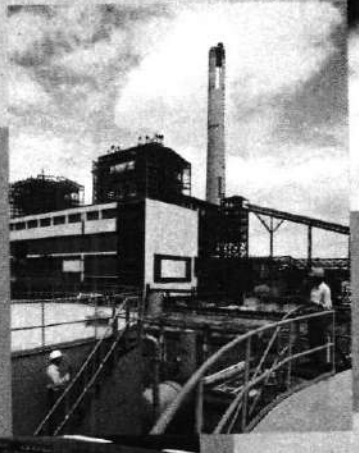
ANNUAL REPORT

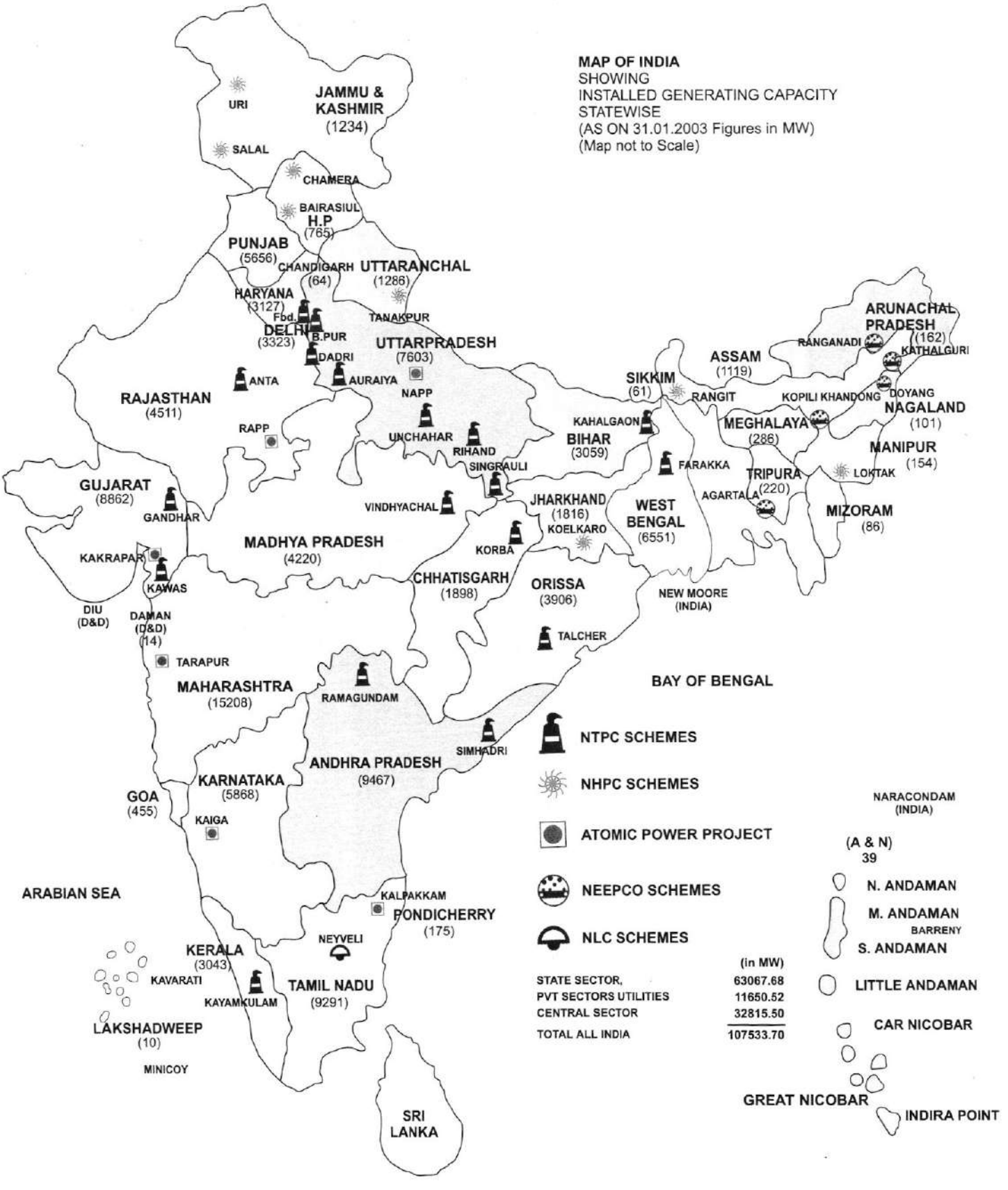
2002-2003



सत्यमेव जयते

Ministry of Power

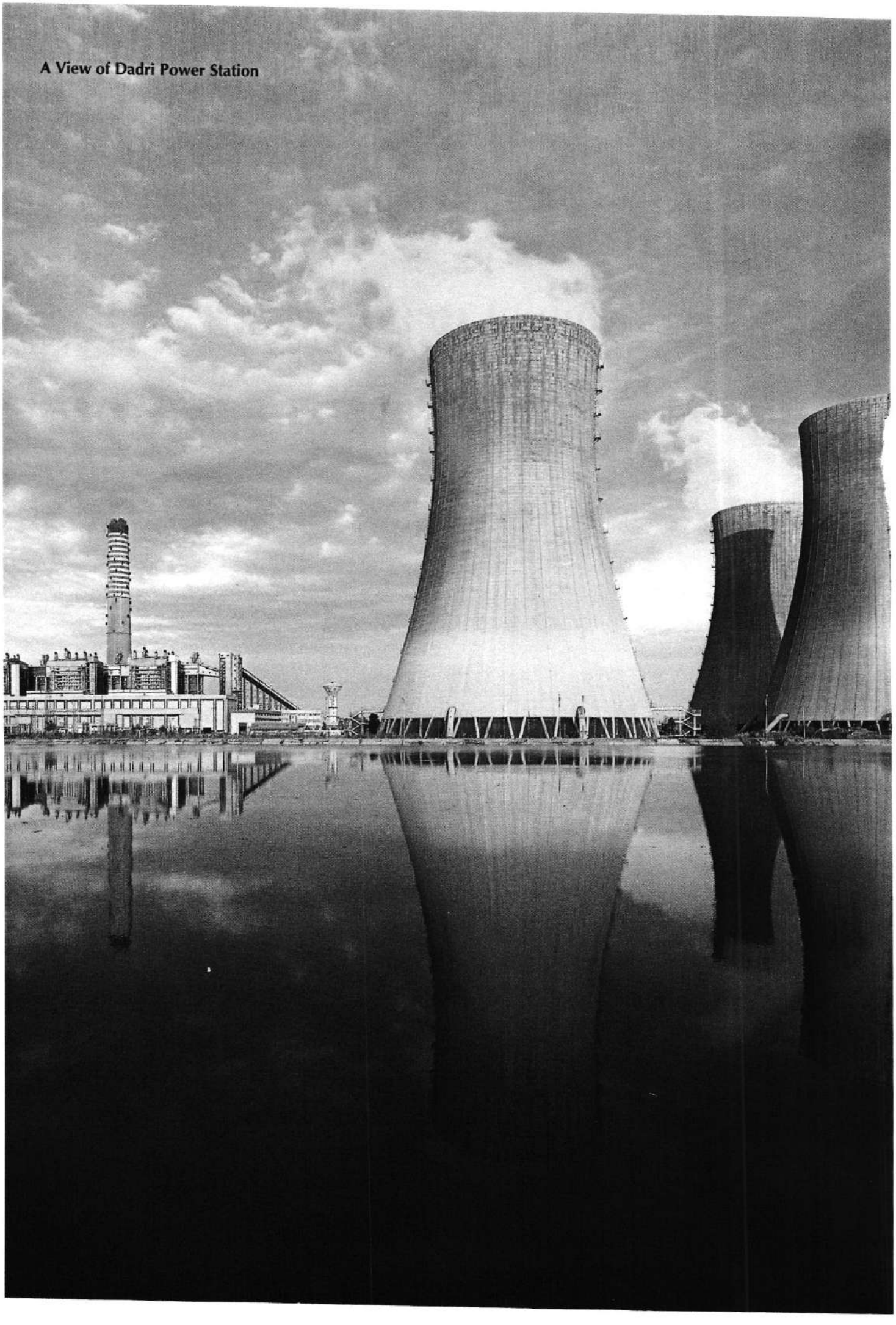
Government of India


MAP OF INDIA
SHOWING
INSTALLED GENERATING CAPACITY
STATEWISE
(AS ON 31.01.2003 Figures in MW)
(Map not to Scale)
JAMMU & KASHMIR (1234)
URI
SALAL
CHAMERA
BAIRASIUL H.P (765)
PUNJAB (5656)
CHANDIGARH (64)
UTTARANCHAL (1286)
HARYANA (3127)
Fbd.
DELHI (3323)
B.PUR
TANAKPUR
UTTARPRADESH (7603)
DADRI
ANTA
AURAIYA
NAPP
RAJASTHAN (4511)
RAPP
UNCHAHAR
RIHAND
SINGRAULI
VINDHYACHAL
GUJARAT (8862)
GANDHAR
KAKRAPAR
KAWAS
DIU (D&D)
DAMAN (D&D) (14)
TARAPUR
MADHYA PRADESH (4220)
KORBA
CHHATISGARH (1898)
ORISSA (3906)
TALCHER
NEW MOORE (INDIA)
JHARKHAND (1816)
KOELKARO
WEST BENGAL (6551)
FARAKKA
KAHALGAON
BIHAR (3059)
SIKKIM (61)
RANGIT
ASSAM (1119)
ARUNACHAL PRADESH (162)
RANGANADI
KATHALGURI
KOPILI
KHANDONG
DOYANG
NAGALAND (101)
MEGHALAYA (286)
TRIPURA (220)
AGARTALA
LOKTAK
MANIPUR (154)
MIZORAM (86)
BAY OF BENGAL
MAHARASHTRA (15208)
RAMAGUNDAM
SIMHADRI
ANDHRA PRADESH (9467)
KARNATAKA (5868)
GOA (455)
KAIGA
ARABIAN SEA
KALPAKKAM
PONDICHERRY (175)
NEYVELI
KERALA (3043)
KAVARATI
KAYAMKULAM
TAMIL NADU (9291)
LAKSHADWEEP (10)
MINICOY
SRI LANKA
NTPC SCHEMES
NHPC SCHEMES
ATOMIC POWER PROJECT
NEEPCO SCHEMES
NLC SCHEMES
(in MW)
STATE SECTOR, 63067.68
PVT SECTORS UTILITIES 11650.52
CENTRAL SECTOR 32815.50
TOTAL ALL INDIA 107533.70
NARACONDAM (INDIA)
(A & N) 39
N. ANDAMAN
M. ANDAMAN
BARRENY
S. ANDAMAN
LITTLE ANDAMAN
CAR NICOBAR
GREAT NICOBAR
INDIRA POINT

Annual Report 2002-03

Ministry of Power
Government of India

(February 2003)



A View of Dadri Power Station

Contents

CHAPTER - 1

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 38 in 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 decision, 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 at www.powermin.nic.in.

The Ministry of Power is responsible for the administration of the Indian Electricity Act, 1910 and Electricity (Supply) Act, 1948, Electricity Regulatory Commissions Act, 1998, Electricity Laws (Amendment) Act, 1998 (No.22 of 1998), Energy Conservation Act, 2001 and to undertake such amendments to these Acts, as may be necessary from time to time, in conformity with the Government's policy objectives.

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 below :

1. General Policy in the electric power sector and issues relating to energy policy. (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 cross country flows);
2. All matters relating to hydro-electric power (except small/mini/micro hydel projects of and below 25 MW capacity) and thermal power and transmission system network;
3. Research, development and technical assistance relating to hydro-electric and thermal power & transmission system network.
4. Administration of the Indian Electricity Act, 1910 (9 of 1910), the Electricity (Supply) Act, 1948 (54 of 1948), Electricity Regulatory Commissions Act, 1998 and Electricity Laws (Amendment) Act, 1998 (No.22 of 1998) and Energy Conservation Act 2001.
5. All matters relating to Central Electricity Authority, Central Electricity Board and Central Electricity Regulatory Commission;
6. Rural Electrification, power schemes in Union Territories and issues relating to power supply in the States and Union Territories.
7. Matters relating to the following Undertakings/ Organizations :-
   a. The Damodar Valley Corporation;
   b. The Bhakra Beas Management Board (except matters relating to irrigation);
   c. National Thermal Power Corporation Limited;
   d. National Hydro-electric 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; (JV)
   j. Satluj Jal Vidyut Nigam (JV) (formerly known as NJPC);
   k. Central Power Research Institute;
   l. National Power Training Institute;
   m. Bureau of Energy Efficiency;
   n. Power Trading Corporation of India Limited;
   o. Narmada Hydro Development Corporation (JV).
8. Other Public Sector Enterprises concerned with the subject included under this Ministry except such projects as are specifically allotted to any other Ministry or Department.
9. All matters concerning Energy conservation and Energy efficiency pertaining to power.

ORGANISATIONS UNDER MINISTRY OF POWER

In all technical and economic matters, Ministry of Power is assisted by the Central Electricity Authority (CEA) constituted under the Electricity (Supply) Act, 1948.

Badarpur Management Contract Cell (BMCC), a subordinate office of this Ministry, is responsible for administering the Badarpur Thermal Power Station (BTPS) Management Contract between the Government of India and NTPC.

The construction and operation of generation and transmission projects in the Central Sector are entrusted to Central Sector Power Corporations, viz. The National Thermal Power Corporation (NTPC), the National Hydro Electric Power Corporation (NHPC), the North-Eastern Electric Power Corporation (NEEPCO) and the Power Grid Corporation of India Limited (PGCIL). The Power Grid 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 (JV) (formerly known as NJPC); and Tehri Hydro Development Corporation (THDC) are responsible for the execution of the Nathpa Jhakri Power Project and other projects in Satluj Basin in Himachal Pradesh and projects of the Tehri Hydro Power Complex in Uttaranchal respectively. Narmada Hydro Development Corporation (NHDC) another joint venture under NHPC is responsible for execution of Indira Sagar and Omkareshwar projects. Three statutory bodies i.e., the Damodar Valley Corporation (DVC), the Bhakra Beas Management Board (BBMB) and Bureau of Energy Efficiency (BEE) 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) are also under the administrative control of the Ministry of Power. A Power Trading Corporation (PTC) was also set up in 1999 to catalyse development of mega power projects and to promote exchange of power with neighbouring countries.

ORGANISATIONAL SET-UP

Shri Anant G. Geete took over as the Minister of Power on the 27th August, 2002. Smt. Jayawanti Mehta has been the Minister of State of Power since the 14th October, 1999. Shri R. V. Shahi assumed charge as the Secretary in the Ministry of Power with effect from 13.4.2002. He is assisted by a Special Secretary, an Additional Secretary and five Joint Secretaries, including the Financial Adviser.

The Special Secretary oversees areas consisting of Thermal, Policy Planning & External Assistance (PP&EA), Restructuring of State Electricity Boards (SEBs), including Regulatory Commissions, Distribution Reform, including Accelerated Power Development & Reforms Programme (APDRP) and Energy Conservation (EC).

The Additional Secretary oversees areas relating to Hydro Power, Transmission, Operation Monitoring, Investment Promotion Cell, Training & Research, Administration and establishment matters of the Central Electricity Authority.

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

i) Thermal/DVC projects, Policy Planning & External Assistance, restructuring of State Electricity Boards, Official Language, Regulatory Commissions, Electricity Bill, 2001 and Vigilance.

ii) Distribution Reforms, Accelerated Power Development & Reforms Programme (APDRP) and Information Technology (IT), Power Finance Corporation (PFC) and Rural Electrification Corporation (REC).

iii) Hydro projects, Coordination and Press & Publicity, Narmada Hydro Development Corporation (NHDC), Bhakra Beas Management Board (BBMB) and Hydro Projects in Bhutan and Nepal.

iv) Transmission, Operation Monitoring (OM), Administration including administrative matters of Central Electricity Authority, Investment Promotion Cell (IPC) and Training & Research (T&R).

v) Accounts & Finance, Resource Planning, Monitoring of financial performance of SEBs and follow up action on the recommendation of Montek Singh Ahluwalia Committee & N. K. Singh Committee.

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 Bureau of Energy Efficiency are dealt with in the Ministry by Director (EC). Matters relating to reservations for SC/ST, Physically Handicapped and OBC in the Ministry including PSUs are dealt by the Deputy Secretary (Adm.), who is also the Liaison Officer for SC/ST. Matters relating to recreation activities are dealt by Power Sports Control Board. The total staff strength of the Ministry is 311.

CHAPTER - 2

Power Sector - Highlights and Main Achievements

Power is a critical infrastructure for the economic development of the country and the Ministry of Power has given a major thrust for accelerated development and restructuring of the sector. The Ministry of Power has set an agenda of providing Power to All by 2012. It seeks to achieve this objective through a comprehensive and holistic approach to power sector development envisaging a six level intervention strategy at the National, State, SEB, Distribution, Feeder and Consumer levels.

To meet the projected power requirement by 2012 an additional capacity addition of 100000 MW is required in the next two Five Year Plans. A capacity of nearly 41,000 MW would be set up in the 10th Plan and the remaining in the 11th Plan with a stronger focus on hydro power. The Central Sector would contribute 22,500 MW, the State Sector 11400 MW and Private Sector 7,100 MW in the 10th Plan. Projects of above 19000 MW are already under construction and projects of 8,900 MW aggregate capacity have the requisite approvals.

Considering the fact that a large chunk of proportion of the installed capacity will come from the public sector, the outlay for the power sector has been raised from Rs.45,591 crores during the 9th Plan to Rs.143,399 crores in the 10th Plan. The balance will be met through domestic and international sources

The Conference of Chief Ministers' held in March 2001 under the Chairmanship of Hon'ble Prime Minister resolved that all villages should be electrified by 2007, and full coverage of households be achieved by 2012. Rural electrification is now treated as a basic minimum service under the 'Pradhan Mantri Gramodhaya Yojna' (PMGY) from the year 2001-02. It is proposed to cover all the 62000 villages that can be electrified through grid connectivity, during the 10th Plan. The balance 18,000 remote villages are to be electrified through the use of Non-conventional technologies.

Power generation resources are unevenly distributed in the country. Hydro resources are mainly located in the Himalayan region and coal in Eastern and Central India. Optimum and economic utilization of these resources requires inter-regional transmission of power from generation centers to load centres. The concept of a strong inter-connected "National Power Grid" across the country is, therefore, of crucial significance. The present inter regional power transfer capacity of about 8000 MW will be enhanced to 23,500 MW by the end of the 10th Plan.

Reforms in the power sector were initiated in 1991 by liberalizing generation. However, owing to non availability of security of payments from the State Electricity Boards (SEBs) and their poor financial health, the capacity addition through private sector has been far below expectations. It is clear that a commercially viable distribution is necessary to sustain investment in generation and transmission. For attaining this objective, comprehensive reforms of the SEBs have been undertaken. SEBs of Orissa, Haryana, Andhra Pradesh, Karnataka, Rajasthan, Uttar Pradesh, Madhya Predesh, Uttaranchal and Delhi have been unbundled . The distribution business has been privatized in Orissa and Delhi. To rationalize the tariff fixation mechanism, the Central Electricity Regulatory Commission (CERC) has been set up by the Central Government and State Electricity Regulatory Commissions (SERCs) have been set up in 22 States. SERCs of 13 States have issued tariff orders.

Even though distribution of power is a state function, the Ministry of Power has taken a pro-active role to modernize and strengthen the distribution system. The Central Government has launched the Accelerated Power Development Programme in the Year 2000-01 with an outlay of Rs.1000 crores. The programme is now re-designated as Accelerated Power Development and Reform Programme from the current financial year with an outlay of Rs.3500 crores. The scheme, besides providing support to States for investment in sub-transmission and distribution will also have a reward component for those States who have been able to reduce the gap between unit cost of supply and realization. The emphasis of distribution reforms is on achieving metering of all 11 KV feeders, 100% metering of all consumers, reduction of T&D losses and control of theft to ensure quality supply of power to all consumers.

Ministry of Power has signed MOUs/MOA with 24 States to expedite the process of reforms. The MOUs provide for metering of all 11 KV feeders, 100% metering of consumers, energy audit, reduction of T&D losses and attaining the commercial viability in distribution etc.

