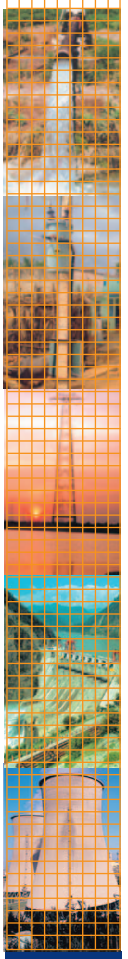
11230 MW at an estimated cost of about Rs. 3465 crores are now programmed for implementation to accrue a benefit of about 4327 MW. Out of 60 projects, 27 projects are already on-going.

Further, 14 nos. of hydro electric projects having an installed capacity of 2646.00 MW, which were originally programmed for completion during XIth Plan, have now been shifted to XIIth Plan, as utilities are not in a position either to carry out RLA studies or units are running satisfactorily. After completion of the R&M works of these projects, there may be a benefit of 2403.0 MW at an estimated cost of Rs. 659.00 crores (provisional).

e) Plan-wise summary of hydro R&M schemes (as on 31.12.2006)

Sl. No	Plan Period	No.of Projects			Installed Capacity (MW)	Cost (Rs. in Crs.)		Benefit (MW)
		Central Sector	State Sector	Total		Estimated	Actual	
1.	**Upto VIIIth Plan** (Projects completed)	2	11	13	1282.00	126.00	127.00	429.00
2.	**IXth Plan** (Projects completed)	8	12	20	4892.00	597.00	570.00	1093.00
3.	**Xth Plan**							
	i) Projects programmed (Original)	10	62	72	8088.00	2802.00	-	2897.00
	ii) Projects programmed (Reviewed)	5	32	37	5258.00	1116.00	1053.00 (Till date)	774.00
	iii) Projects completed	4	22	26	3931.00	895.00	940.00 (Till date)	695.00
	iv) Projects Ongoing	1	10	11	1327.00	221.00	113.00 (Till date)	79.00
4.	**XIth Plan**							
	i) Projects programmed (Original)	2	32	34	4631.00	2013.00	-	3936.00
	ii) Projects programmed (Reviewed)	7	53	60	11230.00	3465.00	274.00 (Till date)	4328.00
	iii) Projects Ongoing	4	23	27	8138.00	1587.00	274.00 (Till date)	1886.00
	iv) Projects yet to commence	3	30	33	3092.00	1878.00	-	2442.00
5.	**XIIth Plan**							
	i) Projects which have been shifted from XIth Plan	1	13	14	2646.00	659.00	-	2403.0

Note : Installed Capacity, Benefit & Cost rounded to nearest zero.



f) Programme for the year 2006-07

As per the revised Xth Plan programme the following 16 schemes, having an aggregate installed capacity of about 2800 MW, are programmed for completion during the year 2006-07 to accrue a benefit of 148 MW at an estimated cost of about Rs. 270 Crores.

S. No.	Name of Scheme (I.C. in MW), Agency
1.	Sumbal Sindh (2x11.3), J&KPDC
2.	Ganguwal,U-1 (1x29.25), BBMB
3.	Kotla, U-1 (1x29.25), BBMB
4.	Anandpur Sahib (4x33.5), PSEB
5.	Jawahar Sagar (3x33), RRVUNL
6.	Rana Pratap Sagar (4x43), RRVUNL
7.	Chibro (4x60), UJVNL
8.	Khodri (4x30), UJVNL
9.	Chilla (4x36), UJVNL
10.	Lower Sileru (4x115), APGENCO
11.	Varahi (2x115), KPCL
12.	Sharavathy - Ph.A (10x103.5), KPCL
13.	Neriamangalam (3x15), KSEB
14.	Mettur Dam (4x10), TNEB
15.	Hirakud-I (Sw.yard), OHPC
16.	Koyna St.III (4x80), MSPGCL

g) Achievement during the year 2006-07

The following 5 schemes having an aggregate installed capacity of about 1473.00 MW have been completed till 31.12.2006 during the year 2006-07 at an actual cost of Rs. 93.08 Crores to accrue a benefit of about 82 MW.

Sl. No.	Name of Scheme, (I.C. in MW), Agency
1.	Ganguwal, U-1 (1x29.25), BBMB
2.	Anandpur Sahib (4x33.5), PSEB
3.	Varahi (2x115), KPCL
4.	Sharavathy Ph.A (10x103.5), KPCL
5.	Neriamangalam (3x15), KSEB

h) Programme for the remaining period of the year 2006-07 i.e. from 01.01.2007 to 31.3.2007

The following 11 schemes with an aggregate installed capacity of about 1327 MW are programmed for completion during the remaining period of the year 2006-07 to accrue a benefit of about 79 MW at an estimated cost of about Rs. 221.00 Crores. Works on these 11 schemes are in advance stage of completion.

Sl. No.	Name of Scheme, (I.C. in MW), Agency
1.	Sumbal Sindh (2x11.3), J&KPDC
2.	Kotla, U-1 (1x29.25), BBMB
3.	Jawahar Sagar (3x33), RRVUNL
4.	Rana Pratap Sagar (4x43), RRVUNL
5.	Chibro (4x60), UJVNL
6.	Khodri (4x30), UJVNL
7.	Chilla (4x36), UJVNL
8.	Lower Sileru (4x115), APGENCO
9.	Mettur Dam (4x10), TNEB
10.	Hirakud-I (Sw.yard), OHPC
11.	Koyna St.III (4x80), MSPGCL

CHAPTER – 11

PRIVATE SECTOR PARTICIPATION IN POWER SECTOR

Close monitoring of IPPs for capacity addition in the 10th Plan - Constitution of the Inter-Institutional Group

Ministry of Power has been closely monitoring the power projects in the private sector which are considered possible for early financial closure. An Inter-Institutional Group (IIG) comprising of senior representatives from the Financial Institutions and Ministry of Power has been constituted to specially focus on fast track power projects which could be taken up for early commissioning and could achieve early financial closure in a time-bound manner. Through the IIG mechanism, 16 private sector power projects with an aggregate installed capacity of about 7320 MW have since achieved financial closure and 12 more projects with a total installed capacity of 12647 MW are being pursued for early financial closure.

Development of Merchant Power Plants

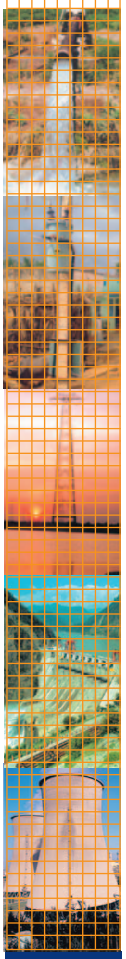
In order to facilitate the development of electricity market, the Ministry of Power has issued the approach and the guidelines on development of merchant power plants, for which coal linkage / captive coal blocks would be available. Unlike traditional utilities, merchant power plants will compete for customers and absorb full market risk. There are no guarantees that they have a minimum off-take of their output. Typically the risk of a merchant power plant is to be carried on the balance sheet of the promoter. Merchant power plants can provide the additional generating reserves that India needs now and will need in the future. They are a modern, market-based partial answer to energy challenges faced by the country.

Merchant power plants are a product of the restructuring of the electricity industry. Merchant power plants fill different niches in the market; some provide steady supplies to the grid, while others fire up only when demand is highest and meet peak loads. Merchant power plants operating competitively help assure that power is produced with efficiency and supplied to locations where it is needed most

Considering the redundancies that are being provided in the grid to promote open access in transmission and in distribution, it would be reasonable to expect that merchant power plants each of a capacity of 1,000 MW and below could be accommodated for availing open access in transmission for wheeling of power to customers which are generally not predetermined. Merchant power plants would be expected to have dedicated lines upto the nearest regional/national grid system. Merchant power plants upto a capacity of 1000 MW would be provided coal linkage and captive coal blocks may also be provided to merchant power plants in the range of 500 - 1000 MW.

It would be essential that certain normative criteria are laid down for eligibility for coal blocks allotment, particularly to IPPs and merchant plants. These criteria could relate to net worth of the company, their internal resource generation and annual turnover. The agencies being allotted the coal blocks, may also be required to put in place bank guarantees of reasonable amounts which should be liable to be encashed if important milestones for development of coal mines are not achieved. The amount should be adequate enough to discourage agencies which are not serious enough for development of coal mines and power projects. The inter-mediate milestones may include not only in relation to development of coal mines, but also with reference to the power projects, such as award of EPC contracts, commencement of construction etc.

Success of this scheme, however, would, to great extent, depend on availability of reliable data and information for plant sites and other inputs in this capacity range so that developers can take further appropriate action. An initiative to prepare brief pre-feasibility reports (PFRs) for various plant locations has been taken by the Ministry with CEA to provide the technical inputs for preparation of such reports and PFC, would engage various agencies to develop brief Feasibility Reports in a time-bound manner for about two dozen power plant locations in the capacity range of 500-1000 MW. These reports may become available in a period of 3-6 months' time.



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 HE schemes viz. Pokhra (1 MW), Trisuli (21 MW) Western Gandak (15 MW) and Devighat (14.1 MW) have been implemented in the past with financial and technical assistance from Govt. of India. Three major multi-purpose projects in Nepal viz. Karnali, Pancheshwar and Saptakosi are presently under discussion at various levels as mutual benefits projects. Feasibility report of Karnali multi-purpose project (10800 MW) was prepared in 1989. Key parameters of this project are to be finalised after mutual discussions. A Joint Committee 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. During 2nd Meeting of JCWR held in Oct., 2004, it was decided to initiate consultation for development of Karnali Project. 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 Detailed Project Report (DPR). The JPO was closed in July, 2002. Draft DPR has been prepared by 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. First meeting of this Joint Group was held in Kathmandu in Dec., 2004. Development of Pancheshwar project is covered under Integrated Mahakali Treaty signed between HMG, Nepal and India in Feb., 1996. India has offered financial and technical assistance for investigation and preparation of DPR of Saptakosi High Dam Multipurpose project and Sun Kosi Storage cum Diversion Scheme. A Joint Project Office has been established on 17.08.2004 in Biratngar, Nepal for taking up field investigations and studies for preparation of Joint DPR. Besides the above, a number of other projects like Burhi Gandaki (600 MW) and Upper Karnali (300 MW) are also under discussions between India and Nepal. Joint Technical Expert Groups have been constituted for the above projects for guidance for carrying out investigations and preparation of Detailed Project Reports (DPRs).

BHUTAN

In Bhutan, Chukha HE Project (336 MW) implemented with Indian Financial and technical assistance and operating in an excellent manner is a shining example of cooperation between the two countries for mutual benefits. Surplus power from the project is being imported by India. Kurichu HE Project (60 MW) in Eastern Bhutan has also implemented with Indian financial and technical assistance. Another project viz. Tala HE Project (1020 MW) has been taken up for implementation and is being executed by Tala Hydro-Electric Project Authority (THPA) comprising of Indian and Bhutanese Officers & Engineers. Design & Engineering consultancy for the project in respect of electro-mechanical and civil works is being rendered by Central Electricity Authority (CEA), Central Water Commission (CWC) and Water & Power Consultancy Services (WAPCOS). The project is being funded by India through grant and loan and major portion of the power generated will be utilised by India. Three units of this project have already been commissioned. The project is scheduled for completion by 2006-07. A protocol to the agreement between India and RGoB regarding Tala Project has been signed on 28.07.2006 regarding Tariff and other modalities. PTC has been designated as nodal agency for transfer of Power

from Tala Project to India. 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 if not less that 5000 MW by 2020. Further, Survery & Investigation for Punatsangchhu-I (1095 MW) has been completed by WAPCOS and its DPR was completed in June, 2006. The DPR is under examination in CEA/CWC. 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 project 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. The cost for preparation of DPR is Rs. 7.59 crores and has the approval of Ministry of Power and MEA, Govt. of India. 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 the 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 in extending assistance for re-construction/rehabilitation and completion of Salma Dam multipurpose project (3x14 MW) through WAPCOS which is likely 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 project site in Nov., 1999. Three nos. G&D sites have been established by India on Chindwin river. In pursuance to an agreement signed on 13.04.06 between Ministry of External Affairs (MEA) and NHPC Ltd., NHPC has prepared and submitted Pre-Feasibility Report (PFR) of the Tamanthi HE Project (1200 MW) has been prepared by NHPC and submitted in April, 2005. DPR for the project is being got prepared by Govt. of Myanmar through foreign consultants and is scheduled to be ready by Jan. 2008 after which decision regarding India's involvement in the project relating to the level of investment, participation in construction and +purpose of power etc. would be taken.

UZBEKISTAN AND TAJIKISTAN

A delegation from NHPC comprising Director (Technical), Executive Director (Design & Engineering) & Chief Engineer (Planning) visited Uzbekistan in the month of April, 2003 and Tajikistan in the month of Oct., 2003 to explore the possibility of setting up small hydro power projects in those countries. Subsequent to discussions by JS (CA), MEA with NHPC / BHEL, it was decided to take up RM&U works of Varzob Hydro Power Plant–I (2 x 3.67 MW) in Tajikistan jointly by NHPC & BHEL. Accordingly, a joint team comprising of Senior Officials of NHPC and BHEL visited Varzob – I Hydro power plant in May 2004 for preparation of feasibility report for Renovation, Modernization and Uprating of Varzob Hydro Power Plant–I. Subsequently, a feasibility report jointly prepared by NHPC and BHEL was submitted to MEA in Oct. 2004 for their acceptance.

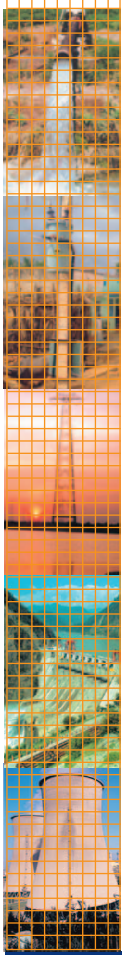
MEA vide letter dated 05.09.2006 informed Govt. of India's decision to undertake rehabilitation of the Varzob – I hydropower station in Tajikistan on the lines of the feasibility report jointly prepared by NHPC & BHEL team in 2004.

MEA vide their letter dated 1.11.2006 requested NHPC / BHEL to hold discussions with Barki Tojik, their Tajik counterpart. Subsequently, discussions were held among NHPC, BHEL, Barki Tojik & Indian Embassy officials, MEA and a Tripartite agreement for Renovation, Modernization and Uprating of Varzob Hydro Power Plant–I (2 x 3.67 MW) has been signed between Barki Tojik, Tajikistan and NHPC and BHEL on 7th Dec. 2006.

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 development of cost effective technologies for the separation and capture of carbon dioxide, its transport and 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. The task force is being chaired by India.

India hosted meetings of the Policy Group and the Technical Group of CSLF on 3-5 April, 2006 in India.

CSLF has recognized 17 projects so far. One of such project "Demonstration of Capture, Injection and Geologic Sequestration of CO_2 in Basalt formations of India".has been co-sponsored by India along with US.

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 India hosted the second meeting of the Working Group in July 2006.

Asia Pacific Partnership (APP)

The Asia Pacific Partnership initiative was launched in January, 2006. The partner countries are US, Australia, India, China, Japan and South Korea. Ministry of Power coordinates the Task Force on "Power Generation and Transmission".

The meeting of the Task Force on "Power Generation and Transmission" of Asia Pacific Partnership on Clean Development and Climate was held in Beijing, China in July, 2006 During the meeting American Electric Power (AEP) of USA had given a proposal for organizing a visit to their stations from 30th October to 7th November, 2006. As this was a technical visit providing an opportunity of exposure to coal based plants in US , a group of 19 engineers from NTPC, CEA, SEBs and other utilities and an officer from this Ministry was sponsored for the visit to share the experiences and implement the same in their organizations on need basis.

NTPC's officers also visited China during January, 2007 on an invitation from China Guodian Corporation for project titled "Energy Conservation and Environment Protection Technology – Application of Plasma Ignition Technology in Power Generation under APP"

Methane to Markets Partnership

India has joined 'Methane to Markets Partnership' as founder Partner along with Argentina, Australia, Brazil, China, Columbia, Italy, Japan, Mexico, Nigeria, Russia, Ukraine and the U.K. in November 2004. This initiative has been launched by US to serve as a framework for promoting cost effective near term methane recovery internationally through partnerships among developed and developing countries. The Ministry of Power is coordinating various activities of the Steering Committee and other sub-committees of this Partnership.

FutureGen Project

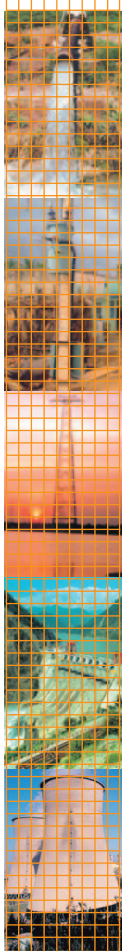
The US Government had invited Government of India to join in the collaborative funding for the FutureGen Project, a US $ 950 million public-private initiative to design, build and operate the first coal-fired emission-free power plant of 275 MW. US$ 250 million is expected from private industry coalition and the balance US $ 700 million is to be provided by the US Federal Government in partnership with foreign governments.

India has agreed to contribute 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. The Framework Protocol recognizes that the objective of the FutureGen Project is to demonstrate a technological solution applicable to a variety of coal types.

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.

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.

First meeting of the GSC was held in USA in September 2006. Ministry of Power represented India in this meeting.



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 sequestrated carbon dioxide. The Consortium is selecting a site for the project using the criteria developed jointly with the US Department of Energy. It will follow a competitive selection process for selecting equipment supplier and service vendors.

REGIONAL CO-OPERATION

South Asian Association for Regional Cooperation (SAARC)

Cooperation framework under SAARC was restructured and five Working Groups were constituted in 2004, including a Working Group on Energy. Two meetings of the Working Group have been held in the year 2004 and 2005 respectively. First SAARC Energy Ministers meeting was held in Islamabad in year 2005. Regional trade in energy and development of trans-national energy lines have emerged as focus areas for cooperation. India will be hosting the Second Energy Ministers Conference and the Senior Energy Officials Meeting and SAARC Energy Dialogue in early 2007

Bay of Bengal Initiative on Multi-Sectoral Scientific and Economic Cooperation (BIMSTEC)

Energy cooperation has emerged as one of the important areas in this newly formed regional Cooperation Forum which consists of Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand. Ministry of Power 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.

According to the Plan of Action, India is going ahead with setting up of BIMSTEC Energy Centre in New Delhi. The MOA for the Centre was considered at a meeting held in New Delhi on 21st December, 2006. As agreed in the meeting, efforts are afoot for the development of physical infrastructure for the Centre.

Ministry of Power has also taken a lead in organizing workshop on Harmonization of Grid Standards. This was followed by a meeting of BIMSTEC Task Force in Thailand during March 2006 for drafting MOU regarding integration of national electricity grids. The Ministry has also taken a lead in organizing seminars on Energy Efficiency and on Development of Hydro power.

BILATERAL CO-OPERATION

Cooperation with Neighbouring Countries

Existing cooperation with Nepal and Bhutan for construction of hydro power projects with Indian expertise has further been strengthened. Tala HEP in Bhutan has been commissioned.

NTPC is setting up a thermal power project in Sri Lanka. An MOA has been signed in 2006 to this effect.

PGCIL is constructing a 220 KV transmission line from Pul-e-Khumri to Kabul in Afganistan to enable import of power from Uzbekistan to Afganistan. This is entirely funded by India

PGCIL has undertaken a Pre-Feasibility Study for establishing Indian Power Transmission Interconnections with Bangladesh and Sri Lanka.

NHPC has prepared Pre- Feasibility Report (PFR) for Damanti HEP in Myanmar. NHPC is presently assisting Myanmar for review of Detailed Project Report (DPR) of this project.

Co-operation with other Countries

Indo-US Energy Dialogue

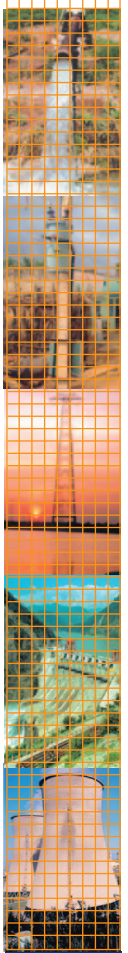
India and US have agreed to begin an Indo-US Energy Dialogue. The Energy Dialogue is chaired by Deputy Chairman, Planning Commission and US Energy Secretary. Following 5 working groups under the Energy Dialogue have been constituted :

(i) Oil and Gas
(ii) Power and Energy Efficiency
(iii) Coal
(iv) Non-Conventional and Renewable Energy
(v) Civil Nuclear Energy

Ministry of Power is leading India in Working Group on Power and Energy Efficiency. A successful Indo-US Conference on energy efficiency was held in May 2006. NTPC has proposed partnership with NETL of USA.

Indo-EU Cooperation

At the 5th India-EU Summit held in November'04, India and EU had 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 Working Group met in New Delhi on 23.3.2006.

A Indo-EU Business Conference on Energy was also held in New Delhi on 6th April, 2006 which was opened by the Minister of Power from India side.

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 studies will be funded by EU and one area by India:

1. Coal quality management system in India.
2. The assessment of technologies for capture and geological CO_2 storage.
3. Application of eco-design requirements/ methodology for energy using products in India.
4. Assessment of potential of using bio-fuel in India.
5. Study on R&M of two thermal power plants in India.

These studies have been assigned to concerned organizations of the Government of India. The nodal officers are in liaison with their counterparts on the EU side.

Special Secretary, Ministry of Power, as the co-chair of the Working Group on Energy Efficiency and Renewable Energy attended its second meeting at Brussels on 31.1.2007.

Indo-German Cooperation

India and Germany launched Energy Dialogue in April, 2006. First meeting of the Indo-German Energy Forum was held in April, 2006 in Germany. Energy Efficiency, Projects under Clean Development Mechanism, Improviing efficiency of power generation are major areas of cooperation.

LIST OF ON-GOING EXTERNALLY ASSISTED POWER PROJECTS

World Bank

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

ADB

- Power Transmission Improvement (Sector) Project (1764-IND)/PGCIL
- Power Transmission Improvement (Sector) Project (2152-IND)/PGCIL
- Power Sector Distribution (1968-IND)/PFC
- Assam Power Sector Restructuring Project (2037-IND)
- Gujarat Power Sector Restructuring Project (1804-IND).
- M.P. Power Sector Restructuring Project (1869-IND)
- Uttaranchal Power Investment Programme (2309-IND)

JBIC (Japan)

- North Karanpura TPP (IDP-160)/NTPC
- Rural Electrification Programme (IDP-169)/REC
- Renovation & Modernisation of Umiam-II HEP(IDP-156)/MeSEB
- Purulia Pump Storage Project (IDP- 98, 152, 167)/ WBSEB
- West Bengal Power Transmission Project (IDP-117,143)/WBSEB
- Bakreshwar TPP (IDP-147)/WBPDCL

KfW (Germany)

- Renewable Energy Programme for Rehabilitation, Upgradation & Modernisation of HPP (PFC)
- High Voltage Distribution System (REC).

CHAPTER – 13

POWER DEVELOPMENT ACTIVITIES IN NORTH EASTERN REGION

There are 10 sanctioned on-going hydro electric projects with a total installed capacity of 3,560 MW as under:

NEEPCO PROJECTS (HYDRO)

(i) Kameng HEP (600 MW) - Arunachal Pradesh: Govt. approval accorded to this project on 02.12.2004 (at approved estimated cost of Rs. 2496.90 crores including IDC of Rs. 249.09 crores at March 04 price level). All major civil works, Hydro Mechanical works & E&M works have been awarded in Dec., 04. M/s SEMEC, Australia appointed as consultant on 17.12.2004 for detailed Design and Engineering Services. Dam, HRT, Surge shaft and power house excavation work is in progress. 1.94 km out of 14.5 km HRT excavation has been completed. An expenditure of Rs. 477.06 crores has been incurred upto 31st December, 2006. The project is expected to be commissioned during 2009-10.

(ii) Tuirial HEP (60 MW) - Mizoram : The project was accorded investment approval at an estimated cost of Rs. 368.72 crores in July 1998, with likely completion by 2006-07. This project is under execution with loan assistance from JBIC, Japan. The works are at standstill on the project site due to poor law & order conditions and anticipated high increase in the cost of project. The matter regarding economic viability and continuation of the project is being reviewed in totality. All construction works have been suspended presently. MOP asked NEEPCO to submit a proposal for Public Private Partnership in respect of Tuirial. Same has been submitted and under consideration with Ministry of Finance. An expenditure of Rs. 237.65 crores (provisional) has been incurred upto December, 2006.

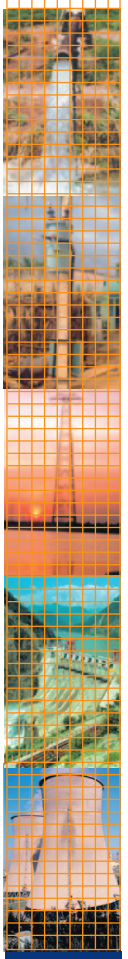
NHPC PROJECTS (HYDRO)

(i) Teesta-V (510 MW)- Sikkim: The project has been accorded approval on 11th February, 2000 at an estimated cost of Rs. 2198.04 crores (now anticipated 2483.00 crores), to be executed in Central Sector by NHPC. The project is scheduled to be commissioned in 2007-08. Concreting of Dam at advance stage of completion and lining work of HRT are in progress. All the three units are boxed up. An expenditure of Rs. 2126.58 crores has been incurred up to January, 2007.

(ii) Subansiri Lower (2000 MW)- Arunachal Pradesh: The project has been accorded approval on 9th Sept., 2003 at a cost of Rs. 6285.33 crores (now anticipated at Rs. 6285 crores) in Central Sector, to be executed by NHPC. The project is scheduled to be completed by 2010-11. Major Civil Works have been awarded to M/S BGS-SGS-Soma joint venture and L&T Ltd. Order for Electrical works have been awarded to consortium of M/s Alstom Power Hydraulique, France and M/s Alstom Projects India Ltd., New Delhi and Hydro Mechanical works awarded to M/s Texmaco. Due to delay in issue of formal forest clearance by MOEF & non-diversion of land from State Govt. of Arunachal Pradesh, Assam, the start of major works of the project had been delayed. Forest clearance was accorded by MOEF on 12.10.2004. Excavation of diversion tunnel, Deonallah work and coffer dam, surge chamber and power house are in progress. An expenditure of Rs. 1429.37 crores has been incurred up to January, 2007.

iii) Loktak Down Stream (66 MW)- Manipur: Loktak Downstream (66 MW): The project with 90 MW capacity was earlier accorded investment approval on 30.12.1999 at an estimated cost of Rs. 897.24 crores in Central Sector to be executed by NHPC. Works at the project could not be started due to adverse law and order situation in Manipur and lack of proper approach roads to the project. The cost of the project got escalated and thus became unviable and was put under jeopardy.

Several meetings were taken by Secretary (Power) with Govt. of Manipur/NHPC and others to look into



105 MW Loktak Power Station (Manipur) - Penstocks

the viability of the project by reviewing the project layout, off loading the cost of security, external roads etc. from the project cost. Subsequently a high level meeting between the Chief Minister of Manipur and Secretary (Power), Govt. of India was held on 7.10.2006. Govt. of Manipur insisted that the project may be considered for implementation keeping in view the socio-economic development of the area. They also agreed to bear the cost of security, main approach roads/bridges and compensatory afforestation & CAT; besides purchasing the entire power generated from the project. It was decided to take up the project under Joint Venture by NHPC with Govt. of Manipur.

NHPC submitted the revised proposal of the project (66 MW) on behalf of Joint Venture suggesting a 28 m high barrage instead of 64.5 m high dam in the original proposal. CEA accorded concurrence to the revised proposal of NHPC at an estimated cost of Rs. 867.77 crores including an amount of Rs. 208.93 crores to be borne by State Govt, MoU between NHPC and Govt. of Manipur for execution of project in Joint Venture is yet to be signed. PIB meeting of the project has been held in MoP on 23.11.2006.

STATE SECTOR PROJECTS

(I) Karbi Langpi (2x50 MW)-Assam : The techno-economic clearance was originally given by CEA in 05/78 and the project was sanctioned for Rs. 36.36 crores (1976 price level) by Planning Commission on 24.9.79.

The project was initially started in the State Sector and could not be completed. The project was then given to Private Sector for execution, i.e., to M/s SPML (M/s Subhas Project and Marketing Ltd) in March, 1993. However, much progress could not be made by M/s SPML also. Therefore, the project was again shifted back to State Sector in November, 1996. But owing to subsequent court case by M/s SPML, the works remained suspended for about 3 years and six months till March, 2000, before the work could resume.

The latest estimated cost of the project in Rs. 557.42 crores. The project execution had been started in state sector. The supply and erection of generating units is financed through OECF. The supply and part erection of Electro Mechanical Equipment which was done long back and need restoration work of both the units completed. The project is likely to give benefits during 10th Plan. The expenditure of Rs. 477.06 crores has

been incurred up to December, 2006. Unit-1 is commissioned on 31.01.2007 and Unit-2 is likely to be commissioned in March 2007.

(ii) Myntdu (2x42 MW)- Meghalaya: Myntdu HE Project (2x42 MW) is under execution by Meghalaya State Electricity Board. CEA clearance was accorded to this project on 20.09.99 at an estimated cost of Rs. 391.33 crores (completion cost at 01/99 Price Level) with the commissioning target by 10/2006 and the revised date of commissioning of project is 2008-09. The Administrative approval is accorded by State Government on 09.06.2003. The Board has started the work on this project w.e.f. 1.11.2001. 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 on M/s SEW Construction Company, Hyderabad. Works of HRT awarded to M/s Skanska Cementation (I) Ltd., Kolkata in Feb. 2005. E&M works awarded on 30.11.2005 to M/s VA Tech Hydro India Pvt. Ltd. & VA Tech Escher WV&S Flovel Ltd. and EOT Crane on 22.06.2006 to UMI Cranes Ltd. An expenditure of Rs. 176.93 crores has been incurred up to December, 2006.

(**iii) Bairabi Dam (2x40 MW)- Mizoram:** The project was cleared by CEA on 09.11.2000. The present day cost of the project is Rs. 441.67 crores (3/2000 Price Level) and completion cost of the project is Rs. 549.43 crores. Funding pattern as per techno-economic clearance is - Govt. of India, Central assistance comprising 90% grant & 10% loan. Investment decision is awaited. Project is also held up due to delay in MoEF clearance.

(iv) Lakwa Waste Heat Recovery Project (Steam Turbine - 37.2 MW)- Assam: Lakwa Waste Heat Recovery Project by Assam Power Generating Company Ltd. In the Sibsagar District of Assam state is presently under construction. LOI for turn-key contract has been placed on M/S. BHEL on 20.03.06. The turn-key contractor M/s. BHEL have mobilized at site in Oct'06 and commenced preliminary works like site cleaning etc. Excavation for piling is expected to commence in Nov'06. The Steam Turbine is expected to be synchronized by April 2008.

(v) Dimapur (22.92 MW) HFO Project-Nagaland: Heavy Fuel Oil Based Diesel Generating Power Project at Dimapur (22.92 MW) by Deptt. of Power, Govt. of Nagaland in the Kohima District of Nagaland State was taken up for execution, Turn-key order was placed on M/s. BHEL by Dept. of Power, Govt. of Nagaland on 21.07.03 for execution of the project. Out of an estimated cost of Rs. 105.57 crores, DONER has sanctioned and released an amount of Rs. 32 crores to BHEL. Presently the work is held-up for want of balance funds. Efforts are being made to revive the project.

10TH HYDRO PROJECTS

One project, namely Karbi-Langpi, in the state of Assam with an installed capacity of 100 MW (2x50 MW) is likely to yield benefit during 10th Plan. The project is scheduled to be commissioned in February, 2007.

11TH PLAN PROJECTS

9 Number Hydro Power projects and 4 Number Thermal Power Projects with installed capacity of 5615 MW have been programmed to yield benefits during 11th Plans as per the details given below:

Sl. No.	Name of States	11th Plan Addition				Total (MW)
		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	–	–	–	23	23
7.	Tripura	–	–	1	750	750
	Total (NER)		2724		1560	4284
8.	Sikkim	5	1331	–	–	1331
	Total (NER+ Sikkim)	**9**	**4055**	**4**	**1560**	**5615**

12TH PLAN PROJECTS

55 Number Hydro Power projects and 4 Number Thermal Power Project with installed capacity of 35,669 MW have been identified which are likely to yield benefits during 12th Plan as per the details given below :

Sl. No.	Name of States	12th Plan Addition				Total (MW)
		No. of Schemes	Hydro (MW)	No. of Schemes	Thermal (MW)	
1.	Assam	1	150	1	480	630
2.	Manipur	2	1566	–	–	1566
3.	Meghalaya	9	903	3	1320	2223
4.	Mizoram	2	140	–	–	140
5.	Arunachal Pradesh	25	27740	–	–	27740
6.	Nagaland	–	–	–	–	–
7.	Tripura	–	–	–	–	–
	Total (NER)	39	30499	4	1800	32299
8.	Sikkim	16	3370	–	–	3370
	Total (NER+ Sikkim)	**55**	**33869**	**4**	**1800**	**35669**

CHAPTER – 14

IMPLEMENTATION OF OFFICIAL LANGUAGE POLICY

Ministry of Power

The Ministry of Power, its attached and subordinate offices and Public Sector Undertakings, Autonomous bodies, Boards, Societies, Institutions under the administrative control of Ministry of Power have continued their efforts to ensure the effective implementation of the Official Language Policy of the Government and encouraged progressively the use of Hindi in day to day official work.

In compliance with the Constitutional and statutory requirements of Section 3(3) of Official Language Act, all documents required to be issued bilingually, are being issued bilingually by the Ministry. Similarly, as per provisions of the Official Language Rules, 1976, all communications received in Hindi are essentially replied to in Hindi.

Ministry of Power conducted a Akhil Bhartiya Rajbhasha Sammelan on 21.7.2006. On this occasion Hon'ble Minister of Power Shri Sushilkumar Shinde inaugurated the Rajbhasha Exhibition and Sammelan in which senior officials of Ministry of Power and officers and employees of Public Sector Undertakings and other Institutes under administrative control of Ministry participated.

A meeting of Hindi advisory committee was organized on 22.7.2006 at Vigyan Bhawan, New Delhi under the chairmanship of Minister of Power. A number of decisions were taken on this occasion having consultations with Hon'ble Minister of Power and Hon'ble members.

To promote the progressive use of Hindi through positive competitiveness among the attached offices and Public Sector Undertakings, Autonomous bodies, Societies, Institutions, Boards under the administrative control of Ministry of Power, a scheme for awarding Vidyut Rajbhasha Shield is in operation under which offices working in Hindi in 'A', 'B' and 'C' regions are awarded shields.

To encourage book writing originally in Hindi on the subjects related to Power Sector, 'Kendriya Pustak Lekhan Puraskar Yojna' is being operationalised.

Under this scheme cash award 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 compliances with the Official Language Policy, a Hindi fortnight was organized from 14th September, 2006 to 28th September, 2006. During this period

Shri Sushilkumar Shinde, Union Minister of Power and other dignitaries in the first All India Rajbhasha Sammelan

various competition including Hindi essay writing, noting, drafting and standard glossary, typing, debate and poetry competition were organized in Hindi for the officers as well as staff of the Ministry. Officers and employees of the Ministry participated in these competitions vigorously. Successful competitors were given certificates and cash awards of Rs. 1200/- first prize, Rs. 1100/- second prize, Rs. 1000/- third prize and Rs.500/- consolation prize were distributed.

With a view to assessing the progressively use of Hindi in the attached and subordinate offices, boards, organizations and public sector undertakings under the administrative control of the Ministry, inspections were carried out and necessary directions were issued.

Proper guidance was given to the attached and subordinates offices, Public Sector Undertakings, under the Ministry of Power regarding inspections done by Committee of Parliament of Official language.

Meetings of Official language implementation Committee of Ministry of Power were conducted regularly on 15.2.2006, 15.6.2006, 23.8.2006 and 19.12.2006. Prompt actions were taken on some important decisions taken in these meetings i.e. conducting Hindi workshops, organizing Conference, Seminars etc., recruitment in vacant posts of Hindi, bilingual advertisement in newspapers and conduct of refresher course etc. in corporations/undertakings.

An order was issued to all officers those achieved proficiency under rule 8(4) of Official language rules, 1976 to this effect that they will do their all official work in Hindi.

Central Electricity Authority

All out efforts were 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 Yojna 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 2004 only two prizes for book writing i.e. Second prize of Rs.30,000/- to Shri Mahipal Singh and Third prize of Rs. 20.000/- to Shri M.F. Quraishi were awarded. Nobody was found eligible for the first prize. For the Calendar year 2005 two entries have been received till date and the evaluation work is to be done shortly. This scheme is also in operation for the year 2006.

During the year 4 Sub-Offices of CEA were inspected to assess the usage of Hindi in official work. Official Language Implementation Committee’s quartely meetings were held regularly.

Hindi Fortnight was celebrated from 01.9.2006 to 14.9.2006. During this period six Hindi Competitions namely Hindi Essay Writing , Hindi Noting and Drafting, Hindi Technical article writing, Hindi extempore speech, Hindi Quiz and Kavi Goshthi were organized. Winners of these competitions were awarded Cash prizes along with letter of appreciation in the Hindi Diwas celebration on 14.9.2006

To create interest in Hindi sufficient number of Hindi books were purchased for library of CEA.

During the year one Hindi computer training programme organised by NPTI, Badarpur in their office, in which 14 employees of CEA were nominated. In each group five employees are being sent for the above training programme.

Officers and employees were regularly nominated for Hindi Language, Hindi Typing and Hindi Stenography training conducted under Hindi Teaching Scheme. Out of 32 Typists 22 were trained and 03 are under training and 07 are still to be trained. In stenography out of 169 employees, 116 trained and 07 are under training and 46 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.

NTPC Ltd.

This year several steps were taken to promote the Official Language Policy in the Corporation. Drafting and evidence sub-committee of Parliament on Official Language held a discussion with the Chairman of Town Official Language Implementation Committee, Delhi (TOLIC) and heads of Eleven Member offices of the Committee on 24.04.2006. The second sub-committee of the Committee of Parliament on official language visited our Western Region HQ-Mumbai on

29.04.2006 and Anta Project on 19.09.06. The committee appreciated the progress achieved in implementation of Hindi and gave their valuable suggestions.

Inter-office Hindi competitions were conducted among the member offices of Town Official Language Implementation Committee (Undertaking) TOLIC, Delhi. 23rd Half yearly meet of TOLIC was held on 27.06.06 in which the winner undertakings of Hindi magazine publication competition were felicitated.

11th Issue of our Hindi house general "Vidyut Swar" was published. On 06.11.06, Children's Hindi Play "Khulja Sim-Sim" was staged on the occasion of raising day of our corporation.

To encourage the employees to do their maximum official work in Hindi seven Hindi workshops were conducted. Five projects and six departments of the Corporate Office were inspected to review the progress achieved regarding use of Official Language.

To evaluate the implementation of Official Language policy in the Corporation the quarterly meetings of corporate official Language implementation committee were conducted regularly.

Moreover, Hindi competitions were held successfully during Hindi fortnight from 1-14 September 2006. Hindi Diwas function was organized gracefully and the winners of Hindi Competitions were awarded.

NHPC

All out efforts were made to implement Official Language Policy of the Government of India and to encourage progressively the use of Hindi in day-to-day official work. In pursuance of Government's directives a Hindi Fortnight was observed from September 1 to 14, 2006 in Corporate Office as well as in its Projects/Offices. During this period, various competitions, programmes and book exhibition were organized and prizes were given to the winners. On this occasion Hindi Rajbhasa Jyoti was also published.

Rajbhasha Vibhag of the Corporation carried internal Rajbhasha Inspections in different departments/ Projects/Offices. Hindi Language, Hindi typing and stenography training classes were also held. Hindi workshops were organized for the different cadre of employees.

Translation training programmes of five days & twenty one days were conducted with the co-operation of Central Transmission Bureau, New Delhi Official Deptt., were held respectively at Regional Office, Banikhet and Corporate Office, Faridabad.

Under the incentive schemes of the Corporation, twenty two personnels have been awarded for doing Noting/Drafting in Hindi. NHPC, too bagged two Rajbhasha Shields from NTPC i.e. first prize for the year 2004-05 and second prize for the year 2001-02.

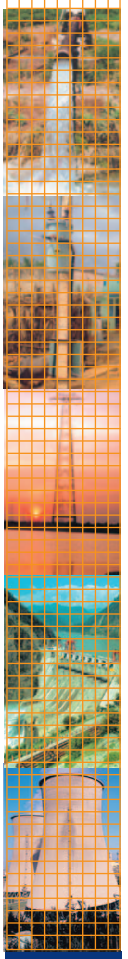
To achieve the prescribed targets under the annual programme 2006-07, Official Language Implementation Committee (OLIC) meetings in NHPC are being organized regularly.

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 for the year 2006-07, received from the Government of India, Ministry of Home Affairs, Department of Official Language, DVC is striving to attain the target of the training programme during the year, under review. Further, DVC has set the target to complete the Hindi Training by 2008 at Headquarters and in the field formations for those employees who could not complete the programme till now. 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 English Type have been short listed and are provided four month Hindi Typing Training. Incentive scheme have been introduce for the trained Hindi Typists & Stenographers in line with the GOI guidelines. During the year under review 12 trainees got through the Hindi typing examination as well as 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, till date two Official Language Workshops (one for Officer and one for Staff) have been organized in which 40 officers and 40 staff took part respectively.

During 2006-07 (upto November, 2006), 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. On this occasion, a Kavi Sammelan has also been organized and Departmental Rajbhasha Shields have been awarded to the best department (HRD Department) and Field Formations (BTPS & CTPS) on the basis of using maximum Hindi in official activities.

During the year under review, 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. DVC O.L. Magazine 'DVC CURRENT' has been awarded 2nd Prize by the same CALTOLIC. DVC Officers and Staff have also taken part in the different type of programmes and competitions organized by CALTOLIC. The anticipated target to be achieved by DVC from December, 2006 to March, 2007 includes Hindi Training to the employees as per the target fixed on the basis of the action plan, organizing more Workshops on Official Language, purchasing Hindi Books as per rule for the Central Library at Hqrs.

BBMB

Special efforts have been made by BBMB for implementation of Official Language Policy of the Govt. of India. 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 88% with region 'B' offices are being done in Hindi. Board Website is made available bilingually and discussions in the meetings of 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 Sectt., are held regularly in which report regarding progressive use of Hindi in any Subordinate Offices 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 Stenographers/ typists/Clerks.

Hindi Library has been set up in Board Secretariat and 50% amount of total expenditure for the purchase of books is being spent for the purchase of Hindi Books for the last five years. Hindi Workshops are organised on quarterly basis and Subordinate Offices are regularly inspected for effective implementation of Official Language.

Hindi fortnight is organized in Board Secretariat 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 encouraged with cash awards.

All magazines/journals of the Board are published bilingually. Two editions of Board's bi-monthly house journal 'BHAKRA BEAS SAMACHAR' are published in Hindi exclusively. Besides, 'TAKNIKI SHABDAVALI and 'RAJBHASHA SAHAYAK 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.

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 sessions, publication of Hindi magazines/papers,

and lectures from eminent personalities are regularly organized. More than 93 offices of POWERGRID have been notified in Gadget 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 employees 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.

The efforts made by POWERGRID in promoting the implementation of Rajbhasha has been applauded in many forum which is reflected in POWERGRID bagging the Rajbhasha Shield of Ministry of Power, and many other awards ; viz. Rajbhasha Vikas Sammelan, Ghaziabad, Second Prize to the Grid Darpan (Ank 11), by Rashtriya Hindi Academy, Rupambara, Calcutta, the Rashtriya Rajbhasha Shield for the best Patrika, Bhasha and Sanskriti Award for excellent work of POWERGRID in Hindi in the last five years. The prestigious NTPC Rajbhasha Shield prathama puraskaara in Power Sector has been awarded by Ministry of Power in year 2006.

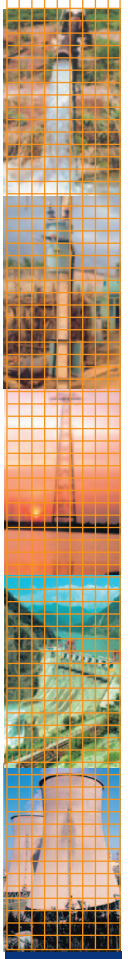
RURAL ELECTRIFICATION CORPORATION LIMITED

The Corporation is committed to implement Official Language Policy of the Government of India to encourage progressive use of Hindi. A brief description of the special efforts made during 2006-07 are given below :

1. Annual Programme 2006-07 prepared by the Official Language Department, Ministry of Home Affairs, was circulated to Zonal/Project Offices and all Divisions of the Corporation to achieve the targets as indicated in it.
2. REC Zonal Office, Mumbai, was notified under 10(4) of the Official Language Rules, 1976 on 15.05.2006.
3. During 2006-07, Parliament Committee on Official Language inspected the Hindi work being done in REC's Zonal Office, Mumbai and Vadodara.
4. Hindi fortnight was celebrated from 14.09.2006 to 28.09.2006, in which nine Hindi competitions were organized.
5. For the first time "Hindi Debate" competition was organized in which officers of the rank of Executive Director participated.
6. Closing ceremony of Hindi fortnight was organized in which winners were awarded Hindi literary books, cash prizes as well as certificates by the CMD.
7. The Corporation continued its efforts to encourage progressive use of Hindi in day to day official work. Two quarterly meetings of Official Language Implementation Committee were held on 23.06.2006 and 28.09.2006 in which progress of Hindi were reviewed.
8. Six Hindi workshops in Corporate Office and 2 Hindi workshops in Project Offices were organized to remove the hesitation of employees for doing their day to day work in Hindi in which 58 officers and 62 employees actively participated.
9. In order to ensure compliance of policy directives, inspection of 2 Project Offices as well as 3 Divisions in Corporate Office were carried out.
10. One officer and one employee of the Corporation won 1st prize in two Hindi competitions organized by Town Official Language Implementation Committee (Undertaking), Delhi.
11. REC website is available in Hindi as well as in English and is constantly being updated/ amended.
12. Standard proforma in use in the Corporation are available on the Intranet for use, in Hindi.
13. All publications, reports, memorandum, Article of Association, Press Releases, etc. are issued bilingually.
14. Annual Report 2005-06 has been published in Hindi and English.
15. Executives and non-executives who have done most of their Noting/Drafting work in Hindi during 2005-06 were awarded.