Due to poor financial health a number of SEBs defaulted on their payment to power generating companies, coal suppliers and railways etc. The cumulative amount due to these agencies from SEBs exceeds Rs.41000 crores, seriously impacting the borrowing capacities of SEBs. A scheme of one time settlement of outstanding dues has been formulated to wipe out entire outstanding dues.

21 States have accepted the scheme and signed the requisite Tripartite Agreement.

The project clearance process has been simplified. The private sector can now participate in generation, transmission and distribution of power. Automatic approval for 100% foreign equity was permitted for foreign investment upto Rs.1500 crores. This ceiling has been removed since June 2000. Captive power projects costing less than Rs.3000 crores and supplying less than 50% of installed capacity to the grid have been exempted from the requirement of clearance of the CEA. Similarly, for any generating project costing less than Rs.2,500 crores, where the tariff is approved by the Regulatory Commissions, the requirement of techno-economic clearance of CEA has been dispensed with. For speedy clearance of Central Sector hydro power schemes, a three stage clearance procedure has been adopted.

PERFORMANCE HIGHLIGHTS

- ◆ Cabinet has approved the amendments to Electricity Bill, 2001 based on recommendations of the Standing Committee.
- ◆ Generation during current year upto Jan.'03 improved to 444 BU from 428 BU of corresponding period of previous year, recording growth of 3.8%.
- ◆ During the period, PLF of generating stations improved from 69% to 71.7% while PLF of Central generating stations improved from 73.6% to 76.6%.
- ◆ 2540 MW of generating capacity was added and 6372 ckm of transmission lines were laid during the year upto Jan.'03 as compared to 1683 MW and 4503 ckm resp. during previous year.
- • NTPC commissioned 500 MW units at Talcher and Simhadri projects, nine and four months ahead of schedule.
- • Powergrid has commissioned 400 KV lines at Jamshedpur-Rourkela and Raipur-Rourkela, Talcher-II Trans. System and Kollapur-Mapusa lines about nine/ten months ahead of schedule.
- • Baspa hydro electric project, 200 MW being constructed in private sector also commissioned ahead of schedule.
- ◆ Impetus to Fresh starts with Techno Economic Clearance accorded to 9831 MW of generation capacity and 4185 ckm of transmission schemes against 3727 MW and 1513 ckm resp. during previous year.
- • With strategic planning, works taken up in Parbati-II 800 MW project by NHPC within a day of investment approval.
- ◆ Investment approval accorded to Central sector schemes costing Rs.10081 cr. during current year against Rs.7027 cr. schemes approved during previous year.
- ◆ Rs.11722 cr. schemes sanctioned under APDRP and Rs.1087 cr. released during current year against Rs.1981 cr. sanctioned during previous year.
- • AT&C losses in majority of identified circles have started exhibiting reduction.
- • Anti theft legislation enacted in Six States.
- • High Voltage Distribution System and Distribution automation up to transformer level through SCADA introduced in Andhra Pradesh.
- • Acceleration in feeder metering.
- ◆ Inter regional transfer capability increased by 70% from 4700 MW last year to 8000 MW till end Feb.'03.
- ◆ Funding for power sector schemes from PFC and REC improved during current year with Sanctions improving from Rs.12884 cr. to Rs.20649 cr. and Disbursals from Rs.5247 cr. to Rs.9180 cr.
- ◆ Reform initiatives taken by States.
- • Distribution companies privatized in Delhi.
- • SERCs constituted in States of Goa, Kerala, Bihar, Jharkhand.
- • MOU signed with 7 States and reform based MOA signed within 24 States during the current year.
- • Tripartite agreement signed with 22 states in respect of old outstanding and full payment of current bills.
- ◆ Rural Electrification Corpn. (REC) scope expanded to provide financial assistance for projects in generation and transmission, both in rural and urban areas. AG&SP for funding R&M schemes to be routed through both PFC & REC.
- • Rs. 500 cr. annual allocation for loan assistance by REC for villages and hamlets electrification at 3% and trible and dalit bastis electrifications at 1%, which will be waived off on successful project implementation.
- ◆ Bureau of Energy Efficiency (BEE) has prepared an Action Plan covering ten thrust areas for implementation of Energy Conservation Act.
- • BEE has undertaken energy audit of government buildings to reduce energy consumption at Rashtrapati Bhawan, North and South Blocks, PM office etc.
- ◆ NTPC has ventured into distribution.
- • Works taken up in their first hydro project at Koldam 800 MW.

To provide for a liberalized framework a comprehensive Electricity Bill, 2001 was introduced in the Lok Sabha in August, 2001 and subsequently referred to the Standing Committee on Energy for examination and report by the Lok Sabha. The Committee submitted its report to the Lok Sabha on 19.12.2002. The Bill provides for delicensing of generation, non-discriminatory open access in transmission, power trading, rural electrification, mandatory requirement of SERCs, mandatory metering, stringent provisions against theft of power etc.

The Power Trading Corporation (PTC) has been set up. Trading activities of PTC have already commenced from surplus regions to deficit regions. The trading volume has gone up to 1617 Million kwh during 2001-02.

To achieve a broad consensus and general awareness among the public on the need for reforms in power sector and also to share with opinion leaders, students and the general public more than 2085 road shows were organized by the Ministry of Power and its CPSUs in 2001-02.

The Energy Conservation Act, 2001 has been enacted to provide for efficient use of energy and its conservation. The Bureau of Energy Efficiency (BEE) has been set up and the Hon'ble Prime Minister has released the Action Plan for BEE on 23rd August, 2002.

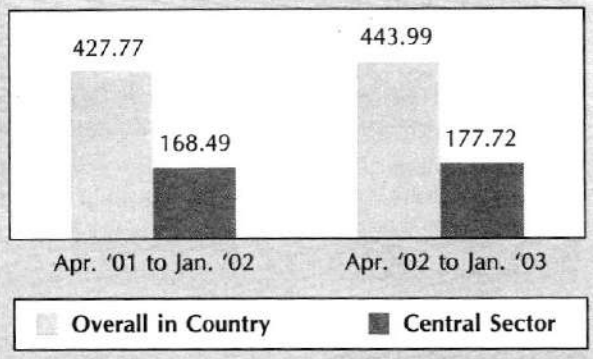
Commissioning of third 500 MW Unit of Talcher Super Thermal Power Project

CHAPTER - 2.1

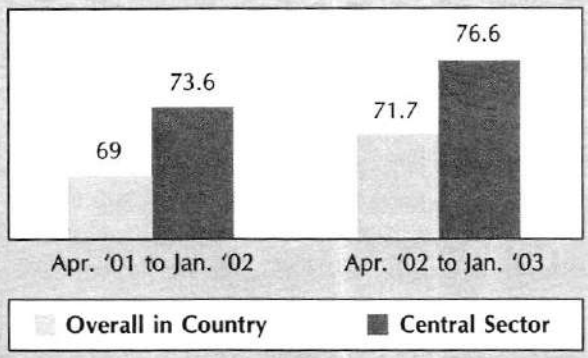
Performance Highlights

1. GENERATION PERFORMANCE

Generation during period (BUs)

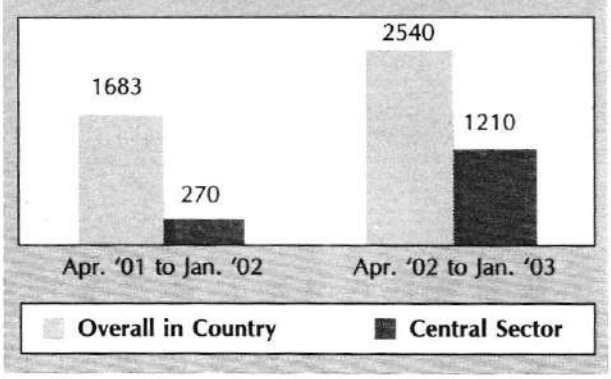


PLF of Thermal Stations (%)

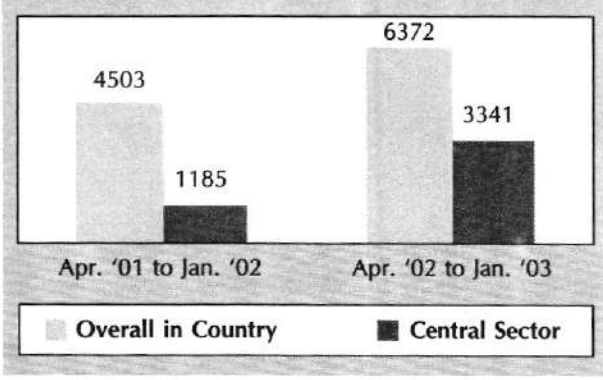


2. NEW ADDITIONS

Generation projects (MW)

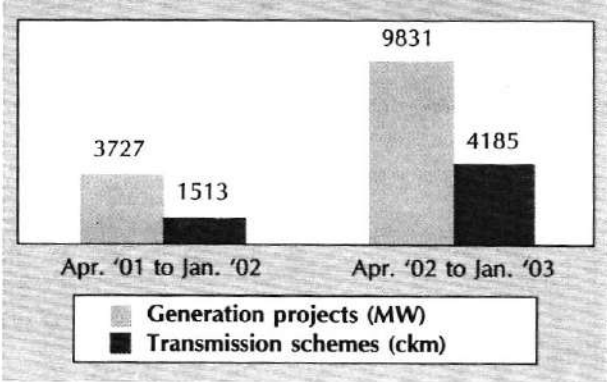


Transmission Schemes (220 kv & above) (ckm)

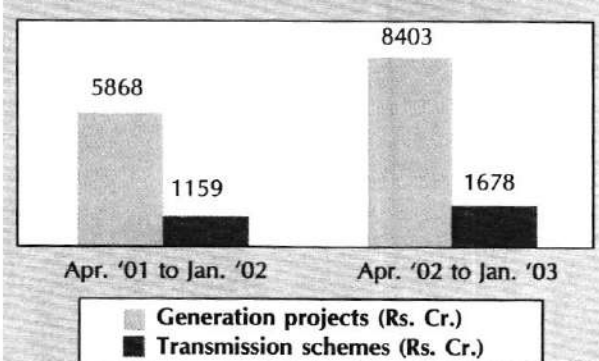


3. FRESH STARTS

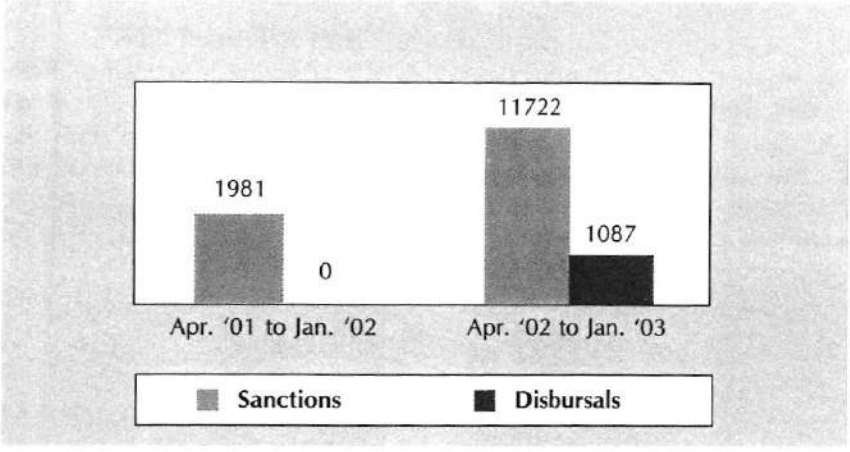
Techno Economic Clearance accorded



Investment approval accorded in Central Sector

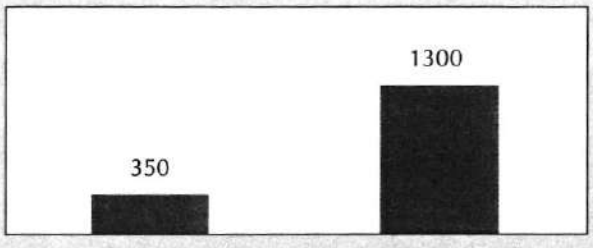


4. APDRP FUNDING (Rs. Cr.)

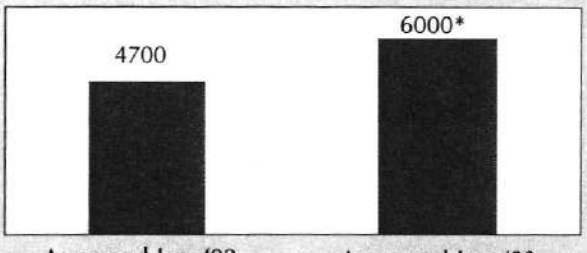


5. INTER REGIONAL TRANSFER CAPABILITY (MW)

Addition during period (MW)



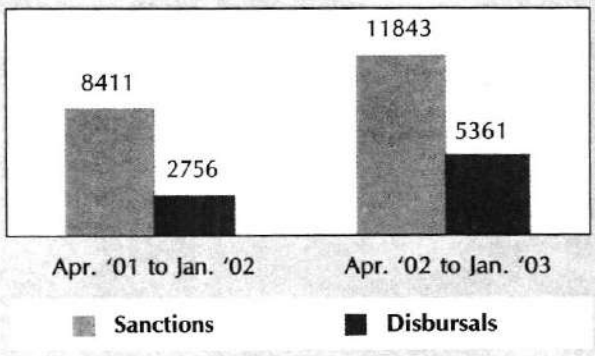
Cumulative Capacity (MW)



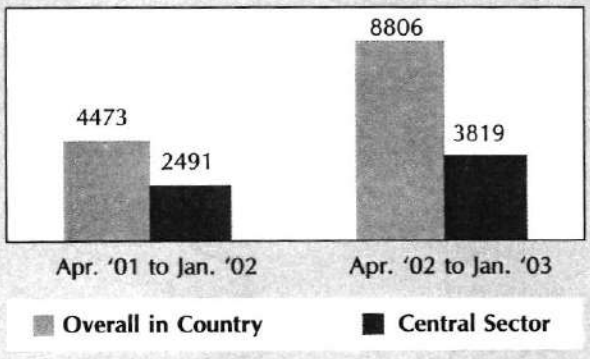
***8000 MW - as on end Feb. '03**

6. FINANCIAL ASSISTANCE (Rs. Cr.)

PFC



REC



CHAPTER - 2.2

Generation & Capacity Addition

GENERATION

The over all generation in the country has increased from 301 Billion Units (BUs) during 1992-93 to 515.3 BUs during 2001-2002 (Chart B). The over all generation (Thermal + Nuclear + Hydro) in public utilities in the country for the last five years are as under :-

Year	Generation (BUs)
1997-98	420.6
1998-99	448.4
1999-2000	480.7
2000-01	499.5
2001-02	515.3
2002-03 (upto Jan. 2003)	443.9
2002-03	545.5 #

 # Target for the whole year

Plant Load Factor (PLF)

The actual all India PLF of thermal/utilities during April 02-Jan.2003 is 71.7 as against the target of 69.9 The PLF figure from the period 1995-96 onward and April 02-Jan, 03 are as follows:-

Year	Centre	State	Overall
1995-96	71.0	58.1	63.0
1996-97	71.1	60.3	64.4
1997-98	70.4	60.9	64.7
1998-99	71.1	60.1	64.6
1999-2000	73.8	63.7	67.3
2000-01	74.3	65.6	69.0
2001-02	74.3	67.0	69.9
2002-03 (April 02-Jan.03)	76.6	68.2	71.7

POWER SUPPLY POSITION

The power supply position during the last five years and during the current year (April 2002 to Jan. 2003) has been as under:

Energy				(in MU)
Year	Requirement	Availability	Shortage (–)	Shortage (%)
1997-98	424505	390330	34175	8.1 %
1998-99	446584	420235	26349	5.9 %
1999-2000	480430	450594	29836	6.2 %
2000-2001	507216	467400	39816	7.8 %
2001-2002	522537	483350	39187	7.5%
2002-2003	458777	417090	41687	9.1%
(April 2002 – January 2003)				

Peak Demand & Peak Met				(in MW)
Year	Peak Demand	Peak Met	Shortage (–)	Shortage (%)
1997-98	65435	58042	7393	11.3 %
1998-99	67905	58445	9460	13.9 %
1999-2000	72669	63691	8978	12.4 %
2000-2001	78037	67880	10157	13 %
2001-2002	78441	69189	9252	11.8%
2002-2003	81492	71520	9972	12.2%
(April 2002 – January 2003)				

INCENTIVE AWARD SCHEME FOR BETTER PERFORMANCE OF THERMAL POWER STATIONS IN THE COUNTRY

The best designs, manufacturing practices and adoption of modern technology in the generation of power, transmission systems are not adequate by themselves for achieving optimum results. Men behind the machine play a key role. Therefore, proper training, motivation and due recognition of their efforts is very important to ensure the best performance of the systems. Keeping in view, the Ministry of Power have formulated incentive schemes for awarding Shields, Medals and Cash Incentives to be distributed among the personnel of power utilities for achieving improvement in the performance of Thermal Power Stations also.

REWARD SCHEME FOR MERITORIOUS PRODUCTIVITY BY THERMAL POWER STATIONS IN THE COUNTRY

The incentive scheme for Meritorious Performance of Thermal Power Stations in the country was introduced in the year 1983-84 for rewarding the Operation & Maintenance personnel for outstanding performance of Thermal Power Stations in Public Sector in the country.

(i) Highlights of the Scheme

- To improve the performance level over the previous years;
- To encourage Annual/Capital Maintenance;
- To encourage early stabilization of newly commissioned thermal generating units.

(ii) Modified Scheme for Meritorious Awards

The scheme for Meritorious Awards was subsequently modified in the year 1992-93 to give recognition to those thermal power stations which achieve improvement in the performance during the peak load period only compared to previous years so as to avoid pumping of unwanted generation of power into the grid during the off-peak period and avoid wastage of energy/natural resources to that extent. Any utility thermal power station in the public sector shall be entitled to be considered for the reward under this scheme if it has actual derated installed capacity of at least 100 MW with minimum unit size of 20 MW and above as on 1st April of the year of Awards. Thermal Power Stations eligible for the Award are also given Shields, if the performance level is 6000 kWh/kW/Year and more during the year of Awards.

(iii) Other Incentives

In addition to the above, the General Manager/ Head/Chief Engineer of the Thermal Power Station were awarded 8 Gold, 10 Silver and 5 Bronze Medals for achieving the performance level of more than 7500 kWh/kW/year; 7100 to 7500 kWh/kW/year; 6600 to 7099 kWh/kW/ year respectively during the year 1999-2000 based on the performance of their respective thermal power stations as per the provision of the Incentive Schemes.

REWARD SCHEME FOR ECONOMIC AND EFFICIENT OPERATION OF THERMAL POWER STATIONS IN THE COUNTRY

A new concept for awarding thermal power stations in the country for achieving economic and efficient performance has been introduced from the year 1992. Under this scheme, thermal power stations which achieve more than a specified improvement in their Secondary Fuel Oil Consumption (SFOC) and Auxiliary Power Consumption (APC) as compared to that of the previous year are rewarded.

For the purpose of selection of thermal power stations for the incentive awards under Secondary Fuel Oil Consumption (SFOC), the coal and lignite based thermal power stations are classified into four groups on the basis of SFOC of previous year. SFOC is worked out in milli-litre/kWh for the Calendar year and awards are decided based on achieving minimum level of improvement over the previous year in SFOC for awards as per the scales of awards prescribed for different groups of such thermal power stations in the country. Similar procedure is adopted for deciding the incentive awards for reduction in Auxiliary Power Consumption (APC) for coal and lignite based thermal power stations in the country.

Under this scheme, cash awards totaling to Rs. 350 lakhs were distributed to 58 eligible thermal power stations in the country comprising of Rs. 265.74 lakhs to 43 eligible thermal power stations under Specific Secondary Fuel Oil (SFOC) and Rs. 84.26 lakhs to 15 eligible thermal power stations under Auxiliary Power Consumption (APC) as incentives for their performance during the year 2000.

(iv) Formulation of comprehensive Incentive Award Scheme

The performance of the thermal power stations have since improved over the period of time and sufficient experience has been gained by now. Accordingly, the performance indices set for the above incentive scheme need modification to suit the present day level of performance. The Availability Based Tariff (ABT) has also been implemented and the above incentive scheme need to be modified taking ABT into consideration. Accordingly the Incentive Award Schemes in operation are under review and preparation of a comprehensive Incentive Scheme including scheme for improved Station Heat Rate of the Thermal Power Stations.

INSTALLED CAPACITY

The all India installed capacity of electric power generating stations under utilities was 104917.50 MW as on 31.3.2002 consisting of 74428.81 MW of thermal, 26261.23 MW of hydro, 2720.00 MW of nuclear and 1507.46 MW wind which has increased to 107533.7 MW (Statement-I) as on 31.01.2003 consisting of 76525.11 MW of thermal, 26660.23 MW of hydro, 2720.00 MW of nuclear and 1628.36 MW of wind. (Chart C)

CAPACITY ADDITION PROGRAMME 2002-03

Capacity addition programme during 2002-03 and achievement (April 2002 - February 2003)

A programme of commissioning of 4109.10 MW comprising of 3502.10 MW thermal and 607.00 MW hydro generating capacity was envisaged during the year 2002-03 as per details given below:

				Programme (MW)
	Central Sector	State Sector	Private Sector	Total
Thermal	920.00	790.10	1792.00	3502.10
Hydro	250.00	357.00	0.00	607.00
Nuclear	0.00	00.00	0.00	0.00
Total	**1170.00**	**1147.10**	**1792.00**	**4109.10**

Against this, a capacity addition of 2650.3 MW consisting of 499 MW of hydro and 2151.3 MW of thermal was added during the year (upto February 2003).

The details of 2151.3 MW thermal capacity already commissioned during the year 2002-03 (till 28.02.2003) are given in Statement II.

The details of 1850.8 MW thermal capacity targeted to be commissioned during the remaining period of 2002-03 are given in Statement III.

The details of 499 MW hydro generating capacity already rolled/commissioned during the year 2002-03 (till 28.02.2003) are given in Statement IV.

The details of 408 MW hydro capacity likely to be commissioned during the remaining period of 2002-03 are given in Statement V.

Capaciy addition (last five years)

In the last five years including 2002-03 (April 2002 – Feb. 2003), the following new capacities have been added:

Year	Centre	State*	Total*
1997-98	333.00	2893.50	3226.50
1998-99	991.60	3250.40	4242.00
1999-2000	1615.40	2892.10	4507.50
2000-2001	659.00	3116.66	3775.66
2001-02	905.00	2210.25	3115.25
2002-03 (upto Feb. 2003)	1210.00	1440.30	2650.30

*includes private sector projects

Capacity Addition Programme for the Tenth Five Year Plan

A capacity addition of 41110 MW has been targeted for the 10th Five Year Plan. Details are as under:

(figs. In MW)

	Hydro	Thermal	Nuclear	Cumulative Capacity
Central Sector	8742	12790	1300	22832
State Sector	4481	6676	0	11157
Private Sector	1170	5941	0	7121
Overall	**14393**	**25407**	**1300**	**41110**

A National Conference was held on the 8th and 9th of July, 2002 at New Delhi to ascertain whether the targets were realistic and whether they could be attained. This Conference was attended by the State Power Secretaries and Chairmen of SEBs and in their presence, each listed project was reviewed and critical constraints were identified. After detailed deliberations, it was agreed that this target of 41,000 MW was realistic considering the fact that about 19000 MW is already under

construction and another 8500 MW has the requisite approvals. An encouraging factor is that the outlay for the Tenth Plan has been enhanced by 214% vis a vis the Ninth Plan outlay. This would ensure that adequate funds would be available for the capacity addition programme.

10TH PLAN OUTLAY FOR CENTRAL POWER SECTOR

The Planning Commission have allocated a total plan outlay of Rs.143399 crore for the Ministry of Power. This would include a Gross Budgetary Support of Rs.25,000 Crore and the remaining Rs.1,18,399 crore would be Internal Extra Budgetary Resources (IEBR). The corresponding figures for the Ninth Plan were about Rs.14,900 crore and Rs.30,648 crore respectively. The Gross Budgetary Support in the 10th Plan has thus been increased by more than 67%. The total Plan figure in the 10th Plan has increased by more than three times. Sub-allocation of the approved Plan outlay is under :

Name of Organisation	Proposed		Approved by Planning Commission	
	GBS	IEBR	GBS	IEBR
NTPC	5000	58680	3000	58680
NHPC	22589	18026	14200	18026
PGCIL	4907	25236.24	1000	20370
DVC	0.00	25941.97	10	13509.50
THDC	1503.76	3515.02	600	3046.50
SJVN (NJPC)	2085	2554	700	2554
NEEPCO	4352.06	2627.12	2011	2213
PFC	0.00	0.00	0	0
REC	0.00	0.00	0	0
MOP/Misc	8064.99#	0.00	3479	0
TOTAL	**48501.81**	**136580.35**	**25000.00**	**118399**

#Includes Rs.500 crore for PTC.

CHAPTER - 2.3

Distribution - Accelerated Power Development and Reform Programme

The Transmission & Distribution (T&D) Losses in the country, which were around 15% up to 1966-67, increased gradually to 23.28% by 1989-90. After a brief spell of reduction in T&D losses to 21.13% (1994-95), there has been an upswing and the losses now stand at 24.79% during 1997-98 and 26.49% for 1998-99 and 30.93% (provisional) 1999-2000. The Transmission & Distribution (T&D) Losses in the country, year-wise, since 1992-93 are given below:

Year	T&D Loss (%)
1992-93	21.80
1993-94	21.41
1994-95	21.13
1995-96	22.27
1996-97	24.53
1997-98	24.79
1998-99	26.45
1999-2000	30.93*

***Provisional**

The financial health of State Electricity Boards (SEBs) has become a matter of grave concern considering that their losses have reached an alarming level of Rs.33, 000 Crores, which is equivalent to about 1.5% of GDP. The gap between cost of revenue realisation and cost of supply has gone up to 110 paise per unit, which indicates that SEBs lose 110 paise for every unit of electricity sold. The accumulation of outstandings to the CPSUs has grown to over Rs.40,000 Crores. Poor creditworthiness of SEBs has effectively blocked investments by private sector despite the enabling and encouraging framework laid down by the Centre. This has necessitated the requirement of reforms in the distribution sector.

Ministry of Power took a number of steps to usher in reform. MOP insisted the State Governments to undertake time bound reforms through executing **Memorandum of Understandings (MOUs).** The thrust was on removal of tariff anomalies by introducing independent tariff regulators, mandatory metering and energy audit. This was expected to increase accountability and to improve revenue realization. However, this did not bring the desired results and therefore, to further rejuvenate the reform process MOP formulated a six level intervention strategy.

SIX LEVEL INTERVENTION STRATEGIES

For giving further boost to the reform programme, the Ministry of Power formulated a six level intervention strategy for distribution reforms at National, State, SEB, Distribution Circle, Feeder & consumers levels to ensures accountability, deliverability and performance at all level.

- **National level interventions**
  The national level intervention include providing for a legal framework for ushering distribution reforms like enabling local institutions to manage distribution, third party sale, remote metering, removal of cross subsidies, penal provision for thefts etc.
- **State level interventions**
  The States are being asked to sign the MOUs with the Ministry of Power to set up SERCs restructure SEBs, remove cross subsidies and tariff anomalies, provide budgetary support to SEBs towards subsidies, introduce privatization etc. So far 26 States have signed MOUs with the Ministry of Power, 22 States have constituted SERCs, 13 State Regulatory Commissions have issued tariff orders and 9 States have unbundled/ corporatised their SEBs.
- **SEB level intervention**
  The State Electricity Boards are being insisted upon to sign an MOA with the Ministry of Power to carry out distribution reforms. This would lead to increased accountability, introduction of commercial accounting, setting up of online management information systems, reduction of T&D losses, introduction of bench marking of crucial parameters that cover consumer satisfaction and system stability. Till now 25 states have signed the MOA and others are expected to sign shortly.
- **Distribution Circle level intervention**
  At this level, the Technical, commercial and administrative interventions for reducing outages improving reliability, reducing technical and commercial losses are envisaged. The Superintending Engineer will be the Chief Executive Officer of the distribution circle. Each circle will work as an independent profit centre.
- **Feeder level intervention**
  11 KV Feeders will be operated as business units that will be accountable for quality of power and reliability, metering, billing and collection.

IT applications covering remote metering at feeder and distribution transformer levels will be the mainstay for monitoring and collection. Replacement of conductors and energy efficient distribution transformers, metering of feeders and distribution transformers, reducing HT/LT ratio, segregation of technical and commercial losses etc. are envisaged.

- **Consumer level intervention**
  Mandatory metering with digital interface for all consumers, prepaid metering, incentives for energy efficiency are envisaged here.

APDRP

In order to operationalise the Six Level Strategy, MOP launched **Accelerated Power Development Programme** in February 2000, which has now been rechristened as **Accelerated Power Development and Reform Programme (APDRP).** Accelerated Power Development and Reform Programme [APDRP] is aimed to achieve AT&C losses to around 15% as against existing over 50% and ensure reliability and quality of power supply with adequate customer satisfaction. To begin with, the activities are concentrated in high-density networks where investments could lead to substantial, quick and demonstrable results. During the period of implementation of projects aimed at up gradation of sub-transmission & distribution network in the high density areas, the State utilities are being asked to meter all the feeder & consumers, take up energy accounting/auditing, develop various circles as profit centers, develop local bodies & local institutions to take up electricity distribution to develop a large number of bulk & retail consumers etc. The scheme has two components of investment and incentive.

Investment Component

Under the investment component of the programme various schemes for up-gradation & strengthening of sub-transmission & distribution network (below 33kV or 66 KV) including energy accounting & metering in the distribution circles in a phased manner.

Under the scheme, in the case of special category States (Jammu & Kashmir, Himachal Pradesh, constituent States of the North Eastern Region including Sikkim) entire cost of the project is being met under APDRP in the form of 90% grant and 10% loan. In case of non-special States, 50% of the project cost is being met from APDRP out of which half will be in the form of grant and half as loan. The remaining 50% of the cost of project can be met by the utility from their internal resources or loans from PFC/REC/FIs/Suppliers' credit.

An amount of Rs. 978 Crores was released among the States in FY 2000-01 for various schemes under above categories. Further, projects costing Rs. 13,703 Crores, covering 332 project areas, have been approved by MOP for various SEBs/utilities in FY 2002-03 and APDRP Fund of Rs. 1087 Crores has been released in FY 2002-03. The details are shown at Statement-VI.

Incentive Component

The incentive component is to provide a substantial reward for states that are willing to go beyond demonstration projects and undertake enterprise wide reform for performance improvements. The states shall be provided a one - for - two matching grant based on the reduction of annual cash loss. Financial year 2000-01 shall be considered as the base year for comparing the cash losses.

MEMORANDUM OF AGREEMENT

Since the distribution reforms requires a structural change in the existing set up in the SEBs, funds under APDRP will be provided only to those SEBs/utilities which agree to certain precedent conditions and commit to achieve agreed benchmarks through a Memorandum of Agreement (MOA). All states except Tripura, Manipur, Orissa and Delhi have already signed the MOA. Under the MOA, in addition to taking measures on technical, commercial and administrative fronts, the states have committed benchmarks for improvements in metering/billing/realization efficiencies, productivity and reduction in gap between per unit revenue realization & cost of supply.

The activities taken up under APDRP would result in the following measurable outcomes:

- Reduction of outages/interruptions by a minimum of 30%.
- Ratio of metered energy in the urban areas to input energy should be more than 0.8 within a period of not exceeding 12 months.
- Ratio of metered energy in the industrial areas to input energy should be more than 0.95 within a period of not exceeding 12 months.
- Revenue increase as a result of interventions mentioned above should be at least 30%.

Information Technology

With a view to use IT as a strategy to improve commercial and operational performance in distribution and for its effective implementation, the MOP has set up an IT Task Force for the power sector with a focus on distribution. The Task Force in its report has suggested road map and phasing of the IT activities in the distribution sector. Large scale IT

initiatives are proposed to be undertaken for the energy auditing, automation of the distribution system ensuring reliable and quality power to the customers and providing E-solutions to the customers.

Universal metering

The T&D losses are pegged at around 10 per cent in better-managed power systems in the developed countries. In order to reduce the T&D losses and to have a proper data base on power supply to various categories of consumers, it was decided in the conference of Chief Ministers held in February 2000, to meter all the 11kV feeders and consumers.

- Static meters on all 11 KV out-going feeders and HT consumers have been installed in most of the States. The data recorded in the static meters can be down loaded to a computer network and software packages will be effectively utilised to process the data for meaningful management of the distribution system. It would be possible to accurately account for the energy received in each 11 KV sub-station and 11 KV out-going feeders; energy billed and T&D losses at the various stages of transformation.
- In the next phase of the programme, meters will be installed in all the distribution transformers and, thereafter, in the premises of the consumers. With the installation of meters at all the transformation stages and in the premises of consumers, it will be possible to operationalise the concept of "cost and profit centre". The implementation of energy accounting system, with billing unit at sub-division level as the nodal point, the problem of commercial losses can be solved. This will help fix proper responsibility at the sub-divisional, divisional, circle and zonal levels.
- Along with 100 per cent metering in the districts, it is necessary to enforce energy accounting and auditing. In this regard an effective Management Information System (MIS) will be put in place to ensure effective flow of information to facilitate quick decision-making and to improve the operation and management of the distribution system.

With the adoption of above steps, it will be possible to develop the data base essential for energy accounting and also to undertake system study and promote measures aimed at improving load management.

CHAPTER - 2.4

Power Sector Reforms

Power sector is witnessing a critical phase. State Electricity Boards (SEBs) are responsible for providing electricity to the people. Most of the Return (RoR) of 3% on their net fixed assets in service after providing for depreciation and interest charges in accordance with Section 59 of the Electricity (Supply) Act, 1948. The power sector in the country has accumulated a huge deficit, a dues to Central Power Generating Companies because of the deteriorating financial performance.

To turn around the financial health of the power sector, the Government has taken up reforms in the power sector for gradual elimination of losses. The reform process in power sector in India was initiated in 1991. The sole objective in launching of the reforms was to mobilize private sector resources for power generating capacity addition. The Government of India has amended Electricity Supply Act, 1948 and the Indian Electricity Act, 1910 to facilitate the private sector participation.

To give a strong impetus to the process of reforms, the Ministry of Power organised a Conference of Chief Minister/Power Ministers on Power Sector Reforms on 3rd March 2001. The Conference resolved inter alia that commercial viability has to be achieved in distribution in 2-3 years through any or all of the following :

- Creating profit centres with full accountability
- Handing over local distribution to Panchayats/ Local Bodies/Franchisees/Users Association, wherever necessary
- Privatisation of distribution
- Or any other means.

ELECTRICITY BILL, 2001

The Government of India with the objective of reforming the power sector had introduced the Electricity Bill, 2001 in the Lok Sabha in August, 2001. The Electricity Bill, 2001 seeks to replace the three existing Acts namely, the Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998. The Bill was subsequently referred to the Standing Committee on Energy for examination and report by the Lok Sabha. The Committee submitted its report to Lok Sabha on 19.12.2002. The Cabinet has approved the proposal of Ministry of Power for amendment to certain provisions of the Bill based on the recommendations of the Committee. The amendment provisions of the Electricity Bill, 2001 will be introduced in the ongoing Budget session of the Parliament.

The salient features of the Electricity Bill are as follows:

- The Central Government to prepare a National Electricity Policy in consultation with State Governments.
- Thrust to complete the rural electrification and provide for management of rural distribution by Panchayats, Cooperative Societies, non-Government organisations, franchisees etc.
- Generation, being delicensed and captive generation being freely permitted. Hydro projects would, however, need clearance from the Central Electricity Authority.
- Transmission Utility at the Central as well as State level, to be a Government company - with responsibility for planned and coordinated development of transmission network. Provision for private transmission licensees.
- Open access in transmission from the outset with provision for surcharge for taking care of current level of cross subsidy with the surcharge being gradually phased out.
- Distribution licensees would be free to undertake generation and generating companies would be free to take up distribution licensees
- The State Electricity Regulatory Commission is a mandatory requirement.
- Provision for licence free generation and distribution in the rural areas.
- The SERCs may permit open access in distribution in phases with surcharge for current level of cross subsidy to be gradually phased out along with cross subsidies and obligation to supply.
- Provision for payment of subsidy through budget.
- For rural and remote areas stand alone systems for generation and distribution would be permitted.
- Trading, a distinct activity is being recognised with the safeguard of the Regulatory Commissions being authorised to fix ceilings on trading margins, if necessary.
- The State Governments have flexibility to unbundle the SEBs or continue with them as distribution licensees and State Transmission Utility.

- The Bill does not prescribe any model of reform, instead provides flexibility to the State Government to choose the model suiting to their conditions.
- Metering of all electricity supplied made mandatory.
- An Appellate Tribunal to hear appeals against the decision of the CERC and SERCs.
- Provisions relating to theft of electricity made more stringent.

BRIEF STATUS ON REFORMS IN THE POWER SECTOR

State Reforms Acts

- Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Kamataka, Rajasthan, Madhya Pradesh and Delhi have enacted their State Electricity Reforms Acts, which provide, inter alia, for unbundling/ corporatisation of SEBs, setting up ofSERCs, etc.
- The SEBs of Orissa, Haryana, Andhra Pradesh, Kamataka, Uttar Pradesh, Uttaranchal Rajasthan, Delhi and Madhya Pradesh have been unbundled corporatised.
- Distribution has been privatized in Orissa and recently in Delhi.

State Electricity Regulatory Commissions

Twenty two states namely, Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Kamataka. West Bengal, Tamil Nadu, Punjab, Delhi, Gujarat, Madhya Pradesh, Arunachal Pradesh, Maharashtra, Rajasthan, Himachal Pradesh, Assam, Chhatisgarh, Uttaranchal, Goa, Bihar, Jharkhand and Kerala have either constituted or notified the constitution of SERC.

Thirteen SERCs viz. Orissa, Andhra Pradesh, Uttar Pradesh, Maharashtra, Gujarat, Haryana, Kamataka, Rajasthan, Delhi, Madhya Pradesh, Himachal Pradesh, West Bengal and Punjab have issued tariff orders.

Anti-theft legislation

Several States viz. Andhra Pradesh, Kamataka, Madhya Pradesh, Uttar Pradesh, West Bengal, Maharashtra, Kerala and Gujarat have either passed or drafted anti-theft laws.

Stringent provisions have been made against theft of electricity in these laws :

- Theft, a cognizable offence
- On the spot assessment
- Debarring supply of power upto two years
- On conviction.
- Special courts
- Compounding of offences

ONE TIME SETTLEMENT OF OUTSTANDING DUES OF SEB

The financial position of the State Electricity Boards has deteriorated quite rapidly in the past decade. The accumulated losses for the last 10 years ending 2001-02 has been calculated to be colossal Rs. 1,55,432 crore. After taking into account the subsidy provided by respective State Governments amounting to Rs. 67,325 crore, the unfunded losses still remain at Rs. 88,107 crore. Such huge losses have very adversely affected the operations and the ability of the electricity utilities to supply electricity to the consumers. Because of the accumulated losses and inadequate cash generation SEBs defaulted in paying their power purchase from the Central Power Utilities like the National Thermal Power Corporation (NTPC), National Hydroelectric Power Corporation (NHPC), Power Grid Corporation of India Ltd. (PGCIL), North Eastern Electric Power Corporation (NEEPCO), Damodar Valley Corporation(DVC), Neyveli Lignite Corporation (NLC), Nuclear Power Corporation of India Ltd. (NPCIL) and for other dues to Coal India Ltd. and the Railways.

A Conference of Power Ministers' held under the Chairmanship of the Prime Minister in March, 2001 resolved that an Expert Group be set up to recommend a One Time Settlement of Power Sector past dues to the CPSUs and dues from CPSUs to State Power Utilities. The Expert Group was set up under the chairmanship of Shri Montek Singh Ahluwalia, formerly Member in the Planning Commission. The Expert Group submitted its report in May 2001. A High Level Empowered Group of Chief Ministers consisting of Deputy Chairman, Planning Commission, Finance Minister, Minister of Power and Chief Ministers of Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Mizoram, Orissa, Rajasthan and West Bengal accepted the recommendations of the Expert Group with a few modifications on 06.07.2001. The Government of India thereafter approved the scheme in March 2002. The scheme was formally announced on 17.04.2002 and a model Tripartite Agreement (TPA) that is to be signed by the State Government concerned, the RBI and the Government of India was circulated on 20.05.2002.