NPTI

Several programmes on Hindi computerization sponsored by Department of Official Language, Govt. of India have been conducted by NPTI during the period under report.



CHAPTER – 15

VIGILANCE ACTIVITIES/DISCIPLINARY CASES

Ministry of Power

During the year 2006-07, attention on the preventive vigilance in the public sector enterprises of 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.

2. The post of CVOs of REC & DVC have been filled up during the year. Regular efforts have been made to fill up the vacancy of CVO of NEEPCO.

3. A regular monitoring and watch is being kept on the cases received from CVC under Public Interest Disclosure Resolution. CVO, Ministry of Power submitted his 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. 20 cases of vigilance irregularities were disposed of by the Vigilance Wing. Four cases of disciplinary proceedings were pending/contemplated and were at different stages of processing.

4. Vigilance Awareness Week was celebrated in the Ministry and its attached officers/PSUs from 6th November to 10th November 2006. On this occasion Secretary (Power) administered the pledge to all the officers and staff of the Ministry. A competition was organised by inviting suggestion from the officers and staff of Ministry of Power to convey the message of integrity, honesty and transparency in the society.

CENTRAL ELECTRICITY AUTHORITY

CEA deals with various facets of vigilance mechanism and functions as a resource to the top management for carrying out investigations into complaints, suggesting corrective measures for improving the control system, compliance of laid down procedure and also for carrying out preventive vigilance exercises.

At the beginning of the year, there were seven cases of disciplinary action pending under CEA's disciplinary jurisdiction. Out of that two have since been finalised and action in respect of remaining five cases is at an advance stage of completion. During the year one new case has been added. Thus at present in all there are six cases pending finalisation.

Complaints other than anonymous/ pseudonymous were taken up for investigation promptly and after completion of investigation, reports submitted to the Disciplinary Authority. Disciplinary action in one of the anonymous complaints is being taken after obtaining due concurrence of the Central Vigilance Commission.

Vigilance Division has carried out inspection of two formations of CEA with a view to appraise and ensure adaptation of proper procedure as well as suggesting improvement thereon. To emphasize and ensure timely information to facilitate the Head Quarters furnish information to CVC, MoP etc. on vigilance/ disciplinary matters, a meeting of the Heads of Subordiante Offices was held where various issues were discussed. As part of preventive vigilance, the Vigilance Division played its part in ensuring job rotation in sensitive posts and also assisted in ensuring that persons under cloud are not posted at sensitive posts.

Prescribed periodical returns were sent to Central Vigilance Commission and the Ministry of Power in time. Vigilance Awareness Week was observed from 6th to 10th November, 2006 in CEA Headquarters and its Subordinate Offices to spread the message of integrity and transparency.

NTPC Ltd.

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

2. The disposal of complaints has been in accordance with the time-frame prescribed by the CVC. 85 complaints were handled during the period.

All these complaints were investigated and carried to a logical conclusion. Besides that 03 complaints were received from CVC. These complaints were also taken up for investigation within the stipulated time-frame.

3. 50 officials were proceeded against for major penalty disciplinary action, 55 officials were proceeded against for minor penalty action and 45 officials were proceeded against for administrative action from April 01, 2006 to Nov. 30, 2006. Major penalty was imposed on 05 officials and minor penalties were imposed on 40 officials. Out of above cases 16 employees were facing disciplinary action in CVC cases as on March 31, 2006. While 07 employees were facing major penalty action, 09 employees were facing minor penalty action. 03 cases of major penalty action and 09 cases of minor penalty action were disposed of during the period. During the period 09 employees were added. Hence, as on November 30, 2006, disciplinary action is pending against 13 employees.

4. So far as CBI cases are concerned, 02 CBI cases are under prosecution as on Nov 30, 2006.

5. 289 Surprise Checks were conducted. 20 cases were instituted out of these checks. Recovery of Rs. 51,31,370/- was effected. 48 System Circulars were issued. During the period 29 Preventive Vigilance Workshops were conducted at various projects/places in which 788 employees participated. Property Returns relating to immovable property are obtained from employees every two years. 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 Projects, Regions, and Sites from November 06, 2006 to November 10, 2006

NHPC

Annual action plan for the Vigilance activities to be carried out during the year 2006 was approved by the CMD, NHPC for the Vigilance division Corporate Office and Projects. Approved action plan was further sent to Project Vigilance Officers/Head of the Projects for carrying out these Vigilance activities.

During the above period, total 301 inspections were conducted by Project Vigilance Officers of various projects which includes 116 Surprise inspections and 185 Regular inspections. Actionable points detected have been brought to the notice of HOP to take action accordingly.

During the period 25 Vigilance Awareness programmes of one-day each have been conducted in various projects of NHPC. 422 participants attended these programmes.

A seminar on "Vigilance in Procurement and Contract Management" was organized by Vigilance Division, NHPC on 12 June, 06 wherein officers of the level of Chief Engineers and above and vigilance officers from various projects of NHPC participated.

During this seminar a compact disc titled "A Vigilance Omnibus" containing circulars of CVC, MOP, DPE, MHA and DOPT was released by CMD, NHPC. Thereafter ISO 9001: 2000 renewal certificate granted to NHPC Vigilance Division was presented to CMD, NHPC by Shri Chandra Shekhar, Dy. Director General (North), BIS, Northern Regional office which was followed by short presentation by Shri A.K.Arora, Director (BIS), North Regional Office, Chandigarh on standardization as per ISO 9001: 2000.

Chief Technical Examiners of CVC Shri Ramachandran and Mrs. P. Verma delivered a talk jointly on "Vigilance In Procurement and Contract Management" followed by Question – Answer Session in which the participants interacted with the Chief Technical Examiners.

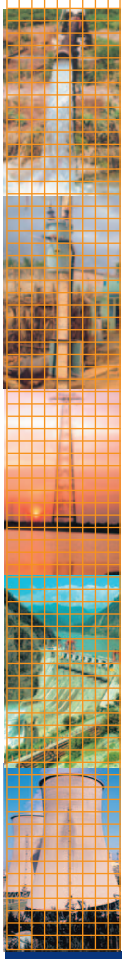
The CVC vide letter Dy. No. 22667 / 06-35341 dated 14-09-2006 has appreciated the efforts of NHPC, Vigilance Division in bringing out the 'Vigilance Omnibus' CD

Circulars received from CVC from time to time have been circulated in NHPC as well as in the Projects for information and compliance.

During the above period 7 preventive measures circulars on Common Lapses in Procurement and execution of works based on CTE's intensive inspection reports have been circulated to all the concerned in NHPC.

Vigilance Division, NHPC has conducted 15 intensive examinations of the works on CTE's pattern.

CTE's Organisation of CVC also referred 22 works for intensive examination to Vigilance Division of NHPC. After carry out intensive examination of these works, 13 reports were sent to CTE during the above



period and 9 reports were sent in the last year.

Also 38 Intensive examinations of the works were conducted on CTE's pattern by the PVO's at various projects.

By the end of 31-03-06, 9 complaints were brought forward and during the above period 11 complaints have been registered thus total 20 complaints are under investigation. Out of these 20 complaints, 2 complaints have been finalized and disciplinary proceeding started and reports in respect of 3 complaints were sent to MOP and CVC (2 reports in this year and 1 report in last year). As a result 15 complaints are under investigations / finalization.

As on date30-11-2006 a total 8 Disciplinary cases are in progress out of which 5 cases are with various Disciplinary Authority and 3 cases are with various Inquiry Authority.

During the above period 920 vigilance clearances were issued to HRD & other departments in respect of employees of the Corporation for various purposes.

As per direction of CVC, a detailed programme for observance of Vigilance Awareness Week w.e.f. 6th Nov. to 10th November, 2006 at various projects, Regional offices, Liaison offices and Corporate office was circulated with the approval of CMD, NHPC. Also on 7th November, 2006, Vigilance Journal 'CHETNA' Vol–VI 2006 was got released by Chief Guest Shri R.V.Shahi, Secretary (Power) Government of India, on the celebration of 32nd raising day of NHPC.

Specific issues / suggestions taken up with NHPC management and CVC

Inspection of Electro-mechanical and Hydro-mechanical equipments are conducted as per Quality Assurance Plan approved by the QA&I wing of NHPC, included in the Contract. At times, it has been noted that sufficient time for inspection call as stipulated in the Contract Agreement is not given before the inspection date. CMD NHPC has issued directions to comply with the inspection procedure of QA&I wing strictly for smooth and detailed inspections to ensure prolong service life of these equipment.

At present, as per instruction of CTE, Technical teams from Vigilance wing of NHPC are conducting inspections of Works/ Procurement on CTE's pattern. There does not appear to be any guidelines / instructions for carrying out inspection of "Supply items/equipments" for the work in the contract. It is proposed that Vigilance teams should also look into quality aspects of "Supply items" of E&M and Hydro mechanical works and depute its representative for this purpose when there is an inspection call from the supplier.

During Co-ordination Committee Meeting of Executive Director's held on 15-5-06 following points were emphasized upon by CVO:-

I. Annual review of Project schedule of rate, for preparation of realistic estimates in projects.

II. Necessity of standardizing the documents for contracts for services, consultancy work and hiring of vehicles and equipments.

III. Necessity of updating and standardization of general conditions of contract for civil works awarded by project.

With past experience, it was felt essential that the Bank Guarantees, Performance Bonds etc. submitted by the Contractor should be examined and kept in Finance centrally and safely.

The matter was taken up with the management in various meetings and finally as an outcome of the same, a circular was issued by the F&A division vide No. NH/FA/TMG-BANKING/2006 dt. 27-06-06, nominating Manager (Finance), Banking Section for control of all these documents.

Procedure for conclusion of Civil Contracts issued by Company Secretary vide No. NH/CS/311 dt. 17-10-1983 was required to be updated. The matter was brought to the notice of management. As as a result Committee has been constituted vide Office order No. NH/CS/311(VOL-XVII) dated 01.08.2006 for the purpose.

It was observed that during Construction of bridges in various projects awarded on lump-sum basis, contractors try to find ways and means to get paid more on one pretext or the other. In order to safeguards the interest of the Corporation/ Organization, the matter was taken up in various meetings held in the organization. Consequently a circular vide No. NHPC/ED(CC)/GEN dated 18.08.2006 has been issued by ED (Contracts-Civil)- to clearly / define various parameters in the contract and take all necessary care to avoid such occurrence in future.

As a part of preventive vigilance, introduction of file tracking system is necessary in the organization to enhance efficiency of the system. Matter has been taken up with the NHPC management. The file tracking system in Corporate Office is being

introduced. IT division has developed software and also training has been imparted to the employees in the divisions on this system. Implementation of the system in projects and other offices has also been impressed upon.

During various inspections of Supplies / Works, the lapses in obtaining and maintaining various Insurances Cover was observed and highlighted. The matter was brought to the notice of CMD, NHPC. Consequently, Guidelines for maintaining Open Transit Insurance Policies have been issued by ED Contracts (E & M) vide Circular No. NH/CONTS.(E&M) CIRCULAR /2006/5223-77 dated 08.09.2006.

PFC

Vigilance is not an isolated activity. It has to be seen as part of the overall management strategy of an organization where the systems, policies and procedures are built in a manner to prevent leakages which adversely affect its efficiency, productivity and profitability. With this in view, Vigilance functions as a resource to the top management for suggesting constructive measures for improving the control systems, setting up of adequate checks and balances, enforcing compliance of laid down procedures, carrying out investigation into complaints and also taking other preventive vigilance measures.

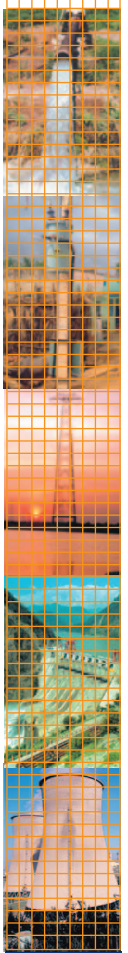
In the FY 2006-07 (as on 30th Nov, 2006), Vigilance functioned as an effective management asset with the thrust being on improving systems and increasing transparency, fairness and accountability with a view to incorporating best practices and promoting growth of the Corporation. Towards achieving these objectives, Preventive Vigilance was accorded a high priority. This aspect was focused upon by conducting periodic & surprise inspections of files on a continuous basis and by issuing effective guidelines to streamline systems with the aim of eliminating loopholes, thereby ensuring transparency and objectivity in day to day operations as also minimizing the scope for misuse and corruption. Vigilance Unit undertook the review of operational manuals of various activities of the Corporation. Comprehensive manuals like Procurement Procedure, Project Appraisal Manual, Project Rating Model, Promotion Policy etc. have been finalized and others are in the process of finalization. To further reinforce preventive vigilance, an Invoice Tracking System was got installed for monitoring all type of bills/invoices, processing and payments pertaining to supplier(s)/ contractor(s), other parties etc. and also a computerized File Tracking System was introduced which is being effectively used in all Units of the Corporation.

As part of other preventive vigilance measures, Vigilance Unit of PFC reviewed the property returns of the employees on a continuous basis and monitored job rotation in the sensitive posts. It also ensured that the circulars issued by CVC for strengthening preventive vigilance like the requirement for all types of tenders to be put on the website of the Corporation, transparency in the tendering system, payments and receipts transactions through electronic mode etc. are complied with in the Corporation. Vigilance clearance cases of the employees were processed on a continuous basis in respect of resignations, promotions, foreign personal visits, foreign training etc. Further 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 6th November to 10th November 2006 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 programmes on 'Vigilance Awareness' and 'Managing Effective Customer Relationships: Issues and Initiatives' were 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.

RURAL ELECTRIFICATION CORPORATION LIMITED

1. The Vigilance Division headed by the Chief Vigilance Officer (of the rank of Functional Director) constantly endeavoured to inculcate values of probity in the employees to promote professionalism, organizational ethics, work culture and enforce discipline in exercising power in a judicious way in



matters relating to administrative and financial functions.

2. The Vigilance set up in REC consisting of one CVO and two officers, though small, has been an effective managerial tool in enhancing the performance of the Corporation. Presently, there being no CBI case against any employee of the Corporation and only one disciplinary case and four complaints pending, is an indication of the effectiveness of the Vigilance Division.

3. 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 was reiterated during the Vigilance Awareness Week programmes were organised at Corporate Office as well as at all the Project Offices of the Corporation.

4. Regular inspections were carried out by the Officers of Vigilance Division in the two field offices. Employees were made aware during vigilance inspections and during regular interactions that carelessness in observance of rules, procedures may attract disciplinary actions.

5. Information with a vigilance bias were scrutinized carefully. Vigilance Division initiated measures to streamline and strengthen office system and procedures after some systemic failures were noticed. In this process, all important circulars as and when received from CVC and circular issued by Vigilance Division from time to time are regularly placed on REC intranet for information of all the Zonal Offices, Project Offices and Central Institute for Rural Electrification, Hyderabad.

6. Agreed lists were finalized in respect of all Zonal Offices, Project Office/Training Institue of REC in addition to its Corporate Office at Delhi after close interaction with local branches of CBI.

7. Prescribed periodical statistical returns were timely sent to CVC, CBI, MOP. Instructions received from the Central Vigilance Commission from time to time were also complied with. Performance of Vigilance Division was reviewed regularly by the CMD-REC, CVO-MOP, CVC in addition to constant reviews undertaken by the CVO, REC, as per norms prescribed by CVC.

PGCIL

During the period January to November 2006, 48 complaints have been received, out of which 29 are signed complaints, including 6 complaints referred to by the CTE's Organisation. Ministry of Power and Central Vigilance Commission referred 1 and 4 signed complaints, respectively, for investigation. 6 cases were instituted out of inspections conducted by the VEs and the balance on the basis of source information. Investigations into complaints resulted in issue of advisory memos in 10 cases and imposition of penalties in 13 cases, while 18 cases are currently pending for initiation of departmental proceedings.

The Vigilance Department of POWERGRID has, laid special emphasis on inspections, both at the Corporate as well as the regional level. During the year 2006, till the month of November, 129 inspections including 70 site inspections were conducted. On their basis an amount of Rs.1,12,363,25 has been recovered from contractors during the year till date. Besides, the CTE's organization conducted 4 inspections in POWERGRID resulting in recovery of Rs. 59,62, 951. 187 nos. CTE paras have been settled during the year.

The Board of Directors of POWERGRID reviewed the vigilance work of the organization on 17.01.2006. The Board took note of the status of various activities and appreciated the same. The Board directed that in future an Exception report on the suggestions made by Vigilance Deptt. to other departments and the extent to which the same have not been implemented be also provided.

In POWERGRID, high priority has been placed on training and as part of these various workshops were organised at the regional levels and also as part of the HRD Calendar for training. As part of this, 110 non-vigilance executives were imparted training on vigilance matters. Besides, a one day seminar was conducted at Corporate Centre on 27.04.2006 on the Right to Information Act, 2005. The faculty included those who had made substantial contributions to the promulgation of this Act, as well as senior officials of the Central Information Commission. About 140 participants actively participated in this seminar. Since then, seminars have been organized in the NER and SR-II on the RTI Act. Apart from the above, a three day workshop on 'Values and Ethics in Management' was organized at Corporate Centre from 16.10.2006 to 18.10.2006 for 28 Executives.

Action was initiated for submission of Annual Property Returns due on 31.12.05 through the web by all the

regions, as per the directives of the Central Vigilance Commission in the matter.

The Vigilance Executives posted at the regions as well as Corporate Centre were introduced to the software relating to Vigilance Information System, which is mainly related to inspection management.

Vigilance Awareness Week was also organised from 6.11.2006 to 10.11.2006, as per the guidelines of the Central Vigilance Commission. On this occasion, an interactive session was organised with the vendors of POWERGRID, in which repeated lacunae observed during vigilance inspections were discussed. Besides the above, an inter school debate competition and an essay writing competition for employees were also organised. On the concluding day, the play "Taj Mahal ka Tender" was staged to sensitise the people regarding corruption.

NEEPCO

Action Plan on anti-corruption and vigilance measures have been taken up by NEEPCO, keeping in view various directives and guidelines of the Central Vigilance Commission.

DVC

(A) Current year upto 30TH November, 2006

Like previous year Vigilance Department continued its efforts to achieve corporate objectives within the framework of instructions received from DVC and MOP. The activities of the vigilance department were, however, reoriented towards the corporate needs and objectives. Special emphasis was laid down to gear up the preventive vigilance machinery. An Action plan was drawn up at the beginning of the year to make inspections more comprehensive .On the basis of vigilance inspection several areas were noticed for corrective measures and the same has been intimated to concerned authorities for necessary action. Also vigilance department carried out CTE type inspections of some major ongoing works and observations were brought to the notice of concerned department for clarifications/comments. This effort of the vigilance department has lead to improvement in the overall functioning of the different departments and maintenance of records as well. The officers of the vigilance department were also deputed to training programmes for delivering lectures on areas related to preventive vigilance.

Team of CTE officials made regular visits to DVC and carried out the intensive examinations of major works. The officials of the vigilance department were deputed to provide all necessary assistance to the CTE team.

The Vigilance Awareness Week – 06 was observed w.e.f. 6.11.06 to 11.11.06 throughout the valley with due sincerity. All section of employees, school students & family members of DVC employees took part indifferent programmes organized during the week.

(B) Anticipated target up to 31st March 2007

(1) The Vigilance Department would carry out at least three CTE type intensive examinations of on-going works/contracts involving substantial amount.

(2) The Vigilance Department would coordinate with the concerned department to effect system improvements and introduce corrective measures to plug the loopholes observed during inspection in different areas of activities.

(3) It has been also planned to organized workshops/seminars to increase the vigilance awareness among all categories of employees.

BBMB

The Vigilance Organisation in Bhakra Beas Management Board comprises a Chief Vigilance Officer (CVO) of the rank of Superintending Engineer who is helped by six Vigilance Officers (VOs) of the rank of Superintending Engineers 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.

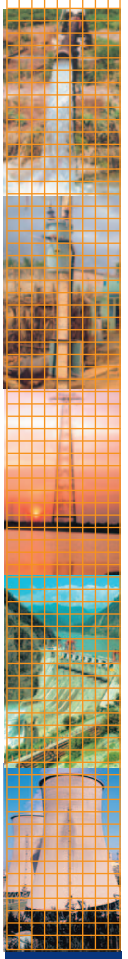
Besides above, Vigilance Awareness Week – 2006 was celebrated w.e.f 6.11.06 to 10.11.06 in BBMB Offices at Chandigarh as well as at Project Stations. An interactive session on vigilance awareness was also conducted on 10.11.06 at Chandigarh.

NPTI

Vigilance activities at NPTI are carried out by a Director as an additional responsibility. Vigilance Awareness Week was observed at NPTI in the first week of November,2006.

CPRI

Chief Vigilance Officer received no complaints from any Quarter and no case has been referred by Head of the Organisation. Reports and returns were submitted to the Central Vigilance Commission and the Ministry of Power.



CHAPTER – 16

ACTIVITIES RELATING TO WOMEN EMPLOYEES

Employment status of women in the MINISTRY OF POWER

There are 47 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 20.02.2007)	Strength of women employees	Percentage of overall staff strength
A	47	08	17.02
B	121	26	21.48
C	71	11	15.49
D	68	02	2.94
Total	**307**	**47**	**15.30**

- 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, 2006 there are 397 Women Employees working at different level of the Corporation out of a total of 7,342 employees. Details are given below.

Category	Total no. of Employees	No. of Female Employees	% of Female Employees
Executives	3,207	139	4.33
Non-Executives	4,135	258	6.23
Total	**7,342**	**397**	**5.40**

NTPC Ltd.

Representation of women employees as on 30.06.2006

Group	Total Employees	Women Employees	Percentage of overall strength
A	10405	385	3.70
B	2684	207	7.71
C	8315	441	5.30
D (ES)	2500	107	4.28
D (S)	48	3	6.25
Total	**23952**	**1143**	**4.77**

Activities:

- A complaints committee exists in NTPC to look into the complaints of sexual harassment made 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

No. & percentage of women employees in NHPC as on 30.11.2006

Cadre	Total No. of Employees	No. of female employees	% of female employees
Executive	3033	199	6.60
Assistant Officer / AE / Supervisor	2191	135	6.20
Workmen	7673	696	9.10
Total	**12897**	**1030**	**7.98**

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.
- 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.

Women employees of REC participating in Rajbhasha function

Hindi Pakhwara Competition for Women

RURAL ELECTRIFICATION CORPORATION LIMITED

1. Statement showing number of women employees in various posts in REC as on 30.11.2006.

Sl. No.	Post(s)	No. of employees	No. of Women employees
1.	ED/GM/CS	12	1
2.	Chief	18	0
3.	Joint Chief	32	5
4.	Dy. Chief(Eco) /Fin./Engg./Iso)/FM etc.	41	2
5.	F.E.-I	4	0
6.	DD(Eco./Gen./Hydro/EDP)/DPE etc.	57	16
7.	ACAO	19	1
8.	F.E.II	4	0
9.	AD(Eco/Gen./Iso)/APE etc./FE-III	65	13
10.	Sr.A.O.	19	1
11.	AO/SO/PS	71	10
12.	Acctt./Sr.Asstt.Sr.P.A./SCD(SA)/EDP Analyst or equivelent	116	16
13.	Asstt./Asstt.(A/cs)/ L.Asstt./UDC/ LDC/PA/Comp. Optr./SCD	110	25
14.	DMO/PMO/BMO	4	0
15.	Elect./AC Mech.	2	0
16.	Class-IV	111	11
	TOTAL	**685**	**101**

2. Number of women employees in Project Office(s) situated in North Eastern Region

Sl. No.	Project Office	Number of Women employees
1	Shillong	1
2	Guwahati	1

DVC

The Corporation has number of women employees working almost in all levels of hierarchy. During the Financial Year 2006-07, number of women employees appointed in various categories is given below:

Group 'A' : 4
Group 'B' : 1

In the Intra and Inter valley sports level meet during the year 2006-07, women employees are being encouraged to take part in competition of sports and cultural events.

All statutory facilities like maternity and other benefits are extended to the women employees. Their working conditions are governed under the statutory provisions of the Factory Acts and the Shops and Establishment Acts.

CPRI

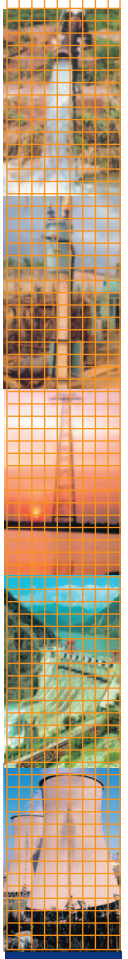
Employment situation of Women Employees in various post(s) in CPRI as on 30.11.2006 is 11.97%.Woman cell in CPRI is functioning since 1997 to look after the welfare of woman employees (totalling to 89 and constitute 11.97% of total employee strength). The initiatives taken by the woman cell includes running of Crèche satisfactorily for the past 9 years for the employee's children and grievance redressal of the woman employees of the Institute.

NPTI

12% employees of NPTI are women.

NEEPCO

346 women employees are working in organisation against a total workforce of 3267 employees.



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 is as under :

Group	Total number of employees	Physically Challenged
Group A	47	-
Group B	121	-
Group C	71	01
Group D (Excluding Sweepers)	64	01
Group D (Sweepers)	04	-
Total	**307**	**02**

NTPC

Representation of Physically Challenged Employees

Group	Total Employees (As on 30.06.2006)	Physically Challenged Employees (As on 30.06.2006)				Percentage of physically challenged employees
		VH	HH	OH	Total	
A	10405	02	01	35	38	0.36
B	2684	0	0	06	06	0.22
C	8315	57	69	115	241	2.89
D(ES)	2500	26	36	59	121	4.84
D (S)	48	0	0	0	0	-
Total	**23952**	**85**	**106**	**215**	**406**	**1.69**

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 (Physically Challenged) 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

No. & Percentage of Physically Challenged employees in NHPC as on 30.11.2006.

Cadre	Total No. of Employees	No. of Physically challenged employees	% of Physically challenged employees
Executive	3104	23	0.74%
Assistant Officer/ AE / Supervisor	2329	35	1.50%
Workmen	7818	36	0.46%
Total	**13251**	**94**	**0.71%**

RURAL ELECTRIFICATION CORPORATION LIMITED

Statement showing number of physically handicapped employees in various posts in REC as on 30.11.2006.

Sl. No.	Post(s)	No. of employees	No. of Physically challenged employees
1	ED/GM/CS	12	0
2	Chief	18	0
3	Joint Chief	32	0
4	Dy. Chief(Eco) /Fin./Engg./Iso)/FM etc.	41	1
5	F.E.-I	4	0
6	DD(Eco./Gen./Hydro/EDP)/DPE etc.	57	1
7	ACAO	19	0
8	F.E.II	4	0
9	AD(Eco/Gen./Iso)/APE etc./FE-III	65	0
10	Sr.A.O.	19	1
11	AO/SO/PS	71	1
12	Acctt./Sr.Asstt.Sr.P.A./SCD(SA)/EDP Analyst or equivelent	116	2
13	Asstt./Asstt.(A/cs)/L.Asstt./UDC/LDC/PA/Comp. Optr./SCD	110	1
14	DMO/PMO/BMO	4	0
15	Elect./AC Mech.	2	0
16	Class-IV	111	0
	TOTAL	**685**	**7**

PGCIL

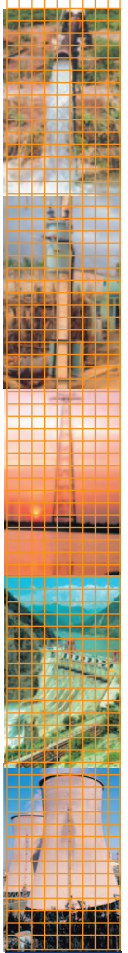
As on November 2006, there are 31 Physically Handicapped Employees working at different levels in the corporation out of a total of 7,342 employees.

DVC

As per provision of GOI Rules for Physically Challenged Persons, 3% reservation – 1% each for visually handicapped, 1% for hearing handicapped and 1% for orthopaedically handicapped person has been implemented in DVC.

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 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.

CPRI

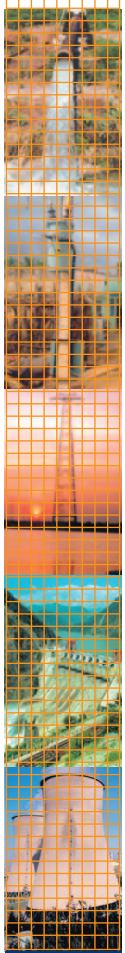
Number of Physically Challenged employees in the Institute as on 30.11.06, is 16 out of 743 employees.

NPTI

During 2006-07, the process for selection of the candidates for one post reserved for Physically Handicapped initiated.

NEEPCO

37 Physcially Challenged employees are working in the organisation against a total workforce of 3267 employees.



CHAPTER – 18

WELFARE OF SCs/ST/OBCs/MINORITIES

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.

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

Groups	Total number of employees	Number of Scheduled Caste employees	Number of Scheduled Tribe employees	Number of OBC employees
Group A	47	06	02	-
Group B	121	17	04	02
Group C	71	16	01	06
Group D (Excluding sweepers)	64	34	02	-
Group D (Sweepers)	04	03	-	-
TOTAL	**307**	**76**	**09**	**08**

3. With a view to ensuring 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 inspections report sent to the concerned Appointing Authorities for rectifying the discrepancies found, if any, 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.

4. Ministry of Power recognizes the importance and need to fill up all vacant reserved posts by appointment of candidates from respective categories. Various Special Recruitment Drives to fill reserved vacancies in the various organizations under its administrative control, have been carried out by the Ministry in the past. As part of the Common Minimum Programme of the Government in September, 2004, the Ministry launched a Special Recruitment Drive to fill up the backlog vacancies reserved for Scheduled Castes and Scheduled Tribes. Various organizations under the administrative control of the Ministry were instructed to carry out such Special Drive in accordance with prescribed time schedule.

5. The progress of the above Special Drive was closely monitored through various progress reports and senior level meetings. As a result of special efforts put in by the Ministry about 98.6% of backlog reserved vacancies in the various organizations under the Ministry have been filled up.

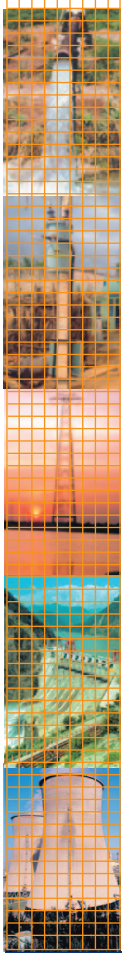
Welfare of Minorities

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.

CENTRAL ELECTRICITY AUTHORITY

Representation of Scheduled Castes & Scheduled Tribes in CEA: (As on 30-11-06)

Category	Number of Govt. Employees			
	Sanctioned	Filled	SC	ST
Group A	533	437	73	12
Group B	440	377	22	10
Group C	474	380	43	4
Group D	219	208	76	8
TOTAL	**1666**	**1402**	**214**	**34**



NTPC Ltd.

Representation of SC/ST/OBC as on 30.06.2006 :

Group	Total employees	Representation					
		SCs	%age (SC)	STs	% age (ST)	OBCs	%age (OBC)
A	10405	1087	10.44	252	2.42	841	8.08
B	2684	379	14.12	220	8.19	128	4.76
C	8315	1395	16.77	462	5.55	594	7.14
D (ES)	2500	482	19.28	247	9.88	250	10.00
D (S)	48	48	100.00	0	-	-	-
Total	**23952**	**3391**	**14.15**	**1181**	**4.93**	**1813**	**7.56**

Appointments made during calendar year 2006 (as on 30.06.2006)

Group	Total	SCs	STs	OBCs
A	420	63	32	120
B	-	-	-	-
C	06	-	-	02
D (ES)	-	-	-	-
D (S)	-	-	-	-
Total	**426**	**63**	**32**	**122**

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
Total	**252**	**118**	**12**	**1**	**516**	**221**	**56**	**50**	**836**	**390**

Activities:

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

- Periodical meetings of SC/ST Welfare Associations with Head of Human Resources/ Head of Projects at project level and with Executive Director at Regional level.
- Awareness Programmes for SC/ST employees at Projects, Regional Headquarters and Corporate level.
- Structured meetings of SC/ST employees with Liaison Officers (SC/ST) held at all Units of NTPC.
- Handling of SC/ST employees' grievances quickly and effectively at all Units of NTPC.

- Scholarships for SC/ST students pursuing degree/ diploma courses in engineering and MBA/ PGDBM in HR/ Finance. 50 scholarships have been awarded in the year 2006.

PGCIL

Statement showing the number of employees and the number of SC, ST & OBC in POWERGRID amongst them as on November, 2006

Group	Representation of SC/ST/OBC (as on November, 2006) On Absorption Basis			
	TOTAL	SC	ST	OBC
A	3,207	314	98	325
B	1,517	143	60	149
C	2,269	355	114	241
D	349	53	47	34
SUB TOTAL	7,342	865	319	749

Group	Number of appointment made during calendar year 2006 By Direct Recruitment (As on November, 2006)			
	TOTAL	SC	ST	OBC
A	178	26	14	52
B				
C	2		1	
D				
TOTAL	180	26	15	52

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. However, during the period 01.04.2006 to 30.11.2006, no offer of appointment has been issued from Corporate Office/ Recruitment Section.

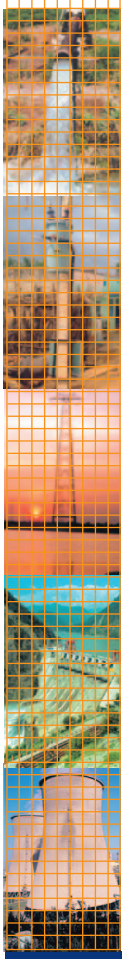
- "Awareness Programs" for SC/ST/OBC employees in each of the Sub-stations, offices have been conducted to clear their doubts on Reservation Policy.
- Adequate representation of SC/ST employees has been given in internal training.
- Action on awareness program on SC/ST is contemplated in near future.

DVC

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 Categories.

Social Integration Programme (SIP), a commitment for the development of villagers/inhabitants in the areas within 10 Kms around DVC's main projects was launched in the line of Government of India's Twenty Point Progrmme 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 72 Panchayats of 14 Blocks in 7 Districts of Jharkhand and West Bengal for Socio-Economic and Infrastructural (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.11.79 crores has been allocated in the year 2006-07, out of which Rs.4.46 crores has been spent upto November, 2006.



The programmes taken up under Socio-Economic development are Primary Education, Medical treatment of Villagers through Mobile Clinic Services, DVC Hospitals including Health Awareness Programme, Training Programmes for self employment extending assistance for income generation to the trained rural youths, agricultural extension, implementation of modern farming technology, sports & cultural activities to improve the standard and skill of rural youths.

In infrastructural development, need based schemes such as drinking water facility, road for communication, buildings for schooling, dispensary, community hall, youth club, library, renovation/ construction of ponds, construction of check dams and irrigation wells and mocro-lift irrigation schemes, civic amenities, agriculture, social forestry, cultural promotion, development of cottage industries, piggeries, goat farming, poultry and fisheries.

Besides, Corporation has also taken up the work of electrification of the villages from 2001-02. So far 40 villages were electrified by DVC through State Electricity Boards.

SC/ST CELL

One SC/ST Cell at DVC Headquarter exists since long with the following objectives:

1. To ensure due compliance of the GOI orders in respect of reservation of SCs and STs,
2. Prompt disposal of the grievances of these employees,
3. Consolidate the statistical data related to SC/ST community and furnishing the report to Ministry of Power,
4. To keep liaison between Ministry / Department and SC/ST Association and to supply required information,
5. To monitor Special Recruitment Drive conducted by Corporation for filling up the backlog reserved vacancies.

The following is the Progress, as on 30.09.06, of Special Recruitment Drive conducted by the Corporation:

	NO. OF BACKLOG VACANCIES REPORTED				NO. OF BACKLOG VACANCIES FILLED UP AS ON 30.09.06			
	SCs		STs		SCs		STs	
	DR*	PROM*	DR	PROM	DR	PROM	DR	PROM
GROUP A	19	10	16	3	15	10	16	3
GROUP B	3	15	6	16	3	15	6	16
GROUP C	4	NIL	13	NIL	4	NIL	13	NIL
GROUP D	2	NIL	13	NIL	2	NIL	13	NIL
TOTAL	**28**	**25**	**48**	**19**	**24**	**25**	**48**	**19**

*DR : DIRECT RECRUITMENT *PROM : PROMOTION

TOTAL BACKLOG REPORTED TO MOP: 120

TOTAL FILLED UP: 116

Liaison Officer (SC/ST) at different field formations is also nominated to adhere to the above objectives.

Welfare of Minorities

The programmes and facilities applicable in respect of 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 caters to the cultural need of Minority Community.

BBMB

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 Goverments/ 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, the 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.

NPTI

During 2006-07, the process for selection of the candidates for four post reserved for SC candidates was completed.

PFC

The Corporation has been making necessary efforts to discharge its obligations satisfactorily in terms of Govt. of India orders as applicable towards economically and socially weaker communities such as SC/ST/OBC etc.

RURAL ELECTRIFICATION CORPORATION LIMITED

Statement showing number of SC & ST employees in various posts in REC as on 30.11.2006.

Sl. No.	Post(s)	No. of employees	SC	ST
1.	ED/GM/CS	12	0	0
2.	Chief	18	1	0
3.	Joint Chief	32	3	1
4.	Dy. Chief(Eco) /Fin./Engg./Iso)/FM etc.	41	3	1
5.	F.E.-I	4	0	0
6.	DD(Eco./Gen./Hydro/EDP)/DPE etc.	57	3	2
7.	ACAO	19	3	0
8.	F.E.II	4	0	0
9.	AD(Eco/Gen./Iso)/APE etc./FE-III	65	8	1
10.	Sr.A.O.	19	4	1
11.	AO/SO/PS	71	6	3
12.	Acctt./Sr.Asstt.Sr.P.A./SCD(SA)/EDP Analyst or equivelent	116	17	3
13.	Asstt./Asstt.(A/cs)/L.Asstt./UDC/LDC/PA/Comp. Optr./SCD	110	18	0
14.	DMO/PMO/BMO	4	1	1
15.	Elect./AC Mech.	2	1	0
16.	Class-IV	111	34	5
	TOTAL	**685**	**102**	**18**

CHAPTER – 19

CENTRAL ELECTRICITY AUTHORITY

1. ORGANISATION 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.

As per section 73 of the Electricity Act, 2003, the Central Electricity Authority shall perform such functions and duties as the Central Government may prescribe or direct, and in particular to -

a) Advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and coordinate the activities of the planning agencies for the optimal utilization of resources to sub serve the interests of the national economy and to provide reliable and affordable electricity to all consumers;

b) Specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid;

c) Specify the safety requirements for construction, operation and maintenance of electrical plants and electric lines;

d) Specify the Grid Standards for operation and maintenance of transmission lines;

e) Specify the conditions for installation of meters for transmission and supply of electricity;

f) Promote and assist in the timely completion of schemes and projects for improving and augmenting the electricity system;

g) Promote measures for advancing the skills of persons engaged in electricity industry;

h) Advise Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter if, in the opinion of the Authority, the recommendation would help in improving the generation, transmission, trading, distribution and utilization of electricity;

i) Collect and record the data concerning the generation, transmission, trading, distribution and utilization of electricity and carry out studies relating to cost, efficiency, competitiveness and such like matters;

j) Make public from time to time the information secured under this Act, and provide for the publication of reports and investigations;

k) Promote research in matters affecting the generation, transmission, distribution and trading of electricity;

l) Carry out, or cause to be carried out, any investigation for the purpose of generating or transmitting or distributing electricity;

m) Advise any State Government, licensees or the generating companies on such matters which shall enable them to operate and maintain the electricity system under their ownership or control in an improved manner and where necessary, in coordination with any other Government, licensee or the generating company owning or having the control of another electricity system;

n) Advise the Appropriate Government and the Appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity; and

o) Discharge such other functions as may be provided under this Act.

Section 3 - National Electricity Policy and Plan

(1) The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy,

(2) The Central Government shall publish the National Electricity Policy and tariff policy from time to time.

(3) The Central Government may, from, time to time, in consultation with the State Governments and the Authority, review or revise the National Electricity Policy referred to in sub-section (1).

(4) The Authority shall prepare a National Electricity Plan in accordance with the National Electricity Policy and notify such plan once in five years.

PROVIDED that the Authority while preparing the National Electricity Plan shall publish the draft National Electricity Plan and invite suggestions and objections thereon from licensees, generating companies and the public within such time as may be prescribed.

PROVIDED FURTHER that the Authority shall-

(a) notify the plan after obtaining the approval of the Central Government;

(b) revise the plan incorporating therein directions, if any, given by the Central Government while granting approval under clause (a).

(5) The Authority may review or revise the National Electricity Plan in accordance with the National Electricity Policy.

Section 8 - Hydro-Electric Generation

(1) Any generating company intending to set up a hydro-generating station shall prepare and submit to the Authority for its concurrence, a scheme estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government, from time- to time, by notification.

(2) The Authority shall, before concurring in any scheme submitted to it under sub-section (1) particular regard to, whether or not in its opinion:

a) The proposed river-works will prejudice the prospects for the best ultimate development of the river or its tributaries for power generation, consistent with the requirements of drinking water, irrigation, navigation, flood-control, or other public purposes, and for this purpose the Authority shall satisfy itself, after consultation with the State Government, the Central Government, or such other agencies as it may deem appropriate, that an adequate study has been made of the optimum location of dams and other river-works;

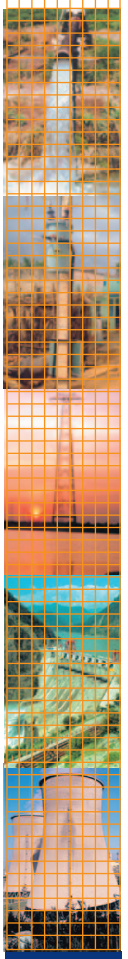
b) The proposed scheme meets, the norms regarding dam design and safety.

(3) Where a multi-purpose scheme for the development of any river in any region is in operation, the State Government and the generating company shall co-ordinate their activities with the activities of the person responsible for such scheme in so far as they are inter-related.

Section 53 - Provision Relating to Safety and Electricity Supply

The Authority may in consultation with the State Governments, specify suitable measures for-

a) protecting the public (including the person engaged in the generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation, maintenance or use of any electric line of electrical plant ;



b) eliminating or reducing the risks of personal injury to any person, or damage to property of any person or interference with use of such property;

c) prohibiting the supply or transmission of electricity except by means of a system which conforms to the specification as may be specified;

d) giving a notice in the specified form to the Appropriate Commission and the Electrical Inspector, of accidents and failures of supplies or transmission of electricity;

e) keeping by a generating company or licensee the maps, plant and sections relating to supply or transmission of electricity;

f) inspection of maps, plans and sections by any person authorized by it or by Electrical Inspector or by any person on payment of specified fee;

g) specifying action to be taken in relation to any electric line or electrical plant, or any electrical appliance under the control of a consumer for the purpose of eliminating or reducing the risk of personal injury or damage to property or interference with its use;

Section 55 - Use etc. of Meters

1) For proper accounting and audit in the generation, transmission and distribution or trading of electricity, the Authority may direct the installation of meters, by a generating company or licensee at such stages of generation, transmission or distribution or trading of electricity and at such locations of generation, transmission or distribution or trading, as it may deem necessary.

Section 177- Powers of Authority to Make Regulations

1) The Authority may, by notification, make regulations consistent with this Act and the rules generally to carry out the provisions of this Act.

2) In particular and without prejudice to the generality of the power conferred in sub-section (1), such regulations may provide for all or any of the following matters, mainly :-

a) the Grid Standards under section 34;

b) suitable measures relating to safety and electricity supply under section 53;

c) the installation and operation of meters under section 55;

d) the rules of procedure for transaction of business under sub-section (9) of section 70;

e) the technical standards for construction of electrical plants and electric lines and connectivity to the grid under clause (b) of section 73;

f) the form and manner in which and the time at which the State Government and licensees shall furnish statistics, returns or other information under section 74;

g) any other matter which is to be, or may be, specified;

(3) All regulations made by the Authority under this Act shall be subject to the conditions of previous publication.

During the year 2006-07 (upto 31.01.2007), two regulations viz. CEA (Installations and Operation of Meters) Regulation, 2006 and CEA (Procedure for Transaction of Business) Regulations, 2006 have been notified. The Regulations on Technical Standards for Connectivity to the Grid and Regulations on Furnishing of Statistics, Returns and Information have been sent to MoP for notification. In addition, Regulations on Grid Standards u/s 34 of EA, 2003 has been sent to MoP for pre-publication.