The salient features of the scheme are:

(a) For the states participating in the scheme, 60% of the interest / surcharge on the delayed payments as on 30-09-2001 would be waived off.

(b) The rest of the dues comprising the full principal amount as well as the remaining 40% of the interest / surcharge to be securitised through bonds issued by the respective State Governments.

(c) The bonds will be issued through RBI at a tax-free interest rate of 8.5% per annum. The terms of bonds shall be structured to achieve a moratorium of 5 years on repayment of principal with the entire principal being repaid between the 6th and 15th year. These bonds shall be identical to the bonds issued in connection with the market borrowings of State Governments, with the attendant discipline in repayments. The bonds will be subject to lock-in restrictions that will allow release of only 10% of the bonds in the secondary market each year.

(d) For ensuring timely payment of current dues in future, defaults in current payment for power/fuel shall attract a graded reduction in the supply of power from central power stations and in coal supplies. Payments that remain outstanding after 90 days from the date of billing shall be recovered, on behalf of the CPSUs, by the Ministry of Finance through adjustment against releases due to the respective State Government on account of plan assistance, States' share of Central taxes and any other grant or loan.

(e) In order to initiate steps towards reform of the sector, the State Electricity Boards / State governments to accept reform-based performance milestones such as setting up of State Electricity Reforms Commission (SERC), metering of distribution feeders, improvement in revenue realisation specified in the Memorandum of Understanding (MOU) signed / to be signed with the Ministry of Power.

(f) The States to be offered incentives for complying with the scheme. If SEBs do not default on their current dues and adhere to the performance milestones, CPSUs would pay them, bi-annual cash incentives equal to 3% of the value of bonds in the first year, 2.5% in the second year and 2% in the third and fourth years (total incentive of 19% for four years). Further, if SEBs open and maintain Letters of Credit (LCs), CPSUs would pay them a one-time cash incentive equal to 2% of the value of bonds. In addition, States undertaking reforms would also be assisted through the Accelerated Power Development and Reform Programme (APDRP) grants and discretionary allocation of Power.

(g) The States that withhold their consent beyond 60 days after this scheme enters into force will be denied any share in the discretionary allocation of power (15%) from the power stations of CPSUs as well as any assistance under the APDRP. If the overdues of such States exceed Rs 50 crore in respect of any CPSUs, they would also attract reduction in power and coal supplies, available to the states participating in this scheme.

(h) Outstanding dues as on 30.09.2001 would form the basis of the one time settlement. Dues that accrue after this date would not form part of the scheme. Individual CPSUs & states can consider exchanging bonds for the outstanding beyond 30-09-2001.

The scheme covers the outstanding dues payable by the SEBs to the National Thermal Power Corporation (NTPC), National Hydro-electric Power Corporation (NHPC), North Eastern Electric Power Corporation (NEEPCO), Damodar Valley Corporation (DVC) and Power Grid Corporation of India (PGCIL) under the Ministry of Power, Coal India Limited (CIL) & its subsidiaries and Neyveli Lignite Corporation (NLC) under the Department of Coal, Nuclear Power Corporation (NPL) under the Department of Atomic Energy and the Ministry of Railways.

Andhra Pradesh, Assam, Bihar, Chattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttaranchal, Uttar Pradesh, West Bengal, Jharkhand and Meghalaya have signed the tripartite agreement. Maharashtra have accorded 'in-principle' approval to sign the agreement apart from the National Capital Territory of Delhi. Arunachal Pradesh, Manipur, Mizoram and Tripura are yet to convey their consent to sign the agreement.

The Scheme is expected to:

a) Facilitate settlement of outstanding dues of Rs. 41,852.63 crore of the SEBs payable to the CPSUs as on 30.09.2001, through write off of 60% of interest/surcharge amounting to Rs 9609.94 crore and securitisation of the remaining interest / surcharge and 100% of the principal (as on 30-09-2001, the cut off date) by means of issue of bonds of Rs 32242.69 crores (provisional);

b) Set up a mechanism for regular payment of future dues of the SEBs to the CPSUs through incentives for timely payment, regulations of power and coal supplies and in exceptional cases, through deductions from Central Resource Transfer by the Ministry of Finance in case of default; and

c) Help the reforms process in the States by cleaning the books of the SEBs/utilities.

EXPERT COMMITTEE ON STATE SPECIFIC REFORMS

The Expert Committee, under the Chairmanship of Shri Deepak S. Parekh, Chairman, IDFC submitted – in September 2002 - the report on the first part of the terms of reference suggesting measures for structuring of the APDRP and outlines the reform framework and principles of financial restructuring that could form the basis for devising state-specific reforms programme.

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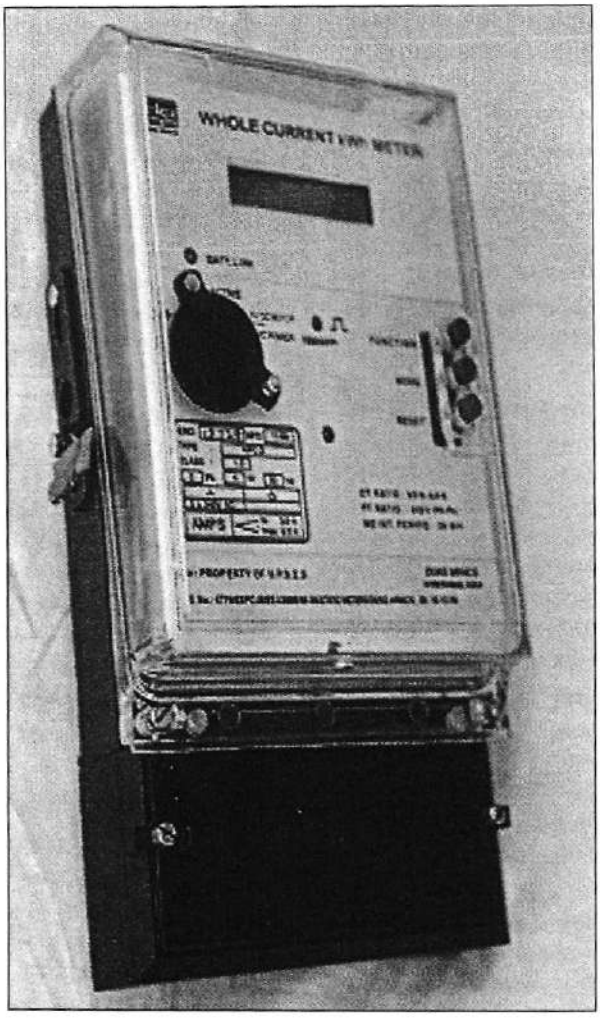


CHAPTER - 3

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 re-strengthening and creation of National Grid. Central Sector transmission construction targets for the year 2002-03 and the progress achieved up to November 2002 are summarised below:

Works	Programme for the year 2002-2003 (Ckt. Kms.)	Achievement upto January, 2003	% of Achievement
800/400/220 kV EHV AC & 500 kV HVDC lines	3437	3341	95.5

CENTRAL SECTOR TRANSMISSION

Central sector transmission lines and sub-stations completed during the year 2002-03 (upto January, 2003) are shown in the following table :

S. No.	Name of the line/Sub-station	Voltage Class
1	LILO of Bongaigaon-Malda I at New Siliguri	400 kV
2	Fixed Series compensation for Kanpur-Ballabhgarh	-
3	Unified Load Despatch & Communication Scheme- Northern Region	-
4	Unified Load Despatch & Communication Scheme- Southern Region	-
5	LILO of Cuddappa-Somanahalli at Kolar	400 kV
6	400 kV S/c Kolar-Madras line	400 kV
7	400 kV S/c Kolar-Arakkonam line	400 kV
8	400 kV S/c Arakkonam-Madras line	400 kV
9	Pole-I of Talcher-Kolar HVDC Bi-pole	±500 kV
10	400 kV Kolar-Hoody D/c line	400 kV
11	400 kV Hosur-Palakkadu S/c portion of 400 kV Kolar-Hosur-Palakkadu S/c line	400 kV
12	400 kV Palakkadu-Salem S/c line	400 kV
13	220 kV D/c Allahabad-Rewa road of UP strengthening scheme	220 kV
14	LILO of 220 kV Modipuram-Muzzaffarnagar (Nara) at Meerut of UP strengthening scheme	220 kV
15	400 kV D/c Kolhapur-Mapusa	400 kV
16	220 kV D/c Purnea-Purnea line	220 kV
17	Siliguri (New) Sub-station	400 kV
18	East-North Interconnector (Sasaram HVDC), AC & HVDC sub-stations	400 kV/±500 kV
19	Talcher HVDC station	500 kV
20	Kolar AC & HVDC sub-stations	400 kV/ ±500 kV
21	Hosur AC sub-station	400 kV
22	Bhiwadi (New) sub-station	400 kV
23	Mapusa sub-station	400 kV
24	Jamshedpur-Rourkela transmission line	400 kV
25	Pole-II of Talcher-Kolar HVDC Bi-pole	400 kV/ ±500 kV
26	East-West Inter-regional link (Raipur-Rourkela transmission line)	400 kV
27	Strengthening of Transmission System in Southern Region (Vijayawada-Nellore-Chennai)	400 kV
28	LILO of Birpara-Siliguri at Siliguri	400 kV
29	400 KV D/C Meerut – Mandola Line (Tehri –I)	400 kV
30	LILO of Modipuram-Simbholi line at Meerut	220 kV
31	LILO of Bassi-Ballabgarh at Bhiwadi	400 kV

Details of Central sector transmission works expected to be completed during the period from Feb. 2003 to March, 2003 are shown in the following table:

S. No.	Name of the line/Sub-station	Voltage Class
1	Talcher-Meramundali	400 kV
2	LILO of Bongaigaon – Malda at Purnea (new)	400 kV
3	LILO of Purnea- Dalkhola at Purnea (Existing)	400 kV
4	220 KV S/C Allahabad – Phulpur (UP System Improvement. Scheme)	220 kV
5	220 KV D/C Panki – Naubasta LILO Line (Unchahar)	220 kV
6	132 KV S/C Mau – Balia line	132 kV
7	220 KV S/C Meerut – Shatabdi Nagar (UP System Improvement. Scheme)	220 kV
8	400 kV Agra (POWERGRID)-Agra (UPPCL)	400 kV

TOWARDS FORMATION OF NATIONAL GRID

A perspective transmission plan, for short, medium and long-term, has been evolved for strengthening the **regional grids** with the ultimate objective of establishment of a strong & vibrant **National Power Grid** by the year 2012 to support the generation capacity addition program of about 1,00,000 MW during X & XI Plans. The major considerations followed while formulating such a perspective plan are, creation of **"Transmission Highways"** from potential hydel generation resources mainly in Eastern & North-Eastern Regions to major load centers in Northern, Southern & Western Regions for their optimum utilization, conservation of precious Right-of-Way along eco-sensitive areas and to achieve economy in long-term.

INTER-REGIONAL LINKS UNDER OPERATION :

A number of schemes have already been implemented towards development of the first phase of the National Power Grid. There are three HVDC back-to-back inter-regional links-500 MW HVDC back-to-back link interconnecting Western and Northern Region at Vindhyachal, 1000 MW HVDC back-to-back link interconnecting Western and Southern Region at Chandrapur, 500 MW back-to-back link interconnecting Eastern and Southern Regions at Gazuwaka-already under operation in addition to a few AC inter-regional links.

To hasten the development of **"National Power Grid" 500 MW HVDC back-to-back link** inter-connecting Eastern & Northern Region at **Sasaram** in Bihar has been commissioned ahead of contractual schedule and at a cost lesser by Rs. 76 Crore than the approved cost. This link is transferring surplus power from Eastern Region and providing relief to Northern Region states. With this, the first phase of the National Grid has been completed and the inter-regional power exchange capacity has been enhanced to **5,000 MW**.

Special emphasis has been given for enhancing the inter-regional power transfer capacity for optimal utilization of available energy resources. As a result the inter regional transmission of energy increased from mere 3600 MUs in 1997 to over 9730 MUs during the year 2001-02. Similarly, during the same period the inter-regional power transfer capacity has been enhanced from 1200 MW to 5000 MW.

ADDITIONAL INTER-REGIONAL LINKS BY 2005:

The commissioning of 1st pole of Talcher-Kolar HVDC link commences the development of second phase of the National Power Grid the **largest HVDC project in Asia** i.e. **2000 MW capacity, 1369 km. long HVDC link between Talcher in Orissa and Kolar in Karnataka** was energized through commissioning of first pole about 9 months ahead of the schedule and at a cost which is less by approx. Rs. 700 crores less than the approved cost. Cumulative inter-regional power transfer capacity has been increased to about 6000 MW by November, 2002. The inter-regional power transfer capacity has further been enhanced to about 8,000 MW with the commissioning of the second pole of the Talcher-Kolar HVDC link and 400 kV D/c Raipur-Rourkela transmission line.

It has been planned to double the capacity of Gajuwaka HVDC back-to-back link by establishment of additional 500 MW block for enhancing the power transfer capacity between Eastern Region & Southern Region.

LONG-TERM PLAN

In the ultimate phase, a strong National Grid has been envisaged to evacuate the power from major

generating resources including hydro projects in North-East Region and large sized Thermal Power Plants in Jharkhand/Bihar, Orissa and Madhya Pradesh. The scheme for National Grid involves development of high capacity transmission corridor in chicken-neck area (falling between Nepal & Bangladesh) and establishment of a ring of 765 kV lines interconnecting Eastern-Western and Northern regions. Cumulative inter-regional transmission capacity of the proposed National Grid would increase to about 29,500 MW by the end of XI plan. Details of inter-regional links existing/planned to be established till XIth plan are given at Statement - VII.

FORMATION OF SAARC GRID

As per an estimate, the hydro potential of Bhutan is 21,000 MW, that of Nepal is 83,000 MW, and of Pakistan is 36,000 MW. Bangladesh has gas potential to the tune of 40,000 bcf. India being centrally placed in South Asian region, sharing political boundaries with four SAARC countries, can play a major role in facilitating interconnection between these countries leading to formation of SAARC Grid for effective utilization of Regional Resources.

PRIVATE SECTOR PARTICIPATION IN TRANSMISSION

In line with the Government of India guidelines, effective steps have been taken to attract private investment in transmission sector to bridge the gap in resource mobilization for execution of transmission projects during 10th and 11th plan. Solicitation process on already identified two routes viz. Independent Power Transmission Company (IPTC) and Joint Venture (JV) is under progress.

The project taken up through JV route covers certain transmission lines estimated to cost Rs 1100 Crore. These are associated with a transmission project titled "Transmission system associated with Tala HEP, East-North inter-connector and Northern region transmission system". The project taken up through IPTC route covers 400 KV double circuit transmission line from "Bina to Nagda & Nagda to Dehgam", and is estimated to cost Rs 450 Crore.

For the first project through JV route, M/s Tata Power has been identified as a prospective Joint Venture Partner (JVP). For the formation of the Joint venture Company, a 'project specific Shell Company' was incorporated on 4th may, 2001. Shareholder's Agreement (SHA) has already been

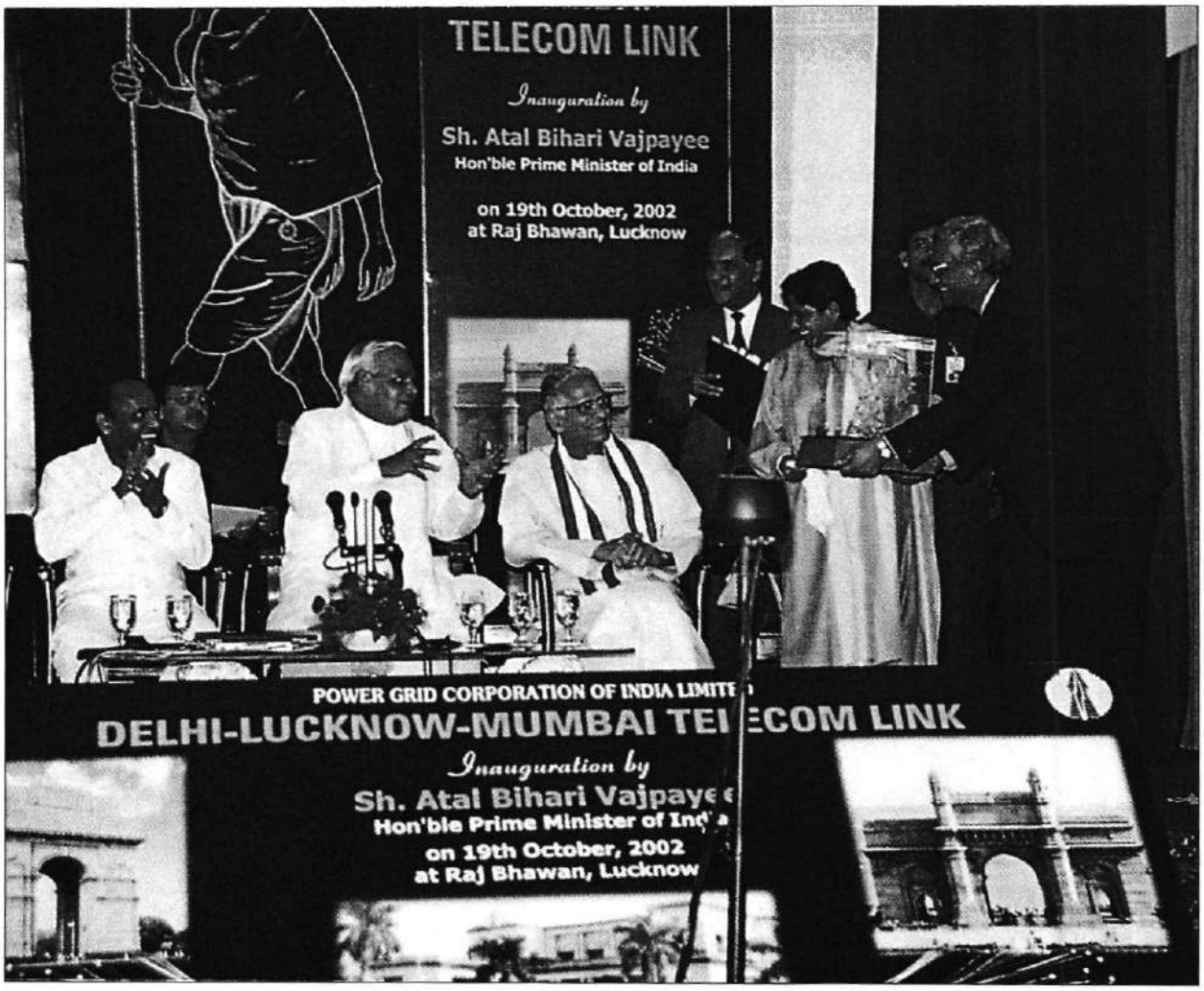
Inaugration of East-South Interconnector-II Transmission System (Talcher - Kolar HVDC bipole)

initialled for entering into Joint Venture and after necessary approval, POWERGRID's equity participation in this Joint Venture Company would be 49%. Balance 51% equity shall be contributed by M/s Tata Power and its affiliates. The other two Agreements viz. Implementation Agreement (IA) and Transmission Service Agreement (TSA) are in advance stages of finalisation.

CERC has also issued orders on 'Tariff norms applicable for private sector' and 'Procedure and Terms & Conditions of license'.

Significant progress has also been achieved under IPTC route, which is being implemented through International Competitive Bidding on BOOT basis. In response to the invitation for the RfQ stage, fifteen applicants had purchased the document. Out of these, 6 Applicants submitted their Qualification statements and four parties have been short listed for issue of Request for Proposal (RfP) document to enable them submit their Techno-Commercial & Tariff Proposal for final selection as Sponsor. Request for proposal (RfP) document has been issued to short listed parties. RfP was submitted and opened on 30/10/2002. The Sponsor is likely to be finalised by the end of financial year, 2002-03.

Innuguration of Delhi-Lucknow-Mumbai Telecom Link by Hon'ble Prime Minister of India



CHAPTER - 4

Rural Electrification Programme

Rural Electricity involves supply of energy for two types of programmes:

(a) Production oriented activities like minor irrigation, rural industries etc.;
(b) Electrification of villages.

While the emphasis is laid on exploration of ground water potential and energisation of pumpsets/tubewells, which has a bearing on agricultural production, the accent in respect of areas covered under the Revised Minimum Needs Programme (RMN P), is on village electrification.

According to the earlier definition: "A village is classified as electrified if electricity is being used within its revenue area for any purpose what–so-ever."

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

"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."

It has been decided to revise the definition of village electrification and a new proposed definition of village electrification is as under:

1. The basic infrastructure such as distribution transformer and or distribution lines is made available in the inhabited locality within the revenue boundary of the village including at least one hamlet/Dalit Basti as applicable and
2. Any of the public places like Schools, Panchayat Office, Health Centres, Dispensaries, Community centers etc. avail power supply on demand and
3. The ratings of distribution transformer and LT lines to be provided in the village would be finalized as per the anticipated number of connections decided in consultation with the Panchayat/Zila Parishad/District Administration who will also issue the necessary certificate of village electrification on completion of the works.
4. The number of household electrified should be minimum 10% for villages which are unelectrified, before the village is declared electrified. The revision of definition would be prospective.

During the year 2002-2003, 3056 inhabited villages were electrified as on 31.12.2002 and 213618 pumpsets/tubewells energized as on 30.11.2002. Cumulatively 509678 villages have been electrified and 13355909 electric irrigation pumpsets have been energized as on 30.11.2002.

As regards the electrification of tribal villages, out of a total of 106949 tribal villages in the country, 81423 (Provisional) villages constituting 75.72% have been electrified as on 30.9.2002. Similarly, 309171 (Provisional) Harijan Bastis have been electrified as on the same date.

PRADHAN MANTRI GRAMODAYA YOJANA (PMGY)

Rural Electrification was included under Pradhan Mantri Gramodaya Yojana (PMGY) from 2001-02 to achieve human development at the village level.

The six components of PMGY now are: Primary Health, Primary Education, Rural Drinking Water, Rural Shelter, Nutrition and Rural Electrification.

During 2002-03, the PMGY is being administered by the Planning Commission. Under the revised guidelines, the States would have flexibility to decide their inter-se allocation of ACA among the six PMGY sectors as per their own plan priorities and discretion. The funds for village electrification are available as Additional Central Assistance with 90% grant and 10% loan for the special category States, and 30% grant and 70% loan for other States. Government has released Rs.36066.35 lakhs to various States as first installment (50%) under PMGY for 2002-03. Details are available in Statment - VIII.

DISTRIBUTED GENERATION

For a large and dispersed rural country, decentralized power generation systems, wherein electricity is generated at consumer end and thereby avoiding transmission and distribution costs, offers a better solution. Gokak Committee had gone into details about the concept of decentralized generation to meet the needs of rural masses. The main recommendations of the Committee are as under :-

1. The concept of Distributed Generation (D.G.) has been taken as decentralized generation and distribution of power especially in the rural areas. In India, the deregulation of the power sector has not made much headway but the

problem of T&D losses, the unreliability of the grid and the problem of remote and inaccessible regions have provoked the debate on the subject.

2. The D.G. technologies in India relate to turbines, micro turbines, wind turbines, biomass, and gasification of biomass, solar photovoltaics and hybrid systems. However, most of the decentralized plants are based on wind power, hydel power and biomass and biomass gasification. The technology of solar photovoltaics is costly and fuel cells are yet to be commercialized.
3. In so far as the 18,000 villages in remote and inaccessible areas are concerned, the extension of grid power is not going to be economical. Decentralized plants based on biomass, gasification of biomass, hydel power and solar thermal power and solar photovaltaics are the appropriate solution for these areas. A decision with regard to the available options will have to be taken depending on the feature of each site/village.
4. As regards the remaining unelectrified villages, the responsibility should rest primarily with the State Governments. The Govt. of India would, however, act as the facilitator to them.
5. As people in many of the electrified villages are very much dissatisfied with the quality of grid power, such villages also encouraged to go ahead with the Distributed Generation Schemes. These should also be the responsibility of the State Governments.
6. Though India has made considerable progress in adopting technologies based on renewable sources of energy these are not yet capable of commercial application on a large scale.
7. Association of Village Panchayat with Village Level Committees is important for the success of the programme. The fact that the Rural Electric Cooperatives which were established in the 80's for distribution of power supplied by the SEBs incurred losses need not deter us from trying them out again as these did have some positive features.

MINIMUM NEEDS PROGRAMME (MNP)

The revised criteria for the MNP components of rural electrification adopted since the beginning of 7th Plan are as under:-

(a) all North-Eastern hilly States;

(b) all States with less than 65% electrification and in these States those districts will be taken up which has less than 65% electrification provided that districts having least percentage coverage will be given priority over the others; and

(c) all areas including in the tribal sub plan.

During 2002-03 Rs.600 crores have been allocated to the eligible States under MNP. The break up is as under:-

(Rs. in lakhs)

S.No.	States	Amount
1.	Arunachal Pradesh	1200
2.	Assam	6000
3.	Bihar	6800
4.	Chattisgarh	800
5.	Himachal Pradesh	200
6.	Jharkhand	6800
7.	Madhya Pradesh	800
8.	Manipur	270
9.	Meghalaya	3000
10.	Nagaland	130
11.	Orissa	6000
12.	Uttar Pradesh	15000
13.	Uttaranchal	7000
14.	West Bengal	6000
	Total	**60000**

RURAL ELECTRICITY SUPPLY TECHNOLOGY MISSION (REST)

Distributed Generation has been identified as one of the technologies for ensuring supply of power in rural areas by way of setting up of small generating units based on a variety of local funds alongwith localized distribution. The electricity distribution in the rural areas is characterized by low density, high cost of delivery, poor availability of supply of power and commercially unviable on account of high faxed cost and high variable cost.

In order to utilize technology in proving for an affordable solution in making available electricity in rural areas, it has been decided to constitute the Rural Electricity Supply Technology Mission (REST) under the auspices of Minister of Power. The Mission would evolve a strategy based on technology which could provide for low cost power generation and low cost of delivery in the rural areas which can be managed by local institutions like Village Panchayats of Non-Government Organizations and to identify feasible size of generating units for different fuels, which are locally available and for mini and micro hydel projects.

ACCELERATED RURAL ELECTRIFICATION PROGRAMME(AREP)

Government of India in the Budget for 2002-03, have announced the introduction of a new Interest Subsidy Scheme called Accelerated Rural Electrification Programme. With the Interest Subsidy Scheme, States should be able to give this programme the requisite momentum.

An outlay of Rs.164 crores has been provided for this Scheme during 2002-03. The interest subsidy will be at 4% and would be provided to the States for the loans to be taken for rural electrification of un-electrified villages including dalit basti.

KUTIR JYOTI SCHEME

The Government of India in 1988-89 launched a programme called Kutir Jyoti for extending single point light connections to the households of rural families below the poverty line including Harijan and Adivasi families to improve the quality of life of such poor families. Under this programme, one time cost of internal wiring and service connection charges is provided by way of 100% grant to the State Governments/State Electricity Boards through REC. The money provided for release of Kutir Jyoti connections covers the service line from the pole, the fuse unit, switch, the meter and board. It also covers the cost of single point internal wiring and the cost of bulb.

Keeping in view the current cost of material and labour charges, the Government has now accorded fresh approval to revise the cost from the present Rs.1,000/- to Rs.1800/- per connection in respect of special category States and Rs.1500/- per connection in other States. Government have also decided that under this Programme, only metered connections should be given.

The programme, by and large, has been successfully implemented in the States barring a few States like Assam, Goa, J & K, Manipur, Orissa, Uttar Pradesh & West Bengal. These States have not been able to implement the programme at the desired pace based on performance review upto March ending 2002.

The yearwise and cumulative progress of Kutir Jyoti Programme upto the end of March, 2002 is given in the Statement - IX.

During 2002-03, it is proposed to provide 6,53,007 connections. The details of allocation, programme accepted by the States./SEBs and progress under Kutir Jyoti Programme during 2002-03 are given in the Statement - X.

CHAPTER - 5

Energy Conservation

ENERGY CONSERVATION

The strategy developed to make power available to all by 2012 includes promotion of energy efficiency and its conservation in the country, which is found to be the least cost option to augment the gap between demand and supply. Nearly 25,000 MW of capacity creation through energy efficiency in the electricity sector alone has been estimated in India. Energy conservation potential for the economy as a whole has been assessed as 23% with maximum potential in industrial and agricultural sectors.

ENERGY CONSERVATION ACT

Considering the vast potential of energy savings and benefits of energy efficiency, the Government of India enacted the Energy Conservation Act, 2001 (52 of 2001). The Act provides for the legal framework, institutional arrangement and a regulatory mechanism at the Central and State level to embark upon energy efficiency drive in the country.

Indian Industry Programme for Energy Conservation (IIPEC)

Under IIPEC the Task Groups for Textile, Cement, Pulp & Paper, Fertilizer, Chlor-Alkali, and Aluminium have been formed and the first meetings of these groups have taken place at Chhindhwada (M.P.), Beawar (Rajasthan), Ballarpur (Maharashtra), Mumbai (Maharashtra) and Hirakud (Orissa) respectively. Each Task Force is being headed by stakeholders and BEE is actively involved in organising the programmes. The Members from the industry participate in this project for sharing Best Practices, declaring their voluntary targets and bench-marking, etc. The voluntary targets undertaken by the Members from Cement and Pulp & Paper sector will alone result in saving of Rs.175 crores and Rs.51 crores respectively by 2005-06.

STANDARDS AND LABELLING PROGRAMME

Standards and labelling (S&L) programme has been identified as one of the key activities for energy efficiency improvements. The S&L program when in place would ensure that only energy efficient equipment and appliance would be made available to the consumers. Initially the equipment to be covered under S&L progarm are household refrigerators, air-conditioners, water heater, electric motors, agriculture pumpsets, electric lamps & fixtures, industrial fans & blowers and air-compressors. Preliminary discussions have already taken place with manufacturers of refrigerators, air conditioners, agricultural pumpsets, motors, etc., regarding procedure to fix lables and setting standards for minimum energy consumption.

DEMAND SIDE MANAGEMENT

The Demand Side Management and increased electricity end use efficiency can together mitigate power shortages to a certain extent and drastically reduce capital needs for power capacity expansion. The Bureau will be assisting 5 electric utilities to set up DSM Cell and will also assist in capacity building of DSM Cell staff. The preparation of investment grade feasibility reports on agricutural DSM, municipal water pumping and domestic lighting in each of the 5 states will also be undertaken by the Bureau under DSM programme.

ENERGY EFFICIENCY IN BUILDINGS AND ESTABLISHMENTS

Energy audit studies conducted in several office buildings, hotels and hospitals indicate energy saving potential of 20-30%. The potential is largely untapped, partly due to lack of an effective delivery mechanism for energy efficiency. Government buildings by themselves, constitute a very large target market. The Government of India is committed to set an example by implementing the provisions of the EC Act in all its establishments as a first initiative. To begin with, the Bureau has begun conduct of energy audit in the Rashtrapathi Bhawan, Parliament House, South Block, North Block, Shram Shakti Bhawan, AIIMS, Safdarjung Hospital, Delhi Airport, Sanchar Bhawan, and Rail Bhawan. Energy audit in the Rashtrapati Bhawan PMO, S S Bhawan, Sanchar Bhawan & Rail Bhawan has been completed

ENERGY CONSERVATION BUILDING CODES

The new buildings are required to be designed and built with energy efficiency consideration right from the initial stages itself. The development of energy conservation building codes is necessary for this purpose. The codes would be applicable to commercial buildings constructed after the relevant rules are notified under the Energy Conservation Act. The Bureau would constitute Committee of Experts for preparation of Energy Conservation Building Codes for different climatic zones.

PROFESSIONAL CERTIFICATION AND ACCREDITATION

The "Designated Consumer" under the EC Act, 2001 is required to appoint or designate energy

manager with prescribed qualifications and also to get energy audit done from accredited energy auditor. It has been decided that prescribed qualification for energy manager will be the passing of certification examination to be arranged by the Bureau. Also, regular accreditation is proposed to be given to energy audit firms having a pool of certified energy auditors. The syllabus and other preparatory activities for conducting the examination have been finalized and the first National Level Certification Examination is scheduled to be conducted in August 2003.

MANUAL AND CODES

In order to standardize the energy performance test procedures and adopt uniform codes while performing energy audit in the designated consumer premises, the Bureau has undertaken this activity. Initially twenty energy intensive equipments have been identified for development of performance test codes which will be developed and reviewed by experts, validated by field tests and pilot tested by training energy manager and energy auditors in these codes.

SCHOOL EDUCATION PROGRAMME

Considering the need to make next generation more aware regarding efficient use of energy resources, it is necessary to introduce children during their school education. In this regard, a Steering Group comprising members from NCERT, CBSE, School Principals and Teachers has been constituted, which is assisting in preparing a detailed project covering review of the existing curriculum, training of teachers and sensitisation of school principals, undertaking practice oriented programme and launching of awareness campaign.

DELIVERY MECHANISMS FOR ENERGY EFFICIENCY SERVICES

Although the benefits of energy efficiency are well known and recognised, investments in energy efficiency have not taken place due to variety of barriers faced by energy users, such as risk averseness and lack of motivation for making energy efficiency investments, and low credibility of energy auditors and their services, lack of confidence in the ability of energy efficiency equipment to deliver energy savings as expected, etc. An innovative way of overcoming such barriers is the approach of using performance contracting through energy service companies (ESCOs). The Bureau would be conducting investment grade audits in industries, which are proposed to be implemented on the performance contract basis by ESCOs.

INDO-GERMAN ENERGY EFFICIENCY PROJECT (PHASE-II)

The Phase-I of the Indo-German Energy Efficiency Project has been successfully completed by the erstwhile Energy Management Centre in June 2000. Activities in the Phase-II of the Project have already begun and the project would be supporting the thrust areas of the Bureau as mentioned above.

ENERGY CONSERVATION AWARD 2002

To give national recognition through awards to industrial units for the efforts undertaken by them to reduce energy consumption in their respective units, the Ministry of Power launched the National Energy Conservation Awards in 1991. BEE provides technical and administrative support for the Awards Scheme. In the Awards Schme 2002, for Large and Medium Scale Industry, applications were invited from 17 Industrial Sub-Sectors i.e., automobile, aluminium, cement, chemicals, ceramics, chlor-alkali, edible oil/vanaspati, fertilizers, glass, integrated steel, mini-steel, paper & pulp, petrochemicals, refractories, refineries, sugar and textile plants. The automobile sector has been included for the first time in the Awards – 2002. The response from the industries to the year 2002 scheme has been encouraging. In total, one hundred seventy four (174) industrial units belonging to the above sub-sectors responded, which is a record for the Award Scheme since its inception.

The award scheme has motivated the participating units to undertake serious efforts in saving energy and environment. The data pertaining to 174 industrial units indicated that in 2001-2002, these units have been able to save collectively 641 million kwh of electrical energy which is equivalent to the energy generated from a 122 MW thermal power station at a PLF of 60%. Besides the above electrical energy savings, the participating units have also saved 1.7 lakh kilolitres of furnace oil, 7.4 lakh metric tonnes of coal and 3588 lakh cubic meters of gas per year. In the monetary terms these units have been able to save Rs.594 crores per year and the investment of Rs.691 crores was recovered in 14 months time period. This year, the Awards were given by the Hon'ble Vice President of India.

SUPPLY SIDE ENERGY CONSERVATION

A number of Pilot Projects/Demonstration Projects have been taken up for load management and energy conservation through reduction of T & D losses in the System. The schemes under implementation during the year 2002-2003 include:-

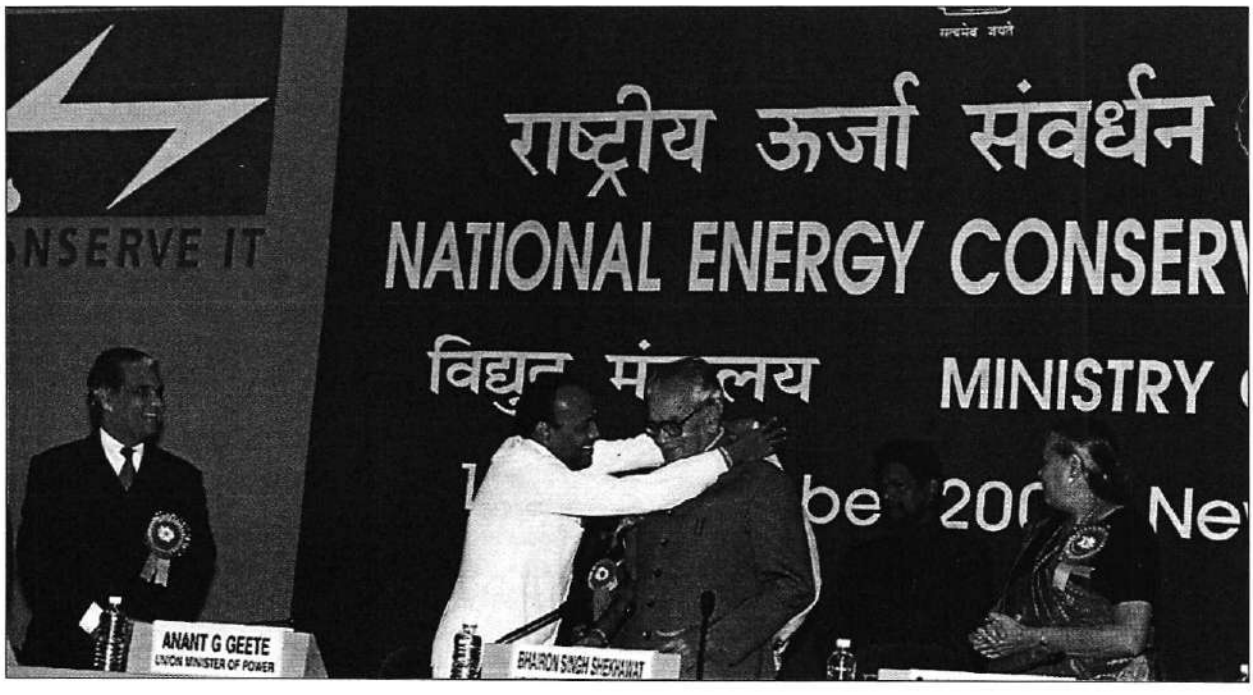
- Two pilot projects for energy audit study, one in the distribution network of West Bengal State

Electricity Board (WBSEB) sanctioned in 1994-95 with the Ministry of Power's contribution of Rs.181.03 lakhs and the other in the distribution network of Kerala State Electricity Board (KSEB) sanctioned in the 1994-95 with the Ministry of Power's contribution of Rs.114.62 lakhs, have been completed successfully by WBSEB and KSEB through REC, during the current financial year 2002 – 2003.

- A pilot project for installation of 2414 LT Switched Capacitors was sanctioned in 1993-94 with the Ministry of Power's contribution of Rs.199.32 lakhs. The installation of 2370 LT Switched Capacitors (with minor reduced scope of work) has been completed in 2002-2003 in Andhra Pradesh, Haryana, Punjab and Tamil Nadu, through Rural Electrification Corporation (REC).
- A pilot project of installation of 3000 Amorphous Core Transformers in the distribution network of various State Electricity Boards, sanctioned in the 1993-94 with the Ministry of Power's of contribution of Rs.300.00 lakhs through REC has been completed successfully in 2002-2003 with some minor reduced scope of work.
- Three pilot projects on Remote Controlled Load Management in the distribution network of RRVPNL (sanctioned in 1996-97 with the Ministry of Power's contribution of Rs.297.50 lakhs and revised to Rs.252.00 lakhs in March, 2000), PSEB (sanctioned in 1995-96 with the Ministry of Power's contribution of Rs.443.88 lakhs) and HVPNL (sanctioned in 1997-98 with the Ministry of Power's contribution of Rs.237.22 lakhs) were under implementation through REC. The projects of RRVPNL and HVPNL have been completed successfully during the 2001-2002 while implementation work of remote controlled load management in respect of the 132 KV sub-station at Hoshiapur has been completed by PSEB in 2002-03.
- An Energy-cum-System Improvement Project, involving installation of Amorphous Core Transformers and LT Capacitors in the distribution network serviced by the Cooperative Electric Supply Society, Sircilla (Andhra Pradesh), sanctioned in 1995-96 with the Ministry of Power's contribution of Rs.508.00 lakhs, is under implementation through REC and is likely to be completed shortly.