TECHNO-ECONOMIC APPRAISAL OF POWER DEVELOPMENT SCHEMES (PERIOD 1.4.2006 TO 31.01.2007)

The Central Electricity Authority had been according Tehno-Economic Clearance/ Appraisal to generation schemes (Hydro & Thermal) and Transmission schemes etc. under the then Electricity (Supply) Act, 1948 before enactment of The Electricity Act, 2003. CEA's consultation u/s 44 (2A) of repealed Electricity (Supply) Act, 1948 was also been 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 31.01.07, Central Electricity Authority accorded concurrence to 9 Hydro Generating Scheme aggregating to a capacity of 4375 MW. The details of these schemes are given below :

(As on 31.01.2007)

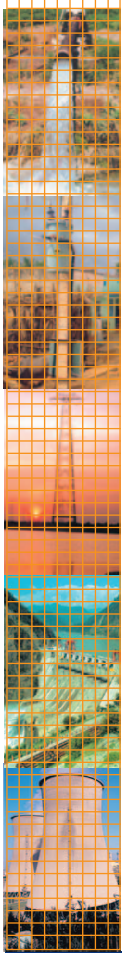
SCHEMES APPRAISED BY CENTRAL ELECTRICITY AUTHORITY FROM APRIL'06 TO JAN.'07

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
	Total 9 Nos.	**4375 MW**		

RESEARCH AND DEVELOPMENT

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. The report of the Committee 'National Perspective Plan for R&D in Power Sector has since been submitted.



An Action Plan to carry out R&D on prioritized areas has been prepared by the Standing Committee on R&D. The Action Plan was consist of 23 projects in various areas of power sector. After a series of meetings and deliberations, the Standing Committee on R&D in its 10th meeting held on 21st September 2005 recommended 8 projects for immediate take up and also decided the mechanism of funding these projects. A combined SFC memo for these projects was forwarded to the MoP for allocation of funds. These projects are in the field of Hydro and Thermal generation and Transmission and Distribution of power.

Standing Finance Committee of Ministry of Power in its meeting held on 1st November 2006 has recommended implementation of 6 of these projects. These projects are:

All figures in Rs. Lakhs

Sl. No.	Project Name	Total Outlay	Lead Agency
1.	Development of Silt Resistant Material for Turbines of Hydro Generators	299.79	NML
2.	A study on the characteristics of different types of power coals for blending / beneficiation to meet the requirement of MOEF and use of pet coke as alternate fuel, vis-à-vis their impact on PF combustion	290	CFRI
3.	National Effort to Develop Technology for Custom Power Devices	635	C-DAC
4.	Development of Super conducting transformers	200	EMCO Ltd.
5.	R&D projects in Power system stability	230	IIT Kanpur
6.	Development of 132 KV Class Optical current transformer	19	ERDA
	Total	**1673.79**	

Coordination in respect of implementation of these project would be carried out by technology Division of respective wings of CEA in association with CPRI.

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 Centre 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.

Eight nos. of officers of CEA,CPRI and NPTI are pursuing M.Tech and PhD courses at IIT, Delhi under the programme, which will give long term benefits to the Power Sector.

Application for admission to Ph.D. for second term of academic year 2006-07 has been called for. The process of selection of officer for pursuing Ph.D. would be completed during the remaining period of the financial year.

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 is being updated based on the revised information obtained from the Research Organizations.

It being a continuous process, the updating of Directory will be continued by obtaining revised information from all concerned.

CHAPTER – 20

CENTRAL ELECTRICITY REGULATORY COMMISSION

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, namely:-

(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 this 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 this Act.

Advisory Role

The Electricity Act, 2003 further states that the Central Commission shall advise the Central Government on all or any of the following matters, namely:-

(a) formulation of National Electricity Policy and tariff policy;

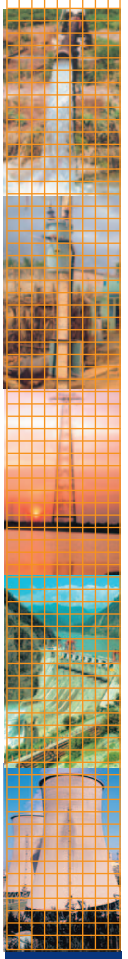
(b) promotion of competition, efficiency and economy in activities of the electricity industry;

(c) promotion of investment in electricity industry;

(d) any other matter referred to the Central Commission by that Government.

1. Staff Paper on Power Exchange for Electricity Trading

In July 2006, CERC has released its Staff Paper on developing a common trading platform (Power Exchange) for electricity trading in the country. Power Exchange (PX) is a mechanism for institutionalized, transparent and efficient trading. Section 66 of the Electricity Act, 2003 and the National Electricity Policy require the Central Commission to promote and develop the electricity market in the country. Based on in-house research and analysis, the Staff Paper addresses the whole gamut of issues related to development of electricity market from an Indian perspective and existing ground realities of the electricity sector. The Commission has released the Staff Paper to provide a starting point for an informed debate with the stakeholders as a part of the consultation process for developing the electricity market.



2. CERC guided competitive bidding process for Western Regional System Strengthening Scheme in Western Region

The process of tariff based competitive bidding process ordered by CERC for Projects B and C of the Western Regional System Strengthening Scheme-II (WRSSS-II) was successfully completed in November 2006. Eight bidders were in fray and Reliance Energy Transmission Ltd. emerged as lowest bidder for both Projects B & C. The tariff discovery in both Projects is estimated to be about 25% lower than the cost-plus tariff for these Projects. The direction for competitive bidding was issued by the Commission in July 2005, while disposing of an application for transmission licence filed earlier by RETL, requesting the Commission for permission to develop entire WRSSS-II on cost plus tariff basis. The successful completion of tariff based bidding process under the supervision of CERC is a landmark development for power sector paving way for development of transmission system through private sector in a big way.

3. Licence for inter-State Transmission of Electricity

The Commission has published draft regulations on procedure, terms and conditions, for grant of licence for inter-state transmission in electricity in Oct. 2006.

4. Grid Discipline

CERC on 27.4.2006 warned that stringent action would be taken under section-29 and 152 of Electricity Act-2003 against State Electricity Boards (SEBs) and Distribution utilities who were endangering the Grid security by overdrawing in violation of Grid Code and disobeying the instructions of RLDCs. In continuation to this, CERC invoked section-142 of the Act and imposed penalty of rupees one lakh on Uttar Pradesh Power Corporation Limited (UPPCL) for its undisciplined overdrawal from the grid when frequency was less than 49 Hz. CERC also appointed Shri A.H. Jung, Member, CERC as adjudicating officer to hold an inquiry under section-143 of the Act on alleged violation of the instructions of NRLDC during the month of April 2006. Again on 17.10.2006 due to sustained low frequency conditions, CERC directed all RLDCs to keep a strict watch over the Grid Code violators which could endanger the grid stability.

5. Notification of Escalation Rate for Coal and Gas, Inflation Rate based on WPI and CPI, Discount Rate and Exchange Variation Rate, for the purpose of bid evaluation as well as for payment

The Ministry of Power (MOP), vide its Notification dated, 19.01.2005, issued Guidelines for Determination of Tariff by Bidding Process for Procurement of Power by Distribution Licensees. These guidelines have been amended vide notifications dated 30.3.2006 and 18.8.2006. **These guidelines provide that the CERC shall notify and update the Escalation Rate for Coal and Gas, Inflation Rate based on WPI and CPI, Discount Rate and Exchange Variation Rate, for the purpose of bid evaluation as well as for payment.**

After taking into consideration the comments of the stakeholders, Commission notified the Escalation Rate on 26.10.2006 for Coal and Gas, Inflation Rate based on WPI and CPI, Discount Rate and Exchange Variation Rate, for the purpose of bid evaluation as well as for payment in respect of the above rates excluding (i), (ii) & (iv). The Commission amended the Notification on 22nd November 2006 after correcting certain inadvertent errors in data considered and methodology adopted for the computations of escalation rates/indices for the purpose of payment.

6. TRADING MARGIN

CERC on examination of the data relating to the Inter-State Electricity Transactions of the licensees, observed that in certain cases, the trading margin charged by the traders was exorbitant. With a view to curbing the tendency of profiteering, the Commission has fixed a ceiling of 4 paise per unit on trading margin chargeable by the inter-State electricity Traders. The trading margin fixed is inclusive of all charges, except the charges for scheduled energy, open access and transmission loses.

7. INTER-STATE TRADING IN ELECTRICITY

The Commission had, so far, issued licence for Inter-state trading in electricity to total 20 applicants. Of the total, one licence has been issued during the current year 2006-07 i.e. upto 30th November, 2006. 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 number of licensees who are undertaking trading in electricity has been increased from 7 during 2005-06 to 9 during 2006-07 (upto 30th November 2006). These are as under :

Sr. No.	Name of the Trading Licensee	2005-06		2006-07(April-Sept)	
		Volume of Trade (MUs)	% to total volume	Volume of Trade (MUs)	% to total volume
1	PTC India Ltd	8357.6	58.90	4369.80	55.30
2	Adani Exports Ltd	2979.81	21.00	619.44	7.84
3	NTPC Vidyut Vyapar Nigam Ltd	1642.45	11.58	1505.94	19.06
4	Tata Power Trading Company	673.42	4.75	459.81	5.82
5	Reliance Energy Trading Limited	482.52	3.40	459.91	5.82
6	Subash Kabini Power Corporation Ltd	41.29	0.29	36.61	0.46
7	Lanco Electric Utility Ltd	11.22	0.08	345.81	4.38
8	JSW Power Trading Company Ltd	–	–	78.35	0.99
9	Karamchand Thapar and Bros Ltd	–	–	25.96	0.33
	Total Volume Traded	**14188.31**	**100.00**	**7901.62**	**100.00**

Total volume of electricity traded during the current year 2006-07 (7901.62 MU during April-September) is 55.69% as compared with the volume of electricity traded during the last year (14188.31 MU). This indicates that the volume of electricity traded during the current year will be marginally higher than the volume of electricity traded during the last year.

SJVN, Power House Site Bridge

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.

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 equivalent to a sitting judge of the Supreme Court. Hon'ble Ms. Justice Manju Goel is the other Judicial Member. There are two Technical Members, namely, Hon'ble Mr. H.L. Bajaj and Hon'ble Mr. Anwar Ahmad Khan.

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 transferred to this Tribunal.

Proceedings are conducted in two Courts, each Court consisting of at least one Judicial Member and a Technical Member.

As on 31st December 2006, out of the 485 appeals/ petitions that have been filed, 237 appeals have already been disposed off.

Thus within a short span of its operation, APTEL has become fully operational and has been successful in disposing of a large volume of matters, thus expediting justice.

APTEL launched its website (www.aptel.gov.in) on 10th March 2006. The portal is providing easy access to the daily causelists and judgments pronounced by the Tribunal.

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.

PUBLIC SECTOR UNDERTAKINGS

CHAPTER – 22.1

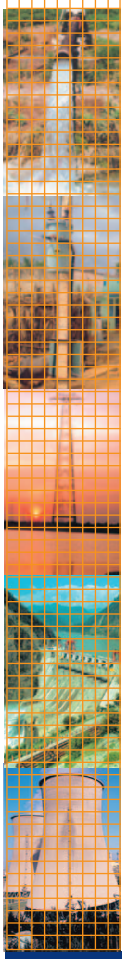
NTPC LIMITED

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 31.01.2007 stands at Rs. 106242.38 crore.

The commissioned capacity of NTPC owned stations, as on 31.01.2007 is 26,404 MW (details enclosed at Annexure-I). Presently, NTPC has to its credit coal based thermal power stations at 14 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.

2.0 NTPC PERFORMANCE HIGHLIGHTS: as on 31.01.2007

- During the year 2006-07 up to 31.01.2007, a record generation of over 154885 Million Units was achieved, as against the last year's generation of 139946 Million Units during the same period registering an increase of 10.68% over the previous year's period.
- During the year 2006-07 (till January 2007), following TWELVE NTPC coal stations achieved more than 87% PLF: Unchahar (95.53%), Dadri (Coal) (95.23%),Vindhaychal (91.97%), Rihand (90.74%), Simhadri (90.39%), Tanda (89.55%), Talcher (Kaniha) (89.34%), Talcher Thermal (89.24%), Kahalgaon (87.60%), Ramagundam (87.47%), Korba (87.45%) and Badarpur (87.43%).
- The company is at present implementing THIRTHEEN power projects with a capacity of 11360 MW.
- Vindhyachal Stage-III unit No.9 (500MW) and Unchahar Stage-III unit No.5 (210 MW) commissioned in July and September 2006 respectively.
- NTPC has achieved all the targets to be rated "Excellent" during 2005 -06 for the nineteenth consecutive year since inception of the MOU system.
- So far, NTPC has been allotted 7 coal blocks by Government of India including 6 blocks allotted during the year. These blocks are expected to produce 50 Million tonnes of coal per annum by 2017.
- During the year 2006-07, NVVN traded 2136 MUs up to 31.01.07 and transacted business with 19 State Utilities.
- NTPC has been awarded as "Most Admired Organization in the Central Sector" based on a survey conducted by Powerline in 2006 wherein nearly 600 experts from the sector have participated.
- "Asian Power Plant of the Year Award 2006" to FG Unchahar Power Project, awarded on attributes of Efficiency, Environment, Operational Characteristics and Business Management.



Smt. Sonia Gandhi, Chairperson UPA dedicated 210 MW Unit of Unchahar Thermal Power Station to the nation in the presence of Hon'ble Union Minister of Power Shri Sushilkumar Shinde and other dignitaries

3.0 NTPC STATIONS & GENERATION PERFORMANCE (as on 31.01.2007)

NTPC Stations : As on 31.01.2007, a total capacity of 26404 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, 26 units of 500 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhaychal, Rihand, Talcher-Kaniha and Simhadri, 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, 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 740 MW (2X240+1X260 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 during the year 2006-07 (upto 31.01.2007) has been 154885 MUs as against 139946 MUs generated during the same period last year. NTPC achieved a PLF of 88.19% (including Badarpur w.e.f. 1.6.06) with availability of 89.02% during the period.

4.0 COMMERCIAL PERFORMANCE

Settlement of Outstanding Dues of NTPC in F.Y. 2006-2007 (upto Jan'07) and payment of current bills.

The amount billed for the financial year 2006-07 (upto Jan'07) were Rs. 24891.23 crore with realization of Rs.24909.19 crore. Consequently for fourth successive year, 100% realization of dues against the energy supplied to various beneficiaries was achieved.

However, the arrears of Rs 1311.19 crore as on 31.01.2007 (arrears pertains to the period upto 30.09.2001 payable by Govt. of NCT Delhi for DESU period to NTPC) are yet to be settled.

Tariff of NTPC stations

CERC have approved tariff for the period 2004-09 for all NTPC stations except for Talcher Stage-II, Ramagundam Stage-III, Rihand Stage-II and TTPS till Jan.'07. CERC has also approved tariff of Rihand Stage-I for the period 2001-04 and revision of fixed charges of all NTPC stations for the period 2001-04 on account of additional capitalization. CERC vide order dated 30.06.2006 has directed implementation of ABT at RGCCPP, Kayamkulam w.e.f. 01.07.2006.

CERC vide order dated 28.09.2006 has further extended the billing of charges on provisional basis upto 31.03.2007 or till disposal of tariff petitions filed by Utilities for tariff period 2004-09 whichever is earlier, subject to the condition that billing of charges shall be based on the tariff claimed in application if it is lower than the bills raised based on the billing as on dated 31.03.2004. Generic Procedure on regulation of power supply to beneficiaries in case of non-payment of dues of Central Power Utilities has been extended by CERC upto 31.03.2007 or till such time the revised procedure is notified, whichever is earlier.

Declaration of commercial operation of new capacities

Unit–II of Rihand–II has been declared commercial w.e.f. 01.04.2006.

Unit–I of Vindhyachal–III has been declared commercial w.e.f. 01.12.2006.

Unit- V of Unchahar-III has been declared commercial w.e.f. 01.01.2007.

Allocation of power from New Projects

Allocation of power from Vindhyachal-III (2x500MW) and Feroze Gandhi Unchahar Thermal Power Station (FGUTPS) Stage–III (1x210MW) was issued by MOP on 21.08.2006 and 07.09.2006 respectively.

5.0 GROSS REVENUE AND PROFIT

NTPC recorded a gross revenue of Rs.24176.8 crore and net profit after tax of Rs. 5130 crore during the first nine month of 2006-07 (i.e April to Dec.'06) as

Turbine maintenance at a NTPC Station

compared to revenue of 20834.2 crore and net profit after tax of Rs. 4253.9 crore during same period last year (i.e April to Dec.'05).

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.20434 crore as on 31st January 2007 for its capacity addition programme, including Rs.3000 crore LIC bonds. The cumulative utilization up to 31st January 2007 is Rs. 14489.35 crore. The balance of Rs. 5945 crore is yet to be drawn.

6.2 DOMESTIC BONDS

In Jan. 2007, the company has issued series XXII Bonds aggregating Rs. 500 crore to Life Insurance Corporation of India. The total amount of domestic bonds outstanding as on 31.01.2007 is Rs. 4950 crore.

6.3 PUBLIC DEPOSITS

As on 31.3.2006 the cumulative deposits received by the company from 1068 depositors stood at Rs. 77.83crore. The corresponding of figures for the year 2006-07 up to 31.01.2007 are 653 depositors aggregating Rs. 33.68 crore.

6.4 LOAN FACILITY OF USD 300 MILLION FROM ADB

During 2005-06, a loan amounting to USD 300 million has been extended by Asian Development Bank (ADB) under their Complementary Financing Scheme (CFS). The loan agreement was signed on 21.9.2006. The loan consists of two tranches –A & B. Tranche A amounting to USD 75 million is extended by ADB and Tranche B amounting to USD 225 million is expected by the Participation Arranger appointed by ADB. The loan is to be utilized for financing the capital expenditure of Sipat (Stage I and II) and Kahalgaon-Stage-II.

The loan has a provision of payment of interest on floating rate basis to be derived from 6 month USD Libor. The tenure of Tranche A is 11 years and for Tranche B, the final maturity is up to 7 years of signing of loan agreement. The loan is extended without any back up security from Govt. of India i.e, on the strength of NTPC own credit worthiness. An amount of USD 141 million has been drawn under the loan.

7.0 MOU PERFORMANCE

NTPC has achieved targets for 'EXCELLENT' rating under the Memorandum of Understanding (MOU) signed with GOI for all the NINETEEN (19) years up to 2005-06 since inception of the MOU system since 1987-88.

8.0 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.

8.1 CAPACITY ADDITION PROGRAMME

During the X Plan period, 4710 MW has already been commissioned. During the year 2005-06, one unit of 500 MW at Rihand-II project was commissioned ahead of schedule. Further, one unit of Vindhyachal-III has been commissioned ahead of schedule in July, 2006 and one unit of 210 MW of Unchahar-III commissioned in September 2006. Thus, the total generating capacity of the company has increased from 23935 MW to 24645. In addition to this, NTPC has taken over 705 MW Badarpur TPS from Govt of India w.e.f. 1-6-06 which has increased NTPC's capacity to 25350 MW. Further 1054 MW capacity acquired/setup through Joint Venture at Durgapur, Rourkela, Bhilai and Dabhol. Thus totaling present installed capacity to 26,404 MW.

Construction work is going on in 11360 MW capacity for benefits in X Plan and XI plans.

Commissioned, On-going & New Projects identified by NTPC For Benefits Starting During 10th & 11th Plan Period

Sl. No.	Project (Fuel)/ State (Total Capacity in MW)	Capacity Addition (MW) X Plan (2002-07) & XI Plan (2007-12)
A	**Commissioned Projects**	
1.	Simhadri (Coal), A.P. (1000)	500
2.	Talcher-II (Coal), Orissa (2000)	2000
3.	Ramagundam-III (Coal), A.P. (500)	500
4.	Rihand-II (Coal), U.P. (1000)	1000
5.	Unchahar-III (Coal), U.P. (210)	210
6.	Vindhyachal-III (Coal), M.P. Unit-1 (500)	500
	Total Commissioned (A)	**4710***
B	**Ongoing Projects**	
1.	Vindhyachal-III (Coal), M.P. Unit 2 (500)	500
2.	Kahalgaon-II Phase-I (Coal), Bihar (1000)	1000
3.	Kahalgaon-II Phase-II (Coal), Bihar (500)	500
4.	Sipat-II (Coal), Chhattisgarh (1000)	1000
5.	Sipat-I (Coal), Chhattisgarh (1980)	1980
6.	Koldam (Hydro), H.P. (800)	800
7.	Barh (Coal), Bihar (1980)	1980
8.	Bhilai Exp. (Coal), Chhattisgarh (JV) (500)	500
9.	Korba-III (Coal), Chhattisgarh (500)	500
10.	NCTPP-II, Dadri, Uttar Pradesh (980)	980
11.	Farakka-III (Coal), West Bengal (500)	500
12.	Loharinag Pala (hydro), Uttaranchal (600)	600
13.	Tapovan Vishnugad (Hydro), Uttaranchal (520)	520
	Total Ongoing Projects (B)	**11360**
C	**New Projects**	
I	**Projects for which Main Plant Bids have been received/invited**	
1.	Simhadri-II (Coal), Andhra Pradesh (1000)	1000
2.	Ennore (Coal), Tamil Nadu (JV) (1000)	1000
3.	Aravali STPP, Jhajjar (Coal), Haryana (1500)	1500
4.	Badarpur TPS Exp. (Coal), Delhi (100)	1000
5.	Barh-II (Coal), Bihar (1320)	1320
6	North Karanpura (Coal), Jharkhand (1980)	1320
7.	Kawas-II (Gas), Gujarat (1300)	1300
8.	Gandhar-II (Gas), Gujarat (1300)	1300
	New Projects Sub-total-I	**9740**
II	**Projects for which FRs have been prepared and clearances/ approvals are in progress**	
1.	Nabinagar (Coal), Bihar (JV) (1000)	750
2.	Bongaigaon (Coal), Assam (750)	750
3.	Mauda (Coal), Maharashtra (1000)	1000
	New Projects Sub-total-II	**2500**
	New Projects Total (C)	**12240**
	Grand Total (A+B+C)	**28310**

*4710 MW already commissioned.

Note: JV – Joint Venture

Further, Lata Tapovan (Hydro), Uttaranchal (171 MW) and Rammam-III (Hydro), West Bengal (120 MW) to be implemented through NTPC Hydro Ltd. (a wholly owned subsidiary of NTPC). RGCCPP-II (RLNG), Kerala (1950 MW) to be taken up after tie up/signing of Gas supply agreement.

8.2 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. Grouting and 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 liners has taken off.

Loharinag Pala HEPP (4X150 MW) : Investment approval has been accorded for the project in June'06. Work packages of Head Race Tunnel (HRT), Power House and penstock, Construction of barrage and de-silting chamber have been awarded. Packages for Electro Mechanical works and Hydro Mechanical works are under the process of tendering and award. Majority of land required for the project has been acquired. Construction of adit for Head Race Tunnel and approach roads are in progress.

Tapovan Vishnugad HEPP (4X130 MW) : Investment approval has been accorded for the project in Nov'06. Construction of approach roads to power house and barrage has been done. Work for head Race Tunnel has been awarded in Nov'06. Barrage and De-silting Package awarded in Jan'07 Packages of barrage and desilting chamber, underground power house and penstock, electro mechanical works and hydro mechanical works are in the process of tendering and award.

Rupsiabagar Khasiabara HEPP (260 MW) : Site specific studies and investigations are in progress for preparation of DPR which is targeted to be completed by Oct'2007.

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.

8.3 Coal Mining and Coal Washery

8.3.1 Coal Mining

(A) Allotment of Coal Mining Blocks

NTPC has been allotted the following five coal mining blocks by Ministry of Coal.

Sl.	Name of the Coal Blocks	State	Geological Reserves (MT)	Est. Mineable Reserves (MT)	Est. Ultimate Capacity (MTPA)
01	Pakri-Barwadih	Jharkhand	1436	760	15
02	Chatti-Bariatu	Jharkhand	243	150	5
03	Kerandari	Jharkhand	228	150	5
04	Dulanga	Orissa	260	150	5
05	Talaipalli	Chhatisgarh	965	600	15

In addition to the above, five coal mining blocks, Ministry of Coal has also identified Brahmini and Chichro Patsimal coal blocks (in the State of Jharkhand), to be operated by a 50:50 joint venture between CIL and NTPC.

(B) Development of Coal Mining Blocks

NTPC plans to develop these seven coal mine blocks including two blocks in a JV with CIL so as to reach an aggregated production capacity of around 14 MTPA by 2011-12 and 47 MTPA by 2016-17.

Pakri-Barwadih Coal Block

Mining Plan for 15 MTPA has been apprvoed by Ministry of Coal on 25th August, 2006. It is the largest-ever capacity planned in a single mine in the country in its very first phase.

A 'Mine Developer-cum-Operator (MDO)' will be appointed for which NTPC has already initiated the tendering process. Bidders, qualified in 'Request for

NPTC Talcher (3000 MW) - the largest power station of the country

Qualification (RFQ)' stage, have been issued with 'Request for Proposal (RFP)' documents.

Application for Section 7 notification under CBA Act submitted to Ministry of Coal

Other Coal Mine Blocks

NTPC has engaged M/s. MECL for execution of detailed exploration and preparation of Geological Report (GR) for Talaipalli and Dulanga Coal Blocks, which were only regionally explored. Drilling is underway in these coal blocks.

NTPC has already initiated action for land acquisition in these blocks. Applications for Notification under Section 4(i) for the following Blocks has been submitted on 14th July 2006. Notification is awaited from MoC.

(C) Joint Venture with CIL

MOU for formation of JV with Coal India Ltd. had been finalized and forwarded to CIL.

(D) Joint Venture with SCCL

NTPC has entered into a MoU with M/s.SCCL on 23.08.2006 for formation of a Joint Venture Company for undertaking the development and O&M of coal blocks in India and abroad.

8.3.2 Coal Washery

NTPC have floated NIT for selection of 'Build-Own-Operate (BOO)' agency for its Talcher Coal Washery of 2.5 MTPA Capacity.

8.4 JOINT VENTURES

8.4.1 NTPC-SAIL Power Company Private Limited

BESCL (Bhilai Electric Supply Company Private Limited) – Joint Venture company of NTPC and SAIL) operating and maintaining the CPP-II (74 MW) of Bhilai Steel Plant has been merged with NSPCL (NTPC-SAIL Power Company Private Limited) – another Joint Venture of NTPC and SAIL, operating and maintaining the Captive Power Plants (CPP-II) of Durgapur and Rourkela Steel Plants

(120 MW each), with effect from 11.09.2006. Combined Gross income of the company for the year 2005-06 was Rs.189.3 crore and combined profit after tax was Rs.30.03 crore. The company is also implementing 500 MW (2x250 MW) expansion of Bhilai Captive Power project.

8.4.2 NTPC Alstom Power Services Limited

NTPC Alstom Power Services Limited (NASL) was incorporated for taking up Renovation & Modernisation (R&M) assignments of power plants in India and abroad. The Company was registered on 27.09.99 and formally launched on 15.02.2000. NTPC holds 50% equity in NASL. Turnover for the year 2005-06 was Rs. 73.0 crore and profit after tax was Rs. 3.1 crore.

8.4.3 Utility Powertech Limited

Utility Powertech Limited (UPL) (a Joint Venture Company of NTPC and Reliance Energy) has been taking up assignments of construction, erection and project management in power and other sectors. Profit after tax of the JVC for the year 2005-06 was Rs.6.1 crores and the turnover was Rs. 147.8 crores.

8.4.4 PTC India Ltd : A JV company for trading of power has been formed with 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.

8.4.5 NTPC Tamil Nadu Energy Company Limited (NTECL).

NTPC and TNEB have formed a 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, at Ennore, using Ennore Port infrastructure facilities. Joint Venture Agreement was signed between NTPC and TNEB on 23rd January 2006. Various site specific studies have been completed and JV Board approved Feasibility Report for the project in its meeting held on 17.08.2006.

8.4.6 Ratnagiri Gas and Power Private Limited (RGPPL)

Ratnagiri Gas and Power Supply Pvt. Ltd. has been formed as joint venture 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 started from one of three blocks on 30.4.2006.

8.5 SUBSIDIARIES COMPANIES

8.5.1 NTPC Vidyut Vyapar Nigam Limited (NVVN)

NTPC Vidyut Vyapar Nigam Limited (NVVN) was incorporated as a wholly owned subsidiary of NTPC on 01.11.2002 for trading in power. NVVN transacted business with 18 state utilities spread all over the country and traded 1643 MUs of power in 2005-06. Turnover for the year 2005-06 was Rs.444.1 crores and the profit after tax was Rs.3.3 crores. NVVN is also engaged in facilitating development of power exchange in India.

8.5.2 NTPC Electric Supply Company Ltd. (NESCL)

A wholly owned Subsidiary Company for Distribution Business named NTPC Electric Supply Company Ltd. (NESCL) has been formed in August, 2002. NESCL has been undertaking the activities as Advisor-cum-consultant under the "Accelerated Power Development Reforms Program" (APDRP) an initiative taken by "Ministry of Power" (MOP) for power development reforms.

Upon merging of "Accelerated Rural Electrification Program" (AREP) of MOP of rural electrification under the name Rajeev Gandhi Grameen Vidyutikaran Yojana (RGGVY), NTPC has also been asked to carry out rural electrification works in the state of West Bengal, Chhattisgarh, Jharkhand, Madhya Pradesh, Orrisa and Union Territory of Lakshdweep for which quadripartite agreement has been signed between REC, NTPC, respective state governmetn and state utilities. Under a supplementary agreement NESCL has been assigned to take up these works on behalf of NTPC. As per agreement NESCL will executing turnkey works in Kharagpur Block-I & II of Midnapore district of West Bengal, five districts of Chhattisgarh, eight districts of Jharkhand, twelve districts of Orissa, four districts of Madhya Pradesh and one district of Union Territory Lakshdweep. All the envisaged thirty one Detailed Project Report (DPR) of districts have been prepared and submitted to REC. Turnover of

the company for the year 2005-06 is Rs. 9.2 crores and the profit after tax of the company for the year is Rs. 0.45 crores.

8.5.3 NTPC Hydro Ltd. (NHL) : NTPC has formed a wholly owned subsidiary company with an objective to develop small and medium hydro electric power projects up to 250MW capacities. Presently, company is implementing two projects namely, Lata-Tapovan Hydro Electric Project (171 MW capacity) in the state of Uttaranchal and Rammam Hydro Electric Project, Stage-III (120 MW capacity) in the state of West Bengal. Central Electricity Authority (CEA) have already accorded the techno-economic clearances for both the projects. Further, balance statutory clearances are being obtained and parallely implementation activities for these projects have been initiated. Both the projects are scheduled to be commissioned by end of XI Plan.

8.5.4 Vaishali Power Generating Company Limited : An MOU was signed on 26th June, 2006 to take over Muzaffarpur Thermal Power Station (2x110 MW) at Kanti for Restoration, R&M, O&M through a JV of NTPC & BSEB i.e. "Vaishali Power Generating Company Limited".

8.5.5 Pipavav Power Development Company Ltd. : 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 Govt. of Gujarat have conveyed their decision to develop this project in collaboration with another strategic partner.

9.0 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 31.01.2007, 337 applications have been received and replied.

10.0 RISK MANAGEMENT POLICY

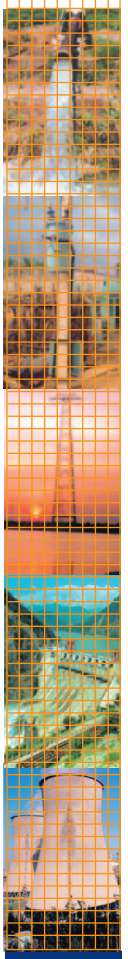
Since inception of NTPC, the company is having systems and practices which have helped in identifying risk and taking measures to mitigate those risks. As a further step towards institutionalising this system the company has now put in place a risk management policy. As an initial step, the policy has identified risks being faced by the company, the short term as well as long term measures to mitigate those risks and also a reporting system. The company is also in the process of putting a risk management tool across the company which would enable smooth implementation of the risk management policy and integrate the same at all working levels.

11.0 CONSULTANCY SERVICES

During the Current year (2006-07) upto Jan.'07 the consultancy wing has so far secured orders from Domestic Client worth Rs. 93.73 Crores. This includes assignment from DVC for Engineering consultancy for their 2x500 MW Koderma TPS, Project Management services for Haldia Refinery of Indian Oil Corporation, Post award services for 2x250 MW Harduaganj Extension & Parichha extension and Owner's Engineer Services for 2x500 MW Anpara-D TPS of UPRVUNL, Development of Computerized Integrated Plant management systems of Panipat of TPS and Finance & Accounting systems at other locations at Haryana Power Generation Corporation and Post award services for setting up 1000MW Pragati-III CCPP from Pragati Power Corporation Ltd. Also agreement signed with TNEB for Ennore TPS (Unit-1&2 of 60 MW and Unit-3,4&5 of 110 MW) and with UPRVUNL for Parichha TPS (Unit-1&2 of 110 MW) under "Partnership in Excellence" for improving the performance of their power plants under Accelerated Generation & Supply Programme (AG&SP) of Ministry of Power.

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 also secured orders from International Clients. This includes a order worth Rs. 3 crore for providing Energy Audit Services for Saudi Electricity Company(SEC), for Saudi Arabia Plants apart from assignment from Kenya and Nigeria.



NTPC has signed a Memorandum of Agreement with Govt. of Sri Lanka and Ceylon Electricity Board for development of a 2 x 250 MW Coal based power project at Trincomalee in Sri Lanka on 29th December, 2006. The project would be developed through a joint venture company between NTPC and Ceylon Electricity Board. A NTPC team visitied Sri Lanka from 22-25 Jan.'07 to carry out site selection studies to finalize a suitable site for the power plant.

NTPC is also exploring the similar business opportunity in Nigeria for sourcing of LNG. Regarding Nigeria, pursuant to presentation made to President of Nigeria and receipt of clearance from MOP, a broad proposal of cooperation with Nigeria involving providing Consultancy services and setting up of Coal and Gas based power plant in Nigeria in lieu of allocation of LNG/Gas for export to India was submitted to Govt. of Nigeria. Govt. of Nigeria has responded to the same and has forwarded a draft MOU which has been discussed in the meeting of the committee constituted by GoI on 29th Jan.'07. Comments on the draft MOU have been sent to Nigerian side after leval vetting received from MEA.

12.0 HUMAN RESOURCES

There were 24044 number of employees on the rolls of the company in fiscal year 2006 with Man/MW ratio at 0.91. The success of human resource initiatives of the company is reflected in the low attrition rate of 0.41% for the executives of the company. NTPC has ranked fifth among the top ten "Best companies to work for in India" by Mercer HR Consulting-Business Today Survey 2005 and the 3rd "Great Place to work for in India" by a reputed Human Resources consultant Grow Talent and Business World.

To achieve the ambitious growth targets, the company has evolved a Leadership Assessment and Development system for identifying potential leaders for strengthening the succession planning process. For this purpose the company has partnered Ernst & Young, one of the leading international HR consulting firm and has developed a comprehensive Leadership Competency Model.

Training and Development

Continual training and upgradation of skills of its employees is an area of special focus of the company. The Power Management Institute (PMI) located at NOIDA near Delhi is the company's apex training and development centre providing planned as well as need-based programmes in technical, managerial and information technology areas. Employees of other companies in the power sector too participate in the training programs conducted by the institute.

In addition NTPC has 15 specialized Training centers at NTPC Power stations. Two simulator training centers – one for coal based units at Korba and another for Gas based units have been set up. NTPC has also tied up with renowned institutions such as IIT, Delhi, BITS Pilani and MDI, Gurgaon for specialized programs/training for its employees.

13.0 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 Anta-II, Koldam, Sipat and Barh project are in progress. Formulation of Rehabilitation Action Plan for North Karanpura and additional ash dyke for Talcher-Thermal, Unchahar Stage-III and coal mining project at Pakri-Barwadih project is under progress. A negotiated settlement with respect to R&R entitlements have also been arrived at for Hydro projects in Uttranchal viz. Loharinag Pala and Tapovan Vishnugad projects. Formulation of Community Development Plans for Loharinag Pala and Tapovan-Vishnugad projects is under progress.

Socio-economic Survey (SES) for ash dyke at Korba Stage-III and coal mines at Pakri-Barwadih, Chatti-Bariatu, and Kerandari projects is under progress. Socio-economic Studies are also being initiated for lands being acquired for expansion projects at Dadri, as also for other mining blocks viz. Talaipalli and Dulanga projects.

Further, Social Impact Evaluation (SIE) for Simhadri and Sipat projects where R&R activities have been completed is under progress to evaluate the impact of R&R activities undertaken by NTPC.

Implementation of Rehabilitation Action Plan for Sipat Project will be completed by March, 2007.

14.0 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 has committed for a grant of Rs. 22.5 million to Hyderabad Eye Research Foundation for three specialized Eye Centers at Bhubneswar Eye Hospital, Bhubneswar, Orissa. Further in the field of education, NTPC is committed to provide support for setting up two technical polytechnic at Uattaranchal, at Kaladungi, Dist. Nainital and a Women's Polytechnic at Gopeshwar, Dist. Chamoli for a tentative cost of Rs.150 million each.

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.

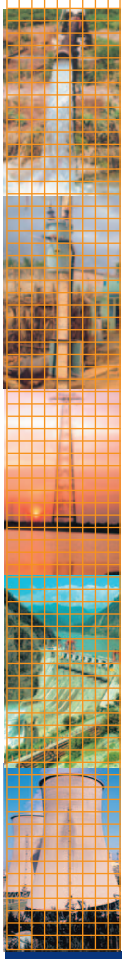
NTPC's efforts in the area of CSR have been recognized and appreciated. At international level, NTPC was honoured with the prestigious Golden Peacock Global Award on CSR by World Council for Corporate Governance (WCCG) at Portugal in 2007 and Global award for CSR by Platts – BusinessWeek at USA in 2005. At national level, NTPC was conferred the Golden Peacock Award for CSR by IOD and Corporate Social Responsibility Award by BSR in 2006.

15.0 ISO Certification : NTPC's pursuit for excellence with good system orientation has resulted in Engineering Division, Operation Services Division, Contracts & Materials Division, Consultancy Wing, Corporate Commercial, Corporate HR, EMG & Ash Utilisation, Noida Services Group and the Power Management Institute (PMI) achieving ISO-9001 certification. All Stations of NTPC have been accredited with ISO-9002 certification and all stations of NTPC (including Badarpur) have implemented ISO-14001 certified Environment Management Systems (EMS). The Corporate Environment and Ash Utilisation Division has also achieved ISO-14001 Certification.

16.0 ENERGY CONSERVATION

For exploiting the energy conservation potentials in different forms of energy being consumed in the operation of power plants, NTPC is concentrating on saving of different forms of energy by constant monitoring and adopting latest technology-upgradations. Continuing with the systems adopted earlier, NTPC established a dedicated group Centre for Energy Efficient Technology & Energy Management (CEETEM) at Corporate Centre and Energy Efficiency Management Groups (EEMG) group at each site, during 2004, to coordinate all the energy conservation activities. During 2005-06, 103 nos. of in-house energy audits in NTPC power projects have been conducted. As against the target saving of Rs. 30 crores during 2005-06, NTPC could achieve savings worth Rs. 35 crores due to different energy conservation efforts. During 2006-07, upto Nov. 2006, 70 in-house energy audits have been completed and 34 more energy audits are planned to be carried out by March, 2007. The annual target savings due to different energy conservation efforts in NTPC during 2006-07 is Rs. 37 crores.

Looking at the track record of NTPC, particularly in the field of energy audits, Bureau of Energy Efficiency/ Ministry of Power appointed NTPC as an accredited agency for energy audit under Energy Conservation Act-2001. To further strengthen the energy conservation activities in the power sector in India, NTPC took up 4 energy audits of APGENCO in 2006-07 up to Nov. 2006 and plans to carry out the energy audit of one more power plant of APGENCO. Looking at the credentials of NTPC in carrying out the energy audits in India, at the international level Saudi Electricity Company of Kingdom of Saudi Arabia has also entrusted the job of energy audit of its 15 power plants to NTPC. This job is proposed to be taken up



Singrauli 2000 MW Flagship Power Station of NTPC

from Jan. 2007 onwards. NTPC has also submitted a number of other bids for conducting energy audits of external utilities.

17.0 RESEARCH & DEVELOPMENT

NTPC's R&D Centre continued to provide necessary scientific services to all the power stations to improve the availability through regular health & life assessment studies of coal & gas based stations, condition monitoring of different equipment, corrosion control studies, Failure analysis, etc. Indian Institute of Science, Bangalore has been appointed as Consultants for up-gradation of R&D Centre and they have started the work.

All the four projects identified under MOU with GOI for 2006-07 are progressing well and will be completed in time.

R&D is developing software for on-line turbine blade damage detection & shaft crack detection to reduce the maintenance cost and prevent catastrophic damage to turbo-generator along with BARC.

- RSOP Project of MOP through CPRI on "Ways & Means of determining and controlling Colloidal Silica in raw & DM water" has been successfully completed. A methodology is being developed for ascertaining the health of CPU resins by measuring the kinetics of resin using Resin Kinetic tester.
- R&D is carrying out studies on blending and right mix of Imported coal with Indian coal for optimal performance and cost economy. National Boiler Board has made an assessment of expertise and facilities for carrying out Remnant Life Assessment (RLA) of High Pressure Boiler and other components and has certified R&D as RLA Organization for the next five years.

18.0 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: The company has set up an Energy Technologies Centre with a mandate of being a world class Research Institute. The Centre will work in both fundamental and applied research with ultimate objective of developing the technologies both within and outside India. The centre would develop technologies through collaborative research with best of the R&D and academic institutions in India.

19.0 ENVIRONMENT MANAGEMENT

NTPC has adopted state-of-the-art technologies for all its power stations to control and maintain environmental parameters within prescribed norms and has also been taking various pro-active steps to continually improve environmental performance of its stations.

NTPC stations have also been taking up important scientific studies in the field of environment. During the year, the following important Environmental Studies were completed /nearly completed :

i) Study on solid waste management and hazardous waste management carried out at Auraiya Gas Power Project suggested methods to identify and categorize the solid wastes and hazardous wastes generated from its premises and has helped in handling, treatment and disposal of the wastes in an environmentally sound manner.

ii) Human health risk assessment study has been taken up at Rajiv Gandhi Combined Cycle Power Project, Kayamkulam and the study is near completion. The observations revealed no adverse findings.

iii) Study on water balance and conservation was conducted at Korba to study savings in water consumption on account of various recirculation systems provided.

As a result of pursuing sound environment management systems and practices, all NTPC stations have been certified with ISO - 14001 by reputed National and International certifying agencies. NTPC has been conferred the prestigious "Golden Peacock Environment Management Award" for the year 2006 in "Corporate Category" by the World Environment Foundation for significant contribution made in the area of Environment Management.

20.0 SAFETY

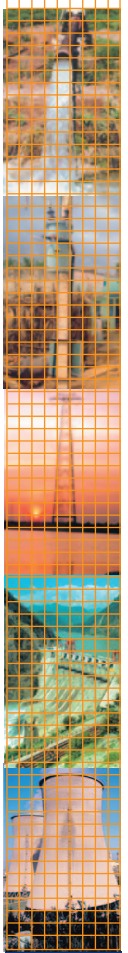
The protection of workers against injury and disease has always been a key issue for the NTPC and Occupational Safety at workplace is one of the concerns & utmost importance is given to provide the safe working environment and create Safety awareness among the employees.

Workers Participation in Safety Management is promoted through Safety Committees, Safety Circles, Safety Taskforces and Safety Stewards Schemes. Disaster Management Plans are reviewed and regular mock drills are conducted at all the projects/stations to familiarize the employees and to meet any emergency.

Koldam has received the National Safety Council of India Golden Safety Award for the year 2005 under Building and Other Construction Works category. NTPC Ramagundam, Kahalgaon, Korba and Dadri have received "Safety Initiative Award 2006" for implementing innovative Safety and Quality Procedures and Practices. The award is instituted by the Safety and quality forum of Institution of Engineers (India).Auraiya has received Two Government of India National Safety Awards, for outstanding performance in industrial Safety during the Award year 2005 in achieving "Lowest average frequency rate" and "Accident free year".

21.0 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 Shram Awards and Safety Awards. NTPC



has been recipient of various other awards also. Major awards and rankings received during 2006-07 are :

- 'SCOPE Meritorious Award' for Best Practices in Human Resource Management by SCOPE.
- 'The 4th Wartsila-Mantosh Sondhi Award' instituted by Wartsila Corporation to NTPC in 2006 to recognize leaders who have made significant contribution to power sector.
- 'Sustainability Awards 2006' by CII-ITC Centre for Sustainable Development – NTPC has received Commendation certificate for strong commitment among large Business Organisation in social, economic and environmental performance.
- "Asian Power Plant of the Year Award 2006" to FG Unchahar Power Project, awarded on attributes of Efficiency, Environment, Operational Characteristics and Business Management.
- 'Golden Peacock Environment Management Award' to NTPC Corporate Environment Management by World Environment Foundation.
- NTPC has been ranked 1st as per total income in the Power Generation, Transmission, Distribution sector for the year 2006 edition of "India's Top 500 Companies" by Dun & Bradstreet.
- NTPC has been awarded as "Most Admired Organization in the Central Sector" based on a survey conducted by Powerline in 2006 wherein nearly 600 experts from the sector have participated.
- NTPC won the Golden Peacock Global Award for Cororate Social Responsibility in the Category Emerging Economies (Public Sector) - 2007 at the 2nd Global Conference on Social Responsibility in Vilamoura, Portugal.