Two pilot projects, one of the introduction of 500 Electronic Meters with Time of the Day (TOD) facility, sanctioned in 1996-97 with the Ministry of Power's contribution of Rs.88.00 lakhs and the other for Energy Conservation and Demand Side Management by energy efficient lighting in WBSEB's HQs at Kolkata sanctioned in 1998-99 with the Ministry of Power's contribution of Rs.5.55 lakhs have been completed successfully during the year 2002-2003.

Energy Conservation Day function



CHAPTER - 6

Renovation & Modernisation

RENOVATION AND MODERNISATION OF THERMAL POWER STATIONS

Introduction

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 implementation of Phase-I R&M programme during 7th Plan, Phase-II Programme for R&M of Thermal Power Stations was taken up in the year 1990-91 by the Government of India for implementation during the 8th Plan. Under this programme, 44 Thermal Power Stations covering 198 Thermal Units aggregating to a total capacity of 20,869 MW were taken up. The total estimated cost of the programme was Rs. 2383 crores and an additional generation of 7864 MU/ year was anticipated after the completion of the programme.

However about 50 % works could be completed by the end of 8th Plan i.e. March 1997. After partial completion of these works, an additional generation of 5000 MU/year was achieved. Also, life extension works on 4 Units (300 MW) 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, 130 Units (17935 MW) at 30 Power Stations were taken up for R&M and another 28 units for Life Extension at an estimated cost of Rs.1794 crores.

Out of 28 Units, the Life Extension works on 22 Units (1500 MW) have been completed and the works on 6 Units (410 MW) are under progress.

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, work of residual life assessment (RLA) studies on 59 units have been completed and further action is being taken by concerned SEBs/utilities. 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 35 units (6440 MW) at an estimated cost of Rs.750 crores have been identified for improvement of their performance. Works on another 25 units of NTPC will also be taken up for sustenance of their performance.

RENOVATION AND MODERNISATION OF HYDROELECTRIC POWER PROJECTS

(a) R&M Phase-I Programme :

Based on the recommendations of the National Committee set up in 1987 and subsequent reviews, a programme for renovation, modernization and uprating of Hydro Power Stations was formulated in which 55 schemes were identified with an aggregate capacity of 9653 MW. The total cost of these schemes was estimated as Rs.1493 crores and expected benefit as 2531 MW/7181 MU. Out of 55 schemes, work on 29 schemes having an aggregate capacity of 5677.7 MW at an estimated cost of Rs.605.26 crores have been completed during the VIIIth and IXth Plan and have accrued a benefit of 1717.18 MW.

(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 having an aggregate capacity of 10318 MW were identified to be undertaken under Phase-II programme till the end of 10th Plan to accrue a benefit of 3684.91 MW. Out of these 67 schemes 4 schemes having an aggregate capacity of 591.4 MW at an estimated cost of Rs.119.95 crores have been completed during the IXth Plan and have accrued a benefit of 53.9 MW.

(c) National Perspective Plan :

National Perspective Plan was formulated in the year 2000 including R&M proposals under Phase-II alongwith the left out schemes of National Committee (Phase-I) under implementation/ yet to be implemented. This Plan indicated the benefits of about 7755 MW during the IXth, Xth and XIth Plan through R&M of existing 117 schemes with an aggregate capacity of 19370 MW at an estimated cost of Rs.4654 crores.

(d) Revised Xth & XIth Plan Programme:

Under this programme, the schemes identified under National Perspective Plan and not yet completed have been reviewed in totality in consultation with the utilities and a total of 72 schemes involving 10 schemes under the Central Sector and 62 schemes under State Sector having a total installed capacity of 8139.05 MW to accrue a benefit of 2886.62 MW at an estimated cost of Rs.2733.33 crores have been identified for renovation, modernization and uprating during the Xth Plan and are under various stages of implementation. Further 34 schemes involving 2 schemes under Central Sector and 32 schemes under State Sector having a total installed capacity of 4631 MW to accrue a benefit of 3980.50 MW at an estimated cost of Rs.2023.91 crores have been identified for RM&U during the XIth Plan.

(e) Programme for the year 2002-03:

Out of the 72 schemes programmed for implementation/ completion during the Xth Plan period, the following13 schemes (1in Central Sector + 12 in State Sector) to accrue a benefit of 425.75 MW having an installed capacity of 851.75 MW at an estimated cost of Rs.479.50 crores have been programmed for completion during the year 2002-03.

Sl. No.	Year 2002-03
1	Khandong (2x25), NEEPCO
2	Shanan (4x15 + 1x50),PSEB
3	Bhadra (2x12 + 1x7.2 + 1x6 + 1x2), KPCL
4	Nagjhari* (2x135), KPCL
5	Supa* (2x50), KPCL
6	Mahatma Gandhi* (4x12 + 4x18), VVNL
7	Munirabad (2x9 + 1x10.3), VVNL
8	Panniar (2x15), KSEB
9	Pallivasal* (3x5 + 3x7.5), KSEB
10	Sengulam (4x12), KSEB
11	Pykara (3x6.65 + 2x11 + 2x14), TNEB (Excl. U-4)
12	Hirakud-I,(Sw. yd.) OHPC,
13	Umium St-I (4x9), MeSEB
	* Since Completed

4 schemes out of above 13 schemes with an installed capacity of 527.5 MW to accrue a benefit of 211.50 MW at an expenditure of about Rs.167.42 crores have been completed during the year. The R&M works on the remaining 9 schemes are under progress and likely to be completed as programmed by the end of 2002-03.

CHAPTER - 7

Central Electricity Authority

Organisation of CEA

The Central Electricity Authority (CEA) is a statutory organisation constituted under Section 3(1) of the Electricity (Supply) Act, 1948. It was established as a part- time body in the year 1951 and made a full time body in 1975. It is an attached office of Ministry of Power, Government of India.

In all technical, financial and economic matters, the Ministry of Power is assisted by CEA. CEA is responsible for technical co-ordination and supervision of programmes and is also entrusted with a number of statutory functions. CEA is headed by a Chairman, who is also Ex-officio Secretary to the Government of India and has six full-time Members, who are of the rank of Ex-officio Additional Secretary to the Government of India. These are - Member (Thermal), Member (Hydro), Member (Economic & Commercial), Member(Power Systems), Member (Planning) and Member (Grid, Operation & Distribution). CEA has five Part-time Members, Member (Legal) being one of them.

Functions of CEA

The Authority is generally to exercise such functions and perform such duties and act in such a manner as the Central Government may prescribe under the Rules framed under Section 4B(1) of the Electricity (Supply) Act, 1948 or by issue of written directions in matters of policy involving public interest under Section 4A(1) of the said Act. Under Section 3(1) of Act, CEA is particularly charged with the following functions:

(i) To develop a sound, adequate and uniform national power policy, formulate short-term and perspective plans for power development and co-ordinate the activities of planning agencies in relation to the control and utilisation of national power resources;

(ii) To act as arbitrators in matters arising between the State Govt. or the Board and a licensee or other person as provided in the Act;

(iii) To collect and record the data concerning generation, distribution and utilisation of power and carry out studies relating to cost, efficiency, losses, benefits and such like matters;

(iv) To make public from time to time information secured under this Act and to provide for the publication of reports and investigations;

(v) To advise any State Govt., Board, Generating Company or any other agency engaged in generation or supply of electricity on such matters as will enable such Govt., Board, Generating Company or agency to operate and maintain the power system under its ownership or control in an improved manner and where necessary in co-ordination with any other Government, Board, Generating Company or other agency owning or having the control of another power system;

(vi) To promote and assist in the timely completion of schemes sanctioned under Chapter V of the Act;

(vii) To make arrangements for advancing the skill of persons in the generation and supply of electricity;

(viii) To carry out ,or make arrangements, for any investigation for the purpose of generating or transmitting electricity;

(ix) To promote research in matters affecting the generation, transmission and supply of electricity;

(x) To advise the Central Govt. on any matter on which its advice is sought or make recommendation to that Govt. on any matter if, in the opinion of the Authority, the recommendation would help in improving the generation, distribution and utilisation of electricity; and

(xi) To discharge such other functions as may be entrusted to it or under any other law.

Under the provisions of Electricity (Supply) Act, 1948, the Central Govt. has further added few more functions to the Central Electricity Authority. These are:

- Co-ordination of research and development in the power generation field;
- Evaluation of financial performance of the SEBs constituted under Section 5 and undertaking of studies concerning the economic and commercial aspects of the power industry as well as analysis of tariff structure in the power industry;

- Techno-economic appraisal of power projects;
- Promotion of inter-State and Joint Sector power projects.

Apart from the above functions provided under the Electricity (Supply) Act, 1948, CEA also undertakes design and engineering of power projects with a view to develop in-house technical know-how and also to assist the State Electricity Boards, generating companies & State authorities requiring such assistance under Section 3(1)(v) of the Electricity (Supply) Act, 1948. In addition, the Secretariat for Central Electricity Board (CEB) and safety inspection of centrally owned/controlled electrical installations as per Indian Electricity Rules, 1956 is also vested with CEA.

Subordinate Offices:

Following are the sub-ordinate offices 0f CEA:-

1. Northern Regional Electricity Board, New Delhi
2. Western Regional Electricity Board, Mumbai
3. Southern Regional Electricity Board, Bangalore
4. Eastern Regional Electricity Board, Kolkata
5. North-Eastern Regional Electricity Board, Shillong
6. Regional Power Survey Office, New Delhi
7. Regional Power Survey Office, Bangalore
8. Regional Power Survey Office, Mumbai
9. Regional Power Survey Office, Kolkata
10. Regional Inspectorate Office, New Delhi
11. Regional Inspectorate Office, Chennai
12. Regional Inspectorate Office, Panaji (Goa)
13. Regional Inspectorate Office, Shillong

Techno-Economic Appraisal of Power Scheme

During the year 2002-03 (upto 31.1.2003), CEA accorded Techno-Economic Clearance to 20 new power schemes comprising 13 generation projects aggregating to 9831 MW and 2 transmission schemes involving 2653 Ckt. Kms of transmission length.

Also, during the year 2002-03 (upto 31.1.2003), CEA's consultation under Section 44 of E(S) Act, 1948 was issued to 6 captive power plants aggregating to 498 MW to the various State Electricity Boards.

IMPORTANT TASKS HANDLED DURING 2002-2003 (Upto January 2003)

1. CEA Chairs at IIT, Delhi

An MOU has been signed between CEA and IIT Delhi for creation of two CEA Chair Professorships-one each at the Centre of Energy Studies and the Electrical Engineering Department of IIT, Delhi to fulfill following objectives concerning Power Sector:

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

  Under the program, CEA officers are pursuing M.Tech. and Ph.D. courses at IITD, which will give long term benefits to the Power Sector.

  A number of topics for R&D have been suggested to IIT, Delhi as per the MOU signed. For each of the topic CEA officer(s) has been nominated to carryout R&D work under the guidance of IIT, Delhi professors.

2. Preparation of Perspective Plan for Research & Development activities concerning Power Sector for 15 years

A Standing Committee on R&D was constituted by the Ministry of Power under the Chairmanship of the Chairman, CEA. The report of the Committee on Perspective Plan for R&D has since been submitted.

An action plan to carry out R&D on prioritized projects has been prepared and is under implementation.

3. **Directory of agencies/ organisations carrying out R&D in power sector** has been prepared and is available in CEA web site.
4. **CEA has represented in following Groups / Sub-groups of MNES and CPRI:**
   - Consultative Group on Wind Power of MNES.
   - Governing Council of CPRI.
   - Working Committee on R&D of the Governing Council of CPRI.

- Review Committee to examine the Working of CPRI.

RANKING STUDY BY CEA

The Government of India is according high priority for Hydro Power Development. A number of steps have been taken to improve the Power situation in the country especially in Hydro Sector. The country needs more and more Hydro Power to stabilize its Power System and meet the growing energy needs of the people. With an objective of expediting hydro development in a systematic manner, Central Electricity Authority undertook a ranking study of Balance Hydro Potential sites for all the basins in the country. This exercise would help in identifying the projects, which could be taken up first in order of their priority so that Hydro power Development is taken in an appropriate sequence.

The Ranking of hydro sites has been carried out based on weightage criteria for various aspects involved in the development of hydro schemes such as R&R aspects, inter-state / international issues, height of dam, length of water conductor system, accessibility to site, type and potential of the scheme, status of scheme, etc. Considering these aspects, the schemes have been graded as A,B and C Categories in order of their priority for development.

Based on the preliminary Ranking Study, about 400 schemes with an aggregate installed capacity of about 1,07,000 MW have been prioritized in all the six River Systems of the country. Out of this, 98 schemes with probable installed capacity of 15,640 MW fall under "A" Category, 247 schemes with probable installed capacity of 69, 850 MW under "B" category and 54 schemes with probable installed capacity of 21,420 MW under "C" category. Discussions have been held with individual States to initiate the development of this potential.

CENTRAL ELECTRICITY BOARD

The Central Electricity Board (CEB) is constituted as per Section 36A of the Indian Electricity Act, 1910 (IX of 1910) and is empowered by section 37 of the Act to make rules to regulate generation, transmission, supply and use of electrical energy and generally to carry out the purposes and objects of the said Act, towards its administration. The Board is comprised of the members nominated from the State Government, State Electricity Boards, Central Government Organisations concerning the elctricity and also from the Federation of Electricity Undertakings of India and the Bureau of Indian Standards. Chairman, Central Electricity Authority is being nominated as the Chairman of CEB. The activities of the Board are managed through a secretariat staff provided by Central Electricity Authority (CEA) with one of its Chief Engineers functioning as Secretary of the Board. The Indian Electricity Rules, 1956, have been framed by the CEB. The Board meets at least once in a year to consider amendments/additions to the IE Rules, 1956 which are considered necessary in view of advancemets made in technology, safety, testing procedures and the practical difficulties faced.

During the year under report the following, amendments were promulgated:-

(i) 7 amendments in IE Rules, 1956 based on the recommendations made by the Board during its 36th meeting, after due consideration of the views of public and CEB members, have been promulgated as amended Rules and therafter were laid before the both Houses of Parliament.

(ii) 4 amendments in IE Rules, 1956 based on the recommendations made by the Board during its 37th meeting after the consideration of the views of public and CEB Members, have been promulgated and thereafter forwarded for laying before the both Houses of Parliament.

(iii) The draft rules for amendments based on the recommendations made by the Board during its 38th meeting have been forwarded to Ministry of Law/Department of Legislation for legal vetting of the Gazette Notification.

(iv) The draft rules for amendments based on the recommnedations made by the Board during its 39th meeting are under amending process and draft Gazette Notification is under preparation.

HE&TD AND HE&RM DIVISION.

During the year 2002-03 (up to Nov. 2002), technical assistance and back-up support for design and engineering of electro-mechanical works of following HE Projects aggregating to Installed Capacity of 5044 MW are being carried out:

S.N.	H.E. Project	State/Executing Agency	Capacity
1.	Tehri St.-I	Uttaranchal (THDC)	4 x 250 MW
2.	Koteshwar	-do-	4 x 100 MW
3.	Chandil	Jharkhand (BSHPC)	2 x 4 MW
4.	Sardar Sarovar CHPH	Gujarat (SSNNL)	5 x 50 MW
5.	Sardar Sarovar RBPH	Gujarat (SSNNL)	6 x 200 MW
6.	Indira Sagar	M.P. (NHDC)	8 x 125 MW
7.	Pykara Ultimate Stage	T.N. (TNEB)	3 x 50 MW
8.	Western Yamuna Canal	Haryana (HPGCL)	2 x 8 MW
9.	Myntdu H.E.Project	Meghalaya	2 x 42 MW
NEIGHBOURING COUNTRY			
10.	Tala	Bhutan (THPA)	6 x 170 MW

The design & engineering of some HE Projects as mentioned above, will also be done up to March. 2003.

Under the provision of Section 3(1)(ix) of Electricity (Supply) Act, 1948 Central Electricity Authority will function and perform such duties so as to promote research in matters affecting the generation, transmission and supply of electricity. Central Govt. has later added the function of 'Coordination of Research and Development in the power generation field'.

Functions of UT Directorate

- **Power Development Schemes**
  - UT Directorate is responsible for power development in UTs viz Chandigarh, Dadra and Nagar Haveli, Daman & Diu, Pondicherry, Andaman & Nicobar Islands and Lakshadweep Islands. It renders assistance to the UTs in project formulation, preparation of specification/ procurement of equipments pertaining to power generation, transmission and distribution schemes.
  - Clearance of Generation and T&D Schemes of UTs whose cost do not come under the purview of techno-economic clearance of CEA.
- **Plan Formulation for UTs.**
  - Assistance in formulation of/participation in Annual Plan discussions for UTs.
  - Preparation of Master Plan for Power Development in UTs.
- **Assistance/Advise to UTs.**
  - In tendering and procurement of power equipment as required by DGS&D, Advisory Committee for acceptance of tenders, etc.
  - UT Administration on specific organisational and staff matters as and when referred to.
  - Assistance to MOP in dealing with audit observations of UTs.

Important works completed by UT Directorate during the year 2002-03 :

UT of Andaman & Nicobar Islands

1. Evaluation of tender for procurement of DG sets for Rangat Bay PH.
2. Recommendations conveyed regarding opening of revolving letter of credit in favour of M/s SPCL for 20 MW Bambooflat PH

Lakshadweep

1. Technical clearance to the scheme for augmentation of DG capacity and Distribution system at Kavaratti Island during X Plan period.

D&NH

1. Technical clearance to the scheme for establishment of 2X15 MVA S/s at Silly.
2. Technical clearance to the scheme for augmentation of Masat S/s from 30 MVA to 50 MVA.
3. Technical clearance to the scheme for providing 66 KV connection to M/s 21st Century Ltd.
4. Technical clearance to the scheme for providing 66 KV interim connection to M/s JBF Ltd.
5. Award of works for entrusting the responsibilty of O&M of 220 KV Kharadpada and 66 KV Rakholi S/s to M/s PGCIL
6. Approval of NIT for floating Tender for augmentation of Dadra S/s from 3x10 MVA to 3x20 MVA.

Daman & Diu

1. Award of works for entrusting the responsibility of O&M of 220 KV Magarwada and 66 KV Verkund S/s to M/s PGCIL
2. Technical clearance to the scheme for augmentation of 66 KV Dalwada S/s from 2x15 MVA to 4x15 MVA.

Delhi

1. Coordination and Monitoring of works relating to power supply to VVIP areas including Parliament House and President Estate-conducting of mock test exercise , organising high level meetings and keeping track of progress of works
2. Technical clearance to the revised IX Plan scheme for NDMC

Pondicherry

1. Sanction for fixation of reserve stock limit for 2002-03.
2. Ex-post facto sanction for fixation of reserve stock limit for 1996-97.

THERMAL PROJECT APPRAISAL DIVISION

Details of DPRs of Thermal Power Projects for the period 01.04.2002 to 3.2.2003

A. The following Schemes were cleared by CEA during period 01.04.2002 to 3.2.2003 :

Sl.No.	Name of the Project/Executing Agency/State	Capacity (MW)
1.	Kota TPP U-6, Stage-IV - M/s RRVUNL District Kota – Rajasthan	195
2.	Tau Devi Lal TPS – M/s HPGCL District Panipat – Haryana	2x250
3.	Valuthur (Perunagulam) CCGT – M/s TNEB District Ramnathapuram – Tamil Nadu	94
4.	Bakreshwar TPS Extn. Unit 4 & 5 – M/s WBPDCL District Birbhum – West Bengal	2x210
5.	Sipat STPP Stage-II – NTPC District Belaspur – Chhattisgarh	1x660
6.	Proposal for transmission system associated with Sipat STPS Stage-I – M/s Power Grid Corp. of India Ltd., Chhatisgarh	-
7.	Vindhyachal STPP Stage-III – NTPC District Sidhi – Madhya Pradesh	2x500
8.	Neyveli TPS-II Expansion – M/s NLC District Cuddalore – Tamil Nadu	2x250
9.	Birsinghpur Extn. – M/s MPEB District Umaria – Madhya Pradesh	1x500
10.	Kutralam Gas – TNEB – Tamil Nadu	100
11.	Anpara TPS - M/s UPRVUNL (UP)	2x500

B. The following Thermal Schemes which were examined during the period 01.04.2002 to 3.2.2003 and are presently under examination in CEA

Sl.No.	Name of the Project/Executing Agency/State	Capacity (MW)	Date of Receipt of DPR
1.	Kutch Lignite- GEB – Gujarat	1x75	29.11.2000
2.	Maithon Right Bank – DVC/BSES JV- Jharkhand	4x250	28.06.2001
3.	Mejia Unit 5 & 6- M/s DVC – West Bengal	2 x 250	03.05.2002
4.	Chandrapur Unit 7&8 – M/s DVC – West Bengal	2 x 500	16.10.2002
5.	Yamuna Nagar TPS, M/s HPGCL – Harayana	2x 250	11.11.2002
6.	Paras TPS Extn. M/s MSEB – Maharashtra	1x250	02.08.2002
7.	Vijaywada TPS St. IV – M/s APGENCO– Andhra Pradesh	1x660	01.08.2002

C. Thermal Schemes returned to Project Authorities due to non tie-up of essential inputs/clearances

Sl.No.	Name of the Project/Executing Agency/State	Capacity (MW)	Date of Receipt of DPR
1.	Tenughat – TPS- M/s TVNL Jharkhand	3 x 210	28.08.2002
2.	North Karanpura -NTPC –Jharkhand	3 x 660	20.04.2001
3.	Konaseema – M/s Konaseema EPS Oak well Power Ltd. – A.P	445	12/2000
*4.	Jojobera –M/s Tata Power Co. Ltd Jharkhand	120	04.03.2002
5.	Amarkantak – MPSEB M.P	210	13.11.2002
*6.	Jindal Expn. – M/s Jindal Tractebel Power Co. – Karnataka	500	20.02.2001
7.	Malwa TPS MPSEB Madhya Pradesh	2 x 500	16.10.2002
8.	Sikka TPS G.E.B – Gujarat	500	21.7.1999
9.	Durgapur Unit 5 & 6 – M/s DVC- West Bengal	1000	19.07.2002
10.	Chandil TPP Jharkhand State Electricity Board Jharkhand	1000	26.09.2002
11.	Bokaro Steel Plant TPS-M/s DVC	1000	31.12.2002
12.	Korba East TPS - M/s CSEB	2x500	13.01.2003

* As cost is less than Rs.2,500 crores, DPR has been returned in view of notification dt. 19.8.2002

CHAPTER - 8

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 Act, 1998. The Commission consists of a Chairperson and four other Members including the Chairman, CEA as the ex-officio member.

CERC has formulated the regulations relating to CERC (Filing of Annual Report by Thermal Generating Companies) 2000, CERC (Filing of Annual Report by Transmission Utility)1999, CERC (Medical Facilities) Regulations, 2000 and CERC (Terms and Conditions of Tariff) Regulations, 2001, Notification regarding revised terms and conditions for determination of tariff, CERC (Procedure, Terms & Conditions for grant of transmission License and other related matters) Regulations, 2001, CERC (Terms & Conditions of Tariff) (First amendment) Regulations, 2001, CERC (Terms & Conditions of Tariff) (First amendment) Regulations, 2002, CERC (Recruitment, Control and Service Conditions of Staff) Regulations, 2002, CERC (Medical Facilities) Regulations, 2002 (First Amendment) and Notification regarding extension of billing of charges upto 31.03.2003.

The Commission has also launched its web site (www.cercind.org) which is updated at regular intervals by posting all its programmes and orders from time to time.

One hundred and thirty eight petitions were carried forward from the previous year, that is 2000-2001. In addition 142 petitions were filed during 2001-2002, the year under report, taking the total number to 280 petitions. Out of these, 101 petitions were disposed of during 2001-2002 itself.

From 1st April, 2002 to 30th November, 2002, another 73 petitions have been disposed of. Out of the balance, 50 – 60 petitions are likely to be finally disposed of during the period upto 31st March 2003.

CHAPTER - 9

Private Participation In Power Sector

1.0 Since independence, development of the electricity sector was primarily the responsibility of the Government, with a relatively small contribution from private enterprises, in the form of licensees like Bombay Suburban Electricity Supply Company(BSES), Tata Electric Company(TEC),Calcutta Electric Supply Company(CESC) and Ahmedabad Electric Company(AEC), etc. In order to mobilise additional resources for the sector to help bridge the gap in demand and supply of power, the Government formulated a policy in 1991 with the objective to encourage greater investment by private enterprises in the electricity sector. The Electricity (Supply) Act, 1948 was amended in 1991 to provide a legal framework for facilitating the investments. Although the policy announced in 1991 covers both generation as well as distribution, there has been more progress in the area of generation in so far as private sector is concerned.

2.0 The package of incentives in the policy which complements the amended provisions in the legislation comprehensively cover the legal, administrative and financial environment to make private investments in the sector attractive. A two-part tariff system for power projects to be put up by the Independent Power Promoters, covering the fixed costs and variable energy cost in electricity pricing, has been formulated and tariff notification issued in March 1992. The notification, inter-alia, provides for a 16% Return on Equity at 68.5% PLF for thermal plants (coal/lignite/gas) and 90% availability for hydro electric plants. To encourage efficiency in plant operation, an incentive scheme based on capacity utilisation has also been formulated. The norms for tariff based bidding in respect of thermal power projects have been incorporated in the tariff notification vide an amendment dated 23.5.1997. The tariff notification is not applicable for those States where Section 43(A) of the Electricity (Supply) Act has been deleted through notification consequent upon the SERCs becoming functional in those States.

3.0 RESPONSE FROM THE PRIVATE SECTOR

3.1 Private power projects being monitored by Central Government: The initial response to GOI's energy policy has been encouraging. Since 1991, both domestic and foreign developers have evinced interest in the Indian power sector. Out of a total of 59 private sector power projects given techno-economic clearance by Central Electricity Authority (CEA), 55 project envisaging a total capacity of around 27,800 MW are presently in the pipeline at different stages of implementation. Four of the projects are no longer being pursued by the the respective State Governments for development through the Private Sector. In addition, there are several projects which are being set up by the private sector with the approval of the State Governments themselves and do not require the techno-economic clearance of CEA. Since announcement of the private power policy in 1991, a total capacity of around 7000 MW from 36 private power plants has so far been commissioned and another capacity of around 3000MW from 6 projects is reported to be under construction (These include those projects also, which do not require the TEC of CEA).

4.0 MAJOR POLICY INITIATIVES TAKEN TO STREAMLINE THE PROCESS OF PROJECT DEVELOPMENT

4.1 Competitive bidding for Awarding Projects:

The initial batch of private sector power projects were awarded generally on the basis of negotiations between the SEB and a single developer (MOU route). In January 1995, it was decided that no new private power project proposal would be considered by CEA, if the project is not awarded through competitive bidding. A cut off date-18.2.1995 was prescribed for this purpose and only those MoUs, which were signed upto this date, have been treated as being valid. Projects after this date have to be awarded only after following the competitive bidding route. However, certain categories of projects, where the International Competitive Bidding (ICB) route may not be feasible, have been exempted from this route. Detailed guidelines have also been issued to the State Governments for adopting competitive bidding. A notification for competitively bid projects was issued in May 1997 defining the manner in which tariff would be determined for such projects.

4.2 Exemptions from ICB route:

The following categories of power projects have been exempted from following the ICB route for selection of the devloper:-

(i) Expansion projects developed by the owners of the original plant.

(ii) Joint venture projects between SEB/PSU and private company provided the SEB/PSU (either combined or individually) hold majority shares(51%) of the joint venture company.

(iii) Generating stations set up by generating companies exclusively for captive use:

(iv) Power projects based on heavy bottom residue and set up by refineries.

(v) Hydro projects having a capacity of upto 100MW.

4.3 Bidding for EPC contracts:

The States/SEBs have been advised in June, 1996 to impress upon the promoters that for the projects that have not finalized their EPC contracts, it would be necessary to follow the ICB route in the selection of their EPC contractors. In the case of IPPs who inform that their EPC contracts have been finalised, the SEB should satisfy itself that they have actually done so and in cases where it is not finalised, the SEB should ensure that the bidding route adopted is transparent and proper.

4.4 Captive/Co-generation Plants:

As an alternative to meet the rapidly increasing industrial demand for power, Ministry of Power has suggested encouragement to captive/co-generation plants by industries. The policy suggests, inter-alia, sale of excess power to the grid as per mutually agreed rates, access to transmission grid of the State on payment of wheeling charges, third party access for direct sale of power etc. A resolution for promotion of co-generation has been issued on November 6, 1996. The resolution details the definition of co-generation, mode of fixation of tariff and mode of deciding co-generation status for the power plants.

4.5 Setting up of Mega Power Projects :

To facilitate setting up of large sized thermal power plants in the country and in order to derive the economies of scale, the Ministry of Power issued guidelines on10th November, 1995, for setting up of mega power projects. Power projects having a capacity of 1000 MW or above and supplying power to more than one State were defined as Mega projects. After considering the experience of this policy, the policy was revised in November 1998. Under the revised policy, specific Inter-state and Inter-regional mega power projects have been identified for being developed both in the public as well as private sector. The principles of competitive bidding would be adhered to as far as possible, while obtaining tariff offers. A Power Trading Company(PTC) has been established to purchase power from the mega projects and sell it to the beneficiary States. Security to the PTC would be provided by means of a Letter of Credit etc.

4.6 The import of capital equipment has been made free of customs duty for these projects. In order to ensure that domestic bidders are not adversely affected, price preference of 15% is being given for the projects under public sector, while deemed export benefits as per the EXIM policy is being given to domestic bidders for projects both under public and private sector. The domestic bidders have been allowed to quote in US Dollars or any other foreign currency of their choice. In addition, the income-tax holiday regime would be continued with the provision that the tax holiday period of 10 years can be claimed by a promoter in any block of 10 years, within the first 15 years. The State Governments have been requested to exempt supplies made to mega power plants from sales tax and local levies.

4.7 Enhancing the CEA limit

Under the provisions of Section 29(1) of the Electricity (Supply) Act, 1948, every scheme estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government through notification in the official Gazette, require the concurrence of CEA. Such limits capital expenditure in regard to various categories of schemes have been fixed from time to time through issue of notification. The limits were last notified on 2nd June 1999 (as amended twice) and are as follows:

(i) Rupees five thousand crores for thermal projects on the ICB route and conforming to the amendment dated 23rd May, 1997 to the tariff notification dated 30.3.1992.

(ii) Rupees one thousand crores for other thermal generating stations on the ICB route.

(iii) Rupees twenty thousand crores for the identified mega projects in the private sector whose scheme is approved by any agency or body authorised by the Central Government.

(iv) Rupees one thousand crores for hydro-electric generating station on the ICB route.

(v) Rupees five hundred crores for R&M schemes.

(vi) Rupees three thousand crores for captive plants established by Generating Companies provided that at least 50% of the installed capacity should be for captive / group captive consumption.

(vii) Rupees two thousand five hundred crores in relation to a scheme for a generating station prepared by a Generating Company whose tariff for sale of electricity is determined by the Central Electricity Regulatory Commission or any State

Electricity Regulatory Commission.

(viii) Rupees two hundred and fifty crores for all other schemes,;

All hydro-electric schemes utilising water of inter-state rivers are required to be submitted to the CEA for its concurrence (irrespective of the cost).

4.8 Policy on automatic approval for foreign direct investment

It has been decided to allow automatic approval (RBI route) for 100% foreign equity without any upper ceiling on the quantum of investment. The categories which would qualify for such automatic approval are :

(i) Hydro - electric power plants

(ii) Coal/lignite based thermal power plants

(iii) Oil / gas based thermal power plants

4.9 Norms for environmental clearance

The following delegations have been made to the state governments in the matter of environment clearance to power projects:-

(i) All co-generation plants and captive power plants upto 250 MW.

(ii) Coal based plants upto 500 MW using fluidized bed technology subject to sensitive area restrictions.

(iii) Power stations upto 250 MW on conventional technology.

(iv) Gas/Naphtha based station upto 500 MW.

A new procedure for getting environmental clearance for pithead thermal project has also been laid down.

4.10 Relaxation of 40 % cap for debt exposure by IFIs

The policy announced in 1991 envisaged that, an amount not exceeding 40% of the total outlay for private sector units may come from Indian public financial institutions (IPFIs). This ceiling has since been removed, but with a stipulation that considering the need of maximising financing from external sources and prudential norms exercised by IPFIs, allowing a higher domestic debt component for projects which are developed based on indigenously sourced plant and equipment, would be more desirable.

It has also been decided that there would be no objection for Foreign Term Loan being replaced by Rupee Term Loan as long as the hard cost does not change and the new financial arrangements are acceptable to the concerned SEB/ State Government, project developers and the lenders. Whenever such a change is desired in the financial package, project developers may approach CEA, for formal approval.

5.0 REASONS FOR TARDY PROGRESS BY PRIVATE POWER SECTOR.

5.1 The major impediments to the speedy development of private sector power projects include the following:

i. Inability of State Electricity Boards (SEB) and State Governments to provide an acceptable payment security. The revenues of the SEBs are not adequate to ensure payments to Independent Power Producers. This is due to a variety of reasons including irrational tariffs, high T&D losses, poor collection efficiencies etc.

ii. Delay in finalisation of various contracts such as PPA, Fuel Supply Agreement and Fuel Transportation Agreement acceptable to all the concerned parties. Protracted negotiations on fuel prices, liquidated charges/ damages, risk covering clauses etc have caused delays in many cases.

iii. High cost of naphtha and other liquid fuels has made the SEBs reluctant to buy power from such projects. Non- availability of gas in sufficient quantity has also delayed progress of projects in some states.

iv. Court cases in the form of Public Interest Petitions etc.

v. Failure by IPPs to bring in equity up front.

5.2 GOI has been assisting wherever required, to resolve issues coming in the way of conclusion of these contracts. Government has initiated the process of reforms and restructuring of the power sector. It is expected that with the reforms and restructuring of the power sector, the confidence of investors/IPPs in power sector will improve and the need for additional security for their investments would not be necessary. Twenty two States have already constituted Regulatory Commissions or are in the process of doing so. The Central Electricity Regulatory Commission at the centre has also become operational. The Regulatory Commissions will look into all aspects of tariff fixation. Subsidies to any specific group of consumers would have to be met by the States by debit to their respective budget. This is expected to gradually help the SEBs in improving their financial health.

5.3 Twenty Six states have signed Memoranda of Agreements(MOA) with Ministry of Power, committing for reforms which include restructuring

of SEBs, constitution of State Electricity Regulatory Commissions, energy audit, 100% metering, billing and collection of bills, reduction in T&D losses etc.

6.0 Implementation of Memorandum of Agreement for alternative payment security mechanism for financial closure of IPPs

Operationalisation of escrow

6.1 Indian Financial Institutions have been insisting on escrow as a payment security mechanism for lending to private power projects. Since most of the States had problems with regard to escrowable capacity, many private power projects were unable to achieve financial closure.

6.2 Private power projects, which are in advanced stage of development and have obtained the requisite clearances would be identified by the FIs and State Government for facilitating financial closure as per the Alternative Payment Security Mechanism. With the State Governments' commitment to implement reforms in a time bound manner, the cash flows and creditworthiness of the SEBs would improve enabling them to ensure payments for the power purchased from IPPs. As per the mechanism, the SEB would be able to open escrow account 30 days before Commercial Operation Date instead of present requirement of escrow before financial closure. During the interim period, the States would have to agree to provide charge on receivables of SEB to the Financial Institutions. The Working Capital Banks have also agreed for concurrent charge with the Financial Institutions on the receivables of SEBs.

6.3 A Memorandum of Agreement (MoA) , which ensures financing of 6 private power projects in Andhra Pradesh with a total capacity of 2239 MW, has been initialed by the Government of Andhra Pradesh/ APTRANSCO, Power Finance Corporation and the financial Institutions led by Industrial Development Bank of India on August 10, 2001. Further action for committing funds to the short listed projects would be taken by the IFIs/ Banks.

CHAPTER - 10

Cooperation with Neighbouring Countries in Hydro Power

Development of water resources of the common rivers of India, 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.

India has been assisting Nepal in the development of its hydro power potential and four HE schemes namely Pokhra, Trisuli, Western Gandak and Devighat have been implemented with financial and technical assistance from Govt. of India. Three major water resources projects in Nepal namely Karnali, Pancheshwar and Saptakoshi have been identified as mutual benefits projects. Feasibility report of Karnali multi-purpose project (10800 MW) was prepared in 1989. Key parameters of this projects are to be finalised after mutual discussions. Investigations have been carried out in respect of Pancheshwar MPP by the two countries in their respective territories. A Joint Project Office (JPO) was established in Kathmandu in Dec., 1999 to carry out additional investigations and studies are required to be carried out for finalisation of Detailed Project Report (DPR). The preparation of various chapters of DPR is under progress. Development of this project is covered under integrated Mahakali River 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 (3300 MW) Multipurpose project and Sun Kosi Storage cum Diversion Scheme (93MW). It has been decided to establish a Joint Project Office in Nepal for taking up field investigations and studies for preparation of Joint DPR. Joint technical expert groups have been constituted for each of the above projects for joint guidance for carrying out investigations and preparation of detailed project reports (DPRs). A team comprising officers from CEA, CWC and NHPC visited Nepal for identification and implementation of small/ medium size power projects in Nepal. A number of projects like Burhi Gandaki (600 MW), and Upper Karnali (300 MW) are also under consideration between India and Nepal. Further, a joint committee on water resources to be headed by respective Water Resources Secretaries has been constituted to act as an umbrella committee of all technical and expert level committees.

In Bhutan, the Chukha HE Project (336 MW) implemented with Indian financial and technical assistance is a shining example of cooperation between the two countries for mutual benefits. Surplus power from the project is being imported by India. In addition, Kurichu HE Project (60 MW) in Eastern Bhutan has also been implemented as a turnkey with Indian financial and technical assistance. Another project namely Tala HE Project (1020 MW) has been taken up for implementation and is being executed by Tala Hydro-Electric Project Authority(THPA) comprising Indian and Bhutanese Officers and Engineers. Design and 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. Investigation of Sankosh Multi-purpose Project (4060 MW) has been completed by CWC and DPR prepared by CEA/ CWC. In addition, Manas MPP (2800 MW) was reconnoitered by a Joint Indo-Bhutan team and pre-feasibility report was prepared in Aug., 1982. The investigation of the scheme could not be taken up due to objections to the scheme from environmental angle. Investigation of two Hydro-electric projects namely Wangchu (900 MW) and Bunakha (180 MW) have been completed and DPR prepared. India is also providing technical assistance for rehabilitation of 8 nos. Mini/Micro hydel projects in Bhutan for which CEA is rendering Design and Engineering Consultancy Services. CEA is also rendering consultancy services for Yonglachu HE Project (4x400 kW) in Bhutan. Further, two hydro projects namely Mangde chhu (360/600 MW) and Punatsangchhu (870/1000 MW) are under discussion between India and Bhutan.

Myanmar, Tamanthi MPP (1200 MW) proposed to be developed on Chindwin River has been identified as a mutual benefit project between India & Myanmar. A Fact Finding Mission led by Member (Hydro), CEA, visited Myanmar in Feb., 1999 and held discussions relating to setting up of the project. A technical team comprising Engineers from CEA/NHPC/CWC/GSI visited project site for inspection in Nov., 1999. An Indian team visited Myanmar in April/May, 2000 and established two nos. Gauge & Discharge Stations on the Chindwin river at Tazon and Hkamti and studied general geology of project sites. Subsequently, another G&D site has been established at Hwena in April, 2002. An Indian Technical Team comprising Engineers from CEA/ CWC/GSI/WAPCOS also visited Myanmar in connection with development of another project viz. Yeywa H.E. Project (700 MW).

CHAPTER - 11

Badarpur Thermal Power Station (BTPS)

INTRODUCTION

Badarpur Thermal Power Station (BTPS) was established by the Government of India in the year 1967 to ensure power availability for meeting growing demand of power in the Northern Region. The installed capacity of BTPS is 720 MW consisting of 3x100 MW and 2x210 MW coal fired units. However, the 3 units of 100 MW each have been derated to 95 MW w.e.f. 11.1.1990 making the present capacity as 705 MW. The station is owned by Government of India and is being managed by NTPC since 1st April'1978 on an agency basis.