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	2760*
6.	Rihand-I & II	UP	2000
7.	Kahalgaon-I	Bihar	840
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
	Total (Coal)		**21395**

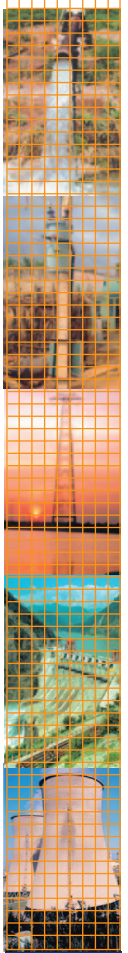
* Another 500 MW of Stage-III is under construction.

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	State	Installed Capacity (MW)
1.	Rourkela	Orissa	120
2.	Durgapur	West Bengal	120
3.	Bhilai	Chhattisgarh	74
4.	RGPPL	Maharashtra	740
	Total (JV)		**1054**
GRAND TOTAL (Coal + Gas + Hydro)			**26404**




POWER BEHIND POWER – HYDRO POWER

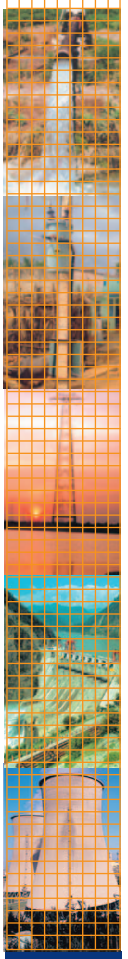
CHAPTER – 22.2

NATIONAL HYDROELECTRIC POWER CORPORATION LTD.

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 with an investment base of more than Rs.24,000 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, such as, transmission, distribution 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 Pardhan Mantri Gram Sadak Yojana-100% Centrally sponsored Scheme. Works are in progress on these schemes.

The Corporation has so far completed 14 hydroelectric projects as under:

S. No.	Name of the Power Stations owned by NHPC	State/UT/ Country	Installed Capacity In (MW)	Year of Completion
1.	BAIRASIUL	H.P.	180	1981
2.	LOKTAK	Manipur	105	1983
3.	SALAL STAGE-I	J&K	345	1987
4.	TANAKPUR	Uttaranchal	120	1992
5.	CHAMERA-I	H.P.	540	1994
6.	SALAL STAGE-II	J&K	345	1995
7	URI	J&K	480	1997
8.	RANGIT	Sikkim	60	2000
9.	CHAMERA-II	H.P.	300	2004
10.	DHAULIGANGA	Uttaranchal	280	2005
PROJECT IN JOINT VENTURE				
11.	INDIRA SAGAR	M.P.	1000	2004
DEPOSIT WORK/TURNKEY BASIS				
12.	DEVIGHAT	Nepal	14.1	1984
13.	KALPONG	A&N Islands	5.25	2001
14.	KURICHU	Bhutan	60	2002



NHPC has generated 10496 MUs upto 30.11.2006 and is likely to generate 1837 MUs from remaining part of financial year 2006-07(i.e. December, 2006 to March, 2007) as indicated below:

GENERATION FROM NHPC POWER STATIONS

Name of Power Station	Installed capacity (MW)	Generation upto November, 2006	Likely to be generated in balance period i.e. December, 2006 to March, 2007	Total expected generation during 2006-07
BAIRASIUL	180	529.14	114.95	644.09
LOKTAK #	105	377.65	114.95	492.60
SALAL	690	2839.46	319.20	3158.66
TANAKPUR	94.2	371.29	67.73	439.02
CHAMERA-I	540	1928.22	198.55	2126.77
URI	480	2107.33	523.45	2630.78
RANGIT	60	133.38	52.25	185.63
CHAMERA-II	300	1230.84	221.35	1452.19
DHAULIGANGA	280	978.65	125.40	1104.05
DULHASTI *	390		98.95	98.95
TOTAL	**3014.2**	**10495.96**	**1836.78**	**12332.74**

Derating of the Loktak Power station from 105 MW to 90 MW v as per CEA letter.
* The date of commercial operation (COD) of the Dulhasti Project has been taken as Feb'2007.

Capacity Index of NHPC Power Stations (Figures in %)

Name of Power Station	Capacity Index upto November'06	Likely capacity indeed in balance period i.e Dec'06-Mar,07	Total expected capacity index during 2006-07
BAIRASIUL	95.41	89.81	93.55
LOKTAK #	93.14	82.37	89.57
SALAL	97.40	95.93	96.91
TANAKPUR	99.87	84.04	94.62
CHAMERA-I	96.18	82.85	91.76
URI	98.18	96.20	97.52
RANGIT	54.03	90.91	66.26
CHAMERA-II	96.31	85.12	92.60
DHAULIGANGA	82.90	85.74	83.84
DULHASTI *		80.00	80.00
TOTAL	**94.53**	**89.11**	**92.65**

PROJECTS UNDER CONSTRUCTION

The Corporation is presently engaged in the construction of the following hydro project.

Sl. No.	Name of Power Station	State	Capacity (MW)
1.	Dulhasti	Jammu & Kashmir	390
2.	Teesta-V	Sikkim	510
3.	Parbati-II	Himachal Pradesh	800
4.	Sewa-II	Jammu & Kashmir	120
5.	Teesta Low Dam-III	West Bangal	132
6.	Subansiri Lower	Arunachal Pradesh	2000
7.	Uri-II	Jammu & Kashmir	240
8.	Chamera-III	Himachal Pradesh	231
9.	Parbati-III	Himachal Pradesh	520
10.	Teesta Low Dam-IV	West Bengal	160
11.	Nimoo Bazgo	Jammu & Kashmir	45
12.	Chutak	Jammu & Kashmir	45
13.	Kotli Bhel-1A	Uttranchal	195
14.	Kotli Bhel-1B	Uttranchal	320
PROJECT IN JOINT VENUTRE			
15.	Omkreshwar	Madhya Pradesh	520
Total			**5712**

The Status of On Going projects is given below:

1. Dulhasti HE Project (390 MW), J&K

All Civil works completed except HRT grouting and finishing works , which are under progress. All other works except HRT have already been completed. The Project is expected to be commissioned within 10th Five Year Plan.

2. Teesta HE Project Stage-V (510 MW), Sikkim

Dam concreting and HRT heading excavation completed. 92.70% benching, 85.47% overt lining and 27.50% Invert lining of Head Race Tunnel (HRT) completed. Excavation and lining of Desilting Chambers, erection of steel liners in Pressure Shafts/ Penstocks are in progress. Civil works of Power House and TRT have been completed. Assembly of all the 3 generating units completed. Project is expected to be completed by Jan. 08.

3. Teesta Low Dam Project, Stage-III (132 MW), West Bengal.

Excavation of Intake structure (79.15%), Barrage block III to VII, Cellular Wall, Penstocks (97.50%), Power House & Tail race Channel (61%) have been completed. Concreting of Intake structure (61%), Barrage (61.33%), Power House (8%) & Cellular Wall (63.50%) have been completed. The project is expected to be commissioned by Sept. 2008.

4. Sewa HE Project Stage-II (120 MW), J & K

So far 6494 m (65.12%) HRT excavation and 46864 cum (36%) Dam Concreting has been completed. Excavation of Surge Shaft, Pressure Shaft and Power House has been completed, PH concreting is in progress. E&M and HM works are in progress. The project is expected to be commissioned by December 2008.

520 MW Parbati Hydroelectric Project Stage-III (HP) - Diversion Tunnel under construction

5. Parbati HE Project, Stage-II (800 MW), H.P

Construction activities are going on in full swing and Dam excavation has been completed. 56333cum (30%) Dam concreting including Intake structure is completed so far. Excavation of about 23 Km (73%) long HRT out of 31.5 Km has been completed. Excavation of both the inclined Pressure Shaft having 1546m length have been completed. Excavation of Power House has also been completed and concreting is in progress. The project is scheduled to be commissioned by September 2009.

6. Teesta Low Dam Project, Stage-IV (160 MW), West Bengal

Investment approval has been accorded on 30.9.05 with commissioning date as Sept.2009. Final MOEF clearance accorded only on 30.3.2006. After that 43.06 Ha Land of right bank handed over on 20.04.2006 and 76.08 Ha Land of left bank handed over on 28.04.2006. All the major civil works were awarded to M/S H.C.C Limited on 19.01.2006 and infrastructure work started at site .Excavation for 1st stage diversion channel has been started on 05.06.2006 and is in progress. Contracts for E&M and HM works are in the process for award.

7. 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 awarded to M/s HCC Ltd. Diversion Tunnel has been daylighted. Dam and Open Channel excavation is in progress. Excavation of adit-1 & 3 completed and HRT excavation started from these adits. Excavation at other adits is in progress. Contracts for E&M and HM works are in the process for award.

8. Chamera 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. Most of the Equipments have been mobilized by contractor. Diversion Tunnel has been daylighted in Oct.'06. The excavation of adit-3, 4 & 5 has been completed. Excavation of HRT is in progress. Contracts for E&M and HM works are in the process for award.

9. 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. Mobilisation and infrastructure development is in progress. Open channel excavation started on 14.10.06 and is in progress. Contracts for E&M and HM works are in the process for award.

10. Subansiri (Lower) HE Project (2000 MW) Arunachal Pradesh

Subansiri Lower was entrusted to NHPC on 1st May 2000 by Govt. and investment approval has been accorded on 9th Sept. 2003 with completion period of 7 years. Major civil works have been awarded. Final forest clearance was accorded by MOEF on 12.10.2004.So far 2619m (89%) heading excavation of Diversion Tunnels completed. Stripping of Dam abutment & HRT excavation are in progress. 298757 cum (57%) of Surge Chamber open excavation and 2217527 cum (72%) are completed. The project is expected to be commissioned by Sept. 2010.

11. Parbati HE Project, Stage-III (520MW), H.P.

Investment approval has been accorded on 9.11.2005 with commissioning date of Nov.2010. All Major civil works awarded to M/s Patel-L&T consortium and M/s Jager-Gammon JV. Both the Diversion Tunnels have been daylighted. Excavation of adit-1 & HRT from face-1 completed. Excavation at other adits is in progress. Excavation of Rock Fill Dam started and 15% completed so far. 47% of Main Access Tunnel excavation completed. Contracts for E&M and HM works are in the process for award.

12. 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 awarded to M/s H.C.C Ltd. on 23.9.06. Mobilisation and infrastructure development is in progress. Diversion channel work has been started. Approach road to surge shaft bottom completed. Portal excavation of MAT in Progress. Contracts for E&M and HM works are in the process for award.

13. Omkareshwer HE Project (520 MW), Madhya Pradesh

Investment approval has been accorded on 29.05.2003 and work on turnkey basis was awarded to M/s Jai Prakash – Voith Simens Consortium, New Delhi on 09.06.2003. Excavation of Power House, Penstock, Power Dam and Intake has been completed. Dam concreting, excavation of Head Race Channel, Tail Race Channel & Switchyard is in progress. E&M and HM works are in progress. Project is expected to be completed by Feb.2008.

280 MW Dhauliganga Power Station (Uttranchal) - Dam

PROJECTS UNDER GOVT. CLEARANCE

S. No.	Name of the Project	State/ UT/Country	Installed Capacity(MW)
1.	Loktak Down Stream	Manipur	66
2.	Kishan Ganga	Jammu & Kashmir	330
3.	Pakal Dul	Jammu & Kashmir	1000
4.	Kotli Bhel-1A	Uttranchal	195
5.	Kotli Bhel-1B	Uttranchal	320
6.	Kotli Bhel-II	Uttranchal	530
7.	Dibang	Arunachal Pradesh	3000
8.	Lakhwar Vyasi	Uttranchal	420
Total			**5861**

Brief Status of Projects under Govt. Clearance

Loktak Downstream (90 MW) Manipur

The project was sanctioned on 30.12.199 but no work could be taken up for execution due to Law and order situation in the State. The project is being processed for execution in Joint Venture with Govt. of Manipur. A draft MoU for implementation of the project (to be signed between NHPC and Government of Manipur) has been prepared and submitted to MoP on 08.11.06 for accord of approval. TEC for the revised proposal has been accorded by CEA on 15.11.06. PIB in its meeting held on 23.11.06 has recommended the project for approval of CCEA. Minutes of meeting is awaited.

Kishan-ganga (330 MW), J&K

Techno Economic Appraisal issued by CEA vide letter dated 31.08.05 for the revised proposal. Clearance from Indus Water Treaty Angle & Defence was accorded vide letter dated 050.8.05 & in Aug.1991 respectively. Environmental Clearance accorded by MOEF on 19.04.04 and revised Environment clearance accorded by MOEF on 09.03.06. Forest clearance accorded by J&K State Forest Deptt. Vide letter dated 17.01.05. PIB in its meeting held on 25.07.06 recommended the project for approval of CCEA.

Pakal Dul (1000 MW), J&K

The project has been cleared by MOWR from Indus Water Treaty on 23.03.06. Techno Economic Appraisal has been accorded by CEA on 03.10.06. Forest clearance (311.042 ha) for forest area falling outside the KHANP has been accorded by Govt. of J&K on 16.06.05. The proposal for de reservation of forest land falling under KHANP was discussed in the meeting of Standing Committee of NBWL held on 08.06.06 and after seeking additional information from Wildlife Institute of India, Dehradun, the case was again discussed by the Standing Committee of

NBWL in its meeting held on 14.9.06 and it was decided that Govt. of J&K should propose mitigating measures for the project and approach the Standing Committee again. EIA & EMP studies have been awarded on 14.07.05 and are under finalization.

Kotli Bhel IA (195 MW), Uttaranchal

Implementation Agreement for the project has been signed between NHPC and Govt. of Uttaranchal on 8.6.06. Techno-Economic Clearance (TEC) has been accorded by CEA on 3.10.06. EIA & EMP report has been submitted by the Consultant to NHPC on 31.8.06. The EIA/EMP were submitted to the State Pollution Control Board for conducting Public Hearing. However, Govt. has asked the project to process the case in accordance with EIA notification 2006. MOEF has been requested to clarify the same.

Kotli Bhel IB (320 MW), Uttaranchal

Implementation Agreement for the project has been signed between NHPC and Govt. of Uttranchal on 8.6.06. TEC has been accorded by CEA on 31.10.06. EIA & EMP Studies have been awarded on 24.6.05. EIA & EMP studies have been finalized on 30.10.06.

Kotli Bhel II (530 MW), Uttaranchal

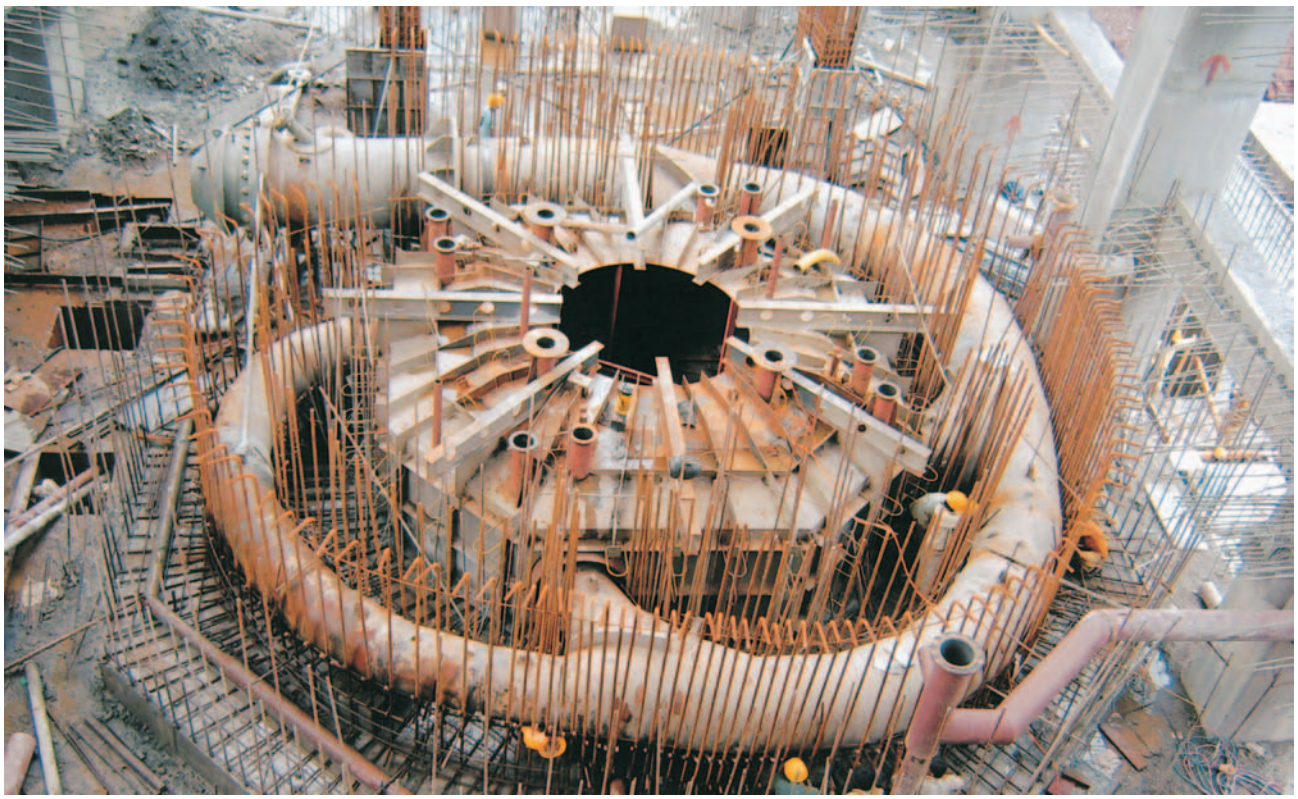
Implementation Agreement for the project has been signed between NHPC and Govt. of Uttaranchal on 8.6.06. DPR has been submitted to CEA on 30.3.06. Techno Economic Clearance (TEC) has been accorded on 30.11.2006. EIA & EMP studies have been awarded.

Dibang Multipurpose (3000 MW), Arunachal Pradesh

DPR has been submitted to CEA on 29.12.05 and CEA has intimated on 27.7.06 that the proposal for TEC of the project is required to be submitted to CEA by JV company and therefore DPR submitted earlier may be treated as returned. NHPC has requested CEA to continue the process for accord of TEC to the project in view of signing of MOU on 21.9.06 between NHPC and Govt. of Arunachal Pradesh for implementation of the project through Joint Venture. Forest clearance proposal has been initiated by the project.

Lakhwar Vyasi (420 MW), Uttaranchal

DPR of Lakhwar Vyasi project has been submitted to CWC on 30.3.06. On advice of MOEF, revised EMP report of Lakhwar Vyasi has been prepared and submitted to MOEF on 13.7.05 for transferring the environmental clearance in favour of NHPC. However, MOEF on has asked NHPC to obtain fresh environment clearance. Inspite of NHPC request to reconsider the case, MOEF vide letter dated 8.12.05 asked NHPC to obtain fresh environment clearance.



120 MW Sewa HE Project (J&K) - Power House under construction

Shri Sushilkumar Shinde, Union Minsiter of Power at the foundation stone laying ceremony of Loktak Downstream Project on 16.12.2006. Seen L to R are Shri R.V. Shahi, Secy. (Power) Shri S.K. Garg, CMD, NHPC, Shri O. Ibobi Singh, CM of Manipur and Shri Santosh Mohan Deb, Minister of State for Heavy Industries and Public Enterprise

PROJECTS UNDER PREPARATION OF DETAILED PROJECT REPORT

Sl. No.	Name of the Project	State	Installed Capacity (MW)
1.	Teesta-IV	Sikkim	495
2.	Bursar	Jammu *& Kashmir	1020
3.	Chungar Chal	Uttaranchal	240
4.	Garba Tawaghat	Uttaranchal	630
5.	Khartoli lumti tulli	Uttaranchal	55
6.	Lachen	Sikkim	210
7.	Ratle	Jammu & Kashmir	560
8.	Kawar	Jammu & Kashmir	320
9.	Shamnot	Jammu & Kashmir	370
10.	Tawang-I	Arunachal Pradesh	750
11	Tawang-II	Arunachal Pradesh	750
	Total		**5400**

EIA study has been awarded vide letter 10.2.06 and draft reports submitted by the consultant. Issue regarding sharing of water among beneficiaries states as per agreement signed in 1994 has been referred to MOWR. Further, MOWR has nominated a Steering Committee to resolve the issue.

On the advice of MOP, NHPC has prepared the DPR of Vyasi project and submitted to CEA on 2.8.06. The presentation on DPR of Vyasi project was made by NHPC in CEA on 20.9.06 and minutes issued by CEA on 4.10.06. EIA & EMP of Vyasi project to be finalized by Dec.06.

Brief Status of Projects under DPR

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.

Bursar (1020 MW) J&K : Site clearance stage-II accorded by MOEF on 14.5.02. Forest clearance (577.2753 ha) for forest land falling outside the KHANP has been accorded by Govt. of J&K vide letter dated 16.6.05. 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 KHANP was discussed in the meeting of Standing Committee of NBWL held on 8.6.06 and after seeking additional information from Wildlife Institute of India(WII), Dehradun, the case was again discussed by the Standing Committee of NBWL in its meeting held on

Shri Sushilkumar Shinde, Hon'ble Union Minister of Power alongwith Shri Narayan Dutt Tiwari, Hon'ble Chief Minister of Uttrakhand, Smt. Amrita Rawat, Minister of Energy, Uttrakhand and other dignitaries after dedicating to the Nation the 280 MW Dhauliganga Power Station of NHPC in Uttrakhand

14.9.06. It was decided by the Committee 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. EIA & EMP studies for the project in J&K has been awarded to CISMHE, University of Delhi vide letter dated 14.07.2005.

Chungar Chal (240 MW) Uttaranchal : Agreement for implementation has been signed with Govt. of Uttaranchal on 21.11.05. Site clearance Stage-I has been accorded on 11.11.05. S & I works for preparation of DPR and Infrastructure works are in progress.

Garba Tawaghat (630 MW) Uttaranchal : Agreement for implementation has been signed with Govt. of Uttaranchal 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 has been desired.

Khartoli Lumti Tulli (55 MW) Uttaranchal: Agreement for implementation has been signed with Govt. of Uttaranchal on 21.11.05. Stage-I site clearance applied by NHPC on 1.02.06 held up by MOEF as the project area falls in ASKOT Musk Deer Sanctuary for which clearance of NBWL has been desired.

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.

Ratle (560 MW) J&K : The consent of J&K State Govt. has been received in 27.10.04 for preparation of DPR only. Stage-I Site clearance obtained on 3.03.05 and DPR is under preparation. EIA/EMP studies were awarded on 4.01.06.

Kawar (320 MW) J&K : The consent of J&K State Govt. has been received in 27.10.04 for preparation of DPR only. Stage-I Site clearance obtained on 28.02.05. EIA/EMP studies were awarded on 04.01.06.

Shamnot (370 MW) J&K : The consent of J&K State Govt. has been received in 27.10.04 for preparation of DPR only. Stage-I Site clearance obtained on 6.6.05. The project has been found unviable. EIA/EMP studies were awarded on 4.01.06.

Tawang-I & II (1500 MW) Arunachal Pradesh : Agreement signed between NHPC and Govt. of Andhra Pradesh on 21.09.06 for implementation. S&I works taken up for preparation of DPR.

Survey & Investigation in respect of above schemes is being carried out for collecting necessary data for preparing DPR.

Apart from the above, the Corporation has under taken following small Hydroelectric Projects for execution.

1. **Kambang Small HE Project (6 MW), Arunachal Pradesh**
2. **Sippi Small HE Project (4 MW), Arunachal Pradesh Development of Geothermal Power**
   NHPC has been the appointed Nodal Agency for exploitation of Geothermal Energy in the country by Ministry of Non-Conventional Energy Sources

(MNES). NHPC have got he ranking studies of geothermal fields in India done through an International Consultant viz, M/s. Geothermex, USA. NHPC is exploring feasibility of installation of Geo-thermal project at quite a few places in the country

COMMERCIAL PERFORMANCE OF THE CORPORATION

During the financial year 2006-07(up to October, 2006), 99% realization has been achieved (Rs.1163.52 Crore realized against the billsraised amounting to Rs.1172.51 Cr. During the FY 2006-07). With all out efforts for realization of energy bills/dues, the current dues now reduced to Rs.29.98 Crore Only as on 31.10.2006 (which is about 0.22 months of average billing) by increased realization. Also, there is no default in getting payment of interest on bonds and long term advances and an amount of interest of Rs.233.62 Crore has been earned up to Oct. 2006.

PERFORMANCE AGAINST MEMORANDUM OF UNDERSTANDING

Memorandum of Understanding was signed for the year 2006-07 between NHPC and Ministry of Power in March 2006 setting targets for different performance parameters as per MOU guidelines issued by Department of Public Enterprises and as approved by TF/DPE during discussions.

The targets can be broadly classified into static financial parameters covering financial performance indicators, financial indicators and financial returns-labour productivity and total factor productivity, dynamic parameters like Quality, HRD (% of manpower to be trained and % investment of gross salary towards training and HRD activity), R&D, Energy audit, project implementation parameters, DPR, ERP and consultancy assignments. Some specific parameters covering parameters like generation, capacity Index and Recovery of Current dues are major parts of performance indicators on a five point scale. NHPC has been rated as "Excellent" for the eleventh consecutive year up to the year 2004-05. NHPC is also expecting "Excellent" rating for the year 2005-06.

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 the leading organizations of the country like A&N administration, BBMB,BHPC,BRO, CEACSEB, CWC, DVC, Govt. of Arunachal Pradesh, Govt. of Bihar, Govt. of Goa, Govt. of Mizoram, Govt. of Nagaland, ICICI, IFC, JKPDC,KPA, KRCL, KSEB, LAHDC, MEA, NHDC, Northern Railway, NTPC, PIDB, PGCIL, REC, SJVNL, THDC, THPA, UJVNL, WBPDCL and other private organizations.

NHPC is also registered with World Bank, Asian Development Bank, African Development Bank and Kuwait Fund for Arab Econimic Development as Consultant. NHPC is also registered with/Central Water Commission and Consultancy Development Centre as a Corporate Member.

NHPC has been appointed "Lender's Independent Engineers" for Baspa-II HE Project(300 MW) in the state of Himachal Pradesh which is being financed by ICICI Ltd.

NHPC has signed MOU with Montgormery Waston Harza Amercia inc., for providing consultancy & management services jointly in the field of Hydro Power in India and abroad. NHPC has also signed MOU with domestic financial institutions like IFCI, UTI Bank REC for providing Consultancy Services and appointment of NHPC as "Lender's Independent Engineers" for hydro projects financed by these institutions.

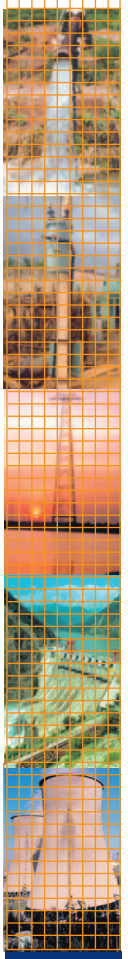
Training Programmes in NHPC

Employees are the most precious asset of an organization and a favourable environment is necessary to encourage creativity, innovation and performance excellence amongst them. A scheme "Transformation NHPC – Sharing of Best Practices" was launched during the year to encourage and reward the creativity and innovation. Amidst the challenges thrown by private players, emphasis has been laid on developing a pool of highly effective managers and great technicians A major reengineering and restructuring exercise is being undertaken to identify strength and weakness, future HR requirements and evolution of a suitable organizational structure for the Corporation.

The core areas identified for training to augment the competencies of employees are Managing Self. Groups, Organization, Carrier Building, Organizational Development, Productivity enhancement, Functional / Technical Upgradation and Information Technology Skill Upgraadation. In the year 2005-06, we conducted 616 training programmes in which 6449 employees of various levels were trained. In the first six months of 2006-07, we have conducted 312 training programmes imparting training to 4186 employees.

Commercial Performance of the Corporation

During the financial year 2006-07 (upto Oct.,2006), 99% realization has been achieved (Rs.1163.52 Cr. realized against the bill raised amounting to Rs.1172.51 Cr. during the financial year 2006-07). With all out efforts for realization of energy bills/dues, the current dues now reduced to Rs.29.98 Cr. only as on 31.10.2006. (which is about 0.22 months of average billing) by increased realization. Also there is no default in getting payment of interest on bonds and long term advances and an amount of interest of Rs.233.62 Cr. has been earned upto Oct.2006.



CHAPTER – 22.3

POWER GRID CORPORATION OF INDIA LTD.

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 recognised as a Mini-ratna company by the Government of India in October 1998. POWERGRID 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 2006, POWERGRID is operating around 57,750 ckt. kms. of transmission lines along with 99 Sub-stations with transforma-tion capacity of 58,500 MVA. With the use of modern state-of-the-art preventive maintenance techniques, average availability of transmission systems during the year 2005-06 was maintained above 99.5%. Based on its 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.

Western Regional Load Despatch Centre, Andheri East Mumbai

In the year 2005-06, company registered a Turnover of Rs. 3,554 Crore and earned a Net profit (After tax) of Rs. 1,009 Crore thereby recording a Net profit margin of 28.39%. The company's Gross asset base at the end of the financial year 2005-06 stood at Rs. 24,888 Crore as against Rs 21,930 Crore at the end of last financial year. The Return on Net Worth for the company was at 10.39% in 2005-06, creating significant value for the shareholders.

The company undertook capital investment of Rs. 4,134 Crore during the financial year 2005-06 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. In the year 2006 upto November 2006, POWERGRID has commissioned about 2,707 CKm. of transmission lines, 6 new sub-stations and has added transformation capacity of about 3,780 MVA. Major projects commissioned include: Tala-Siliguri Transmission Line, East-North Inter connector and Northern Region Transmission System Associated with Tala HEP, Dulhasti Combined Transmission System, System Strengthening Scheme in Northern Region, Neelamangla - Mysore Transmission Line, Tehri Transmission System and System Strengthening-IV of Southern Region.

After commissioning of the high capacity 400 kV D/c line from Muzaffarpur-Gorakhpur, part of Transmission system associated with Tala HEP, East-North Interconnector and Northern Region Transmission System. With this Indian Power Sector has entered a new era after successful synchronisation of Northern Grid with the Central grid consisting of Western, Eastern and North Eastern Grids. Such interconnection of two large systems of 55,000 MW (Central Grid comprising of Eastern, Western and North Eastern Regions) and 33,000 MW (Northern Grid) into a single grid of 88,000 MW is a major milestone towards achieving our long cherished dream of National Grid.

This has helped in improving power supply situation in various regions, enhanced inter-regional power transfer capacity and has resulted in improved reliability etc.

The outstanding dues of CPSUs in power sector were securitised by signing the Tripartite Agreements (TPAs)/ Bi-partite Agreement (BPA). Under securitization scheme, bonds worth Rs. 2,017 Crore have been issued by States against outstanding dues of POWERGRID.

BUSINESS DEVELOPMENT

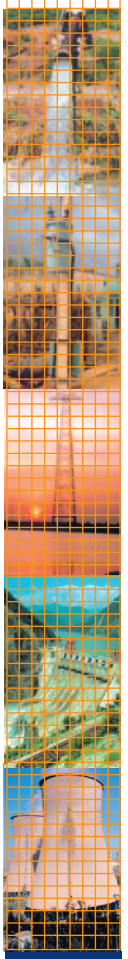
POWERGRID, an ISO 9001 certified company, has acquired in-house expertise at par with global standards in the field of Planning, Engineering, Load Despatch and Communication, Telecommunication, Contracting, Financial and Project Management. POWERGRID is executing various consultancy assignments in these areas as a part of its Business Development Activity. During the year 2006-07, POWERGRID has secured 22 nos. of new consultancy assignments with a project cost (including POWERGRID consultancy fee) of more than Rs. 847Crore (upto Nov., 06). The Company has realised consultancy fee of Rs. 65 Crore (upto Nov.,06) 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, it has recently signed Three Consultancy Agreements with Ministry of Energy and Water, Govt. of Afghanistan and ADB for:

(a) Procurement and installation of OPGW and associated equipments for 220kV transmission line from Kabul to Phul-e-Khumri for a consultancy fee of USD 399,500 with an estimated Project cost of USD 3.2 Million. POWERGRID is also constructing this transmission line on behalf of Government of India under the assistance program to Afghanistan. The installation of OPGW on this line provide communication link between Kabul to Phul-e-Khumri and would also be used for the protection of the system. The assignment is being funded by World Bank.

(b) Reactive Power Control studies for the "North-East Transmission System" (NETS) of Afghanistan, planned for enabling import of power from neighboring countries Uzbekistan, Turkmenistan and Tajikistan, with POWERGRID's consultancy fee of USD 55,870. The assignment is being funded by World Bank.



Foundation stone laying ceremony of WRSSS-II by Dr. Manmohan Singh, Hon'ble Prime Minister of India on 1st Sept., 2006 at Solapur. Sitting L to R are Shri Dilip Walse Patil, Energy Minister, Maharashtra, Shri S.M. Krishna, Governor of Maharashtra, Shri Vilas Rao Deshmukh, CM, Maharashtra and Shri Sushilkum Shinde, Union Minister of Power

(c) ADB has appointed POWERGRID to provide on the job training to three persons of Ministry of Energy and Water, Govt. of Afghanistan on Transmission Systems Operations and Load Dispatch with POWERGRID's consultancy fee of USD 96,300. The capacity building program is meant to support the process of restructuring and re-ensure the Ministry in Afghanistan is able to adapt to its new functions and effectively manage and implement Power sector programme. This program shall also provide a foundation to future capacity building activities.

POWERGRID has recently secured the prestigious international Consultancy assignment against stiff competition from Ministry of Energy and Water, Govt. of Afghanistan for providing consultancy for Tender Evaluation and Construction Supervision for Power Transmission and Distribution project of about USD 37 Million with POWERGRID Consultancy fee of USD 776,692. This project is being funded by ADB and is the fifth consultancy assignment awarded to POWERGRID in Afghanistan in less than two years. The present assignment involves construction of 220/110 kV Transmission lines along with Distribution networks and connections to 91,000 households in Northern, Eastern and Southern Regions of Afghanistan.

Advance Engg. Associates International, inc (AEAI) has placed Purchase Order amounting to USD 1,25,000 towards field survey & preparation of bid documents for Turkmenistan - Sheberghan Transmission Line funded by USAID.

These projects have strengthened Indian presence and involvement in the reconstruction process in Afghanistan and have also enhanced international profile of POWERGRID.

Bhutan Power Corporation (BPC) has appointed POWERGRID as a consultant to execute the work of construction of Turnkey Construction of 3 nos. 33kV Substations at Yurmoo, Trongsa and Bumthang & 18 kms. 33 kV line between Yurmoo and Trongsa. The estimated cost of project (including POWERGRID consultancy fee) is Rs. 25.59 Crore.

Bhutan Power Corporation (BPC) has awarded consultancy work for Construction of NLDC at Thimpu in Bhutan to POWERGRID with consultancy charges of INR 1.47 Crore.

UNIFIED LOAD DESPATCH & COMMUNICATION FACILITIES

The unified approach for planning, engineering, procuring, and implementing the Load Despatch and dedicated Communication system is paying rich

A view of Transmission Towers of PGCIL

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 an 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 modern 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 the regions of the country. These facilities minimize grid disturbance/failure and facilitate quick grid restoration, in case of failure.

RESEARCH & DEVELOPMENT

Towards technological advancement, POWERGRID has established several fully automated remote controlled 400 kV substation like Bhiwadi, Kolar, Chandrapur etc. Many more sub-stations are being planned on similar lines with a view to optimise upon operational costs. POWERGRID is also introducing 'INVAR' power conductors, which can sustain high temperature upto 230ºC against the normal 85ºC. This would wheel more than two times electric power than 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 envisages to establish 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.

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.

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.

CONTRIBUTING TO DISTRIBUTION REFORMS UNDER APDRP

Govt. of India has earmarked more than Rs. 20,000 Crore for the 10th Five year Plan towards investment window of 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 184 Schemes covering about 135 Circles spread over 18 States costing about Rs. 7,820 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. 1,076 Crore on behalf of States such as Bihar, Goa, Meghalaya, Uttar Pradesh, Tripura and Gujarat 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.

POWERGRID has entered into a quadripartite agreement with Rural Electrification Corporation (REC), State Government and State Power utility, for undertaking rural electrification works under Rajeev Gandhi Grameen Vidhyutikaran Yojana (RGGVY). Under this, POWERGRID has been assigned the job for execution of rural electrification in 9 States namely Bihar, Uttar Pradesh, West Bengal, Rajasthan, Gujarat, Orissa, Chhattisgarh, Assam and Tripura involving approx. 87,300 Villages of 68 Districts. These works are estimated to cost Rs. 9,400 Crore.

POWERGRID has successfully created infrastructure for electrification of 6,200 Nos. Villages of Bihar, Uttar Pradesh, West Bengal, Gujarat & Rajasthan till November, 2006. So far, Contracts worth Rs. 2,340 Crore have been awarded covering about 28,800 nos. of Villages in 32 Districts

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.

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.

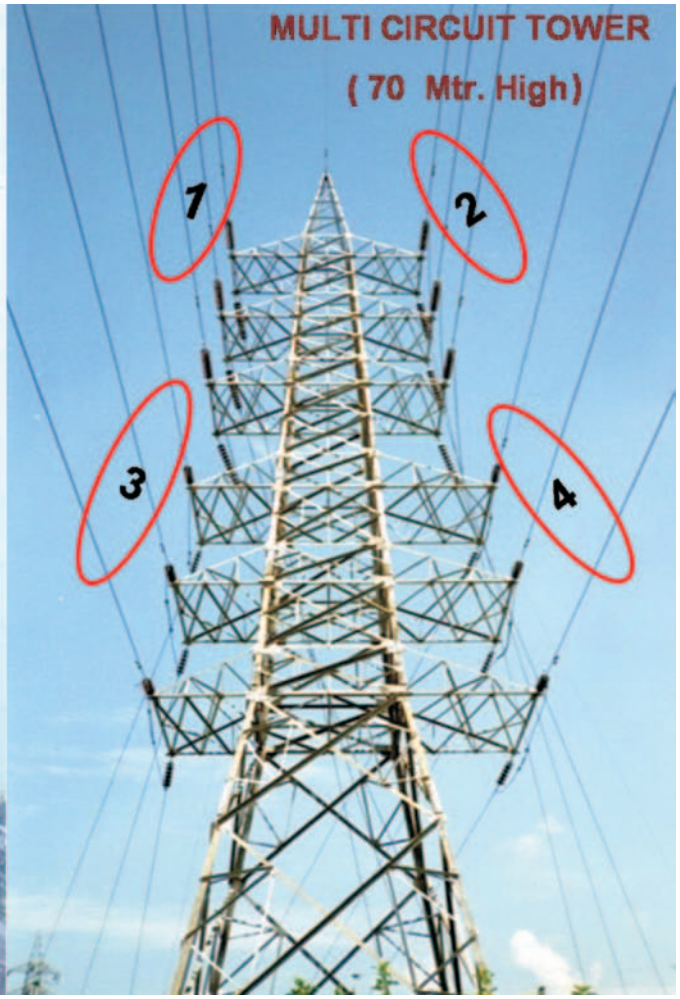
After commissioning of the high capacity 400 kV D/c line from Muzaffarpur-Gorakhpur, part of

Transmission system associated with Tala HEP, East-North Interconnector and Northern Region Transmission System, an inter regional power transfer capacity of 11,500 MW is available by Nov.'06. Indian Power Sector has entered a new era after successful synchronisation of Northern Grid with the Central grid consisting of Western, Eastern and North Eastern Grids. Such interconnection of two large systems of 55,000 MW (Central Grid comprising of Eastern, Western and North Eastern Regions) and 33,000 MW (Northern Grid) into a single grid of 88,000 MW is a major milestone towards achieving our long cherished dream of National Grid.

POWERGRID has envisaged establishment of an integrated National Power Grid in the country by the year 2012 with an inter-regional power transfer capacity of about 39,000 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 Power Grid to support the generation capacity addition program of about 1,00,000 MW during X & XI Plans.

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 34,800 MU of energy across the regions during the year 2005-06, an increase of about 12% compared to previous year (i.e. 30,763 MU during 2004-05), which is likely to be exceeded in current financial year.

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 4 years. The trippings per line were lowest ever & the system availability in FY 2005-06 was as high as 99.64%.



Launching of work of POWERGRID's Barh-Ballia HVDC Line on 29th March, 2006 at 7 Race Course Road, New Delhi by Dr. Manmohan Singh, Hon'ble Prime Minister of India. Seen in the front row L to R are Shri Chandra Shekhar, Former Prime Minister of India, Smt. Sonia Gandhi, Chairperson UPA and Shri Sushilkumar Shinde, Union Minister of Power

LEVERAGING HUMAN CAPITAL TO ACHIEVE EXCELLENCE

POWERGRID believes that its human resource consisting of about 7,340 employees (as on Nov.'06) 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 40% in the asset base of the company is witnessed with a manpower growth of only about 1.7% 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.

MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ISSUES

Creating Sustainable Corporate Values

POWERGRID, being in the infrastructure sector, is in 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 is one of the largest electrical power transmission utilities in the world. It constructs, owns and operates Extra High Voltage (EHV) transmission network in India and carries out real time supervision and monitoring of power flow round the clock over the EHV network of the country in order to fulfill its goal of establishing a National Grid coupled with sustainable Development.

POWERGRID has achieved the distinction of being the first Indian Power company certified with Integrated Management System (IMS) comprising of ISO: 9001 for Quality Management, ISO: 14001 for Environment Management and 18001 for Occupational Health & Safety. Independent and internationally accredited external agency audits these systems regularly.

Dedication of WRULDC, Mumbai by Shri Sushilkumar Shinde, Union Minister of Power on 25th February, 2006. Standing L to R are Shri G.B. Pradhan, Joint Secretary, Ministry of Power, Shri Jayant S. Kawale, MD, MSEB, Shri R.P. Singh, CMD, PGCIL, Shri R.V. Shahi, Secretary (Power) and Shri Dilip Walse Patil, Minsiter of Energy, Maharashtra

POWERGRID's developmental activities have negligible environmental and social impact owing to very nature of its activities and proactive approach. Inspite of this, in the year 2004, POWERGRID has upgraded its Environmental and Social Policy and Procedures (ESPP) evolved initially in the year 1998, through an open and transparent process of National Level Workshop in association with multilateral funding agencies, concerned Ministries of Govt. of India, NGOs and public consultation with wider section of people in the Regions to ensure that its activities have least impact on environment and socio-economic fabric of the communities.

The ESPP outlines POWERGRID's commitment to the goal of sustainable development through conservation of natural resources, continually improving its management system, accessing specialist knowledge of management of significant environmental and social issues and introducing State-of-the-Art and internationally proven technologies while strictly following the basic principles of Avoidance, Minimization and Mitigation. POWERGRID is meticulously following ESPP in every step of project implementation to tackle environmental and social issues effectively. Rehabilitation Action Plans (RAP) & Environmental Assessment Management Plan (EAMP) are prepared, implemented within first 12 months of construction period for all projects. Besides, implementation is monitored by the highest level of the hierarchy and feedback is obtained for continuous improvement.

POWERGRID maintains highest standards of corporate responsibility not only towards its employees but also to the consumers, society and the entire environment in which it operates, also shouldering community responsibility through various community development activities in areas around its establishments. It promotes socio-economic development and enriches the quality of life of the community through initiatives taken towards community empowerment by way of providing basic infrastructure facilities, relief and restoration work during natural calamities, in-house social clubs, social and cultural activities in the vicinity of its establishments by providing education to poor children, organizing health awareness/check-up camp, sponsoring local religious/sports activity etc. most importantly through people's participation.

Initiatives like adoption of innovative tower structure designs and multi-circuit towers for reduction in Right of Way, installation of tall towers (75 mt.) to minimise impact on flora & fauna in ecologically sensitive areas, land management, massive plantation, provision for rain water collection and harvesting, Institutional development of its staff, Contractors and others associated with its operations and activities to maintain high level of care consistent with national regulations and international norms, etc. are continuous endeavors of POWERGRID.

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 advice 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

Shift Engineers with the ULDC facilities on High VIGIL on Grid Operation

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.

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 20,000 Kms, POWERGRID has already established a network of over 19,000 Kms (As on October, 2006) 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, Jallandhar, 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 has obtained Infrastructure Provider license-II (IP-II) license and had also obtained ISP category 'A' license to provide internet services in the country. 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.

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.

CHAPTER – 22.4

POWER FINANCE CORPORATION LIMITED

The Power Finance Corporation Limited (PFC) was incorporated on July 16, 1986 under the Companies Act as a public limited company with the ROC, Delhi and Haryana and received certificate for commencement of business on December 31, 1987. The Govt. of India incorporated PFC as a financial institution in order to finance, facilitate and promote power sector development in India with the President of India holding 100% of its equity share capital. In 1990, PFC was declared as a public financial institution under section 4A of the Companies Act.

The Authorized Share Capital and the Paid-up (equity) capital of the Corporation as on 30th Nov, 2006 stood at Rs.2,000 crore and Rs.1,030.45 crore respectively. This Ministry vide letter dated 30th November, 2006 have issued necessary sanction for making an Initial Public Offer (IPO) of 11,73,16,700 equity shares of Rs.10 (Rs.Ten) each constituting 10.22% of post issue capital of Power Finance Corporation by way of issue of fresh equity shares through a public offer. The bidding for PFC's I.P.O. issue of 11.73 crore shares was opened on 31st January, 2007 and closed on 6th February, 2007. At Rs. 85/- per share the issue got subscribed 76.94 times.

Reserve Bank of India registered the Corporation as Non-Banking Financial Company in 1998.

PFC being a Non Banking Financial Co.(NBFC), is not accepting public deposits The business activities of NBFCs and public financial institutions are regulated by various RBI regulations. However PFC's business operations are not regulated by the RBI regulations applicable to NBFCs and public financial institutions, pursuant to an amendment to the NBFC regulations on January 13, 2000, whereby the RBI exempt government companies, conforming to section 617 of the Companies act from the applicability of the provisions of the RBI Act relating to maintenance of liquid assets, creation of reserve funds and the directions relating to acceptance of public deposits and prudential norms.

PFC is a Schedule "A" organization as per DPE guidelines and declared a "Mini Ratna (Category-I)" Company in 1998.

PFC's vision is to be the leading Institution in financing for sustainable development of Indian Power Sector and its linkages with an eye on Global Operations.

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. the PFC also focuses on the institutional development of its borrowers in the state power sector.

The PFC's borrowers profile comprises of State Power Utilities, State Electricity Departments, Central Power Utilities, Private Sector Power Utilities, Co-operative Societies, Municipal Bodies and Power Equipment Manufacturers. PFC's funding criteria are based on borrower's credit worthiness and project viability. PFC's Performance during 2 decades (cumulative) as on 31st Dec. 2006 is:

Sanction	Rs. 1,20,104 crore
Disbursement	Rs. 71,330 crore

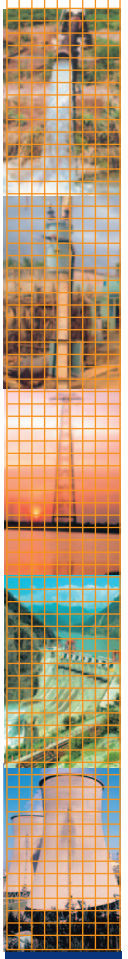
PFC's PERFORMANCE PARAMETER

PFC has been a profit-making enterprise right since inception and has registered impressive growth in its net profit every year.

Table showing at a glance year-wise financial performance of PFC, for the past 5 years, are as under:

(Rs. in Crore)

Parameter	2001-02	2002-03	2003-04	2004-05	2005-06
Sanction	8506	14002	16472	18573	22502
Disbursement	5150	7341	8974	9405	11681
Recovery Rate	98.0%	99.2%	98.0%	96.0%	97.75%
Profit After Tax	778	1172	1607	984	970.95
Dividend	200	235	322	385	361.53
MOU Rating by Govt. of India	Excellent	Excellent	Excellent	Very Good	Yet to be Decided



Dividend paid by PFC Chairman to Shri Sushilkumar Shinde, Hon'ble Union Minister of Power

2.0 OPERATIONAL HIGHLIGHTS

The Company issued sanctions for Rs.23,168 crore of loans and grants during the period from 1st April 2006 to 30th Nov 2006 in FY 2006-07 compared to Rs.16,113 crore during the same period last year. An amount of Rs.8,119 crore was disbursed during the same period to State, Central and Private Sector Entities, compared to Rs.6,774 crore disbursed during the same period in the last year. With this the cumulative sanction of Rs 1,16,000 crore, disbursement of Rs.70,000 crore of loans and grants have been made by the Company as on 30th Nov., 2006.

In FY 2006-07, as on 30th Sept 2006, recovery rate of the principal amount is 97.55%, and the overall recovery rate is 97.32%.

3.0 RESOURCE MOBILISATION

PFC mobilizes funds from the domestic and international markets at competitive rates through bonds, term loans from banks and other financial institutions. In FY 2006-07, as on 30th Nov, 2006, Corporation has raised Rs. 5,370 crore out of which Rs.1,200 crore were raised through long and medium term loans from banks, Rs.2,440 crore as short-term loans from various banks and Rs. 1,630 crore by way of taxable bonds. In addition short term loans of Rs.700 crore were rolled over.

4.0 EXTERNAL CREDIT UTILISATION

4.1 ASIAN DEVELOPMENT BANK (ADB)

Asian Development Bank has 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 30 million has been identified and approved by ADB. US dollar 10.589 million has been utilized as on 30th Nov, 2006.

4.2 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 Himachal Pradesh and Uttranchal are the prospective sub-borrowers for this line of credit.

4.3 KfW-GERMAN FINANCIAL COOPERATION

PFC has signed a Line of Credit (LoC) of • 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 • 35.56 million and a commercial portion of • 65 million amounting to a total of • 100.56 million. The facility also envisages a grant of • 3.33 million for undertaking feasibility studies and organizing training programs. UJVNL is in the process of awarding of contract for feasibility studies.

5.0 INSTITUTIONAL DEVELOPMENT AND REFORM AND RESTRUCTURING OF STATE POWER UTILITIES

PFC has been adopting a proactive and pragmatic approach to encourage improvement in the financial and operational efficiency of the State Power Sector. Keeping this in view, Reform Operational and Financial Action Plans (R-OFAP) consisting of a series of time bound action plan for different functional areas of the utilities are formulated. Besides aiming at bringing about efficiency improvements in the State Power Sector, R-OFAP focuses on reform/restructuring activities needed to create an institutional framework for the self-sustainability of the sector in the long run.

These Action Plans are formulated with active participation of the concerned utility and approved by the respective Board of the Utilities. The implementation of various activities included in R-OFAP is monitored regularly and progress report on the same is sought from the Utilities. As on 30th Nov, 2006, Action Plans are in place for 45 Utilities These Action Plans have been instrumental in bringing about a perceptible change in quantitative and qualitative performance of State Power Utilities functioning. PFC is in the process of reviewing and revising these action plans in co-ordination with State Power Utilities to incorporate the current scenario in Power Sector. PFC expects to formulate the action plan for 4-5 Utilities during the current FY.

PFC provides grants and soft loan for reform and restructuring, institutional development and implementation of Electricity Act 2003 by the State Power Utilities for improving their performance in the areas of financial, technical and commercial operations. During the FY 2006-07, as on 30th Nov., 2006, PFC has sanctioned grants/ concessional financing schemes amounting to Rs. 284 lacs for Reform and Institutional Strengthening Studies.

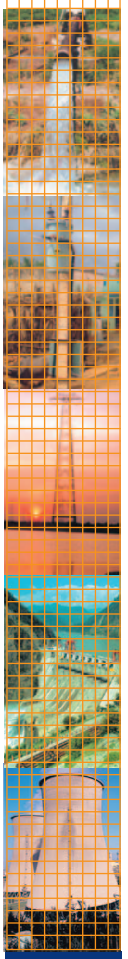
PFC is also assisting in utilization of Information Technology for improvement in efficiency in the operation of Utilities. PFC has extended loans at lower interest rate to the Utilities for computerization scheme for MIS, Networking, Billing, GIS, etc. During the year 2006-07, as on 30th Nov., 2006 an amount of Rs. 39 crore was disbursed for MIS, Networking, Billing, GIS Schemes.

PFC is formulating a policy for categorization of the Utilities into four categories viz. A, B, C and D based on both internal and external qualitative and quantitative parameters. The better performing Utilities will be placed in category A and the least performing Utilities will be placed in category D. PFC proposes to charge differential interest rates to encourage Utilities to perform better. The interest differential between the best performing Utilities in category A and those Utilities in category D will be 1.5%.

6.0 PERFORMANCE REPORT OF POWER UTILITIES

PFC brings out an annual report on the performance of State Power Utilities, The report has been prepared for FY 2002-03 to FY 2004-05 in March 2006. The report contains comprehensive information on State Power Utilities capturing key financial and operational parameters governing the Sector and is widely acknowledged as an important source of information on the State Power Sector Utilities.

PFC has also commenced bringing out one page research report on the performance of State Power Utilities on quarterly basis. The report contains highlights of performance of the Utilities in respect of implementation of reform, areas of concern, actions needed for improvement of performance, etc. The first report for the quarter April-June 2006 was prepared for 20 Power Utilities and circulated to Banks / FIs, including REC and CEA. The report will help the Utilities and stakeholders to take mid-term corrective measures and draw plans for improvement of performance of State Power Utilities. This effort would also stimulate Utilities to expedite the quarterly accounts and subsequently the annual accounts in time for better monitoring and improvement.



7.0 FINANCING OF STATE AND CENTRAL SECTOR GENERATION PROJECTS

7.1 HYDRO PROJECTS

With a view to reverse the trend of declining share of hydropower in the country's total installed capacity, the Company is proactively identifying and providing financial support to Hydro Generation Projects.

In the FY 2006-07 as on 30th Nov, 2006, the Company sanctioned loan worth Rs. 1,895 crore for Hydro Projects and an amount of Rs.919 crore was disbursed. The cumulative financial support provided by PFC for Hydro Generation Schemes are Rs.17,522 crore, out of which Rs.11,797 crore has been disbursed till 30th Nov, 2006.

The important projects commissioned include Tehri Stage I (4x250 MW) of THDC, Larji HEP unit III (3x42 MW) of HPSEB, Bansagarton HEP (2x10 MW) of MPSEB, Marikheda HEP (2x20 MW) of MPSEB and Bhawani Katlai HEP-I (2x15 MW) of TNEB.

7.2 THERMAL PROJECTS

The Company is providing finance to Thermal Generation Projects for their timely completion. Major Generation Projects sanctioned during the period from 1st April to 30th Nov, 2006 under review include Khaperkheda Thermal Power Station Extension (1x500 MW), Giral TPP Stage II (1x125 MW), Chabra TPP (2x250 MW), Malwa TPS (2x500 MW), Harduaganj TPS (2x250 MW), Parjchha TPS Extension (2x250 MW), KOTA TPS unit 7 (1x195 MW) and Suratgarh TPS Extension (1x250 MW).

In the FY 2006-07, as on 30th Nov, 2006, the Company has sanctioned loans for Thermal Projects amounting to Rs.14,542 crore and disbursed an amount of Rs.4,429 crore. The cumulative financial support provided by the Company for Thermal Generation Schemes is Rs.50,613 crore, out of which Rs.24,239 crore has been disbursed till 30th Nov 2006.

The major projects commissioned during the period include Ratnagiri Unit-II (740 MW) of RGPCL.

8.0 FINANCING OF PRIVATE SECTOR POWER PROJECTS

PFC has so far supported 10,266 MW of generation capacity in the Private Sector by way of sanctioning financial assistance of about Rs. 9,767 crore and an amount of Rs. 4,320 crore has been disbursed. Among the major projects supported by PFC include the 1015 MW imported coal based Thermal Project of Nagarjuna Power Corporation in Karnataka, the 600 MW domestic coal based Lanco Amarkantak Project in Chattisgarh, the 400 MW Vishnuprayag Hydel Project of Jaiprakash Power Ventures in Uttaranchal, the 1100 MW gas based project of Torrent Power Ltd in Gujarat and the 469 MW gas based project in Andhra Pradesh of Gautami Power Ltd. PFC has also supported Biomass based Power Projects in its endeavour to support environmental friendly projects. During the FY 2006-07 as on 30th Nov, 2006, the amount of Rs. 4,850 crore has been sanctioned and Rs. 557 crore is disbursed under different stages of appraisal.

The cumulative capacity commissioned by PFC support in the Private Sector stands as on 30th November 2006 at 2382 MW.

9. ULTRA MEGA POWER PROJECTS

PFC has been designated as the nodal agency by the Government of India for the development of Ultra Mega Power Projects (UMPPs), each of 4,000 MW. Nine Projects have been identified. These are located in Madhya Pradesh (Sasan), Gujarat (Mundra), Chattisgarh (Akaltara), Karnataka (Tadri), Maharashtra (Girye), Andhra Pradesh (Krishnapatnam), Orissa, Jharkhand and Tamil Nadu. The projects in Madhya Pradesh, Chattisgarh, Orissa and Jharkhand are at coal pit heads with captive coal mines indigenous coal projects and the other five are at coastal locations and based on imported coal. PFC has incorporated seven wholly owned subsidiary companies for seven UMPPs to act as Special Purpose Vehicles (SPVs) for the Projects. Incorporation of two more Subsidiary Companies for UMPPs at Jharkhand and Tamil Nadu is in process. These SPVs in coordination with Central Electricity Authority (CEA) are undertaking all activities necessary to obtain the appropriate clearances required to establish these projects. Ministry of Power is acting as facilitator for development of UMPP. These SPVs will be transferred to successful bidder (s) selected through a tariff based international competitive bidding process and these bidders will then implement the project.

The Letters of Intent (LOI) for two projects namely Sasan in Madhya Pradesh and Mundra in Gujarat were handed to the successful bidders on 28th December 2006. The bid process for Krishnapatnam UMPP in Andhra Pradesh is also in progress and the project is expected to be awarded by 30th April 2007.

10. RENOVATION, MODERNISATION & LIFE EXTENSION OF THERMAL & HYDRO PLANTS

Renovation, Modernization and Life Extension of old Thermal and Hydro plants is a priority area of financing by PFC. As on 30th Nov, 2006, PFC has sanctioned loans of Rs. 6,812 crore towards R&M Thermal and Rs. 1,539 crore towards R&U Hydro Schemes of various Power Utilities. Out of above an amount of Rs. 3,272 crore and Rs. 724 crore has been disbursed, respectively.

11. ACCELERATED POWER DEVELOPMENT AND REFORM PROGRAMME (APDRP)

During financial year 2006-07 (upto September 2006), PFC committed counterpart-funding amounting to Rs.106.84 crore for distribution schemes in various States. Counterpart funds amounting to Rs. 176.48 crore were disbursed and loan documents for 32 schemes with the loan amount of Rs.345.28 crore were executed. Distribution network in major cities for which PFC has sanctioned counterpart funding during 2006-07 include Gorakhpur Town, Kanpur, Agra etc.

12. ACCELERATED GENERATION & SUPPLY PROGRAMME (AG&SP)

The AG&SP scheme has been extended to 10th Plan. The AG&SP scheme for the 10th Plan envisages the following:

1. The assistance under the AG&SP scheme shall be limited to State Sector Renovation & Modernization (R&M) of thermal power plants and Renovation & Uprating (R&U) of Hydro Power Plants including R&M of Power Plants of Damodar Valley Corporation (DVC);
2. The State Sector Generation Projects including those based on non-conventional energy sources are covered which are to be commissioned in the 10th Plan;
3. Grants under AG&SP scheme is being provided to SEBs, SGCs and State Power Departments for carrying out the Studies, which help to achieve policy objectives of the Government relating to Power Sector. These include Power Sector Reform and Restructuring Studies, System Studies, R&M Studies, Life Extension Studies, Retainer Consultancy for R&M and Environment/ Social Studies;
4. Interest subsidy under the scheme is the difference of prevailing PFC interest rate and G Sec rate limited to 3% & 4% for North Eastern States and other date as the case may be.
5. In FY 2006-07 (till Dec. 31, 2006) PFC has sanctioned financial assistance of Rs. 2160 crore and Rs. 280 crore has been disbursed.

13. COMMON APPROACH BY PFC AND REC FOR FUNDING OF STATE POWER UTILITIES POWER PROJECTS

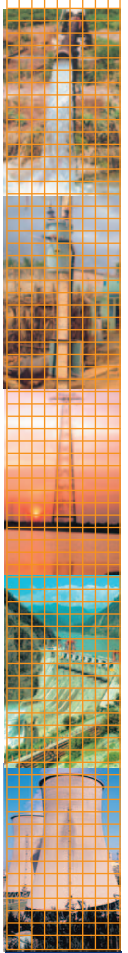
PFC and REC are two institutions exclusively financing power sector and meet major fund requirements of State Power Utilities in the country. In recognition of the advantage that combined effort of PFC and REC is large enough to bring out more committed response from State Utilities to improve their performance, Ministry of Power has taken initiatives to evolve a common approach to be adopted by both in their operations. A Joint Standing Committee of two Directors each of both Corporations and an Apex Committee consisting of Chairman & Managing Directors of both Corporations have been formed. These Committees will meet periodically to evolve a common approach by both in their operations to attain the desired objectives and the common approach would encompass the following:

- Common prudential norms as NBFC
- Standard minimum set of reform related conditions precedent to sanction/disbursement of financial assistance
- Uniform interest rates but differential in nature to reward better performing utilities.
- Procedure for appraisal of projects and entities
- Financing instruments
- Monitoring mechanism

The objective of evolving a common approach would be to ensure that State Power Utilities achieve financial turnaround efficiently and manage their assets in a sustainable manner so that the sector is able to generate resources for future investments.

14. HUMAN RESOURCE DEVELOPMENT AND TRAINING

The Corporation 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 channelzing the funding of USAID under the DRUM (Distribution Reform, Upgrades and Management) Projects. The five-year DRUM Project will cover



25,000 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. Twelve in-house training programmes were conducted for PFC employees as against the MoU target of five for employee training in this period.

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 seven programmes were organized at the behest of State Utilities against the MoU target of five for SEB training.

15. CONSULTANCY SERVICES

PFC' s Consultancy Services Unit has grown in operations manifold in providing Consultancy Services and has generated an atmosphere of competitive pricing by consultancy organizations in the areas where PFC has been providing such services.

During the year 2006-07 (as on 30th Nov, 2006), PFC has further enhanced its reputation as a premier Consultancy Organisation broadened its folio of Consultancy Assignments, both in terms of number of assignments to 8 up to Nov 2006, as also their value amounting to Rs. 4.54 crores. PFC also expanded its client base and moved up the value chain by taking up the assignment on Computerization of operations of J&KPDCL. Besides, PFC has also successfully completed the assignment of Study and Action Plan for developing Chhattisgarh as the Power Hub of the Country. PFC is advising 3 States; J&K, Bihar and Meghalaya in the Reforms and Restructuring process of their Power Sector. Further 4 Utilities have shown interest in PFC undertaking the assignment on Selection of Developers for setting Power Plants through Competitive Bidding route.

While PFC continues to undertake the assignments on regulatory matters like tariff, PFC shall focus on assignments relating to;

- Undertaking the whole process of Selection of Developers for setting Power Plants through Competitive Bidding route

A view of Switch-yard

- Developing Financial Restructuring Plans, Business Models; Short Term and Long Term, and Reform Implementation.
- Human Resources Development plans to support/ facilitate structural changes in State Power Sector including retaining/redeployment of personnel.
- Developing Accounting Systems including computerization of the unbundled Utilities.

16 NEW BUSINESS ACTIVITIES

PFC has been emphasizing on diversification of its activities with the objective of providing support for the integrated development of Power Sector in India. PFC developed some of its New Products / Services and marketed to cater to the requirements of the borrowers / clients during the year as below :

1. During FY 2005-06, credit exposure limits was enhanced for State Sector borrowers and for Central Sector borrowers.
2. Policy introduced for the Utilities who are in the Business of Generation of Power to meet their immediate requirement for import of fuel through a line of Credit for import of Coal was introduced.
3. For convenience of the borrowers a policy for Issue of Comfort Letter for opening of Letter of Credit by borrower's bank was introduced against term Loan sanctioned.
4. A policy for a volume discount of 25 bps on applicable interest rate was introduced and is offered in case of loans for Distribution and Transmission Schemes on future sanctions, if the disbursement under these schemes reaches the target amount within the specified period. The minimum disbursement amount to be considered for offering this discount is Rs. 700 crore in case of Discoms and Transco and Rs. 1,000 crore for an integrated SEB for the combined disbursement for Distribution and Transmission Schemes. For this purpose borrowers shall be required to sign a MoU with PFC, committing to draw required amount within a period of 2 years from the date of signing of MoU.

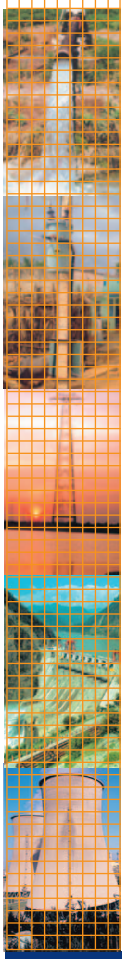
17. CLEAN DEVELOPMENT MECHANISM (CDM)

Ministry of Power has nominated PFC for assistance to State Utilities in preparation of CDM projects for R&M of Old Generation units both Thermal and Hydro.

PFC is assisting State Power Utilities in submission of CDM documents to MoEF (Designated National Authority) for availing of benefits under CDM for R&M Projects.

18. FUNDING OF GENERATION PROJECTS THROUGH NON-CONVENTIONAL SOURCES OF ENERGY

The Corporation gives priority to funding of Power Projects of Non-Conventional Energy sources like Wind Farms, Small Hydro Projects, Bio-Mass Projects etc. and provides financial assistance to State as well as Private Utilities for timely completion of Projects at competitive interest rates.



CHAPTER – 22.5

RURAL ELECTRIFICATION CORPORATION LIMITED

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 2005-06 along with the comparative figures for the preceding four years are given below :

(Rs. in Crore)

	2001-02	2002-03	2003-04	2004-05	2005-06
Loan sanctioned	6764	12125	15978	16316	18771
Loan Disbursed	4722	6607	6017	7885	8007
Recovery of Dues	4064	6673	5003	6817	5434
Resource Mobilisation	3360	4213	3988	8501	9063
Profit before Tax	503	768	803	1038	831
Profit after Tax	388	578	612	801	638*
Networth	2466	2862	3264	3779	4198
Dividend	120	174	183	235	191
Business per employee	9.72	15.07	16.55	21.98	19.01

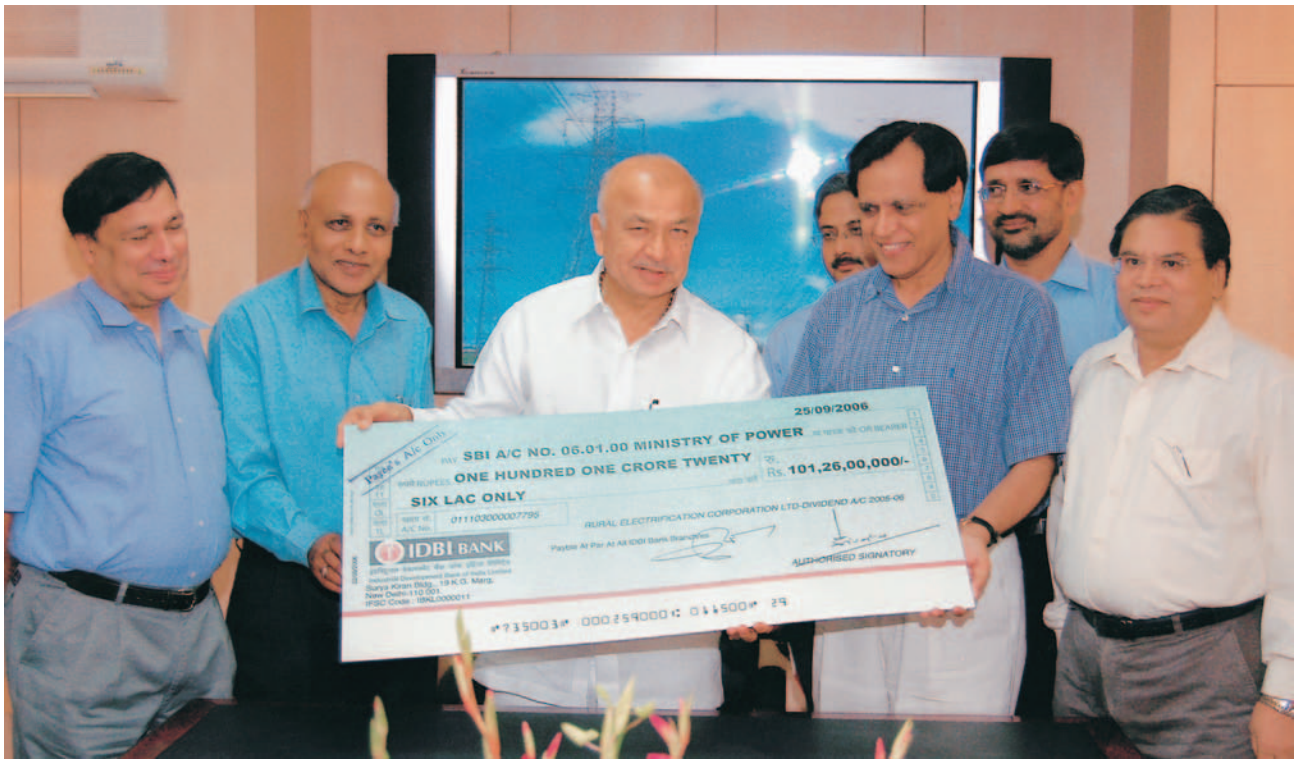
*After tax for earlier years & prior period adjustments

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 2004-05 has been rated as "Excellent". This was the 12th year in succession that the Corporation has received "Excellent" rating since the year 1993-94 when the first MOU was signed with the Government. Even for the year 2005-06, the Corporation recorded "Excellent" results in terms of the parameters of the MOU, and has got qualified for "Excellent" rating.

4.3 Share Capital

There was no additional subscription to the Equity Share Capital during the year 2005-06 and the Paid-up Equity Share Capital of REC as on 31st March, 2006 stood at Rs.780.60 crore, which is wholly subscribed by the Govt. of India, against the Authorised Share Capital of Rs.1200 crore.



Dividend Cheque paid by CMD, REC to Hon'ble Union Minister of Power, Shri Sushilkumar Shinde

4.4 Mobilization of Funds

The amount mobilized from the market during the year 2005-06 was Rs.9062.66 crore, which includes Rs.1885 crore by way of syndicated loan from commercial banks, Rs. 3396.46 crore by way of capital gains tax exemption bonds, Rs. 3281.20 crore by way of non-priority sector bonds including Rs.500 crore raised through structured deal with JPY-INR coupon only swap option, as long term funds. In addition to this, cash credit limits of Rs. 1022 crore were tied up with different banks for day-to-day operations. The debt instruments of REC continued to enjoy AAA rating – the highest rating assigned by CRISIL, CARE and FITCH. FITCH & MOODY have awarded investment grade rating for international borrowings by REC.

5. Cumulative Performance of REC upto 31.3.2006

5.1 Over the last 36 years, REC has cumulatively sanctioned Rs.98543.37 crore for 42880 projects and disbursed Rs.51557.48 crore as on 31.3.2006 as financial assistance on relatively softer terms to the SEBs, Electricity Departments of State Government and other Power Utilities. Upto 31st March, 2006, 3,06,010 villages have been reported electrified and 8565493 pumpsets have been reported energized under the projects financed by REC.

6. REC is the nodal agency for implementing

Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) – Scheme for Rural Electricity Infrastructure and Household Electrification.

6.1 For effective and expeditious implementation of the scheme, a comprehensive framework has been put in place in consultation with all the states, state power utilities and the concerned CPSUs.

7. Progress of Performance upto February, 2007 and targets expected to be achieved for the remaining period upto 31.3.2007 in respect of other regular activities

7.1 TRANSMISSION & DISTRIBUTION (T&D)

7.1.1 Sanctions - Progress made during the period April 2006 to November 2006 and anticipated targets to be achieved by March 2007.

During the period between April 2006 - November 2006, the Corporation, under its regular activities, has sanctioned 417 projects involving a loan assistance of Rs.11677 crore under T&D, which includes 13 projects sanctioned for counterpart funding of Rs.154 crore under APDRP. It is anticipated that during 2006-07 a sanction of about Rs.13500 crores will be achieved under T&D projects by 31st March 2007.

7.1.2 Disbursement - Progress made during the period April 2006 to November 2006 and anticipated targets to be achieved by March 2007.

The Power Utilities/entities, have, for the FY 2006-07, drawn a loan amount of Rs.2175 crore up to 30.11.2006, for transmission and distribution system strengthening, purchase of equipment, intensive electrification of already electrified areas, and energisation of pumpsets. It is anticipated that during 2006-07, a disbursement of about Rs.3500 crores will be achieved under T&D projects by 31st March 2007.

7.1.3 North-Eastern States

A provision of Rs.11 crores has been made for the North-EasternStates including Sikkim, for their intensive electrification and system improvement works, based on the programme indicated by them, for the year 06-07, which is expected to be disbursed.

7.2 GENERATION

7.2.1 Progress made during current year upto 30.11.2006

For the financial year 2006-07 (Upto 30.11.2006), REC has sanctioned term loan amounting to Rs.3725.19 crore. During this period, disbursement of Rs.2625.31 crore has been made against the on-going generation projects.

7.2.2. Anticipated targets to be achieved during the remaining period of the year i.e. upto 31.3.2007.

- Target for sanction is more than Rs.3000 crore for the remaining period.
- Projected disbursement during 2006-07 is Rs.3000 crore, out which Rs.2625.31 crore has been disbursed upto 30.11.2005.

8. Mobilisation of Funds

8.1 The amount mobilized by REC during the year 2006-07 (upto 30th November, 2006) was Rs. 4695 crore which included Rs.4495 crore by way of Capital Gains Bonds and Rs.200 crore by way of Term Loan from Banks. The total borrowing programme of the Corporation for the year 2006-07 is Rs.12000 crores. The balance amount of Rs.7305 crore is proposed to be raised during the period from December, 2006 to March, 2007.

Pre-payment of high cost Bonds

8.2 During the year 2006-07 (upto 30.11.2006), REC has so far exercised call option of Rs.263 crore in respect of REC Bonds, as a part of the process of pre-paying higher cost of borrowings with cheaper funds raised from the market.

9. International Cooperation and Development

9.1. Japan Bank for International Cooperation (JBIC) assistance for Rural Electricity Distribution Backbone Project

9.1.1 JBIC has sanctioned a loan assistance of 21 billion yen (Rs. 835 crore) under the ODA loan package for the Rural Electricity Distribution Backbone Project (REDB) of REC envisaging erection of 785 no. of new 33/11 KV sub stations and 510 no. of augmentation of sub stations in the States of AP, MP & Maharashtra. This loan assistance shall be available from December, 2006 onwards.

9.1.2 The objectives of the project are to improve the sub transmission system by relieving the existing overloaded system and reducing the T&D losses and to expand access to electricity for un electrified households and other rural loads for different economic activities, by constructing and augmenting the sub stations and associated distribution lines, thereby improving living standard of local residents and promoting economic and social development in the concerned areas.

9.2. Indo German Bilateral Cooperation for HVDS project of APSPDCL

9.2.1 REC's project proposal of HVDS system of APSPDCL for Chitoor and Kadapa distt. has been approved by Kfw Germany for providing financial assistance of 70 million EURO (Rs. 410 crore) under Indo German Bilateral Cooperation.

9.2.2 Depending upon the success of the programme, Kfw has also agreed to consider further allocation of 50 million Euro for the HVDS Project of Discoms of Uttar Pradesh, and negotiations between India &

Germany are expected to conclude by March, 2007.

9.2.3 The project aims at reduction in distribution losses, failure rate of distribution transformer and avoidance of theft in agriculture sector and will ultimately help in improving the financial sustainability of the respective Discoms.

9.3. REC- RUS Cooperation under Distribution Reforms, Upgrade and Management (DRUM) Project

9.3.1 DRUM aims at enhancing access to electricity and water through power distribution reform activities and demonstrating best managerial, commercial and technological practices that improve the quality and reliability of "last mile" power distribution.

9.3.2 An alternative model for financing rural electricity distribution entities is being developed for financing Rural Electricity Utilities to make them viable and sustainable in the long run through development of community ownership. This model is based on sound lending principles, participatory institutional arrangements, and establishment of financial, technical and engineering standards relevant to Indian rural electricity distribution companies, developed by REC.

9.3.3 This financing model is to be tested though a few pilot projects being taken up in collaboration with respective state governments for future replication, with technical assistance and guidance from RUS.

9.3.4 As part of this initiative, capacity building measures will be taken up by exposing project implementers to International technical, financial and managerial best practices.

9.4 Clean Development Mechanism (CDM)

The Ministry of Power has designated REC as the nodal agency responsible for promoting CDM in respect of energy efficiency project in the power distribution sector (i.e.LT to HT conversion- HVDS, and Separation of Agricultural Feeders from

Transformation of lives in Rural India with accessability to Power

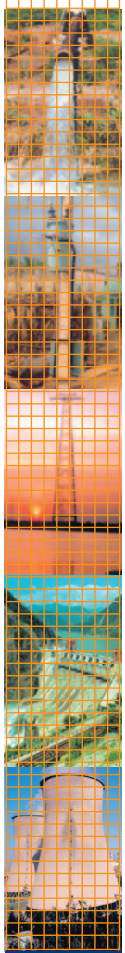
Household Feeders). REC plans to offer technical and financial assistance to the State Power Utilities/Discoms, through experts, for preparation of such projects for CDM, and to enter into suitable cost/revenue sharing arrangements with the project promoters.

10. Activities at CIRE Hyderabad

10.1 REC's Central Institute for Rural Electrification has been empanelled by Ministry of External Affairs (Training Cooperation) for conducting trainings for foreign nationals under (Indian Technical and Economic Cooperation(ITEC) & Special Commonwealth Africa Assistance Plan (SCAAP). For the year 2006-07 three International programmes were allotted to CIRE by MEA (TC) and as of now two programmes for 8 week duration on (i) Power Distribution Project Financing and Accounting System and (ii) Power Distribution Management and Technologies are in progress. The third programme of 8 week duration on Planning and Management of Power Sector in Developing Economies is scheduled between January-March 2007.

10.2 Apart from this, 26 other programmes have been conducted at CIRE upto 30th November, 2006. This includes 20 sponsored programmes under DRUM on Best Practices in Distribution Loss Reduction, Change Management in Power Distribution, Best Practices in Distribution Operations & Maintenance, Distribution Efficiency and Demand Side Management, Best Practices in Agriculture Pumping Systems and Rural DSM, Distribution Efficiency and Demand Side Management, Best Practices in Distribution System O&M and Financial Management of Distribution Business. Other two sponsored programmes in collaboration with Institute of Public Enterprise (IPE) include (i) Enterprise Resource Planning for Financial Management and (ii) Networking Technologies and Security Management. Other 4 programmes organized by CIRE were on (I0 Power Purchase Agreement, (ii) Pilferage of Energy – Technical & Legal Remedies, (iii) Power Sector Accounting with reference to ESAAR & GAAP and (iv) Electricity Act – Open Access in Transmission & Distribution – Issues & Challenges.

10.3 Till November 2006, 777 participants took part in the programmes organized by CIRE accounting to 4385 mandays. The participating officers were from SEBs, Electricity Departments, Discoms, Regulatory Commissions etc. from all over the country.



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. Its authorized share capital is Rs. 3,500 Crs. 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 the Project	State	Installed Capacity (MW)
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. PROJECTS UNDER EXECUTION

KAMENG H.E.P. (4X150 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 Crs. The project is scheduled to be commissioned by Nov, 2009

KHANGTEN SMALL HYDEL PROJECT (7.5 MW) IN ARUNACHAL PRADESH:

NIT for construction on Turnkey Basis has been floated on 07.09.06 while the bids (part-I) were opened on 24.11.06. The project work is scheduled to be awarded by January 2007.

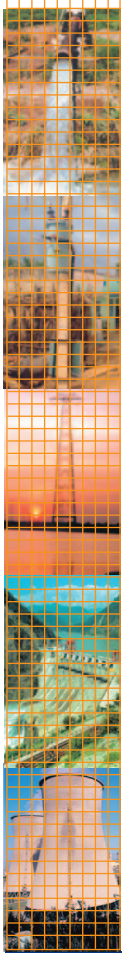
TUIRIAL H.E.P (2X30 MW) MIZORAM:

Tuirial H.E. Project is situated in Aizwal district of Mizoram. All project works are held up since June, 2004 because of agitation demanding illegal crop compensation on forest land and huge cost and time overrun making the project unviable. Efforts are being made to re-engineer the project and make the tariff of the project affordable.

3. PRESENT STATUS OF PIPELINE POWER PROJECTS IN THE NORTH EASTERN STATES INCLUDING SIKKIM:

TIPAIMUKH H.E. (MULTIPURPOSE) PROJECT (1500 MW), MANIPUR:

The Tipaimukh Hydro Electric (Multipurpose) Project (1500 MW) is located in Churachandpur district of



Shri Sushilkumar Shinde, Union Minsiter of Power at foundation stone laying ceremony of 1500 MW Tipaimukh HE Project on 16 Dec., 2006. Seen L to R are Shri R.V. Shahi, Secy. (Power) and Prthviraj Chavan, Minister of State (PMO)

Manipur. The firm power of the project is 434.44 MW. The annual design energy of the project is estimated to be 3,806 MU at 90% dependable year. In addition to hydro power generation, 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. The Revised Cost estimate has been cleared by CEA for a total cost of Rs. 5855.83 Crs. including IDC of Rs 828.99 Crs 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. 246.00 Crs., Flood Moderation for Rs. 445.80 Crs. and diversion of National Highway for Rs. 166.61 Crs., which have been agreed 'In Principle' to be borne by the respective Ministries of the Govt. of India.

The project will be scheduled to be commissioned within 87 months after CCEA clearance.

PARE HYDRO ELECTRIC PROJECT (110 MW) IN ARUNACHAL PRADESH:

MOA signed with Govt. of Arunachal Pradesh on 21.09.06 for execution of the Project. Stage-II activities are in progress. Project cost has been estimated at Rs. 624.87 Crs. at December 2005 Price Level. Commissioning Schedule is 4 (four) years from the date of CCEA clearance.

SURVEY & INVESTIGATION WORKS OF NEW HYDRO PROJECTS:

- DPR of Pare Hydro Electric Project (110 MW), Talong HEP (160 MW), Badao HEP (60 MW) and RHEP Stage-II (130 MW) have been submitted to CEA during 2005-06.
- Survey & Investigation works for the following projects including preparation of DPR during 2006-07 are in progress.
  - i) Dibbin HEP (100 MW), Arunachal Pradesh.
  - ii) Kapak Leyak HEP (160 MW), Arunachal Pradesh
  - iii) Mawhu H.E. Project (120 MW), Meghalaya.
- NEEPCO has been asked to take up development of Tizu Zungki HEP (150 MW) in Nagaland.

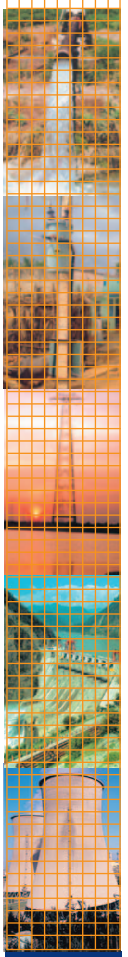
PROPOSAL TO TAKE UP COAL BASED THERMAL POWER PROJECT IN THE NORTH EAST:

In view of abundant coal reserves with high calorific value in the North East, NEEPCO proposes to take-up following coal based thermal power projects.

Sl. No.	Name of Project	Coal Reserve (Million Tonne)	Coal Requirement (Million Tonne/Year)	Generation Cost per unit (Completed)
1.	Margherita TPP, Assam (480 MW)	316 (Makum Coal Field)	1.7	Rs. 2.18
2.	West Khasi Hills TPP, Meghalaya (240 MW)	50 (Langrin Coal Field)	0.8	Rs. 2.10
3.	Garo Hills TPP, Meghalaya (720 MW)	127 (Simsang Coal Field)	2.5	Rs. 1.94

EXTENSION OF AGARTALA GAS TURBINE POWER PLANT (84 MW):

NEEPCO has proposed to install two more gas turbines of 21 MW each totaling addition of 42 MW at existing plant of Agartala Gas Turbine Power Plant.



CHAPTER – 22.7

SATLUJ JAL VIDYUT NIGAM LIMITED

(Formerly Nathpa Jhakri Power Corporation Ltd.)

1.0 About SJVN

The Satluj Jal Vidyut Nigam Limited – SJVN (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 SJVN is Rs. 4500 crores.

The Nathpa Jhakri Hydro – Power Station – NJHPS (1500 MW) was the first project undertaken by SJVN 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 SJVN, 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 upliftment of the people in its vicinity, the 1500 MW NJHEP 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.

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%

A view of kunni tunnel at Rampur Hydro Electric Project

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 has refused to buy its share of power from the 1500 MW NJHPS, which has been reallocated by MOP, GOI, to other beneficiary states.

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 Performance

The financial position of SJVN, for the last 3 years, are as under:

(Rs. in Crores)

S.No.	Description	2005-06	2004-05	2003-04*
A.	**INCOME DETAILS**			
I	Sales	1371.50	1098.27	216.93
II	Other income	20.28	22.72	6.60
III	Total income (I+II)	1391.78	1120.99	223.53
IV	Profit before Depreciation, Interest & Finance Charges and Taxation	1256.39	1049.43	211.61
V	Profit before tax	543.97	323.85	(-)93.09
VI	Profit after tax	498.22	298.43	(-)93.09
VII	Dividend	159.43	143.16	-
VIII	Tax on Dividend	22.36	14.25	-
IX	Reserves and Surplus	358.788	43.406	(-)93.09
B.	**SOURCES OF FUND**			
I	Share Capital	4108.81	4108.81	4045.51
II	Reserve & Surplus	358.788	43.406	(-)93.09
III	Net Worth	4467.60	4152.22	3952.41
IV	Borrowings	3082.735	3631.701	3812.31
	TOTAL	**7550.336**	**7783.921**	**7764.72**
C.	**APPLICATION OF FUNDS**			
I	Gross Fixed Assets	7972.614	7980.288	6722.289
II	Less Depreciation (-)	909.40	579.26	217.81
III	Net Block	7063.215	7401.024	6504.48
IV	Total Fixed Assets (including capital work in progress, investments etc.)	7183.84	7476.48	7746.02
V	Net Current Assets	364.09	307.09	17.41
VI	Misc. Expenditure	2.41	0.346	1.29
	TOTAL	**7550.34**	**7783.92**	**7764.72**

* SJVN 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) were injected into the Northern Grid.

Gross Energy Generation during the year 2005-06 was 4104 MUs, out of which 4055 MUs (Ex–Bus Bar Energy Generation) were injected into the Northern Grid.

The Gross Energy Generation during the year 2006-07, up to January 2007, has been 5897.83 MUs, out of which 5596.14 MUs (Ex–Bus Bar Energy Generation), have already been injected into the Northern Grid.

The Nathpa Jhakri Power Station has generated 15926.88 MU of electricity since beginning up to January 31, 2007.

Satluj Jal Vidyut Nigam Limited has undertaken the following measures to contain the problem of high silt levels during monsoons which results in forced closures and damage to under water turbine parts (i) raising the Dam height of Nathpa Jhakri Power Station (NJPS); (ii) coating of under water parts of the turbines of NJPS by 500 micron thickness using HVOF technology for coating; (iii) provision of blank panels at Dam Intakes; and (iv) provisions of submersible dredging pumps at Power Intakes to remove accumulated silt. The implementation of these measures is likely to be completed by June, 2007 which will ensure that the closure of power station due to silt is minimised and maximum power is generated during monsoon periods. In addition to the above, the Catchment Area Treatment Plan for 1500 MW NJPS with a total cost of approximately 29.57 crores is also under implementation which is likely to be completed by March, 2011.

6.0 Progress Made During 2006–07

The details of the Progress made during the year 2006-07, in respect of Energy Generation by SJVN, are as under:

Description	Target upto Jan. 31, 2007	Actual Achievement upto Jan. 31, 2007	Balance Target w.e.f. Jan. 31, 2007 to March 31, 2007	Total Target during 2006-07
Gross Energy Generation During 2006-07	5897.83 MU	5596.14 MU	502.2 MU	6400 MU

A view of Surge Shaft Top Pond at Nathpa Jhakri Hydro Electric Project

7.0 Corporate Plan

SJVN 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 Hydro Power Generation. SJVN has already taken up the execution and subsequent operation and maintenance, of the following projects in the States of Himachal Pradesh and Uttarakhand:

(1) Rampur H.E. Project (412 MW) located on river Satluj in Shimla district of Himachal Pradesh.

(2) *Luhri H.E. Project (700 MW) located on river Satluj in Shimla district of Himachal Pradesh.

(3) Devsari Dam H.E. Project – 300 MW, on river Pindar, located in district Chamoli of Uttarakhand State.

(4) Naitwar Mori H.E. Project – 33 MW, on river Tons (a tributary of river Yamuna), located in district Uttarkashi of Uttaranchal State.

(5) Jakhol Sankri H.E. Project – 33 MW, on river Supin, located in district Uttarkashi of Uttaranchal State.

* The Implementation Agreement for the execution of Luhri H.E. Project is yet to be signed by Govt. of Himachal Pradesh with SJVN.

SJVN is also making all out efforts to take up the execution of more projects in the other states of the Country.

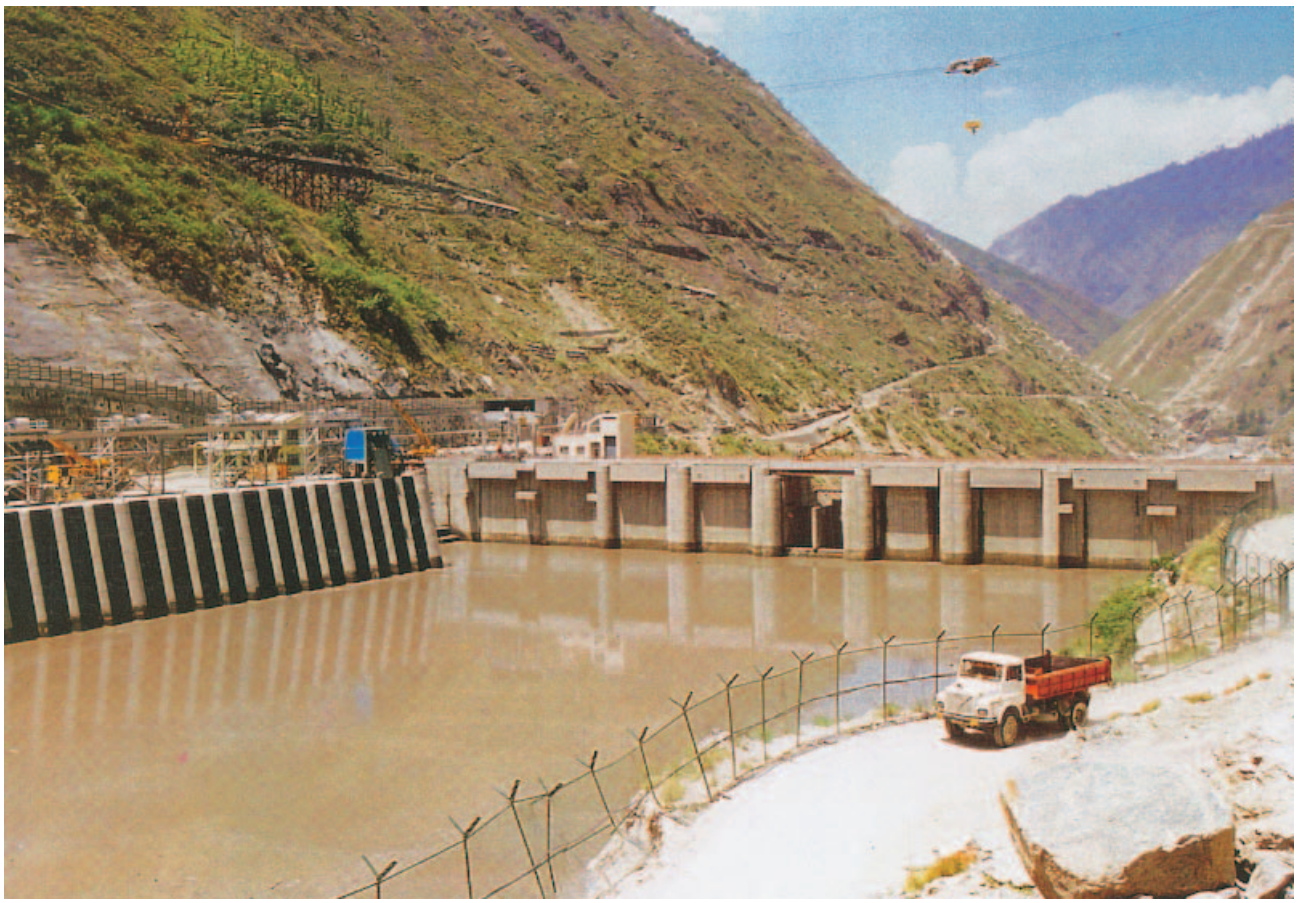
8.0 Organizational Status

8.1 Human Resources

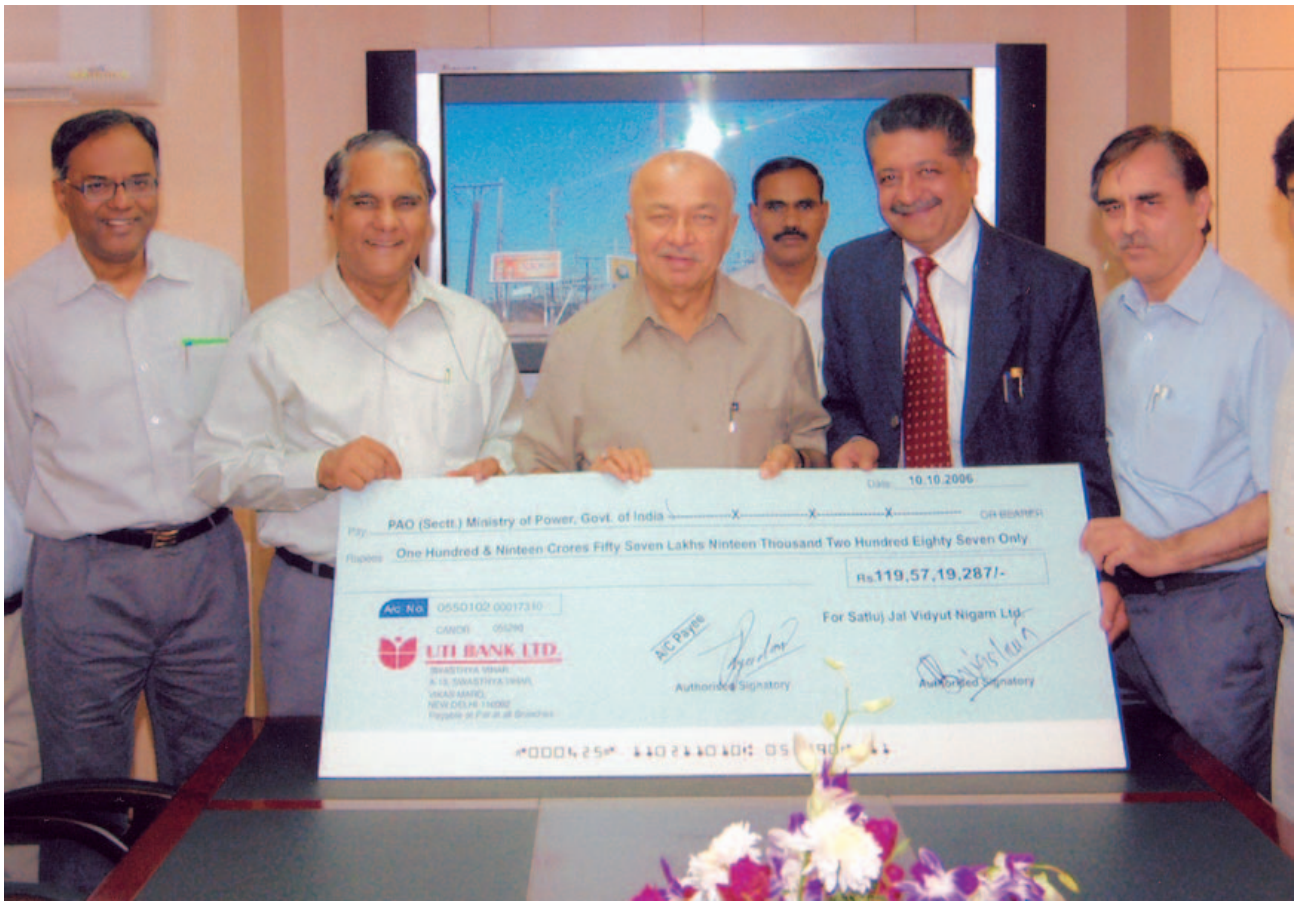
The total man power on the rolls of SJVN was 857 as on 31st March 2006 as against 780 as on 31st March 2005. The strength of HPSEB / HP Govt. on deputation on the above date was 895. The strength of SC, ST and OBC employees as on the above date was 181, 39 and 79 respectively. Special recruitment drive is being undertaken to fill up the vacancies in these categories.

8.2 Environment, Resettlement & Rehabilitation Environment

1500 MW NJHPS is one of the most eco-friendly Projects in the country. Being a run of the river Project, it has minimum adverse impact on the ecology of the area and least disturbance to the flora and fauna.



Dam & Intakes of the 1500 MW Nathpa Jhakri Power Project



CMD of SJVN presenting the Dividend Cheque to the Hon'ble Minsiter of Power Shri Sushilkumar Shinde in the presence of Shri R.V. Shahi, Secy. (Power) and Shri A.K. Kutti, Jt. Secy. (Hydro)

Afforestation of 246 hectares of forestland is being taken up in comparison to 123 hectares of forestland acquired for the Project. The dumping of excavated material only in pre-identified areas and prevention of its flowing into the river by constructing adequate toe-walls further ensures the Project's harmony with the environment.

NJHPS launched a comprehensive Environment Management Plan with an estimated outlay of Rs. 33 crores approx. This plan consists of CAT Plan, Fisheries Plan, Muck Disposal Plan and Environmental Monitoring Plan. So far an amount of Rs. 6.50 cores, have already been spent.

Resettlement & Rehabilitation

SJVN, 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 SJVN, 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 SJVNs 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 IMPLEMENTATON IN BANK ASSISTED PROJECT IN INDIA. IT SHOULD BE CONSIDERED AS AN EXAMPLE FOR OTHER PROJECTS.'

Environment and Resettlement & Rehabilitation Policy

SJVN (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 is presently responsible for the implementation of the Tehri Hydro Power Complex (2400 MW), Vishnugad Pipalkoti (444 MW) and six other new Hydro Electric Projects, totalling to an installed capacity of 695 MW.

The Corporation has an Authorised Share Capital of Rs.4000 Cr. The cost of the Project is being shared in the ratio of 75:25 (Equity portion) by Govt. of India & Govt. of U.P. for Power Component, while the Irrigation Component (20% of cost of Tehri Dam & HPP) has been entirely funded by the Govt. of U.P.

Tehri Hydro Power Complex (2400 MW), comprises the following components:

1. Tehri Dam & Hydro Power Plant (1000 MW)
2. Koteshwar Hydro Electric Project (400 MW)
3. Tehri Pumped Storage Plant (PSP) (1000 MW)

The Govt. in March, 1994 approved the implementation of Tehri Dam & HPP (1000 MW) alongwith committed works of Koteshwar HEP and essential works of Tehri PSP, as Stage-I of Tehri Power Complex. With the synchronization of three units (Unit-IV, III & II) 250 MW each with the Northern Grid on 17.07.2006, 25.10.2006 & 31.01.2007 respectively, the Corporation entered into an era of providing much needed peaking power to the Northern Grid. The first Unit (Unit-IV) after successful synchronization was inaugurated by Hon'ble Minister of Power on 30th July'06. This project has become the landmark and pride of the Nation as a whole.

The 400 MW Koteshwar HEP, was approved by Govt. in April,2000 and the work has progressed in right earnest and after completion of major excavation

A view of Right Bank Shaft Spillway

A view of New Tehri Town

work in Dam, Power Intake and stilling basin areas, the concreting of Power Intake Dam and stilling basin was started in Jan'06, Jun'06 and Oct.'06 respectively.

Investment approval for Tehri Pumped Storage Plant (PSP) (1000 MW) has been accorded by the Govt. in July'06 at an estimated project cost of Rs.1657.60 Cr.(at Dec'05 Price Level) with Debt Equity ratio of 70:30. The essential works of Tehri PSP have already been completed with Tehri Dam & HPP Stage-I.

The Implementation Agreement for the execution of the Vishnugad Pipalkoti Project (444 MW) has been signed with the Govt. of Uttaranchal on 2nd June, 2006. Techno-Economic Clearance (TEC) to the Project has been accorded by Central Electricity Authority (CEA) on 21.09.2006 for Rs.2091.43 Cr. including IDC at Mar'06 Price Level. Proposal for investment decision is being processed & parallely the process of award of major works is in progress.

Government of Uttaranchal (GOUA) has allotted six new Hydro Electric Projects totally to an installed capacity of 695 MW to THDC in Uttaranchal State and the MOU with Govt. of Uttaranchal for Implementation of these projects have been signed on 21st Nov., 2005. Survey & Investigation works for three projects except Bokang Bailing, Jadhganga & Karmoli falling under Wild life areas have been taken up for preparation of the feasibility reports.

MOU has been signed with the Ministry of Power in March-2006, setting the milestones for the ongoing projects during 2006-07 for the first time.

BENEFITS FROM TEHRI HYDRO POWER COMPLEX

The benefits from the Tehri Hydro Power Complex are as under :

- Addition to the installed generating capacity in the Northern Region : 2400 MW
- Annual energy availability (Peaking) : 6200 MU
- Irrigation (additional) : 2.70 Lac. ha.
- Stabilisation of existing irrigation : 6.04 Lac.ha.
- Augmentation of Power for Downstream Projects : 200 MU
- 300 Cusecs (162 million gallons per day) of drinking water for Delhi which will meet the requirements of about 40 Lac. people.
- In addition, 200 Cusecs (108 million gallons per day) of drinking water for towns and villages of U.P. which will meet the requirement of 30 Lac people.

- Integrated development of Garhwal region, including construction of a new hill station town with provision of all civic facilities; improved communication, education, health, tourism, development of horticulture, fisheries, and afforestation of the region.

1. TEHRI DAM & HPP, STAGE-I (1000 MW)

Tehri Dam project is a multipurpose Hydro Project under construction on the river Bhagirathi in Uttaranchal State. Tehri Hydro Power Plant includes the construction of the 260.5 m high earth and rock fill dam, Spillway structures, power tunnels and an underground power house cavern with an installed capacity of 1000 MW (4X250 MW).

STATUS OF THE PROJECT WORKS

A. Main Dam

The 260.5 m high Tehri Dam, which is one of the highest Earth & Rockfill Dams in the World has been raised to its full height and a mammoth quantity of 279.82 Lac.Cum fill material has been placed to complete the Dam.

Tehri Dam has achieved a unique distinction of having two inspection galleries inside the core of the Dam for providing access for physical inspection of Dam behavior during the construction and operation period of the Project.

An extensive instrumentation scheme consisting of 355 nos. instruments has been provided in Tehri Dam. These instruments are installed at different levels in the Dam body for measuring seepage, pore pressure, settlement and temperature.

B. Spillways

Spillway System of the Project comprising a Chute Spillway & four Shaft Spillways, has been designed for a Probable Maximum Flood (PMF) 15540 Cumecs and a drop of 220 M. Spillway structures comprise of a number of unique features, which have been implemented in India for the first time.

Chute Spillway has been completed in all respects including erection & testing of gates. Total quantity of concrete placed in Chute Spillway is 8.68 Lac. Cum. T-3 Circuit with highly complex hydraulic conductor system comprising of Intermediate Level Outlet (ILO), Shaft T-3 and Tunnel T-3 which was critical for commissioning of the Project was successfully completed and put to operation during the year. Application of special coating 'Polyurea' for abrasion resistance in ILO has been done after a long drawn process of examining its technical suitability. This kind of protective coating has been executed for the first time in India on water tunnel. It is a matter of pride for the Corporation that above water conductor system was successfully operation during the year.

A panoramic view of Tehri Reservoir

Inauguration of First Unit (250 MW) of Tehri Project by Sh. Sushilkumar Shinde, Union Minister of Power, in the presence of Smt. Amrita Rawat, Minister of State for Energy Govt. of Uttrakhand, Sh. R.V. Shahi, Secretary (Power) & Shri R.K. Sharma, CMD, THDC

The radial gate, designed to work under the very high head of 140 M with hydraulic hoist has been erected & commissioned in the Intermediate Level Outlet. The erection and testing of Emergency Gates has also been completed.

Works of Left Bank Shaft Spillways has also been completed during the year.

C. Power House Complex

i. Civil Works

All the civil works of Power House Complex viz construction of 04 Nos Head Race Tunnel – 8.5 M dia alonwith Intake Structure, 02 Nos. Tail Race Tunnels – 9.0 M dia and 8 Nos. Underground Caverns (2 Nos. Bifurcation Chambers, Butterfly Valve Chamber, Penstock Assembly Chamber, Transformer Hall, Machine Hall, Upper Expansion Chamber, Lower Expansion Chamber) and 13 Nos shafts (04 Nos Maintenance Gate Shafts-11 M dia, 04 Nos. Vertical Penstocks- 5.75 M dia, 04 Nos. Draft Tube Gate Shafts of size 6.70 M x 5.0 M and 01 No. Link Shaft connecting Power House Cavern with Butterfly Valve Chamber are already complete.

River Joining works of Tail Race Tunnels (TRT-1 & 2), which were taken up after the closure of diversion Tunnel T-2 were successfully completed in a short span of 03 months.

ii. Electro-Mechanical Equipment

Three Units (Unit IV, III & II) were successfully synchronized with the Northern Grid on 17th July 2006, 25th October 2006 and 30th January, 2007 and two units (Unit IV & III) have been put on commercial operation on 22nd Sept' 06 & 9th Nov'06 respectively. Unit-I also in advance stage of commissioning and is planned for synchronization in March'07.

GENERATION FROM THE PROJECT

Tehri HPP has generated 632.32 MU till Jan.'07.

REVISED COST ESTIMATE

RCE-II for Rs.8178.22 Cr., at Nov' 05 PL has been submitted for Govt. approval.

EXPENDITURE

Total expenditure incurred up to Jan.'07 on Tehri Dam and HPP is Rs. 7985.31 crores.

REHABILITATION

Considerable progress has been achieved in the Rehabilitation & Resettlement of the affected population, being carried out by the State Govt. of Uttaranchal, with funds provided by THDC. The R&R work is being implemented by the Rehabilitation Directorate under the overall supervision and control of Commissioner, Garhwal. The R&R is also closely monitored at various levels in the State Govt. and the Govt. of India.

Under Urban Rehabilitation, all the 5291 families of Old Tehri Town, categorized as fully affected, has been completely rehabilitated & resettled in NTT, Dehradun or Rishikesh as per option of oustees. The Old Tehri Town was vacated in Jan 2004.

Under Rural Rehabilitation, all the 3355 fully affected rural families of fully affected villages have been rehabilitated. In partially affected villages, out of 2074 fully affected rural families, 1612 families have been rehabilitated, while R&R of the balance rural families is under progress.

The evacuation of affected rural families up to EL 790 m. has already been completed and evacuation of balance families above EL 790 m, is under process.

All public properties/community facilities created at the Resettlement Sites under the Project have been transferred to concerned Departments of the State Govt. for operation & maintenance.

CONNECTIVITY & PUBLIC FACILITIES IN CUT OFF AREA

- In lieu of Tehri - Dharasu Road, Chamba - Dharasu road at higher altitude have been constructed at Project cost.
- In lieu of Tehri – Ghansali road, Tehri – Bhagirathi Puram - Tipri -Ghansali road have been constructed at Project cost.
- Two medium motor vehicle bridges, one each in Bhagirathi Valley i.e., Siyasu bridge and Bhilangana Valley i.e., Pipaldali bridge have been provided along with approaches. Pipaldali bridge is made operational, while Siyansu bridge is expected to be made operational by March 2007. However, the pedestrians have been allowed to cross the bridge.
- To reduce the travel time and cost between Pratap Nagar and New Tehri Town a heavy motor vehcile bridge across Bhagirathi River near village Dobra with a span of 532 M (5.5 M clear road way for single lane) amouting to Rs. 90 crores is also being constructed with funding by GOUA & GOI.
- Additional package of Rs.25.00 Crs. for road connectivity with bridges, re-construction and relocation of public facilities existing below EL 835 M. at higher elevation for use of population residing above submergence level, arrangement of Cable Car & Ferry Boat for cut-off area, enhancement of compensation for Rural Shopkeepers of cut-off area has also been provided.

COST/ EXPENDITURE OF R&R

The approved provision for R&R as per RCE is Rs. 983.14 Crs. (March'03 PL) with additional measures agreed by the Govt., expenditure on rehabilitation is likely to be around Rs. 1260 Crs. An amount of Rs. 1214 Crs. (Provisional) has been released for R&R works upto 31.01.2007.

ENVIRONMENT

The Environment clearance of Tehri Hydro Power Complex (2400 MW) was accorded by the Ministry of Environment & Forests (MOEF) in July, 1990 subject to the fulfilment of certain conditions, which were to be implemented pari-passu with the construction of the Project.

All the required studies had been completed by the Corporation and these had indicated that no environmental Damage would be caused by the construction of the Project, which cannot be remedied by adoption of appropriate measures. Necessary Action Plans, wherever required, were drawn up and are under implementation.

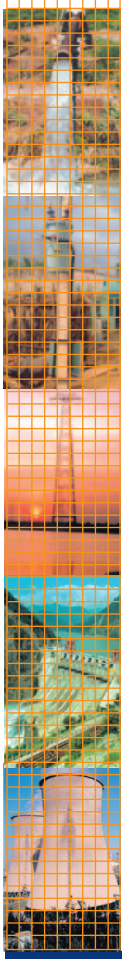
Catchments Area Treatment in the area of high and very high erodibility classification in entire area of 52,204 ha has been completed. The compensatory afforestation in an area of 4516 ha. has already been done in districts of Jhansi and Lalitpur in U.P. The plantation done on non-forest land is being converted into protected forest by State Forest Deptt.

A Botanical Garden located adjacent to the Reservoir in an area of 14.28 ha. at Koti in Tehri Garhwal has been set up at project cost. The work of Mahseer Fish hatchery for induced artificial breeding has also been completed, and fingerlings are being released in the Tehri reservoir.

2. KOTESHWAR HYDRO ELECTRIC PROJECT (400 MW)

The Koteshwar Hydro Electric Project is an integral part of the 2400 MW Tehri Hydro Power Complex. 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 Koteshwar Project will regulate water releases from Tehri Reservoir for irrigation purposes.

The Govt. of India has approved the execution of Koteshwar H.E Project (4X100 MW), at a cost of Rs.1301.56 cr. including IDC of Rs.190.04 cr. at Oct.'99 price level with debt equity ratio of 3:1.



STATUS OF PROJECT WORKS

a. Civil Works

- The Diversion Tunnel has been constructed and Bhagirathi River diverted.
- The main civil works package has been awarded and works are in progress.
- The Excavation for Dam & Spillways, Stilling Basin and Power Intake has been completed and the Concrete placement is in progress. The Excavation for surface Power House, Switchyard and Tail Race Channel is in progress.
- Out of total Open Excavation of 70.24 Lac. cum., a quantity of 63.41 Lac. Cum. has been excavated for Dam & Spillway, Stilling Basin, Power Intake, Switchyard & TRC etc. The underground excavation of vertical Penstocks has been completed and the excavation in horizontal Penstocks is in progress.

b. Electro-Mechanical Works

Contract for design, manufacturing & supply of Electro-Mechanical Equipment for main generating unit including auxiliaries and EOT cranes has been awarded to M/s BHEL. The supplies of equipment by M/s BHEL, are being progressively received.

c. Hydro-Mechanical Works

The Main Package of Hydro-Mechanical works for design, manufacture, supply, transportation, erection and installation of Power Intake Gates, Spillway Gates, Draft Tube gates, Hoists, Stoplog Gates, Penstock Steel Liners etc. have been awarded and the work of fabrication of Penstock Steel Liner is in progress.

d. Rehabilitation and Land Acquisition

Due to construction of Koteshwar Project, 02 villages will come under submergence and 14 villages will be partially affected. There were 77 fully affected families, which have already been rehabilitated. Another 292 families are partially affected to whom only cash compensation is being paid. The rehabilitation package evolved for Tehri Stage-I is applicable for rehabilitating the families affected by Koteshwar HEP.

All the entitled families of 2 villages under fully submergence Pendars and Mulani Villages have been rehabilitated fully with the allotment of residential and agricultural plots & resettled.

COMMISSIONING SCHEDULE

The Project is planned to be commissioned in the year 2009-10.

EXPENDITURE

Total expenditure incurred on Koteshwar HEP (400MW) upto Jan.'07 is Rs. 434.12 Crs.

3. TEHRI PUMPED STORAGE PLANT (PSP) 1000 MW

Investment approval for implementation of Tehri PSP was accorded in July,06 at an estimated cost of Rs.1657.60 Cr. at Dec.'05 PL including IDC of Rs.81.64 Cr. Tehri PSP is the first Central Sector Pumped Storage Scheme and the largest Pumped Storage Scheme in the country.

Essential works of PSP were taken up along with the execution of Stage-I works. Head Race Tunnels along with Intake Structures for PSP have been completed. The Transformer Hall constructed in Stage-I would also serve for PSP. The main cable gallery, interface facility for power evacuation has also been completed. Thus, major Civil Works to be taken up in PSP involve only the Machine Hall, Tail Race Tunnels, Penstocks and Surge Shafts.

Excavation of the Adit-6 to PSP Machine Hall, involving a total length of 883 RM is under progress and around 757 RM stands completed. Also, excavation of Adit-8&9 to Tail Race Tunnels and D/S Surge Shaft has been taken up recently. Excavation of Adits being a prerequisite activitiy for taking up works in the Power House, with this measure, it would be possible to commence underground excavation of the Power House Cavern, as soon as main Contractor is in place. Similarly, Protection wall at TRT outlet, which is essential considering the discharge from the Tehri Power Station, has been taken up.

The Corporation has recently appointed Consultant for Tehri PSP, who shall prepare the bid documents for the EPC Package to be invited under ICB for the Main Works. The award of EPC contract for Design, construction and commissioning of Tehri PSP is scheduled in Oct.'07.

COMMISSIONING SCHEDULE

The Project is planned to be commissioned by June 2011.

EXPENDITURE

Total expenditure incurred on Tehri PSP upto Jan.'07 is Rs. 171.71 crs.

4. VISHNUGAD PIPALKOTI (444 MW)

Govt. approval for Stage-II activities i.e. preparation of Detailed Project Report (DPR) and development of infrastructural facilities was received by the

Corporation in January'06 for an amount of Rs. 34.52 Cr.. The work of preparation of DPR was entrusted to WAPCOS. The DPR was submitted to CEA on 28th March 2006, for accord of Techno Economic Clearance (TEC) of the Project. CEA; in Sept.'06 has accorded TEC to the 444 MW Vishnugad Pipalkoti Hydro Electric Project at an estimated cost of Rs. 2091.43 Cr. including IDC &FC of Rs. 204.70 Cr. at March'06 PL.

Implementation Agreement for the Vishnugad Pipalkoti HEP has been signed with Govt. of Uttaranchal on 2nd June 2006. As per the Implementation Agreement, the Project is scheduled to be completed by March, 2012.

The work of the development of infrastructural facilities viz. approach roads, Bridges, etc. is also being taken up. Field Hostel and Offices are already functional at Pipalkoti. Approach Roads / Pathways to various sites viz. Dam site, Power House site, Surge shaft, HRT junction have been constructed. The work of Supply and erection of two Bailey bridges (one at Dam site and another at Power House site) has been awarded to Garden Reach Ship Builders, Kolkata. Land acquisition (29.208 ha.) for roads/ colony and other works is in advance stage. Process for land acquisition for land to be acquired in the stage-III has also been taken up.

Comprehensive EIA / EMP report of the Project has been submitted to Pollution Control Board, Govt. of Uttaranchal for NOC. Public hearing for NOC was held in Oct., 2006 and Jan., 2007. After getting NOC from UAEPPCB, Environmental Clearance shall be processed by MOEF.

The funding of the loan portion of the Project is under consideration by the World Bank.

EXPENDITURE

Total expenditure incurred on Vishnu Gad Pipalkoti HEP (444 MW) upto Jan.'07 is Rs.12.08 Crs.

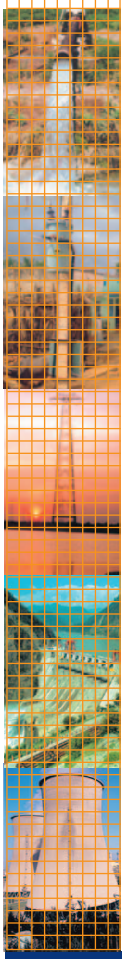
5. NEW PROJECTS

Govt. of Uttaranchal has allotted six New projects in Bhagirathi, Alaknanda and Sharda Valleys, for implementation by THDC namely Karmoli-140 MW, Gohana Tal- 60 MW, Jadhganga -50 MW, Maleri Jhelam - 55 MW, Jhelam Tamak- 60 MW and Bonkang Bailing -330 MW. Implementation Agreement between THDC and GOUA for these Projects were signed on 21st Nov 05.

Stage-I environmental clearance was accorded by MOEF in Dec'05 for five projects except for Bokang Bailing Project as the proposed project site is coming under Askot Musk Deer Sanctuary. Govt. of India accorded approval to carry out Stage-I activities of five Projects except Bokang Bailing Project in March'06. Accordingly, Preparation of Feasibility Report, DPR has been awarded to WAPCOS & taken up. The Survey & Investigation work, Environmental studies has also been taken up.

State Forest Deptt. has now intimated that, sites for Karmoli and Jadhganga Projects fall under the Gangotri National Park and permission of Steering Committee of National Board of Wild life / Hon'ble Supreme Court would be required.

GOUA in Oct'06 have informed that three projects, viz. Birahiganga, Birahiganga-I & Birahiganga-II have since been allotted to Private developers on Birahiganga river in the reach of Gohana Tal Project & that Project may be planned accordingly. Matter has been taken up with GOUA for optimal utilization of available potential.



CHAPTER – 22.9

DAMODAR VALLEY CORPORATION

Damodar Valley Corporation (DVC), one of the first major infrastructural 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 Govts. of Jharkhand and West Bengal. The Chief Executive Officer is the Secretary, who alongwith the Financial Adviser of the Corporation is appointed by the Central Govt. The Head of the Engineering Wing are the Director (Technical), Director (Project), Director (Operation) and Director (Commercial). They are assisted by Sr. Chief Engineer/Chief Engineer who head 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.

PERFORMANCE HIGHLIGHTS 2006-07 (UPTO Jan.'07)

1.0 PERFORMANCE HIGHLIGHTS

POWER GENERATION – PHYSICAL

- Highest Daily Gross Energy Generation of 49.678 Million Units achieved on 27.01.2007.
- Highest Daily Thermal Energy Generation of 49.008 Million Units achieved on 27.01.2007.

DVC's 175 MW Bokaro 'A' Thermal Power Station

Shri Sushilkumar Shinde, Union Minister of Power at the Ground Breaking Ceremony of 1000 MW Maithon Thermal Power Plant in Sept., 2006. Facing him is Shri Subodh Kant Sahay, Minister of State (Independent Charge) Food Processing Industries

- Highest Monthly Gross Energy Generation of 1377.9 Million Units achieved in Dec., 2006.
- Highest Monthly Thermal Energy Generation of 1368.3 Million Units achieved in Dec., 2006.
- Gross Energy Generation by DVC Generating Units during Apr'06 to Jan'07 was 11659 Million Units, an improvement of 13.2% compared to 10297Million Units generated during the corresponding period of 2005-06.
- Energy Generation by Thermal Stations touched 11326 Million Units during Apr'06 to Jan'07, an increase of 11.6% in comparison with 10144 Million Units during the same period of 2005-06.
- DVC Thermal units in operation recorded combined PLF of 69.8% during Apr'06 to Jan'07 compared to 62.5% achieved during the same period of last year.
- Auxiliary Power Consumption in Thermal power Stations came down marginally to 10.61% during Apr'06 to Jan'07 from 16.8% during the corresponding period of 2005-06.
- Combined Heat Rate of Thermal units also came down to 2787 Kcal/Kwh from 2948 Kcal/Kwh during the same period for last year.

FINANCIAL (PROVISIONAL)

- Revenue from sale of power during 2006-07 (till Dec'06) was Rs. 3145 Crores as against Rs. 2528 Crores during the corresponding period of 2005-06 – an increase of 24.80%.
- Profit before tax during 2006-07 (till Dec'06) increased by about 58% to Rs. 1194 Crores from Rs. 753 Crores earned last year upto Dec'06.
- Net profit after adjustment of loss on Irrigation and Flood Control was Rs. 1146 crores during April 2006 - Dec.'06 against Rs. 707 crores of last year for the same period an increase of about 63%.
- Profit after tax also increased to Rs. 948 Crores in 2006-07 (till Dec'06) from Rs. 584 Crores of Last year upto Dec'05.

GENERATION AND POWER SUPPLY POSITION

Particulars	2005-06 (till Jan'06)	2006-07 (till Jan'07)	Target (Feb'07 to Nov'07)
1. Generation (MU)			
(i) Thermal	10144	11326	2322
(ii) Hydel	153	331	18
TOTAL	**10297**	**11657**	**2340**
2. Thermal PLF (%)	62.56	69.80	–
3. Purchase of Power (at DVC Bus) (MU)	590	850	100
4. Total Stock (at DVC Bus)(MU)	7495	11075	2295
5. Saleable Units (at DVC Bus) (MU)	7293	10750	2225

CAPACITY ADDITION PROGRAMME

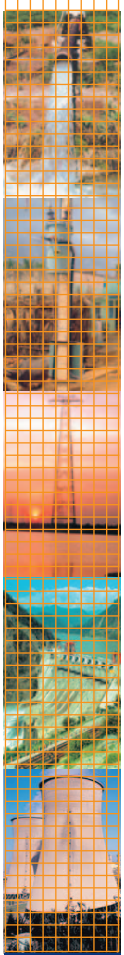
DVC has taken up the programme for capacity addition of 1210 MW through Extension Projects during 10th Plan period. Brief status of the projects of 10th Plan including respective targets for completion is given in the table below.

Project	Capacity (MW)	Brief Status as on Nov'05	Target Commercial Operation
Mejia TPS Extn. Unit # 4	1x210	Commissioned on 16.10.04 and is under commercial operation since 13.02.05.	
Mejia TPS Extn. Unit # 5&6	2x250	Construction is under progress. Boiler for U #5 lit up on 01.01.07. Boiler Hydro-test (Drainable) for U#6 completed on 10.11.06.	Unit #5: 31.05.07 Unit #6: 30.06.07
Chandrapura TPS Extn. Unit # 7&8	2x250	Construction is under progress. Boiler Drum lifting of U#7 completed on 25.04.06 & for U#8 on 14.08.06.	Unit #7: 31.08.07 Unit #8: 30.09.07
Total	**1210**		

In addition, DVC has taken up capacity addition projects for total 6000 MW for completion during the 11th plan period. Out of above, 1500 MW capacity addition will be implemented through JV companies of DVC. Brief schedule and status of the projects are given below.

11th Plan Power Projects Schedules

Project	Capacity (MW)	LOA	Commissioning U#1/U#2	COD U#1/U#2
Mejia TPS Ph-II (2x500 MW)	1000	14.12.06	Dec-09/Mar-10	Mar-10/ Jun-10
Bokaro 'A' TPS (1x500 MW)	500	Feb-07	Feb-10	May-10
Koderma TPS (2x500 MW)	1000	Apr-07	Jul-10/Nov-10	Oct-10/ Feb-11
Durgapur Steel TPS (2x500 MW)	1000	Aug-07	Nov-10/Feb-11	Feb-11/ May-11
Raghunathpur TPS (2x500 MW)	1000	Oct-07	Jan-11/Apr-11	Apr-11/ Jul-11
Maithon RB TPS (2x500 MW) – by JVC	1000	Dec-07	Mar-10/Jun-10	
Bokaro Steel TPS (2x250 MW) – by JVC	500	Dec-07	Jul-10/Oct-10	
TOTAL	**6000**			



11th Plan Power Projects Status

Project	Water clearance	Land	Coal	Mo&EF Clearance
Mejia TPS Ph-II (2x500 MW)	Recd.	Available	Blocks recd.	Recd.
Bokaro 'A' TPS (1x500 MW)	Recd.	Available	LT linkage	Public hearing held on obtained 29.12.06. ECT meeting on 10.01.07
Koderma TPS (2x500 MW)	Recd.	Available	LT linkage obtained	Recd.
Durgapur Steel TPS (2x500 MW)	Recd.	Available	LT linkage obtained	Recd.
Raghunathpur TPS (2x500 MW)	Recd.	Being applied.		Being applied for.
Maithon RB TPS (2x500 MW) – by JVC	Recd.	Available	Applied for Blocks	Recd.
Bokaro Steel TPS (2x250 MW) – by JVC	Recd.	Available	Applied for Blocks	Being applied for.

TRANSMISSION PROJECTS

DVC has prepared a Master Plan for Transmission Network developed with the assistance of CEA to be implemented from 10th Plan onwards for strengthening of the existing system as well as absorption / evacuation of power from the extension units. Pursuant to the master plan, 2 Nos. 220 KV Barjora, Ramgarh and 132 KV Hazaribagh substations were commissioned till the end of financial year 2005-06. In addition to the new T&D projects, action has been taken for refurbishment of the existing system by way of retrofitting of switchgear, protection system, up-rating of transformers and reconductoring of transmission lines as a continuous process and included in the yearly planning.

The list of major projects implemented and under various stages of planning and implementation is furnished below from 2006-07 onwards:

Transmission Network

1) Projects implemented

i) 220/33 kV Burnpur S/Stn. (May, 2006).

ii) 220 kV D/C BTPS-Ramgarh Line (September, 2006)

iii) 2 Nos. Bays at BTPS for BTPS-Ramgarh line (November, 2006)

2) Projects under construction

i) Extension of 132 kV Belmuri S/Stn. (2nd 50MVA Power Transformer) - expected by January, 2007

ii) 220 kV Mejia-Durgapur Line - expected by June, 2007

iii) 132 kV Patherdih-Govindpur Line - expected by November, 2007

iv) 220KV Extension at Durgapur (3rd Power Transformer : 80MVA) – expected by January, 2007

3) Projects initiated

i) Creation of 132 kV infrastructure at Barjora S/Stn. - Order placed in August, 2006. Completion by November, 2007.

ii) 132/33 kV Jamuria S/Stn. – Order placed in March, 2006. Completion by September, 2007

iii) Reconductoring of 132 kV Putki-Nimiaghat Line – Order placed in October, 2006 . Completion by August, 2007.

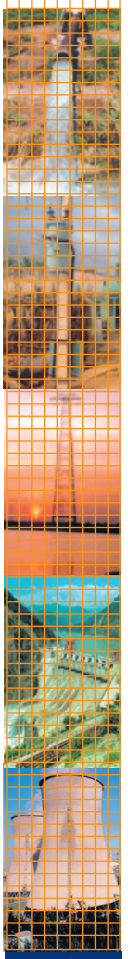
iv) Reconductoring of 132 kV Bokaro-Konar-Barhi Line – Order placed in March, 2006. Completion by June, 2007.

v) 220 kV D/C MTPS-Gola line – Contract finalized – Order to be placed by December, 2006. Completion by December, 2008.

RURAL ELECTRIFICATION PROGRAMME

West Bengal

Allocated District	East Midnapur
No. of Mouzas	807



Project at a glance

11 KV (3phase)	1548.14 KM
LT line (3 phase 4 wire)	824.00 KM
11/0.4 KV Dist. Sub/station	1224 Nos.
Service connection for BPL	9000 Nos
Total Households (including BPL)	1,13,564 Nos.
Expected completion date	31.03.2007

Status as on 31.12.2006

REC sanctioned project cost at Rs.7771.44 lakhs (Rupees 6938.79 lakhs as project cost and Rs.832.65 lakhs as DVC's service charge). Out of the above, REC released fund of Rs.44.29 lakhs inclusive of proportionate service charge. Fund to the tune of Rs.41.76 lakhs has been utilized so far.

Turnkey contract placed on M/s SPML, Kolkata for a total contract value of Rs.64.13 crores. Separate contracts for augmentation of Singda Sub-station of WBSEB for an amount of Rs. 42.52 lakhs and installation of DT metering at a cost of Rs.88.08 lakhs placed on M/s Biecco Lawrie and M/s Easun Reyrolle respectively.

Work Status :

Mouza energized: 183 Nos (38 Nos. as anti-theft measure)

BPL Service Connection affected : 2045 Nos.

Renovation work at Singda Sub-station :completed and commissioned on 02.11.2006

Work completed and awaiting inspection by WBSEB	:	85 Nos.

Work in progress in balance 539 mouzas, out of which ;

Pole erection completed	:	249 Nos.
Stringing completed	:	136 Nos.
DT erection completed	:	74 Nos.
Pole erection in progress	:	227 Nos.

JHARKHAND

Allocated Districts	Dhanbad, Bokaro, Giridih, Hazaribagh, Koderma, Chatra, Gumla and Simdega
No. of villages	8547

Check Dam Constructed by DVC Under Soil Conservation Programme

A panoramic view of Mejia Thermal Power Station of DVC situated at Bankura District of West Bengal

Project at a glance (as per DPR)

33/11 KV Sub/station	42 Nos.
33 KV lines (including reconductoring)	1260 KM
33 KV bay extension (existing sub-station)	47 Nos.
11 KV lines (1 phase + 3 phase) including Reconductoring	17933 KM
11 KV bay extension (existing Sub-station)	60 Nos.
11 KV Dist. Sub-station	11,994 Nos.
Lt line (1 phase + 3 phase)	13,908 Nos.
Service Connection to BPL	6,50,710 Nos.
Total Households (including BPL)	10,50,483 Nos.

Status as on 31.12.2006

DPR for all the eight districts submitted.

In Principle approval for Dhanbad, Koderma and Bokaro districts received vide letter dated 01.06.2006.

INV for Package-A, covering 11 KV and LT works including service connection to BPL, floated on 16.05.2006 and Package-B, covering 33 KV Sub-station and lines including augmentation work at existing Sub-stations, floated on 18.07.2006 in respect of the above said three districts.

Turnkey contract for Package-A of Dhanbad district placed on M/s Sterling & Wilson for an amount of Rs.5480 lakhs on 05.09.2006. For Koderma and Bokaro districts, contract placed on M/s SPML for an amount of Rs.5622 lakhs and Rs. 6009 lakhs respectively on 11.09.2006.

Contracts for Package-B for all the above three districts are under finalization.

In principle approval for rest five districts, namely, Giridih, Hazaribagh, Chatra, Gumla & Simdega accordead by REC on 05-12-06. Tendering is being taken up.

Work Status

- Detailed survey works, preparation of drawing and other engineering works are in progress for Dhanbad, Koderma and Bokaro District.
- Status of survey work completed :

Dhanbad	:	305 villages
Koderma	:	185 villages
Bokaro	:	223 villages

- About 500 villages covered under different schemes of JSEB are being taken up under RGGVY.

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. Salient points on various strides have been taken by DVC are furnished hereunder.

1) Engagement of M/S Energy Economy and Environmental Consultants, Bangalore for detailed Energy Audit study for Bokaro 'B' 3x210 MW Units in 2002 and identification of areas to be addressed for Energy Conservation.

2) Daily Co-ordination Meeting & Monthly ORT Meeting are held at each power station to have detailed analysis /review of the Station performance for the respective month by group of Engineers from different O&M sections and suggestions for further improvement are discussed for implementation.

3) Introduction of Maintenance Planning Cell (MPC), Operation Performance Monitoring Section (OPMS), Condition Monitoring Cell etc. for framing Preventive Maintenance Schedule along with planning of Unit Overhaul, Optimization of Operating parameters & Condition-based Predictive Maintenance.

   Lub. Oil Cells have been formed in all Thermal Power Stations to ensure use of proper lubricant along with reduction of leakages from different Lub. oil systems.

4) Formation of Peer Group of DVC & NTPC engineers for identification of problem areas & recommendation of improvement measures thereof on short, mid & long-term basis – under implementation in phases at all Power Stations.

5) Seminars and Workshops are being organized for awareness of the need of Energy Conservation.

6) Energy Conservation Cell' with constituent core members being Chief Engineer, Dy. Chief Engineers and Superintending Engineers, has been formed. At Plant level, local committee has also been formed for in-situ monitoring of Energy Conservation measures.

7) DVC organized school as well as state level Painting Competitions for students of West Bengal and Jharkhand as part of the National awareness Campaign of the Ministry of Power, Govt. of India for promoting energy conservation. The competitions were conducted as per the guidelines received from the Bureau of Energy Efficiency and in close association with the respective state Education Departments. The state level competitions along with prize distribution functions were held at Kolkata and Ranchi on 14th November 2006. Four participants who secured the first and second positions in the two states were sent to New Delhi for participating in the national level competition held on 12th December 2006. Prize distribution was held on 14.12.2006 where Shri Sushil Kumar Shinde, Hon'ble Minister of Power was the Chief Guest.

RENOVATION & MODERNIZATION

RLA based comprehensive R&M with life extension programme was undertaken for 10 (ten) old thermal units of DVC viz. BTPS 'A' – Units # 1, 2 & 3, CTPS Units # 1 to 6 and DTPS Unit # 3. In addition, R&M including uprating of 4 nos. Hydel units (Maithon U # 1, 2 & 3 and Panchet Unit # 1) were also taken up. Brief status of various R&M/LE activities as on Nov. 2006 with completion target are listed below :

1) Bokaro 'A' TPS, Unit # 1, 2 & 3 (3 x 57.5 MW, De-rated to 3 x 45 MW):

   DVC requested CEA to retire BTPS 'A' Unit # 1, 2 & 3 in view of its un-economical generation and to install new units of higher capacity. CEA communicated that DVC may plan to install new units of higher capacity and retire the present outlived units. Activities for installation of a new 1 x 500 MW in place of existing units has been taken up.

2) DTPS Unit# 3 (1 x 140 MW) :

   In place of comprehensive R&M, programme for performance improvement through short/ medium/long term basis comprehensive overhauling/ modernization has been taken up under PIE program with NTPC.

3) CTPS Units # 1 to 6 (3 x 140 MW derated to 3 x 130 MW + 3 x 120 MW) :

   (a) CTPS Unit # 1 to 3: In place of comprehensive R&M, programme for performance improvement through short/medium/long term basis comprehensive overhauling/ modernization has been taken up under PIE program with NTPC.

(b) Unit # 4 to 6 : CEA has been approached for retirement of these units on account of their un-economical performance since inception/ commissioning.

4) (a) Maithon Hydel Unit # 2 (20 +3.2 MW): RM&U/LE has been completed.

(b) Unit # 1 & 3 (2 X 20 MW): NIT for renovation work of switch yard has been issued. Programme for renovation work of Plant will be taken up in the 11th Plan.

5) Panchet Unit # 1 (1 x 40 MW): RLA study has been completed. Final RLA report is expected to be received shortly.

NON-POWER ACTIVITIES OF DVC

WATER RESOURCE MANAGEMENT FLOOD CONTROL

Out of originally planned eight storage reservoirs in the Damodar basin, construction of our multi-purpose Dams at Maithon, Panchet, Tilaiya and Konar have 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-ft. but due to non-acquisition of land flood reserve capacity that could be arranged was only 1.05 million acre-ft, which has been further reduced to 0.95 million acre-ft. due to progressive siltation. 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.

IRRIGATION

Management and operation of irrigation infrastructure developed by DVC in the lower valley has been handed over to the Govt. of West Bengal in 1964 and DVC provides water from it reservoirs, as per demand, for Rabi, Kharif as well as Boro cultivation in the lower valley.

Water drawal from DVC reservoirs fro Kharif crops during 2005-06 was 8.66 lakh acre-ft. and the area irrigated was approximately 8.1 lakh acres. The allocation for Rabi and Boro crops have been fixed as 70 and 200 thousand acre-ft. respectively, to be released during December'05 to April'06. It is estimated to irrigate around 50 thousand acres under Rabiand 80 thousand acres under Boro.

DRAWAL OF INDUSTRIAL & DOMESTIC WATER:

Many industries have come up in the Damodar Valley in last few decades because of availability of power and water in the region. Uptil now DVC provides water to around 131 industries from its reservoirs. In addition, water is drawn by different Municipalities from the system. From the inception till date the demand for water in the valley has grown up considerably. Present actual quantity of water drawn by different agencies is around 320.00 MGD. Further, water has been allocated to 16 new industries and a quantity of 225 MGD water will be drawn by them in near future.

WATER INVESTIGATION & DEVELOPMENTAL INITIATIVES

As part of developmental activities in water resource management, DVC has submitted the revised pre-feasibility report for Balpahari project in March, 2001. Presently, CWC has been entrusted with the work to prepare the detailed Project Report of the proposed Balpahari Project along with further investigation and survey work of the project. For optimum utilization and further development of the water resources of the valley a comprehensive Master Plan study has been chalked out and the work is scheduled to be entrusted to WAPCOS, India.

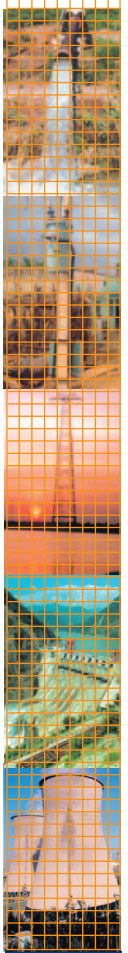
ECO-CONSERVATION & AFFORESTATION SOIL CONSERVATION

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 siltation in dams. The integrated programme includes afforestation, control of soil erosion, and construction of check dams, land protection/reclamation and rehabilitation of denuded forests. DVC has so far constructed more than 16000 check dams and silt detention structures creating a further irrigation potential of around 46,000 hectares in the State of Jharkhand.

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

The DVC has initiated to venture new horizon with a view to achieve the Objectives of the Organization



and created "Damodar Valley Mission". The Mission consists of a Steering Committee and a Monitoring Committee chaired by Chief Secretary, Govt. of Jharkhand and Development Commissioner, Govt. of Jharkhand respectively. The main Aims & Objectives of the Mission are to make Damodar Valley area of operation Greener & Environment friendly, to provide a common forum for greater integration between various agencies of participating Govts. and the Damodar Valley Corporation for effective implementation of various programmes of soil conservation and afforestation, to coordinate between various Govt. departments of the participating Govts., Central Govt., to support Research & Development programmes on Soil Conservation and related activities, etc. The Mission will have Steering Committee and Monitoring Committee. The Mission is going to launch benchmarking studies in the Valley area, extensive campaign for awareness generation towards afforestation, soil and moisture conservation, rainwater harvesting, pisciculture, etc.The Mission will access funds from the Ministries of Agriculture, Environment & Forests, Govt. of India, any other Ministry of the Govt. of India, the participating State Govts. etc.

NEW INITIATIVES IN THE FIELD OF SOCIAL SECTOR

DAMODAR VALLEY FOUNDATION

In order to ensure overall Socio-economic development of the community residing near by DVC Projects in the State of Jharkhand & West Bengal, the Corporation in January,2006 has constituted "DVC Foundation for Social Sector Improvement". The Foundation comprises of a Steering Committee and a Monitoring Committee chaired by Chief Secretary, Govt. of West Bengal and Chairman, DVC respectively.. The objective of the Foundation is to identity activities which are most beneficial to the people of DVC area in consultation with State Governments. The Foundation will take care of various promotive & preventive health care programme, providing safe drinking water, development of agriculture & allied activities, social forestry through community participation and other socio-economic development programmes.

MEDICAL FACILITIES TO THE OUTSIDER / POOR VILLAGERS

Corporation is extending medical facilities through DVC Hospitals and Dispensaries to the villagers who are Above Poverty Line (APL) at 50% cost and villagers Below Poverty Line (BPL) at a very nominal charges. The OPD Consultation and procedural services for operation etc. is being provided free to BPL category.

WELFARE OF DVC EMPLOYEES

Every Project of DVC is having Welfare Centre under one Care-taker. Such Centres are providing Books, Journals, Daily Newspapers, Sports Materials etc.

In the DVC Projects, Complaint Committees have been constituted which deals with the cases of sexual harassment of women at workplace. The Committee organizes programme to generate awareness amongst the employees specially women about the rules/regulations/procedures etc. to combat the evils of sexual harassment at workplace.

CHAPTER – 22.10

BHAKRA BEAS MANAGEMENT BOARD

Bhakra Management Board (BMB) was constituted under Section 79 of the Punjab Re-Organisation Act, 1966 for the administration, maintenance and operation of Bhakra Nangal Project with effect from Ist 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 House 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 for 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.

Nangal Dam

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 metres 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 kilometres area and a gross storage capacity of 9621 million cubic metres. 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 155.30 Mega Watt. The Beas Project Unit – I (BSL Project) diverts Beas Water into the Satluj Basin, falling from a height of 320 metres and generating power at Dehar Power House having an installed capacity of 990 Mega Watt. This project comprises a diversion dam at Pandoh, 13.11 kilometres long Pandoh Baggi Tunnel, 11.8 kilometres long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 kilometres long Sundernagar-Satluj Tunnel, 125 metres High Surge Shaft and Dehar Power Plant. The Beas Dam at Pong is earth-fill (earth core, gravel shell) Dam 132.6 metres high with a gross storage capacity of 8570 million cubic metres. 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 2866.30 Mega Watt as detailed under :

Power House	Installed Capacity (No. of machines x capacity)	Mega Watt
Bhakra (Right Bank)	5x157	785
Bhakra (Left Bank)	5x108	540
Ganguwal	1x29.25+2x24.20	77.65
Kotla	1x29.25+2x24.20	77.65
Dehar	6x165	990
Pong	6x66	396
	Total	**2866.30**

GENERATION AND TRANSMISSION SYSTEM

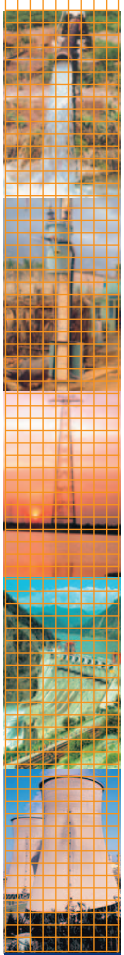
The generation during 2005-06 was 11692 Million Units against the target of 10802 Million Units. Thus, the generation of BBMB Power Houses has exceeded the targets for the year by about 8.2%. The Powerhouse wise plant availability during the year 2005-06 has been, Bhakra Left Bank-95.66%, Bhakra Right Bank-95.47%, Ganguwal-96.30%, Kotla-98.26%, Dehar -85.82% and Pong-91.2%.

During the current year 2006-07, the generation from BBMB Power Houses has been 7583 Million Units up to 30.11.2006 against the target of 7992 Million Units. Generation of 10069 Million Units has been anticipated up to 31st March, 2007 against the annual target of 10800 Million Units fixed by the Central Electricity Authority, Govt. of India. The shortfall in expected generation with respect to the targets for the current year is primarily attributed to less generation at Dehar Power House due to flooding on 27.8.2006 and consequent generation loss during complete closure of Power House up to 25.9.2006. The Power House wise plant availability of BBMB Power Houses up to 30.11.2006 has been, Bhakra Left Bank-97.41%, Bhakra Right Bank-96.89%, Ganguwal-98.70%, Kotla-85.53%, Dehar-63.74% and Pong-93.90%. The drop in plant availability for Dehar Powerhouse is due to forced outage of various units due to flooding of Powerhouse on 27.8.2006.

The Power generation at BBMB Power Houses is being evacuated through BBMB Power evacuation system running into 3706 circuit kilometres 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 (up to November, 2006) has been 98.18%.

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 North-Western region of the Nation has turned into Granary of the Nation. 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 Uprating of two units each at Ganguwal and Kotla Power Houses, all the six units of Pong Power House (6 x 66 MW) has already been completed.

BBMB plans to undertake the Renovation, Modernization and Uprating works of Bhakra Left Bank Power House machines (5x108 Mega Watt) which have been in operation for the last about 40 years. All the five units are proposed to be uprated from 108 Mega Watt to 126 Mega Watt each. The Renovation, Modernization and Uprating of Bhakra Left Bank Power House is expected to provide additional capacity of 90 Mega Watt to the system and is expected to generate additional 88 Million Units annually due to improved efficiency. This work shall be carried out in XIth plan.

The work of Renovation, Modernisation and Uprating of one unit each of Ganguwal and Kotla Power Houses which were supplied by M/S Hitachi, Japan is being carried out. With the ongoing Renovation, Modernization and Uprating, the derated capacity of the machines shall be uprated by 4.43 MW and will also result in additional annual generation of 36 million units. During renovation, replacement of major components like runner, governor, stator, unit transformer and other associated equipment is being done. After Renovation, Modernisation and Uprating, the unit of Ganguwal Power House has been commissioned on 20.10.2006 and its installed capacity has become 27.99 MW. The unit of Kotla Power House has been closed on 4.12.2006 for the work of Renovation, Modernisation and Uprating and is likely to be completed by 30.5.2007.

The Renovation, Modernization and Uprating work on the old Power Houses has given new lease of life to the machines and is a significant step towards meeting the aspirations of the Nation for adding low cost peaking power to the system through Renovation, Modernization & Uprating of old power houses as per the National Hydro Policy.

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 the 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 the 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 Power Houses for the last 52 years.

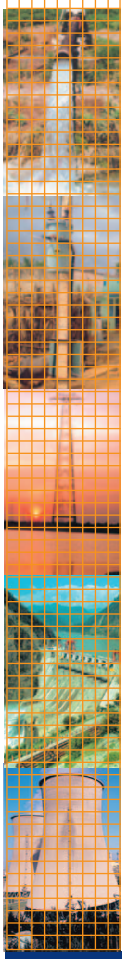
ENVIRONMENT MANAGEMENT PLAN

PLANTATION PROGRAMME

Under this programme, BBMB had chalked out a programme to plant almost 40,000 trees and shrubs on vacant land at all Project Stations every year. During 2006-07, against a target of 48,600 trees and shrubs, BBMB has planted 52224 plants during the monsoon months of 2006. Some more plants will be planted if winter rains are normal during January & February of 2007. 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 PLANATATION

BBMB has surplus land in Talwara Complex which was acquired during the construction of Beas Dam Project. Now, about 30 years 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. As the land is lying surplus to the requirement of the project, this land is subject to a large scale encroachment by the local preople. BBMB has made an extensive plan of Jatropha plantation in the surplus land at Talwara so as to save this from the encroachments.



In this regard, The Energy & Resources Institute (TERI) has submitted a comprehensive proposal for providing consultancy for Jatropha plantation at BBMB Talwara. As per this report cultivation of 4,95,000 No. of Jatropha plants can be carried out in about 300 hectare (750 acres) surplus land available at Talwara. 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 progoramme is covered under Clean Development Mechanism (CDM) under Kyoto Protocol and this mechanism of bio-diesel production will also give CDM credits to the companies/organisations 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 the 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 & modifications 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.

For development of fisheries, the administrative approval of Rs. 72 lacs was accorded by BBMB on Ist October, 2003 after getting the DPR from HP Govt. approved in September, 2003. Out of this, an amount of Rs. 36 lacs as 1st installment was also released to Fisheries Deptt. of HP on 3rd October, 2003. Fisheries Deptt. has incurred an expenditure of Rs. 30.76 lacs for various works executed in Phase-I of the scheme out of Rs. 36 lacs released to them.

For one-time farm management, the Agriculture Deptt. of HP after detailed surveys/studies, informed the State Level 'Steering Committee for BSL Project' under the chairmanship of Principal Secretary (ST&E), Govt. of HP that this recommendation of NEERI is not techno-economically feasible and practicable. The Committee, thus, decided that the compensation of damages to the affected crops only as per the practice already in vogue may be continued.

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 advice on other relevant issues with respect to 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 H.P.High Court has asked BBMB to implement the Action Plan for 5 years for which monitoring will be done by the 'Expert Committee'.

Bhakra Beas Management Board implemented the Action Plan proposed as above during the monsoon season of 2006 and submitted its Implementation Report to the Expert Committee in November, 2006. The Expert Committee has held its meeting at

New Delhi on 27th Nov., 2006 for finalization of its Report which is to be submitted to Hon'ble Himachal Pradesh High Court, Shimla.

MINIMUM FLOW IN RIVER 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 recommended 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 no occasion has 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. In the meantime, BBMB has referred the matter to Ministry of Power for taking the matter with Ministry of Environment & Forests for exempting BBMB from applicability of the notification being an old project. Secretary(Power) had a meeting with Secretary, Ministry of Environment & Forests (MoEF) on 21.11.2005 for deciding the issue of exemption to BBMB for releasing minimum flow at the earliest.

Recently, the Punjab State Electricity Board and NHPC have filed the writ petitions in the Hon'ble H.P.High Court Shimla challenging the notifications dated 16.07.05 and 09.09.05 issued by H.P. Govt. regarding release of 15% minimum flow downstream throughout the year. Hon'ble H.P. High Court, Shimla vide order dated 11.08.06 has stayed the operation of the ibid notifications. These writ petitions then came up for hearing on 11.10.06 when Hon'ble H.P. High Court has modified the earlier order dated 11.08.06 and has stayed the impugned notifications qua petitioners only.

CONSULTANCY SERVICES

In an endeavour to synergise the existing potential of BBMB to boost the interest of its Partner States, Consultancy Services were introduced.

The following works were carried out by Consultancy Services of BBMB during the year 2006:

1) Initiated the efforts for implementation of ISO in BBMB. The ISO 9001:2000 & ISO 14001:2004 certifications (Quality & Environment Management System) have been obtained from M/s BIS for entire BBMB organization.

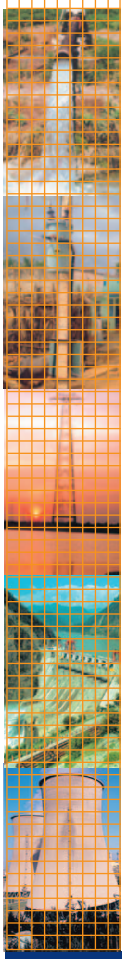
2) Initiated the possibilities of Carbon Trading by participating in Clean Development Mechanism (CDM) programme through sale of Certified Emission Reductions (CERs) generated by Renovation, Modernisation, and Up-rating (R,M&U) Programme of BBMB for its Hydro Power Stations.

3) a) Successfully running training course 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' training to Executive Trainee Engineers of UJVNL, Dehradun at various Power Houses of BBMB.

4) Provided cost-effective expert services for the development of Power Sector infrastructure of the region.

- The following works were completed:
  - Development of 66 KV Sub-Station on turnkey basis in Sector-47, Chandigarh on behalf of Union Territory, Chandigarh Administration.
  - Prepared technical specifications for proposed 66 KV Sub-station of CPWD to be developed at Amritsar & Pathankot under their 'MAP' project.



- The following works were taken in hand:
  - Development of 66 KV Sub-Station on turnkey basis in Sector-56, Chandigarh on behalf of UT Chandigarh Administration.
  - Development of 66 KV Sub-Station at PGIMER complex, Sector-12, Chandigarh on behalf of PGIMER.
- The proposals for the following works are under finalization:
  - Development of SCADA system connecting all the Substation of UT Chandigarh for providing efficient infrastructure for Demand Side Management.
  - Strengthening and segregating the existing 11 KV system in PGIMER campus.

5) Provided expert services for Thermovison Scanning, Hotline Maintenance & Stretch testing of Hydrogen Gas Cylinders to Power Utilities of Haryana, Delhi and Punjab.

6) Participated jointly with CEA and SJVNL to address the issues impeding the smooth running of the project and offer recommendations/ solutions thereof.

Organising a Competent Workforce

The Operation and Maintenance personnel in BBMB's 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, Management, Motivational, Legal, Health and Financial matters have been taken up. Services of the serving experts, retired BBMB personnel and

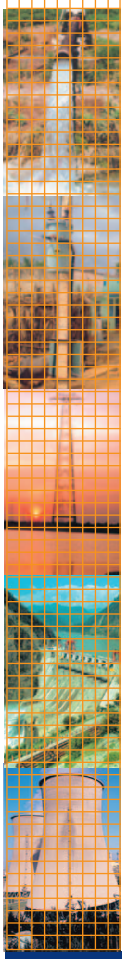
Nangal Hydel Channel

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.

In the year 2005-06, the In-house lectures were arranged for 1393 executives and 8220 non-executives covering overall 11045 man-days of training. In addition to the In-house programmes, 310 Executives and 79 Non-executives were provided training in the Institutional Training Programmes covering 1187 man-days of training. Thus, a total of 12232 man-days of training were imparted during the year 2005-06 against the target of 10,000 man-days.

Under this programme, against a target of 10,000 training man-days for the year 2006-07, 5516 training man-days have been imparted to BBMB personnel up to 31st October, 2006.

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. The cost of training is being borne by MOP through PFC.



CHAPTER – 22.11

BUREAU OF ENERGY EFFICIENCY

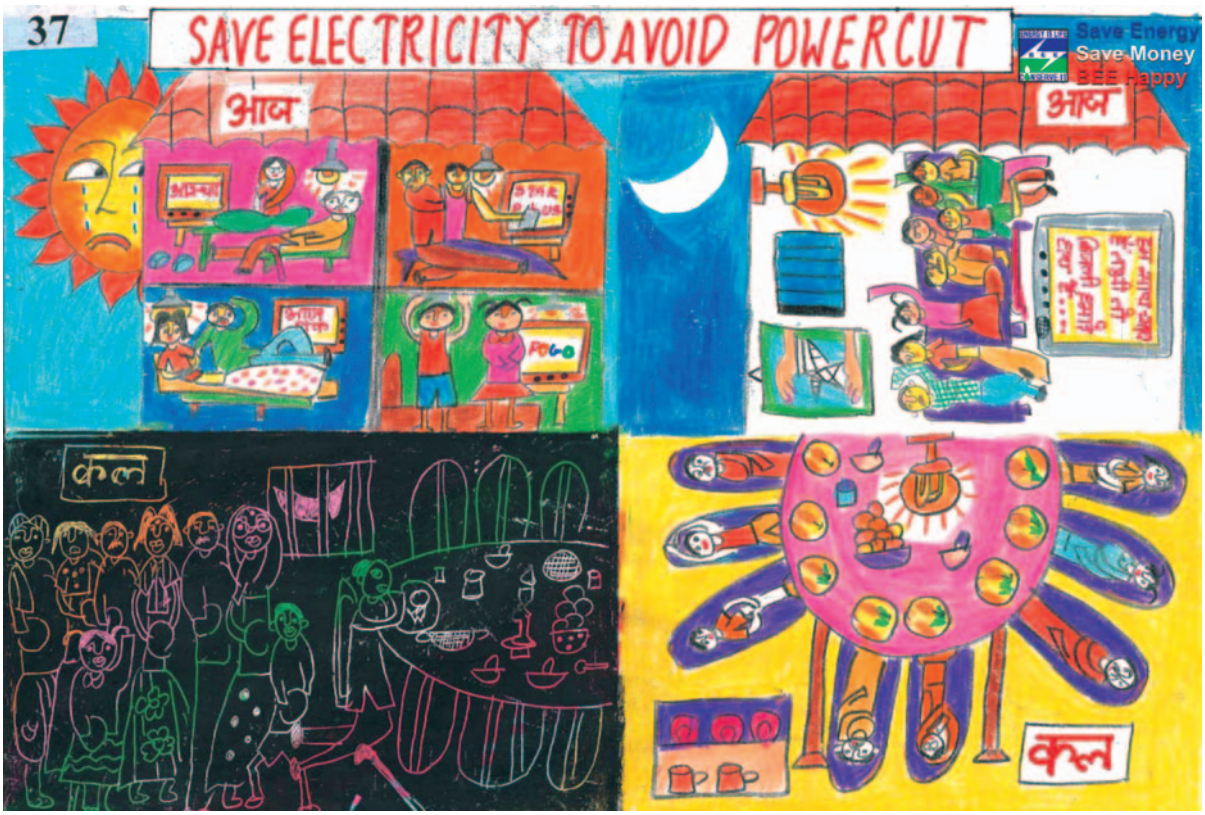
The Government of India has enacted the Energy Conservation Act 2001, and for implementing various provisions in the EC Act, Bureau of Energy Efficiency (BEE) was operationalised from 1st March 2002. The EC Act provides a legal framework for energy efficiency initiatives in the country. The Act has many mandatory and promotional initiatives 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 co-ordinates 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 Bureau of Energy Efficiency (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.

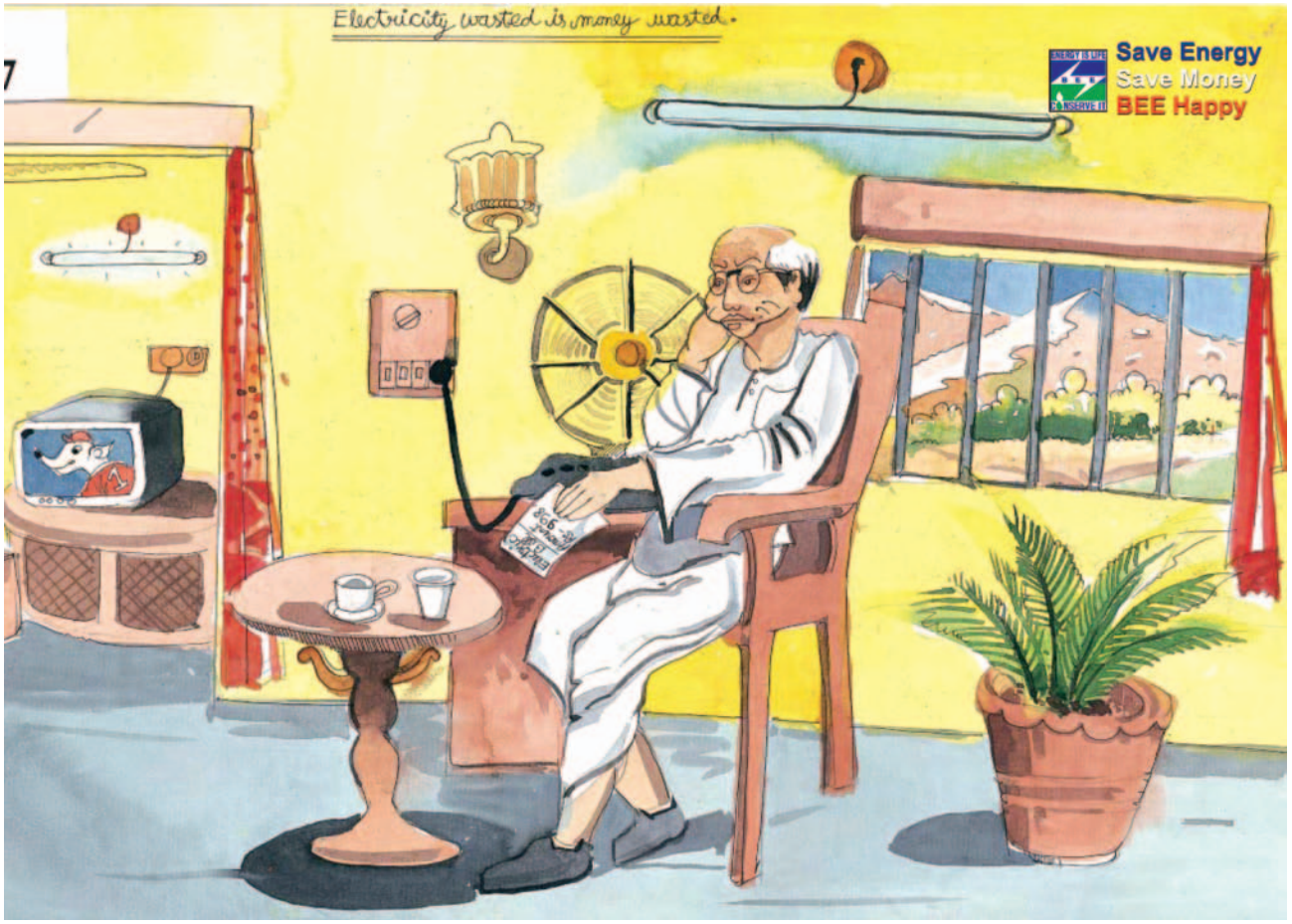
Role of BEE

BEE co-ordinates with designated consumers, designated agencies and other organizations and recognize, identify and utilize the existing resources and infrastructure, in performing the functions assigned to it under the Energy Conservation Act. The Energy Conservation Act provides for regulatory and promotional functions.



Saumayan Mondal, Class : V, Coast Guard Public School, Daman and Diu

Prize Winning Painting, 2006
National Level Painting Competition on Energy Conservation



Subhankar Chakraborty, Class : V, Chittaranjan High School, West Bengal

Prize Winning Painting, 2006
National Level Painting Competition on Energy Conservation

Regulatory

The Major Regulatory Functions of BEE include:

- Develop minimum energy performance standards and labelling design for equipment and appliances
- Develop specific Energy Conservation Building Codes
- Activities focusing on designated consumers
  - Develop specific energy consumption norms
  - Certify Energy Managers and Energy Auditors
  - Accredit Energy Auditors
  - Define the manner and periodicity of mandatory energy audits
  - Develop reporting formats on energy consumption and action taken on the recommendations of the energy auditors

Promotional

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 in the field of energy conservation
- 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
- 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

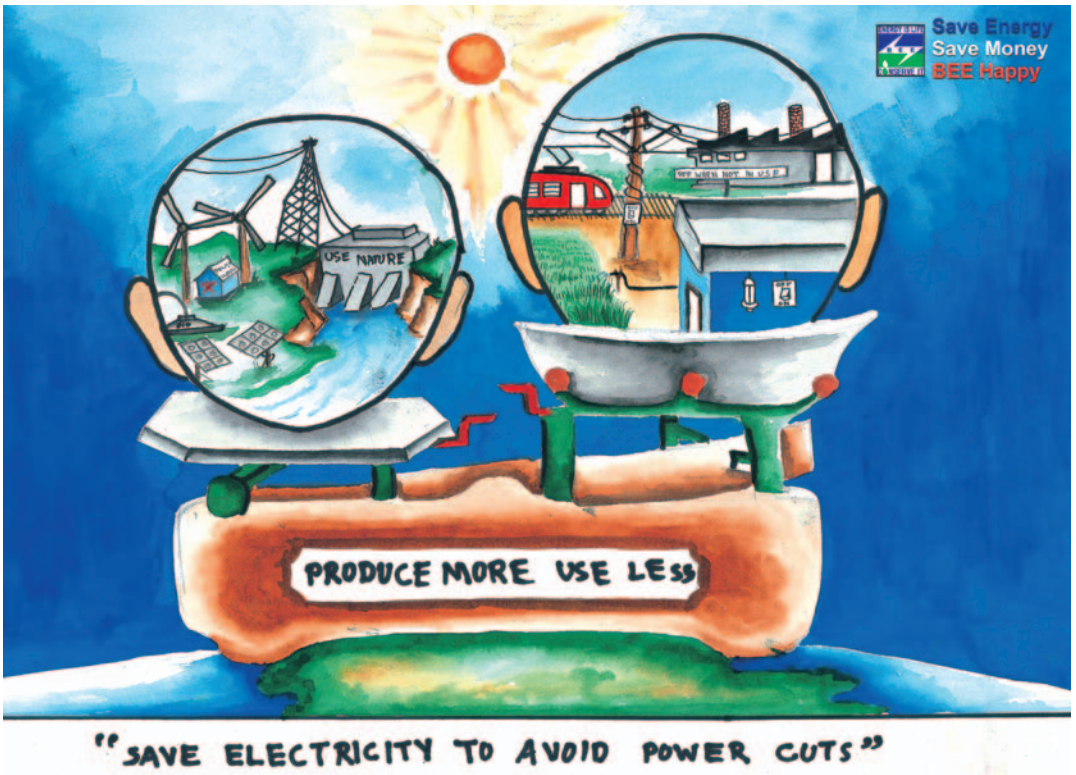
Bureau of Energy Efficiency has already launched many voluntary and mandatory provisions of the Energy Conservation Act, which received support form all the stake holders.

Bureau of Energy Efficiency supported designated consumers in improving their energy efficiency through launch of many voluntary programs. In one of the voluntary initiatives, the Bureau established seven sector specific task forces for Aluminium, Cement, Chlor-alkali, Fertilizer, Pulp & Paper, Petrochemical & Refinery and Textile sectors. This voluntary program of sharing of best practices, undertaking and specific energy consumption targets has full acceptance in all the 7 sectors. Best practices have been recorded and published through CDs and also incorporated in BEE's website which is being updated periodically for use of designated consumers.

In another voluntary initiative, Ministry of Power and Bureau of Energy Efficiency are coordinating the implementation of energy audits study in 9 Government buildings including Rashtrapati Bhawan, Prime Minister's Office, Rail Bhawan, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, Delhi Airport, R&R Hospital and AIIMS through Energy Service Company (ESCO) route. Energy audit study has been implemented in Rashtrapati Bhawan, Prime Minister's Office, Shram Shakti Bhawan, Transport Bhawan and Sanchar Bhawan. Implementation work in Rail Bhawan and AIIMS is under progress.

Bureau has taken a pro-active role in establishing a proper energy management system in the country. In this connection, Bureau has conducted the 3 National certification examinations for energy managers & energy auditors in May 2004, April, 2005 and April 2006 in 23 centers all over the country and prepared guidebooks for the energy professionals. The response to the programme was very encouraging and 713 Certified Energy Managers and 2023 Certified Energy Auditors are in place from three certification examinations.

The Energy Conservation Building Codes (ECBC) is the norms and standards of energy consumption, which include consideration of location, and occupancy of the building. The draft Energy Conservation Building Code has been prepared for



L. Iland, Class: V, Ibempisak English School, Manipur

Prize Winning Painting, 2006
National Level Painting Competition on Energy Conservation

five climatic zones (hot & dry, warm & humid, composite, temperate and cold). The code would be mandatory for commercial buildings or building complexes that have a connected load of 500 kW or greater or a contract demand of 600 kVA or greater. The code can be also applied to all buildings with a conditioned floor area of 1000 m2. The code is recommended for all other buildings also.

The National Energy labeling programme has been launched by Minister of Power on 18th May, 2006. Initially the labeling scheme is applicable for Frost-free (No-Frost) Refrigerator and Tubular Fluorescent Lamps (TFL) and other appliances like Air-Conditioners, Direct cool refrigerator, Motors and Ceiling Fans will be introduced in a phased manner. All these steps would take our country forward in achieving Energy Efficiency standards comparable to International levels.

National Energy Conservation Award 2006

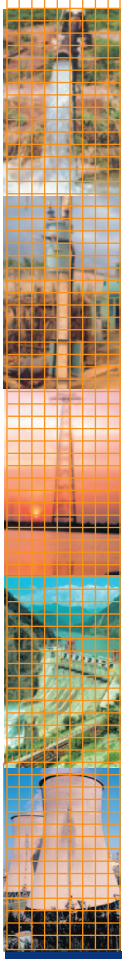
The Award Scheme has motivated the participating units to undertake serious efforts in saving energy and environment. The data pertaining to 388 participating units indicated that these units have been able to collectively avoid generation of 1288 million kWh/year of electrical energy, which is equivalent to the energy generated from a 245 MW thermal power station at a PLF of 60% in 2005-2006. In the monetary terms, these units have been able to save Rs.1135 Crores per year on account of electrical and thermal energy saved during the year 2005-2006.

National Campaign on Energy conservation 2006

National Campaign on Energy conservation was prepared by BEE and was launched in association with the Ministry of Power and CPSUs under Ministry of Power. Painting completion on Energy Conservation was also organized for school children at school, state and national level throughout the country. BEE is regularly releasing advertisements on energy conservation in print and electronic media.

State wise activities – January to December 2006(under National Campaign on EC)

Tamil Nadu	61
Maharashtra	87
Gujarat	36
Uttar Pradesh	11
Kerala	7
Delhi	23
Haryana	11
Andhra Pradesh	25
Orissa	12
Madhya Pradesh	15
Karnataka	12
Assam	10
Rajasthan	3
West Bengal	22
Chhattisgarh	10
Punjab	32
Total	**371**



CHAPTER – 22.12

CENTRAL POWER RESEARCH INSTITUTE

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 located at Bangalore, Bhopal, Nagpur, Thiruvanthapuram, Hyderabad and Ghaziabad are accredited as per latest ISO/IEC 1703\25 standards by National Accreditation Board for Testing & Calibration Laboratories (NABL).

New Test facilities

- An X-ray Diffraction facility, model 'X Pert Pro' has been installed at the Materials Technology Division of CPRI. This sophisticated facility is useful for structural phase analysis of materials (both qualitative and quantitative). The nature of materials, which can be evaluated, could be Ceramics, Insulators, Refractories, Composites, thin films and coatings, in addition to materials and minerals. This facility compliments the Scanning Electron Microscopic Electro Dispersive X-ray (SEMEDX) facility available in the Division.
- Testing facility to test upto 1 MVA capacitor as per IEC 143 & IEC 60871 was created at Bangalore Unit.

Special tests

- 800kV Circuit Breaker of Areva T&D India Ltd., Chennai was tested for the first time in India for combined Power Frequency and Impulse Test at Ultra High Voltage (UHV) Laboratory of CPRI at Hyderabad on 10th May 2006.
- Carried out Endurance test on full size capacitor of rating 500 KVAR for the first time in India as per IEC 60871, Part-II-199 for M/s. ABB Ltd.
- 220 kV Multicircuit tower was tested for PGCIL successfully.
- UHV Research Laboratory, Hyderabad successfully completed tests on 800 kV string insulators.
- Environmental test on power supply outdoor module and battery cabinet of M/s. ZTE Telecome Pvt. Ltd., Mumbai for the first time in Diagnostic Cables & Capacitors Division of the Institute.
- Ageing tests on Power Capacitors of rating 500 KVAR, 8.4kV for 1000 hours was conducted for the first time in the Institute, for M/s. Asea Brown Boveri (ABB), Bangalore.
- Environmental conditioning tests were conducted on tail rotor blade, fluid stick damper, snubber bearing of all indigenously developed Advanced Light Helicopter (ALH) in the new Capacitor Research Laboratory. This cyclic and temperature humidity cycles were conducted for the first time in the Institute for Hindustan Aeronautics Ltd. (HAL), Bangalore.

Special Consultancy rendered

- A team of engineers from CPRI conducted Training Programmes for Quality Inspectors of M/s. Tenaga National Berhad ® (TNBR), Kuala Lumpur, Malaysia on "QA Process Procedures & Methods" & to distribution engineers on "Metering equipments"
- Thirtysix Quality Assurance Inspectors of M/s. Tenaga National Berhad, Kuala Lumpur, Malaysia were trained on Power Distribution Transformers, Circuit Breakers and switches (air insulated), Power Cable and accessories, Gas insulated switchgear (GIS), Surge arrestor and insulators and High Voltage and High Power laboratories. The programme was inaugurated on 7th August 2006 by Dr. Salim Sairan, Managing Director of Research Department, TNBR and closed on 18th August 2006 by En Azmi Omar, Senior General Manager of Research Department, TNBR.
- The institute has bagged a prestigious Consultancy Contract for **"Upgradation of power system network at Rourkela Steel Plant"** from Rourkela Steel Plant, Rourkela for an amount of Rs. 70 lakhs. Preliminary work on the project has commenced.
- Testing of Miniature Circuit Boards MCBs), Distribution Boards (DBs) and Current Transformers (CTs) for Middle East Electric Meter Factory, Saudi Arabia and testing of DB's and

Test facility for Power Capacitors upto 1 MVAR capacity

panels for Farah Trading Co, Jordan were taken up for certification, under ASTA Certification Scheme.

- CPRI executed the prestigious overseas order from M/s. Sharq Sohar Steel Rolling Mills of Sultanate of Oman to carry out studies for sizing of Static VAR Compensator (SVC) and Filter design for their proposed Electric Arc Furnace (EAF) installation.
- CPRI investigated the problem of islanding scheme and Relay Coordination for Neelachal Ispat Nigam Ltd.(NINL). NINL is an integrated steel plant along with a 38 MW combine cycle cogeneration captive power plant (present generation of 2 x 19.2MW).

Capital Projects

1. Shri Sushilkumar Shinde, Hon'ble Union Minister for Power, Govt. of India inaugurated the Institute's two new centers **"Centre for Industrial Solid Waste Utilisation (CISWU)"** and **"Centre for Collaborative & Advanced Research (CCAR)"** at CPRI, Bangalore on Sunday, the 7th May 2006.
2) The honorable Minister for Power and Non Conventional Energy sources, Govt. of West Bengal, Sri Mrinal Banerjee declared open the first eastern unit of CPRI, the **Regional Testing Laboratory at Kolkata** on 22nd September 2006. The eastern regional test laboratory would be able to test transformer oil and give guidance to Electricity Boards/Power Utilities in diagnostics of transformer. A Mobile Transformer Oil Test laboratory has also been established to do testing at site of sub-stations.
3) New Power Capacitors Laboratory was inaugurated on 17th October 2006 at CPRI, Bangalore, built under the capital project "Upgradation of Research & Testing Facilities for Power Capacitors".

Marketing & Publicity

The Institute participated in India International Trade Fair held at Pragati Maidan, New Delhi from 14th to 27th November 2006.

Accreditation

ISO certification to Research & Consultancy activities

CPRI was one of the first major electrical laboratories to achieve the distinction of accreditation as per IEC/ ISO 17025 more than a decade back. All the laboratories of CPRI at Bangalore, Bhopal, and

Hyderabad are accredited as per this quality standard. ISO 9001 improves 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 – British Electrotechnical Approvals Board (ASTA-BEAB), UK for testing of Low Voltage & Medium Voltage equipment. CPRI is having its own Observers for witnessing the testing under ASTA certification Scheme at CPRI laboratories.

RESEARCH ACTIVITIES

The Institute continued its strides in the area of research: Five research projects amounting to Rs. 174 lakhs were commenced during 2006-07 along with 23 ongoing projects commenced during previous years.

R&D Journal of CPRI was launched in August 2004 with a view to create a scientific forum for dissemination of R&D efforts in the Indian Power Sector. So far 4 issues of the Journal have been published and next issue will be published in March 2007.

Research activities in Collaboration with academic institutions and other organization under the aegis of Centre for Collaborative and Advanced Research is planned and it is taking shape. Modalities of working of the Centre have been finalized and efforts are going on in this direction.

APDRP

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 Programme (APDRP) of Govt. of India since 2001. Some of the benefits due to implementation of APDRP are:

Kerala	Power tariff is reduced.
Andhra Pradesh	Due to implementation of High Voltage Distribution System (HVDS), power theft is reduced. Voltage regulation is improved.
Karnataka	The Automatic Complaint redressal method "Prasar Jyothi"is implemented which functions round the clock to serve its consumers.

Shri Sushilkumar Shinde, Union Minister for Power, inaugurating Centre for collaborative and advanced research at Bangalore

Patents and Technology Transfer

The Institute had been granted the following two patents:

i) **Title:**CONDENSATE DEPRESSION MONITOR: Application No.24/MAS/2001, Patent Number: 198941, Granted: March 2006

ii) **Title:** CARD OPERATED PRE-PAID ENERGY METER USING NOVEL CARD READING TECHNIQUE: Application No.443/MAS/2002. Patent number:198297, Granted: March 2006

The Institute had filed the following patents :

i) Thermal Barrier Coatings from Fly-Ash Derived Cenospheres. Application no.208/CHE/2006.

ii) Composition for Polymeric High Voltage Insulator for outdoor Applications. Application no.209/CHE/2006

iii) Ultrasonic Probe for inspection inside a shaft rotor bore

iv) Nitrogen Hetero Cycle as an Accelerator for curing of Epoxy Resin System

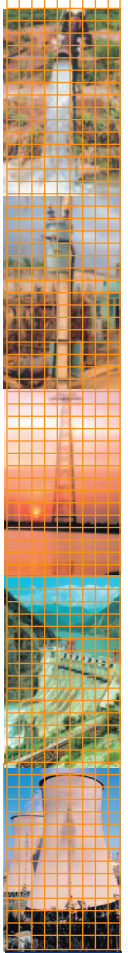
v) Static Solar Thermal Energy Meter

Non Plan Expenditure

The Institute has been meeting its non-plan expenditure through revenue generated by testing and consultancy for the last eighteen years.

Dissemination of Information

The Institute has organised Twelve Seminars/ Conferences/Workshops till date in 2006-07 (Upto 30th November 2006). Ten training programs have been conducted to distribution engineers of the power sector under MoP-USAID sponsored Distribution Reforms, Upgrades & Management (DRUM) programme.



CHAPTER – 22.13

NATIONAL POWER TRAINING INSTITUTE (NPTI)

1. National Power Training Institute (NPTI), a Registered Society set up by the Govt. of India under the Ministry of Power, is committed towards the development of Human Resources in Indian Power and Energy sectors. 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). Government of India has also sanctioned a scheme for Setting up of Hydro Power Training Centre at Nangal at an estimated cost of Rs.14.75 crores and is under implementation.

2. All the Institutes are well equipped with world class 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.

3. Since its inception NPTI has shared its engineering and technology expertise with nearly 1,12,000 Power Professionals at various levels, besides covering over 1,47,000 persons in its mass education programs on Energy Conservation, Power Sector Reforms, Electrical Safety, Energy-Environment Linkage and Water

Hon'ble Union Minister of Power Shri Sushilkumar Shinde and senior dignitaries at Foundation Stone Laying Ceremony of Hydro Power Training Centre of NPTI at Nangal on 22.9.2006

for sustainable development of Power etc. across the country.

4. During the year 2006-07 (upto Nov.,2006), NPTI imparted training to 6027 personnel of various levels in different programmes achieving the trainee weeks of 53488. The revenue realised during the period was of the order of Rs.957.32 lakhs. As many as 22 Corporate Seminars on various issues related to Power Sector were organised. The progress achieved is better than the performance for the same period for the last year.

5. Important activities undertaken by NPTI are:

1. Foundation stone laying of Hydro Power Training Centre of NPTI at Nangal by Hon'ble MOP on 22nd September,2006.

2. 12-Weeks Training Program on "Power Plant Management" was held from 10th January,2006 to 3rd April,2006 in association with Indian Institute of Production Management.

3. 26- Weeks Training Program for XI Batch of Graduate Engineers Trainees (GETs) of Power Grid Corporation of India Ltd. (PGCIL) was organized on 26th August,2006 at NPTI Corporate Office, Faridabad. As many as 90 Executives attended this programme.

4. 26-Week Program on "O&M of Transmission & Distribution Systems" at PSTI, Bangalore commenced on 10th April,2006 and concluded on 6th October, 2006. As many as 49 students enrolled themselves in this T&D Sector related programme.

5. 7- Week Training Program on Power Distribution for North Delhi Power Ltd. (NDPL) GETs was conducted from 3rd July to 18th August,2006.

6. Training program for Bhutan Power Corporation on "Valve Maintenance" for the Kurichhu Hydro Power Corporation Ltd., Bhutan was organized at NPTI(ER), Durgapur from 5th June,2006 to 16th June,2006.

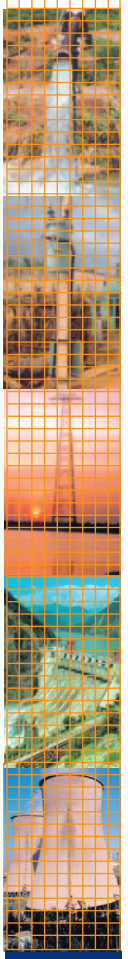
7. Induction Program on "Power Distribution" for Ernst & Young from 15th to 20th May, 2006 was held.

8. National Conference on Organizational Excellence was held at Central Mechanical Engineering Research Institute (CMERI) Auditorium, Durgapur on 21-22nd July,2006.

9. Management Development Programmes were conducted for Executives for Tehri Hydro Development Corporation (THDC).

10. Corporate/National Seminars/Workshops were organized from April till September,2006.

11. Placement for MBA (Power) Management Students - NPTI successfully organized placement for all the students of the 4th batch of MBA in Power Management in reputed power sector organizations like Pricewaterhouse Coopers, Credit Rating Information Services of India Ltd. (CRISIL), Ernst & Young, Deloitte, Infrastructure Leasing & Financial Services (IL&FS), Asea Brown Boveri (ABB), Thermax, GMR, Secure Meters, Adani Exports, Larsen & Toubro (L&T) etc.



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 and seven working Pay & Accounts Officers responsible for making all the payments, expenditure control and accounting of all the receipts and 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 O\O 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 2005-06 is as under :

Year (Accounts Due for audit during 2005-06)	No. of Units due/inspected	No. of Paras raised	No. of Paras settled	No. of Paras outstanding upto 31-12-2006
2005-06	20/16	86	105	124

AUDIT OBSERVATIONS

The Organisation-wise break up of Outstanding Audit Observations and Inspection Reports as on 31-12-2006 for the financial year 2005-06 is as under.

S.No.	Organisation	No. of Inspection Reports	No. of Paras
1.	Ministry of Power	2	17
2.	Central Electricity Authority	17	78
3.	Controller of Accounts		
	(1) PAO. CEA, N. Delhi	1	9
	(2) PR.A.O (Admn) N. Delhi	1	7
	(3) PAO, BMCC, New Delhi	1	1
	(4) PAO, CERC, New Delhi	1	2
	(3) PAO, Sectt. New Delhi	1	10
Total		**24**	**124**

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) 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 and CONTACT (OPA) 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.

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	05	09	33	06	53
(ii) Civil Paras	03	03	06	01	13
(iii) Draft Paras	05	03	37	-	45
Total	**13**	**15**	**76**	**07**	**111**

23.2 GRIEVANCES REDRESSAL

MINISTRY OF POWER

The Grievance Cell in Ministry of Power deals with Redressal of grievances relating to various grievances pertaining to Public Sector Undertakings, Autonomous bodies, Statutory bodies and attached office under the administrative purview of Ministry of Power. The status of Redressal of grievances is being monitored on monthly basis.

The status of grievance Redressal for the period ending on 31st January 2007 is as under:

Total number of grievances dealt	Number of grievances disposed off	Number of grievances pending
44	34	10

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 (Grievance) 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.

DVC

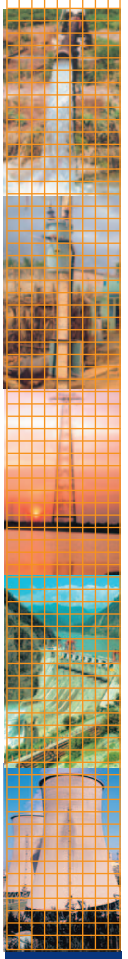
The Public Grievance Cell headed by on Jt. Secretary, DVC, Secretariat is functioning at the HQ of the Corporation to attend and redress the grievances of the public. Grievance Cells for attending grievances of the employees are also functioning at various field formations consisting of representatives of the management.

NHPC

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.

Brought forward as on 01.01.2006	**NIL**
Number of Grievances received during the year upto 30.11.2006	**NIL**
Total number of grievances upto 30.11.2006	**NIL**
Number of Grievances upto 30.11.2006	**NIL**
Number of Grievances pending	**NIL**



CPRI

The staff Grievance Officer received six grievances during the year, out of which three grievances have been disposed off and three grievances are being attended to.

23.3 POWER GRID TRANSMISSION SYSTEM

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. 654.59 Crore till 2004-05. As per current calculations, POWERGRID shall incur a total loss of Rs. 733.26 Crore by the end of 2006-07.

POWERGRID has already completed the execution of 132kV Ziro-Daporijo-Along transmission system on deposit work basis. Further, other deposit works like, 220kV Kathalguri-Deomali 220 kV D/c line and Balipara-Khupi 132kV line have also been completed. Balance works of Deomali sub-station and Khupi-Kimi 132kV lines are scheduled to be completed by Dec., 2006 and January, 2007 respectively. 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 Dept. of power, Govt. of Mizoram. The tendering activities for this works is under progress. The same is scheduled for award by March, 2006 and for commissioning by March, 2007.

In order to ensure 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. Further, Meghalaya State Electricity Board and POWERGRID have signed an agreement to establish a joint venture company for setting up of the 220 kV Misa – Byrnihat transmission line

The transmission system for evacuation of power from future projects of 35,000MW in NER and 15,000MW in Sikkim/Bhutan is 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 42,000-45,000 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 about 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 7-8 nos. of HVDC lines and 4-5 nos. of AC lines would have to be established through Chicken Neck Area.

The transmission system for the future generation projects coming up by XI plan has 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 +800kV HVDC and 400kV AC links.

In fact till date, ±600kV HVDC in 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 developed as it is scheduled to be commissioned ahead of Lower Subansiri and Kameng project.

23.4 RIGHT TO INFORMATION ACT, 2005

The Right to Information Act, 2005 has been implemented in the Ministry of Power as per the orders

received from the Department of Personnel & Training. Deputy Secretary (Grievances) and Joint Secretary (Power) have been nominated as the Public Information Officer and the Appellate Authority respectively for the Ministry of Power as per Sections 5(i) & (ii) and 19 (1) of the Act. Name and address of Public Information Officer and Appellate Authority has been displayed through notice board and website of the Ministry.

All the organizations under the Ministry of Power (PSUs/Autonomous Bodies/Statutory Bodies etc.) have also implemented the Act. Each organization has nominated Appellate Authorities/PIOs/APIOs as per the requirements of the Act.

In compliance of the provisions of Sec. 4 (1) (b) of the Right to Information Act, 2005, a compendium on each of (xvii) points of Sec. 4 (1) (b) has been published and the same has also been posted on Ministry's website **powermin.gov.in.** The important statistics/data and information of Ministry is up linked on the website of the Ministry.

All the information pertaining to Ministry of Power can be accessed by public.

The Right to Information Act came into effect from 12th October, 2005. The monitoring of references received under RTI Act is being done only after ascertaining that the subject matter of the request pertains to this Ministry. Wherever it was found that the Ministry is not the concerned Public Authority the same were returned (in original) to the applicants. The applications received under RTI are disposed off within the stipulated period of 30 days. The applications received through e-mail for seeking clarifications are being replied to by e-mail. Till 31st January, 2007, 158 applications (including 9 appeals) have been received out of which 149 have been disposed off within the mandatory period of 30 days.

23.5 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 & Training, Government of India

MAJOR ACHIEVEMENTS (in 2006-07)

Shri Randhir Singh Toor stood Second in 100m and third in 200m in Delhi State Veteran Athletic Championship organized by Veteran Athletic Association Delhi (Regd.). Ministry of Power's teams also participated in Kabbadi, Chess, Bridge and Carrom events organized by PSCB in different parts of the country.

Shri Randhir Singh Toor

The Ministry of Power's Team comprising S/Shri Paritosh Gupta, M.P. Chamoli, Anil Kumar Sharma, Kamal Kishore, Om Prakash and Satish Joshi won the First prize of Team Championship in the Carrom tournament organized by PSCB. Shri Paritosh Gupta won the First prize both in Single's & Double's category. Shri M.P. Chamoli won First prize in the Doubles category.

23.6 CONSULTATIVE COMMITTEE OF MPs

During the year 2006, the Ministry of Power coordinated and organized six meetings of the Consultative Committee of Members of Parliament for the Ministry of Power. The subjects for discussion at these meetings were :

(i) HYDROELECTRIC PROJECTS DEVELOPMENT;

(ii) REVIVAL OF DABHOL POWER PROJECT;

(iii) POWER PROJECTS DEVELOPMENT BY NATIONAL HYDROELECTRIC POWER CORPORATION;

CMD, NTPC congratulates Women hockey team members

(iv) PROJECTS DEVELOPMENT AND OPERATIONS MANAGEMENT BY NTPC;

(v) ENERGY CONSERVATION; AND

(vi) HUMAN RESOURCE DEVELOPMENT IN POWER SECTOR.

23.7 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 persuing 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 the transparency and accountability in functioning of the Ministry. The applications include conceptualization, initiation and implementation of Decision Support and Management Information System 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 2006-07

The following are some of the key e-Governance Initiatives/ Applications taken up in the ministry.

Management Information System / 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 system being updated by Hydro Utilities and CEA. It is available at **URL: http:/ hydropowernet.gov.in.** It contains comprehensive information related to Generation Projects, Projects under Construction, Project 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.

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 the 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.** Design and development of Web based MIS for Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY), a key component of Bharat Nirman portal, has been taken up by NIC in consulation with MOP & REC. This system will capture **village level** electrification data and generate MIS reports and National Broadsheet with **drill-down features.** The accessibility of the system will be through authenticated user-ids. The implementation of the system will also provide the attribute data for the proposed Geographic Information System (GIS) of the scheme. A prototype of web portal of RGGVY has also been developed to facilitate G2C interface of the programme.

Web-based File Tracking System (FTS)

An online File/Receipt Tracking and Monitoring System has been implemented in the ministry to monitor the pendency of cases, tracking of files, accounting of receipts and timely disposal of important cases. The design and development of Bar Code Module in FTS for easy and quick handling of recording of files and receipts using a hand held scanner has been initiated for pilot implementation for assessing its feasibility.

Public Grievances Redressal and Monitoring System (PGRAMS)

An online system for handling Public Grievances has been implemented in the Ministry. The Grievances cell staff was trained 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; PSUs and Autonomous bodies and the implementation has already been done in NHPC and action initiated in REC, PGCIL, NEEPCO, NPTI etc.

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 and implemented on NICNET staging server. It will be made available at permanent **URL http://transpowernet.gov.in** after data posting and Auditing.

Thermopowernet Project

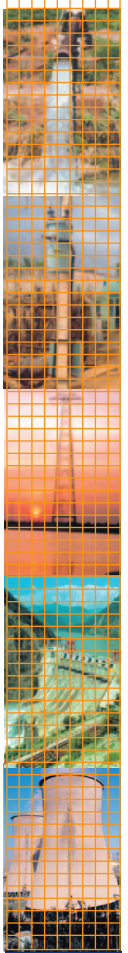
Web based Application for monitoring of Thermal Projects by the Ministry and data sharing between Thermal utilities and CEA with remote data updation facility conceptualized and implemented on NICNET staging server. The system will be made available at permanent **URL http://transpowernet.gov.in** after data posting and Auditing.

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. (viz; the recent Circulars/ Notices, News, upcoming events, Bulletin board, Instant Messaging, Telephone/E-mail directory and minutes of meetings, all types of forms, Personal Profile and online fillable and printable Forms, Guidelines of LTC/HBA rules, Leave/Tour information, Generation/Printing of Pay Slips, health corner, Greetings (Birthday wishes and Superannuation) and e-Governance applications like File Tracking System, Telephone billing System, regular reports etc.

State Profile Information System

Implemented 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 base application has been implemented in 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 in the Ministry of Power as well as 16 Organisations under the Ministry has been initiated and a Training cum Awareness Programme was specially organized for the PIOs of all the Organisations under the Ministry.

RTI Portal - A gateway to Citizens for easy access to information **(URL: http://rti.gov.in)** updated

Composite Payroll System

The 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. is under implementation in the Cash section of Ministry of Power.

Personal Information System

Personal Information system has been implemented in the Ministry of Power for storing personal & other details of all the employees in the Ministry. System provides the facility to the Administration and the individual official of the Ministry to retrieve details like Personal, Job, Promotion, Qualification, Training, Awards, Family details, CGHS card details etc.

MIS of 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 extensive support in conducting Videoconferencing for Review of various remote Projects by Secretary (Power) through Videoconferencing viz; Tehri Hydro Project, Dulhasti Hydro Project and for special occasions viz launch of RGGVY by Hon'ble PM, Secretary's address in International conferences through VC besides interaction with CMDs of PSUs and CEA.

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 units. Internet connectivity has been extended through 2x2 Mbps leased lines with RF connectivity as backup and bandwidth has been further enhanced through a 10 Mbps link on OFC. 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 bilingual website of the Ministry which contains comprehensive information. Summary of Monthly Accounts of the Principal Accounts Office is also posted on the website.

National Power Monitoring Centre (NPMC)

National Power Monitoring Centre (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.

Advanced Computer Training programme for Ministry Officers / officials : As per discussion with/ decision of Secretary (P) all required help has been provided to the Admin. div. by devising Course curriculum of Three different levels of Computer Training Programme for the Ministry staff/officers and through required interaction with training agency DOEACC for acceptance of specialized training module as per approval of Secy (P).

Government Policies Portal

As per the directives of Cabinet Secretariat 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.

Augmentation of Internet/Intranet Infrastructure

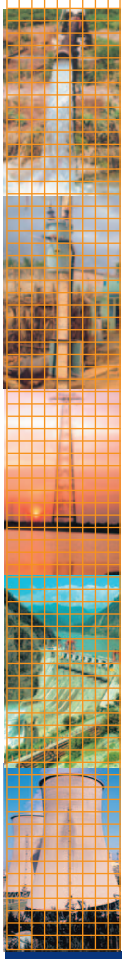
The Internet/Intranet Infrastructure was augmented by installation of Rack based Proxy, Antivirus, Patch servers besides upgradation of the Network backbone of OFC and fibre switches, centralised UPS supply to all the backbone switches, provision of L3 switch etc.

Projects/Activities planned during Annual Plan 2007-08

The following projects/activities are targeted for the year 2007-08

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
- Implementation of Thermopowernet and Transpowernet Project
- Extension of PGRAMS to Organisations under Ministry of Power & CPGRAMS (Centralised PGRAMS) for the Ministry for selected grievance forwarded by DARPG to the Ministry and Ministry to its subordinate organizations.
- **Targeted Training** for increasing the ICT & Computer Security awareness among concerned officers/officials of the ministry.
- Implementation of RTI-MIS for the Ministry as well as the 16 organisations under the Ministry.
- Implementation of Composite Payroll System.
- Web-based Parliament Question & Answer Information System.
- Web-based Court Cases Monitoring System and RTIMIS.



CHAPTER – 24

STATEMENT - I

ALL INDIA INSTALLED CAPACITY (IN MW) OF POWER STATIONS LOCATED IN THE REGIONS OF MAIN LAND & ISLANDS

(As on 31.01.07)

State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Northern Region	State	6712.18	10962.50	901.20	14.99	11878.69	0.00	452.68	19043.55
	Private	790.20	0.00	0.00	0.00	0.00	0.00	241.91	1032.11
	Central	4858.00	7050.00	2311.99	0.00	9361.99	1180.00	0.00	15399.99
	Sub Total	**12360.38**	**18012.50**	**3213.19**	**14.99**	**21240.68**	**1180.00**	**694.59**	**35475.65**
Western Region	State	5458.33	14291.50	1390.72	17.28	15699.50	0.00	195.05	21352.88
	Private	460.50	2290.00	1658.00	0.20	3948.20	0.00	903.78	5312.48
	Central	1000.00	4860.00	2772.00	0.00	7632.00	1840.00	0.00	10472.00
	Sub Total	**6918.83**	**21441.50**	**5820.72**	**17.48**	**27279.70**	**1840.00**	**1098.83**	**37137.36**
Southern Region	State $	10942.26	7572.50	735.80	362.52	8670.82	0.00	1764.74	21377.82
	Private	55.45	510.00	2500.50	576.80	3587.30	0.00	2468.75	6111.50
	Central	0.00	8090.00	350.00	0.00	8440.00	880.00	0.00	9320.00
	Sub Total	**10997.71**	**16172.50**	**3586.30**	**939.32**	**20698.12**	**880.00**	**4233.49**	**36809.32**
Eastern Region	State	2292.53	5458.50	100.00	17.06	5575.56	0.00	104.55	7972.64
	Private	0.00	1441.38	0.00	0.14	1441.52	0.00	7.12	1448.64
	Central	204.00	6510.00	90.00	0.00	6600.50	0.00	0.00	6804.00
	Sub Total	**2496.53**	**13409.88**	**190.00**	**17.20**	**13617.08**	**0.00**	**111.67**	**16225.28**
North Eastern Region	State	303.07	330.00	372.00	142.74	844.74	0.00	45.26	1193.07
	Private	0.00	0.00	24.50	0.00	24.50	0.00	1.60	26.10
	Central	860.00	0.00	375.00	0.00	375.00	0.00	0.00	1235.00
	Sub Total	**1163.07**	**330.00**	**771.50**	**142.74**	**1244.24**	**0.00**	**46.86**	**2454.17**
Islands	State	5.25	0.00	0.00	50.02	50.02	0.00	5.25	60.52
	Private	0.00	0.00	0.00	20.00	20.00	0.00	0.17	20.17
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub Total	**5.25**	**0.00**	**0.00**	**70.02**	**70.02**	**0.00**	**5.42**	**80.69**
ALL INDIA	State	25713.62	38615.00	3499.72	604.61	42719.33	0.00	2567.53	71000.48
	Private	1306.15	4241.38	4183.00	597.14	9021.52	0.00	3623.33	13951.00
	Central	6922.00	26510.00	5898.99	0.00	32408.99	3900.00	0.00	43230.99
	Total	**33941.77**	**69366.38**	**13581.71**	**1201.75**	**84149.84**	**3900.00**	**6190.86**	**128182.47**

Renewable Energy Sources (RES) includes SHP, BG, BP, U&I, and Wind Energy

Abbreviation : SHP=Small Hydro Project, BG=Biomass Gasifier, BP=Biomass Power, U&I=Urban & Industrial WastePower, RES=Renewable Energy Sources

Note: (i) The capacity of Renewable Energy Sources including Small hydro projects (SHP below 25 MW) is 7239.81 MW comprising of 1826.43 MW of SHP Capacity. The Hydro capacity has been reconciled with MNES list of SHP Capacity. The common capacity of 1048.95 MW has been considered under Hydro capacity thus capacity of SHP is shown 777.48 MW

(ii) Derating of 4 units of Bandel Thermal Power Station in West Bengal to 60 MW each.

(iii) On account of takeover of Dhabol Power Project (Capacity 1480 MW) jointly by M/s NTPC & GAIL, the capacity is accordingly being shown in Central Sector instead of Private Sector.

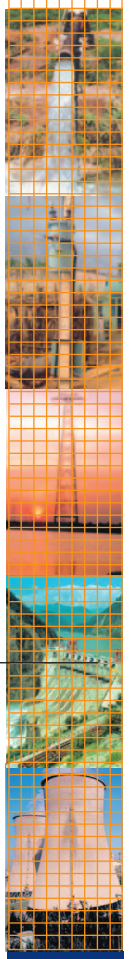
(iv) Figures at second place of decimal may not tally due to rounding off by computer.

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 31.01.07)

State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Delhi	State	0.00	320.00	612.40	0.00	932.40	0.00	0.00	932.40
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07
	Central	509.28	1920.50	204.30	0.00	2124.80	47.08	0.00	2586.93
	Sub-Total	**509.28**	**2240.50**	**816.70**	**0.00**	**3057.20**	**47.08**	**0.07**	**3613.63**
Haryana	State	946.64	1602.50	0.00	3.92	1606.42	0.00	0.30	2553.36
	Private	0.00	0.00	0.00	0.00	0.00	0.00	7.06	7.06
	Central	415.05	375.57	532.04	0.00	907.61	76.16	0.00	1398.82
	Sub-Total	**1361.69**	**1978.07**	**532.04**	**3.92**	**2514.03**	**76.16**	**7.36**	**3959.24**
Himachal	State	476.60	0.00	0.00	0.13	0.13	0.00	49.08	525.81
	Private	386.00	0.00	0.00	0.00	0.00	0.00	0.01	386.01
	Central	754.24	95.41	60.89	0.00	156.30	14.08	0.00	924.62
	Sub-Total	**1616.84**	**95.41**	**60.89**	**0.13**	**156.43**	**14.08**	**49.09**	**1836.44**
Jammu & Kashmir	State	429.15	0.00	175.00	8.94	183.94	0.00	10.59	623.68
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.52
	Central	607.76	198.59	127.09	0.00	325.68	68.00	0.00	1001.44
	Sub-Total	**1036.91**	**198.59**	**302.09**	**8.94**	**509.62**	**68.00**	**11.11**	**1625.64**
Punjab	State	2322.92	2130.00	0.00	0.00	2130.00	0.00	115.25	4568.17
	Private	4.20	0.00	0.00	0.00	0.00	0.00	29.70	33.90
	Central	647.47	546.21	259.72	0.00	805.93	151.04	0.00	1604.44
	Sub-Total	**2974.59**	**2676.21**	**259.72**	**0.00**	**2935.93**	**151.04**	**144.95**	**6206.51**
Rajasthan	State	1008.84	2420.00	113.80	0.00	2533.80	0.00	233.29	3775.93
	Private	0.00	0.00	0.00	0.00	0.00	0.00	90.18	90.18
	Central	389.06	567.49	217.74	0.00	785.23	469.00	0.00	1662.04
	Sub-Total	**1416.65**	**2987.49**	**331.54**	**0.00**	**3319.03**	**469.00**	**323.47**	**5528.15**
Uttar-Pradesh	State	541.10	4490.00	0.00	0.00	4490.00	0.00	11.40	5042.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	114.37	114.37
	Central	899.54	2373.31	541.16	0.00	2914.47	203.72	0.00	4017.73
	Sub-Total	**1440.64**	**6863.31**	**541.16**	**0.00**	**7404.47**	**203.72**	**125.77**	**9174.60**
Uttranchal	State	986.93	0.00	0.00	0.00	0.00	0.00	32.77	1019.70
	Private	400.00	0.00	0.00	0.00	0.00	0.00	0.00	400.00
	Central	217.98	232.80	68.25	0.00	301.05	16.28	0.00	572.06
	Sub-Total	**1641.66**	**232.80**	**68.25**	**0.00**	**301.05**	**16.28**	**32.77**	**1991.76**
Chandigarh	State	0.00	0.00	0.00	2.00	2.00	0.00	0.00	2.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	43.69	26.51	15.07	0.00	41.58	4.84	0.00	90.11
	Sub-Total	**43.69**	**26.51**	**15.07**	**2.00**	**43.58**	**4.84**	**0.00**	**92.11**
	Central - Unallocated	318.43	713.61	285.73	0.00	999.34	129.80	0.00	1447.57
Total Northern Region	State	6712.18	10962.50	901.20	14.99	11878.69	0.00	452.68	19043.55
	Private	790.20	0.00	0.00	0.00	0.00	0.00	241.91	1032.11
	Central	4858.00	7050.00	2311.99	0.00	9361.99	1180.00	0.00	15399.99
	Grand Total	**12360.38**	**18012.50**	**3213.19**	**14.99**	**21240.68**	**1180.00**	**694.59**	**35475.65**



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 31.01.07)

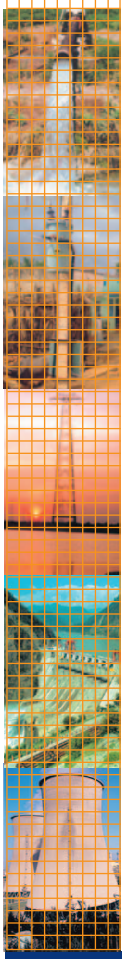
State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Goa	State	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
	Private	0.00	0.00	48.00	0.00	48.00	0.00	0.02	48.02
	Central	0.00	263.03	0.00	0.00	263.03	0.00	0.00	263.03
	Sub-Total	**0.00**	**263.03**	**48.00**	**0.00**	**311.03**	**0.00**	**0.07**	**311.10**
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	0.00	9.54	4.13	0.00	13.67	1.98	0.00	15.65
	Sub-Total	**0.00**	**9.54**	**4.13**	**0.00**	**13.67**	**1.98**	**0.00**	**15.65**
Gujarat	State *	777.00	4429.00	478.72	17.28	4925.00	0.00	99.73	5801.73
	Private	0.00	640.00	1430.00	0.20	2070.20	0.00	207.15	2277.35
	Central	0.00	948.39	417.40	0.00	1365.79	825.00	0.00	2190.79
	Sub-Total	**777.00**	**6017.39**	**2326.12**	**17.48**	**8360.99**	**825.00**	**306.88**	**10269.87**
Madhya Pradesh	State	1724.67	2157.50	0.00	0.00	2157.50	0.00	14.51	3896.68
	Private	13.50	0.00	0.00	0.00	0.00	0.00	36.68	50.18
	Central	1000.00	1194.10	252.91	0.00	1447.01	92.88	0.00	2539.89
	Sub-Total	**2738.17**	**3351.60**	**252.91**	**0.00**	**3604.51**	**92.88**	**51.19**	**6486.75**
Chhatisgarh	State	125.00	1280.00	0.00	0.00	1280.00	0.00	6.00	1411.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	28.01	28.01
	Central	0.00	210.00	0.00	0.00	210.00	0.00	0.00	210.00
	Sub-Total	**125.00**	**1490.00**	**0.00**	**0.00**	**1490.00**	**0.00**	**34.01**	**1649.01**
Maharastra	State	2831.66	6425.00	912.00	0.00	7337.00	0.00	74.76	10243.42
	Private	447.00	1650.00	180.00	0.00	1830.00	0.00	631.92	2908.92
	Central	0.00	1498.55	1877.28	0.00	3375.83	852.06	0.00	4227.89
	Sub-Total	**3278.66**	**9573.55**	**2969.28**	**0.00**	**12542.83**	**852.06**	**706.68**	**17380.23**
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	0.00	11.04	26.61	0.00	37.65	1.98	0.00	39.63
	Sub-Total	**0.00**	**11.04**	**26.61**	**0.00**	**37.65**	**1.98**	**0.00**	**39.63**
	Central - Unallocated	0.00	725.35	193.67	0.00	919.02	66.10	0.00	985.12
Total Western Region	State	5458.33	14291.50	1390.72	17.28	15699.50	0.00	195.05	21352.88
	Private	460.50	2290.00	1658.00	0.20	3948.20	0.00	903.78	5312.48
	Central	1000.00	4860.00	2772.00	0.00	7632.00	1840.00	0.00	10472.00
	Grand Total	**6918.83**	**21441.50**	**5820.72**	**17.48**	**27279.70**	**1840.00**	**1098.83**	**37137.36**

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 31.01.07)

State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Andhra Pradesh	State	3582.61	3132.50	272.30	0.00	3404.80	0.00	131.46	7118.87
	Private	3.75	0.00	1603.40	36.80	1640.20	0.00	413.83	2057.78
	Central	0.00	2428.38	0.00	0.00	2428.38	37.41	0.00	2465.79
	Sub-Total	**3586.36**	**5560.88**	**1875.70**	**36.80**	**7473.38**	**37.41**	**545.29**	**11642.44**
Karnataka	State	3376.20	1470.00	0.00	127.92	1597.92	0.00	515.31	5489.43
	Private	51.70	260.00	220.00	106.50	586.50	0.00	401.61	1039.81
	Central	0.00	1118.67	0.00	0.00	1118.67	136.78	0.00	1255.45
	Sub-Total	**3427.90**	**2848.67**	**220.00**	**234.42**	**3303.09**	**136.78**	**916.92**	**7784.69**
Kerala	State	1807.60	0.00	0.00	234.60	234.60	0.00	48.12	2090.32
	Private	0.00	0.00	174.00	21.84	195.84	0.00	0.73	196.57
	Central	0.00	798.38	350.00	0.00	1148.38	61.17	0.00	1209.55
	Sub-Total	**1807.60**	**798.38**	**524.00**	**256.44**	**1578.82**	**61.17**	**48.85**	**3496.44**
Tamil-Nadu	State	2175.85	2970.00	431.00	0.00	3401.00	0.00	1069.85	6646.70
	Private	0.00	250.00	503.10	411.66	1164.76	0.00	1651.98	2816.74
	Central	0.00	2364.81	0.00	0.00	2364.81	547.39	0.00	2912.20
	Sub-Total	**2175.85**	**5584.81**	**934.10**	**411.66**	**6930.57**	**547.39**	**2721.83**	**12375.64**
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	0.00	100.17	0.00	0.00	100.17	0.00	0.00	100.17
	Sub-Total	0.00	100.17	0.00	0.00	100.17	0.00	0.00	100.17
Pondicherry	State	0.00	0.00	32.50	0.00	32.50	0.00	0.00	32.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60
	Central	0.00	214.01	0.00	0.00	214.01	13.13	0.00	227.14
	Sub-Total	**0.00**	**214.01**	**32.50**	**0.00**	**246.51**	**13.13**	**0.60**	**260.24**
	Central - Unallocated	0.00	1065.58	0.00	0.00	1065.58	84.12	0.00	1149.70
Total Southern Region	State	10942.26	7572.50	735.80	362.52	8670.82	0.00	1764.74	21377.82
	Private	55.45	510.00	2500.50	576.80	3587.30	0.00	2468.75	6111.50
	Central	0.00	8090.00	350.00	0.00	8440.00	880.00	0.00	9320.00
	Grand Total	**10997.71**	**16172.50**	**3586.30**	**939.32**	**20698.12**	**880.00**	**4233.49**	**36809.32**



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 31.01.07)

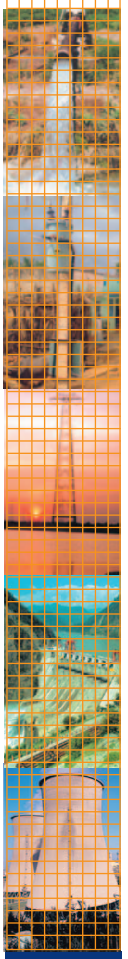
State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Bihar	State	44.90	553.50	0.00	0.00	553.50	0.00	30.40	628.80
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
	Central	21.00	978.79	0.00	0.00	978.79	0.00	0.00	999.79
	Sub-Total	**65.90**	**1532.29**	**0.00**	**0.00**	**1532.29**	**0.00**	**30.42**	**1628.61**
Jharkhand	State	130.00	1260.00	0.00	0.00	1260.00	0.00	4.05	1394.05
	Private	0.00	360.00	0.00	0.00	360.00	0.00	0.08	360.08
	Central	8.00	254.92	0.00	0.00	254.92	0.00	0.00	262.92
	Sub-Total	**138.00**	**1874.92**	**0.00**	**0.00**	**1874.92**	**0.00**	**4.13**	**2017.05**
West Bengal	State	161.70	3225.00	100.00	12.06	3337.06	0.00	59.70	3558.46
	Private	0.00	1081.38	0.00	0.14	1081.52	0.00	6.95	1088.47
	Central	17.00	667.06	0.00	0.00	667.06	0.00	0.00	684.06
	Sub-Total	**178.70**	**4973.44**	**100.00**	**12.20**	**5085.64**	**0.00**	**66.65**	**5330.99**
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	150.00	2600.00	90.00	0.00	2690.50	0.00	0.00	2840.00
	Sub-Total	**150.00**	**2600.00**	**90.00**	**0.00**	**2690.00**	**0.00**	**0.00**	**2840.00**
Orissa	State	1923.93	420.00	0.00	0.00	420.00	0.00	1.30	2345.23
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07
	Central	0.00	1130.93	0.00	0.00	1130.93	0.00	0.00	1130.93
	Sub-Total	**1923.93**	**1550.93**	**0.00**	**0.00**	**1550.93**	**0.00**	**1.37**	**3476.23**
Sikkim	State	32.00	0.00	0.00	5.00	5.00	0.00	9.10	46.10
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	8.00	60.08	0.00	0.00	60.08	0.00	0.00	68.08
	Sub-Total	**40.00**	**60.08**	**0.00**	**5.00**	**65.08**	**0.00**	**9.10**	**114.18**
	Central - Unallocated	0.00	818.22	0.00	0.00	818.22	0.00	0.00	818.22
Total Eastern Region	State	2292.53	5458.50	100.00	17.06	5575.56	0.00	104.55	7972.64
	Private	0.00	1441.38	0.00	0.14	1441.52	0.00	7.12	1448.64
	Central	204.00	6510.00	90.00	0.00	6600.00	0.00	0.00	6804.00
	Grand Total	**2496.53**	**13409.88**	**190.00**	**17.20**	**13617.08**	**0.00**	**111.67**	**16225.28**

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 31.01.07)

State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Assam	State	52.00	330.00	244.50	20.69	595.19	0.00	0.11	647.30
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.12	24.62
	Central	331.00	0.00	178.00	0.00	178.00	0.00	0.00	509.00
	Sub-Total	**383.00**	**330.00**	**447.00**	**20.69**	**797.69**	**0.00**	**0.23**	**1180.92**
Arunachal Pradesh	State	18.50	0.00	0.00	15.88	15.88	0.00	25.80	60.18
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18
	Central	98.00	0.00	21.00	0.00	21.00	0.00	0.00	119.00
	Sub-Total	**116.50**	**0.00**	**21.00**	**15.88**	**36.88**	**0.00**	**25.98**	**179.36**
Meghalaya	State	185.52	0.00	0.00	2.05	2.05	0.00	1.51	189.08
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	73.00	0.00	26.00	0.00	26.00	0.00	0.00	99.00
	Sub-Total	**258.52**	**0.00**	**26.00**	**2.05**	**28.05**	**0.00**	**1.51**	**288.08**
Tripura	State	16.00	0.00	127.50	4.85	132.35	0.00	0.01	148.36
	Private	0.00	0.00	0.00	0.00	0.00	0.00	1.10	1.10
	Central	62.00	0.00	33.00	0.00	33.00	0.00	0.00	95.00
	Sub-Total	**78.00**	**0.00**	**160.50**	**4.85**	**165.35**	**0.00**	**1.11**	**244.46**
Manipur	State	1.50	0.00	0.00	45.41	45.41	0.00	3.95	50.86
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	81.00	0.00	26.00	0.00	26.00	0.00	0.00	107.00
	Sub-Total	**82.50**	**0.00**	**26.00**	**45.41**	**71.41**	**0.00**	**3.95**	**157.86**
Nagaland	State	25.50	0.00	0.00	2.00	2.00	0.00	3.17	30.67
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	53.00	0.00	19.00	0.00	19.00	0.00	0.00	72.00
	Sub-Total	**78.50**	**0.00**	**19.00**	**2.00**	**21.00**	**0.00**	**3.17**	**102.67**
Mizoram	State	4.05	0.00	0.00	51.86	51.86	0.00	10.71	66.62
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20
	Central	34.00	0.00	16.00	0.00	16.00	0.00	0.00	50.00
	Sub-Total	**38.05**	**0.00**	**16.00**	**51.86**	**67.86**	**0.00**	**10.91**	**116.82**
	Central - Unallocated	128.00	0.00	56.00	0.00	56.00	0.00	0.00	184.00
Total North-Eastern Region	State	303.07	330.00	372.00	142.74	844.74	0.00	45.26	1193.07
	Private	0.00	0.00	24.50	0.00	24.50	0.00	1.60	26.10
	Central	860.00	0.00	375.00	0.00	375.00	0.00	0.00	1235.00
	Grand Total	**1163.07**	**330.00**	**771.50**	**142.74**	**1244.24**	**0.00**	**46.86**	**2454.17**

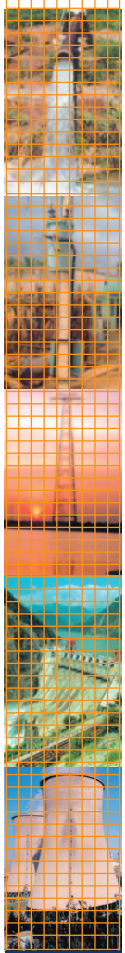


STATEMENT - VII

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE ISLANDS

(As on 31.01.07)

State	Ownership Sector	Hydro	Mode wise Breakup				Nuclear	RES	Grand Total
			Thermal			Total			
			Coal	Gas	Diesel	Thermal			
Andaman & Nicobar	State	5.25	0.00	0.00	40.05	40.05	0.00	5.25	50.55
	Private	0.00	0.00	0.00	20.00	20.00	0.00	20.17	20.17
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	**5.25**	**0.00**	**0.00**	**60.05**	**60.05**	**0.00**	**5.42**	**70.7**
lakshadweep	State	0.00	0.00	0.00	9.97	9.97	0.00	0.00	9.97
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	**0.00**	**0.00**	**0.00**	**9.97**	**9.97**	**0.00**	**0.00**	**9.97**
Total Islands	State	5.25	0.00	0.00	50.02	50.02	0.00	5.25	60.52
	Private	0.00	0.00	0.00	20.00	20.00	0.00	0.17	20.17
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grand Total	**5.25**	**0.00**	**0.00**	**70.02**	**70.02**	**0.00**	**5.42**	**80.69**



CHAPTER – 25

AUDIT OBSERVATIONS OF C & AG

Ministry of Power

Non-collection of service Tax The Central Electricity Authority did not collect service tax of Rs. 62.10 lakh from its clients and ended up as an assessee in default before the Department of Central Excise.

(Report No. 2 of 2006)

Non-deduction of income tax Defective scheme of leave travel concession led to non-deduction of income tax aggregating Rs. 36.37 lakh at source on claims allowed on self certification basis for journeys performed by the employees.

(Report No. 2 of 2006)

NTPC Limited

Performance review on Gas Based Power Stations

The Company commissioned six gas-based plants at Anta, Auraiya, Kawas, Dadri, Gandhar and Faridabad with generating capacity of 3,657.64 MW. Though 14.17 MCMD of gas was required to utilise this capacity, the actual commitment from GAIL (India) Limited was for 12.75 MCMD only, which was sufficient to operate the plants at 66 per cent of the capacity. Thus, even at the initial stage, there was a mis-match between the requirement of gas for generating capacity and the quantity tied up by the GOI. Further, GAIL did not supply gas even up to the committed level. The GOI, which was primarily responsible for assignment of requisite gas for power stations, did not ensure availability of requisite gas.

As the quantity of gas supplied by GAIL declined, the plants increasingly depended on generation through alternate fuel of naphtha/high speed diesel. As the variable cost of generation of power on alternate fuel was four to five times the cost of generation on gas, the beneficiaries were reluctant to purchase costlier power resulting in impairment of the efficient working of the power stations.

In the agreement entered into with GAIL, the Company was required to pay for the minimum guaranteed quantity of gas in the event of short lifting of gas, while there was no corresponding compensating clause in case of short supply of gas by GAIL. The Company's financial interests were not, thus, guarded.

The tariff fixation policy of Central Electricity Regulatory Commission allowed the Company to recover full fixed charges based on declared capacity, even when actual generated units were below the declared capacity. As a result, the beneficiaries had to bear an excessive charge of fixed cost for Rs. 123.45 crore during 2003-04.

Despite underutilisation of the existing capacity due to inadequate gas supply, the Company planned to expand the capacity of four gas-based plants in the IX Five Year Plan. As the beneficiaries declined to take costlier power generated on naphtha, it deferred the expansion after incurring an expenditure of Rs. 23.68 crore, out of which the sum of Rs. 17.56 crore was not likely to be utilised till the end of 2011-12.

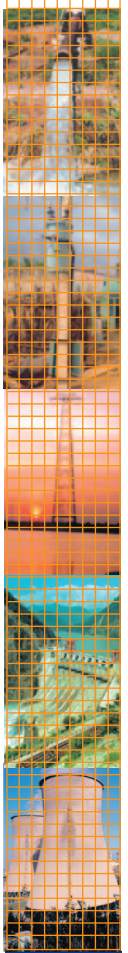
Audit Report No. 8 of 2006

(Chapter-VIII)

North-Eastern Electric Power Corporation Limited

Performance review on Gas Based Power Stations

The gas supply agreements with GAIL (India) Limited/Oil and Natural Gas Corporation Limited did not provide for waiver of Minimum Guaranteed Offtake (MGO) payment due to lower generation in Agartala Gas Turbine Project (AGTP) arising out of grid failure and no/low grid demand over which the Corporation could not exercise any control. As AGTP failed to draw/consume even the MGO quantity of gas due to evacuation constraints and low drawal of power by the beneficiaries, the project had to incur infructuous expenditure of Rs. 3.16 crore.



The Management failed to take timely initiative to enhance the quantity of gas to be supplied keeping in view the availability and future requirement. While working out the gas requirement, the impact of steadily falling calorific value of gas over the years and a higher actual heat rate higher as compared to the norm was not considered.

The Assam Gas Based Power Project (AGBPP) could not achieve the target availability because of lack of tie-up for supply of gas in requisite quantities. As a result, there was under-recovery of fixed charges of Rs. 9.94 crore.

Main causes for lower generation in AGBPP were transformation and transmission limitations in the North-Eastern Region (NER), lower generation schedule given by North Eastern Regional Load Dispatch Centre and priority given to maximisation of hydel generation during monsoon period.

Under-utilisation of capacity of AGBPP and AGTP was also due to non-availability of associated transmission line and weak state-owned transmission system, import of power by Assam State Electricity Board from Eastern Region due to high cost of AGBPP power and commissioning of gas based power stations by Government of Tripura during 2002-03.

Despite the gas-based stations not achieving the normative auxiliary consumption as well as Gross Station Heat Rate, the Corporation had not conducted any Energy Audit since the commissioning of the plants in July 1998.

The Corporation had not developed any documented maintenance policy incorporating its own inspection schedules and associated procedures as well as defining responsibility of various functions even after seven years from the date of commissioning of the plants.

Manufacturer's recommended periodicity of preventive maintenance of the machines was not adhered to in AGBPP and AGTP.

Non-commissioning of the fire protection system and De-mineralised plant resulted in non-compliance of mandatory environmental requirements stipulated by various statutory authorities.

(Chapter-IX)

Audit Report No. 12 of 2006

Due to overstocking of coal beyond CERC norms, National Thermal Power Corporation Limited could not get any return on excess funds blocked in coal stock and suffered an avoidable loss of interest of Rs. 9.20 crore.

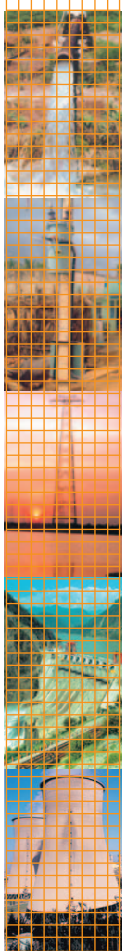
(Para 15.1.1)

Non-inclusion of hedging cost in foreign currency loan agreement and restructuring interest on rupee term loan in relaxation of its interest restructuring policy led to undue benefit to a private party and loss of Rs. 13.48 crore to Power Finance Company Limited.

(Para 15.2.1)

National Hydroelectric Power Corporation Limited was treating three taxable perquisites as non-taxable in contravention of the provisions of the Income Tax Act. On being pointed out by Audit, these perquisites were categorised as taxable income with effect from the financial year 2004-05, thereby avoiding recurring loss to the exchequer.

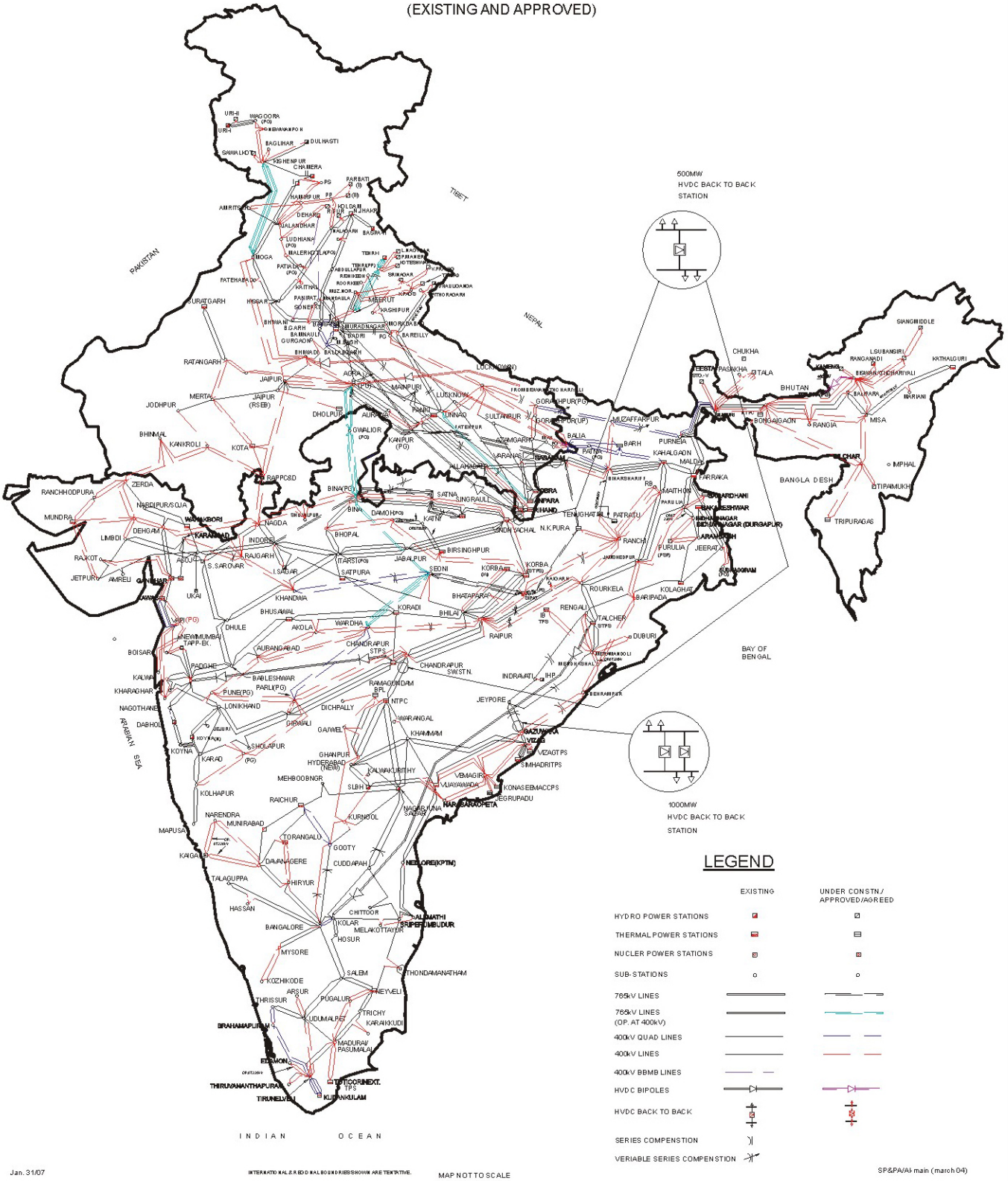
(Para 26.1)



MAJOR TRANSMISSION NETWORK OF INDIA

(400kV AND ABOVE)

(EXISTING AND APPROVED)



Jan. 31/07

INTERNATIONAL BOUNDARIES SHOWN ARE TENTATIVE.

MAP NOT TO SCALE

SP&PA/AI-main (march 04)

सत्यमेव जयते

Ministry of Power

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