BTPS is one of the major sources of power supply to Delhi state and since April'1987, the entire energy generated at this station is supplied to the Delhi Vidyut Board now called Delhi Power Supply Company Limited (DPSCL).

GENERATION TARGET FOR 2002-03

The generation target for BTPS has been fixed at 5200 MUs at a PLF of 84.20% for the year 2002-03 as against the target of 5100 MUs at a PLF of 82.58% and the actual generation of 5273.128 MUs at a PLF of 85.38% during 2001-2002.The power station has already generated 3608.790 MUs at a PLF of 87.41% till November'2002.

HIGHLIGHTS FOR THE PERIOD APRIL-NOVEMBER 2002

- Highest ever generation of 3608.790 MUs at PLF of 87.41% during April-November'2002 period since inception. Previous best, was 3559.274 MUs at a PLF of 86.21% during April-November'2001.
- The station achieved best performance level during April-November'2002 period in respect of Generation, Plant Load Factor, Availability, and DM Make up water Consumption.
- Station has received ISO-9002 certification valid upto 28th March'2003.
- Station has achieved ISO-14001 (for environment) valid upto 26th May'2004.
- BTPS has won the Corporate Award for best performance in the area of Protection & Improvement of Environment & has been awarded a Rolling Trophy for the same on 14th Nov'02.
- Station has received water and air consent from DPCC valid for a period of 3 years i.e. upto 24th April and 13th May'2004 respectively.

RENOVATION & MODERNISATION PHASE-I

BTPS is one of the Thermal Power Stations identified under the centrally sponsored scheme for Renovation and Modernization of thermal utilities. Under the Renovation & Modernization Scheme Phase-I, various schemes for 3x100 MW of BTPS for Rs.36.97 crores were approved. All of the works under these schemes have already been completed and an expenditure of Rs.36.97 crores has been incurred up to March'2002. With implementation of R&M Phase-I schemes for BTPS, the actual annual average PLF has improved from 45.30% to 65.00% against the envisaged improvement in PLF from 45.30% to 55%. As a result of this, during the financial year 2001-02, the station generated 5273.128 MUs at a PLF of 85.38%, the highest since inception surpassing previous best of 5180.458 MUs at PLF of 83.88% achieved in 2000-2001.

RENOVATION & MODERNISATION PHASE-II

Under R&M Scheme Phase-II programme, certain areas were identified for carrying out further modification. BTPS submitted a proposal for R&M Phase-II for an estimated cost of Rs. 187.77 crores (latest revised cost Rs.232.77 crores) for approval covering all units of BTPS. The proposal has been techno-economically cleared by CEA and approved by PIB in April'1997. The scheme mainly emphasizes on reduction in heat rate and sustaining the present level of generation. The scheme also covers various measures to ensure best environmental norms in addition to increase in the reliability of the units.

REPLACEMENT AND REPAIR WORKS

Pending sanction/release of R&M Phase-II funds, SFC schemes covering certain urgent works of capital nature were identified jointly with CEA for immediate implementation in the BTPS Units. Three schemes (Replacement and Repair works I,II & III) have been approved for execution during the years 1998-2000, 2000-02 and 2001-02 at an estimated cost of Rs. 14.70 crores (SFC-I), Rs. 14.91 crores (SFC-II) & Rs. 14.95 crores (SFC-III) respectively. An expenditure of Rs.14.70 crores

have been incurred till 31st March'2002 under R&R Works-I. Under R&R Works-II (SFC-II) schemes, Rs.11.98 crores have already been spent till 31st March'2002 & the remaining Rs. 2.93 crores has been kept under RE 2002-03. Also, an expenditure of Rs. 14.95 crores has been incurred till 31st March'2002 under SFC-III schemes. Encouraged by the advantages of these schemes in increasing and sustaining performance level and environmental norms, another proposal for SFC-IV schemes of Rs.24.69 crores has been submitted on 25.07.02 for consideration .

ASH UTILISATION

Ash utilization for 2002-03 has been targeted at 40% of annual ash generation i.e. around 5,50,000 MT. Till Nov'02, 4,61,131 MT of ash has already been utilized and the aforesaid target will be achieved by the end of the year 2002-03.

BTPS has already achieved a progress of 5 lakh bricks till Nov '2002. Bricks are being used in-house for civil constructions in a big way. Ash bricks from the station have been supplied in the past to IIT Delhi, US Embassy, CPCB, CPWD and CBRI, Roorkee for their construction works.

Dry ash bagging facility has been commissioned (capacity 80-100 MT/day). Till Nov'02, 6950 bags (containing 40 kgs ash per bag) totalling to 278 MT ash have been issued to various agencies.

Another area of ash utilization is for filling up of low-lying areas. For Noida-Greater Noida Express Highway project, ash is being lifted from the station for use in this project. DDA, MCD and other neighbourhood people are also using ash from the station for land filling.

A View of Badarpur Thermal Power Station

CHAPTER - 12

Power Development Activities in North Eastern Region

INSTALLED CAPACITY IN THE N.E. REGION

The total installed capacity in the N.E. Region, as on 01.11.2002 is 2288.41 MW as under:

	INSTALLED CAPACITY (MW) N.E. Region
Hydro	1108.93
Thermal	1179.32
Wind	0.16
Nuclear	0.00
Total	**2288.41**

The aggregate installed capacity of Hydro Schemes (above 3 MW) in operation in the N.E. Region is 1070 MW.

HYDROELECTRIC POTENTIAL IN NER :

As per re-assessment studies carried out by the Central Electricity Authority (CEA) from 1978-87, identified hydro potential of the N.E. region has been estimated as 58971 MW. Out of the above, 1070 MW of the identified potential has been harnessed so far while another 379 MW is under construction after investment approval. The Sate-wise estimated hydro electric potential of North-Eastern region and its development so far is given below:-

Region/State	Identified potential as per reassessment study	Capacity developed*		Capacity under construction*	Capacity under development under Stage-II of 3 stage* process
	(MW)	(MW)	%	(MW)	(MW)
Meghalaya	2394	185	8	84	0
Tripura	15	15	100	0	0
Manipur	1784	105	6	90	0
Assam	680	250	37	145	0
Nagaland	1574	99	6	0	0
Ar. Pradesh	50328	416	1	0	2600
Mizoram	2196	0	0	60	0
Total	**58971**	**1070**	**2**	**379**	**2600**

*Excluding hydro power units below 3 MW capacity.

Mega Hydro Projects Planned in the N.E. Region

The NE Region presents very attractive sites for providing large storage with multi-purpose aspects of Hydro Power development. CWC had earlier carried out investigations and prepared project reports for three major projects viz. Dihang (40x500 MW), Subansiri (12x400MW) and Tipaimukh (6x250 MW) which will provide in addition to power generation, benefits for flood control, irrigation, navigation and pisciculture.

The following schemes have been identified for capacity addition during the 10th Plan:

Sl. No.	Project	Installed Capacity
	Central Sector	
1.	Kopili HEP Stage-II, Assam	25 MW
2.	Tuirial HEP, Mizoram	60 MW
	State Sector	
3.	Karbi Langpi in Assam	100 MW
4.	Myntdu in Meghalaya	84 MW
5.	Bairabi in Mizoram	80 MW

Presently, three schemes namely Karbi Langpi (100 MW) and Kopili Stage-II (25MW) in Assam and Tuirial (60 MW) in Mizoram are under construction. Kameng Hydro-electric Project (600 MW) in Arunachal Pradesh has been accorded second stage clearance under the three stage clearance at a cost of Rs. 94.54 crores for execution by NEEPCO. The Lower Subansiri Hydro-electric Project in Arunachal Pradesh with an installed capacity of 2000 MW to be implemented by NHPC has also been accorded techno-economic clearance by CEA. Four schemes namely, Tuivai (210 MW) and Bairabi Dam (80 MW) in Mizoram, Myntdu (84 MW) in Meghalaya and Subansiri (lower) HEP in Arunachal Pradesh have been cleared by CEA and are awaiting investment sanction. Recently Ministry of Water Resources has also decided to transfer Dibang HEP (2500MW) in Arunachal Pradesh to NHPC for execution. DPR for the Project is already under preparation by the Brahmaputra Board with the assistance of NHPC.

Further, Siang (Middle) - 700 MW, Siang (Upper)-11000 MW, Subansiri (Middle)-2000 MW, Subansiri (Upper) - 2500 MW schemes to be implemented by NHPC and Dikrong (100 MW) to be implemented by NEEPCO have been cleared by CEA under Stage-I for carrying out Survey, Investigation and preparation of Pre-Feasibility Report(PFR). Tipaimukh Hydro-electric (Multipurpose) Project (1500 MW) in Manipur to be implemented by NEEPCO is being appraised by CEA for accord of Techno-Economic Clearance.

Subansiri Dam Projects – Arunachal Pradesh

Three schemes in Arunachal Pradesh with total installation of 5600 MW in three power houses are being planned with details as under.

i) Upstream of Daporijo near Menga village on Subansiri river (Subansiri Upper HE Project) - 2000 MW.
ii) Upstream of Tamen village on Kamla river which is tributary of Subansiri river (Subansiri Middle HE Project) - 1600 MW.
iii) Gerukamukh village near original site on Subansiri river (Subansiri Lower HE Project) - 2000 MW.

Subansiri Lower Project to be implemented by NHPC has been techno-economically cleared by CEA in Jan, 2003. Commercial viability has also been accorded to Subansiri Upper HEP (2000 MW) and Subansiri Middle HEP (1600 MW) in Sept., 2002.

Site clearance for Mega Project : MOEF has issued site clearance (Stage-I) for all the projects in Siang and Subansiri basin. Site clearance (Stage-II) for Subansiri Lower Project has been issued by MOEF in July 2001.

Tipaimukh Dam Project (6x250 = 1500 MW) – Manipur

The scheme envisages construction of a dam across the river Barak immediately downstream of the confluence of the Tuivai river with installed capacity of 6x250 MW = 1500 MW and energy benefits 3516 Gwh. The project has been entrusted to NEEPCO.

Revised cost estimates at December, 2002 price level has been submitted by NEEPCO in December 2002.

Government of Assam has given NOC to NEEPCO for the proposed project subject to certain conditions. Site clearance (Stage-I & Stage-II) has been issued by MOEF.

On-going hydro-electric projects in N.E. Region and Sikkim

The following are the sanctioned and on-going hydro-electric projects in N.E. Region and Sikkim.

NEEPCO Projects :

(i) Kopili HEP Stage-II (25 MW): **The project was accorded investment approval in July, 1999 at an estimated cost of Rs.76.09 crores. The execution of project is in progress and the project is likely to be completed by July, 2003.**
(ii) Tuirial HEP (60 MW): The project was accorded investment approval at an estimated cost of Rs.368.72 crores in July, 1998 and the project is to be completed in 8 years from date of Investment decision i.e. by 2006. The execution of the project is in progress.

NHPC Projects:

(i) **Loktak Down Stream (90 MW):** The project was accorded investment approval on 10.12.1999 at a cost of Rs.578 crores to be executed by NHPC. The project is scheduled to be commissioned in 2008-09. Presently the project works are being held up due to law and order problem prevailing in the region.
(ii) **Teesta - V (510 MW) :** The project has been accorded approval on 19th January, 2000 at a cost of Rs.2200 crores, to be executed as a Central Sector Project by the NHPC. The project is scheduled to be commissioned in 2006-07. The work is proceeding as per schedule.

Beside above, the following projects are under various stages of processing to be taken up by NEEPCO for execution in the N.E. Region and Sikkim:-

(i) **Tipaimukh HEP (1500 MW),Manipur.**
(ii) **Tuivai HEP (210 MW), Mizoram.**
(iii) **Kameng HEP (600 MW), Arunachal Pradesh.**

Thermal Projects :

Tripura GT, 500 MW : -

Tripura Gas Combined Power Plant 500 MW (nominal capacity) at Monarchak Central Sector is proposed to be set up by M/s NEEPCO. A revised DPR was submitted and the scheme was accorded TEC on 19.02.2002 after resolving pending issues such as MOE&F Clearance, Power Absorption Plan etc. In view of the constraints regarding gas availbility, it is proposed to re work the capacity at about 250 MW, the estimates of which are being worked out be NEEPCO.

Rokhia GT, 1x21 MW : -

Proposal for setting up of 1x21 MW GT Extn. Unit-8 at Rokhia was received at an estimated cost of Rs.90.94 crores for consideration under Non-lapsable Central Post of Resources during 10th Plan Period.

RURAL ELECTRIFICATION ACTIVITIES IN NORTH EASTERN REGION

As a follow up of Prime Minister's announcement for electrification of 500 tribal villages in the North Eastern Region(NER), the electrification of 165 tribal villages has been taken up in the first phase. The Government have released an amount of Rs. 12.96 crores to NER States as the first instalment. The States furnished the schemes to CEA, who scrutinized and appraised the cost estimates furnished by the States. Out of balance 335 tribal villages, CEA have recommended electrification of 317 tribal villages at an estimated cost of Rs. 4740 lakhs. In respect of remaining 18 villages, CEA have sought additional information/clarification from the States and on obtaining the requisite information, these villages would also be recommended for electrification.

The State-wise no. of villages being electrified and funds released under Non-lapsable Central Pool of Resources in the first phase is as under :

State	No. of Tribal Villages	Amount (I[st] Instalment)	Achievement upto 01.12.2002
Arunachal Pradesh	60	4.48	**34** (Works in remaining 26 villages are in progress)
Assam	20	0.68	**10**
Meghalaya	10	0.75	**10**
Nagaland	02	0.35	**2**
Mizoram	03	0.34	Work in progress
Manipur	60	5.64	**3** (Work in 27 villages are in progress. Work in remaining 30 villages would be taken up subsequently)
Tripura	10	0.72	6 (Work in remaining 4 villages are in progress)
Total	**165**	**Rs. 12.96 Crore**	

The Planning Commission has made the following allocation of Additional Central Assistance (ACA) under PMGY for 2002-03 for rural electrification:

Rs. in Crores

Sl. No	States	Amount(Rs.)
1.	Arunachal Pradesh	6.84
2.	Assam	30.00
3.	Manipur	6.00
4.	Meghalaya	6.00
5.	Mizoram	5.98
6.	Nagaland	6.50
7.	Tripura	4.00

ELECTRIFICATION OF TRIBAL VILLAGES UNDER PM'S SOCIO- ECONOMIC PACKAGE FOR DEVELOPMENT OF NORTH EASTERN STATES.

In the meeting of the Prime Minister with the Chief Ministers and Government of the North Eastern States held on 22.1.2000 at Shillong, Hon'ble Prime Minister made the announcement that 165 tribal villages in North Eastern States (Arunachal Pradesh – 60, Assam-20, Manipur-60, Meghalaya-10, Mizoram-3, Nagaland-2 & Tripura-10) are to be electrified under the PM's socio-economic package for the development of the North Eastern States.

Ministry of Finance vide their letters No.44(1)-PFI/ 2001000265 dated 28th January, 2002 have released Rs. 12.96 Crores to State Government as grant-in-aid as Central Assistance from the Central Pool of Resources for electrification of tribal villages indicated above. sixty five villages have been electrified by 1.12.2002.

TRANSMISSION & DISTRIBUTION ACTIVITIES IN NORTH EASTERN REGION

Implementation of Sub-Transmission and Distribution Schemes in NER being funded out of the Non-Lapsable Pool of Resources

In pursuance of the decisions taken during the Conference of the Power Ministers of the NE States and Sikkim held on 9.6.1999, CEA was directed to formulate a scheme for the improvement of transmission/ sub-transmission and distribution network in the North Eastern Region. CEA, in consultation with the constituent States in the NER formulated a Scheme for the development of the Sub-transmission and distribution network, to be financed from the Non-Lapsable Pool (NLP) of Resources. The total estimated cost of the scheme worked out to Rs. 452.66 crores (Rs. 283.67 crores for on-going and Rs. 168.99 crores for new schemes). The requirement of funds during 2000-02 was assessed as under:

On going schemes	Rs. 136.23 crores
New Schemes	Rs. 103.69 crores
Total	**Rs. 239.92 crores**

A sum of Rs. 52 crores was released to the respective State Governments of the North Eastern Region and Sikkim during 2000-01. Further, Rs.16.83 Crores have been released to the States directly by the Ministry of Finance during 2001-2002. Deptt. of Development of North Eastern Region recommended a further release of Rs. 25.34 crores to the NE States on 22.4.2002. This amount has been released to the States by the Deptt. of Development of North Eastern Region on 21.10.2002. The State Govts. have been requested to furnish the Quarterly Progress Report/ UCs expeditiously.

The States have reported Utilization of an amount of Rs. 59.26 crores out of this amount so far.

For the year 2002-03, Ministry of Power has requested Deptt. of Development of North Eastern Region for release of Rs. 55 crores(approx).

With the completion of these schemes, an improvement in the quality and reliability of power supply and reduction in T&D losses is expected in the North Eastern States.

Transmission system for the development of North Eastern Region (NER)

The power generated by the Central Sector Power Stations situated in the NER is evacuated through the transmission system executed by POWERGRID. The transmission system consists of 4103 ckt. kms. of transmission line and 13 sub-stations. POWERGRID has already invested over Rs. 1500 crores in NER for development of transmission network. The present transmission system caters to the evacuation requirement of existing / ongoing thermal / hydro / gas generating stations at Kathalguri (294 MW), Doyang (75 MW), Ranganadi (405 MW), Kopili (200 MW) and Agartala (84 MW). The North-Eastern Region is rich in hydro / gas resources and therefore, considering the future generation potential and the eco-sensitive geography, the transmission system has been planned, in consultation with the beneficiaries, to take care of future needs of various generation projects like Kameng (600 MW), Damwe (520 MW) and Amguri (10 MW).

The following benefits have accrued from construction of transmission system:

(i) It inter-connects the networks of all the states in the region and facilitates inter-state transmission of central sector power within the NER.

(ii) It facilitates and enables export of surplus power from Central Sector Power Stations to other parts of the country, particularly to the Eastern Region.

(iii) It facilitates the integration of NER Grid with the National Grid.

PROGRESS OF REC IN NORTH EASTERN STATES

For the financial year 2002-03, provision of Rs.21 crore has been made for the seven North Eastern States and Sikkim for intensive electrification and for undertaking System Improvement Programme.

Concessional rate of interest of 8.25% per annum has also been made applicable for the NE States/ SEBs in respect of all the schemes to be sponsored by them. Besides, an amount of Rs.10 crore has been allocated for release of 55,556 single point light connections in the households of rural poor under Kutir Jyoti Progamme. Against this, based on the acceptance received from the NE states, REC has sanctioned a grant of Rs.4.15 crore for release of 23,060 connections.

The Corporation disbursed Rs.4.02 crore for RE programme in NE States and a grant amount of Rs.1.49 crore has been drawn by SEBs/State Governments for implementation of Kutir Jyoti Porgamme upto 30.11.2002.

NHPC ACTIVITIES IN NE REGION

(i) Siang Valley Projects in Arunachal Pradesh

Three projects with total installed capacity of 13700 MW are being planned as under:

a. Upper Siang (11000 MW), upstream of Yingkiong near Pugging village on Siang River.
b. Middle Siang (1000 MW), 15 km upstream of Raying near Roing village on the Siyom river which is tributary of Siyom River.
c. Lower Sihang (1700 MW), upstream of Pasighat near Routung village.

Survey and Investigation of above schemes by NHPC are in progress so as to firm up DPR.

(ii) Subansiri Valley Projects in Arunachal Pradesh

Three projects with total installed capacity of 13700 MW are being planned as under:

a. Upper Subansiri (2000 MW) on Subansiri River near Menga village upstream of Daporijo
b. Middle Subansiri (1600 MW) on Kamla (a tributary of Subansiri river), near Tamen village.
c. Lower Subansiri (2000 MW) on Subansiri River near Gerukamukh village. Techno-economic clearance has been accorded by CEA.

NHPC Projects under construction in NE Region

(i) Loktak Downstream (90 MW) in Manipur: The Project was accorded investment approval on 10.12.1999 at a cost of Rs. 578 crores to be executed by NHPC. It is scheduled to be commissioned in 2008-09. However, no major work has been possible so far due to security problems.

(ii) Teesta-V (510 MW) in Sikkim: The Project has been accorded approval on 19th January, 2000 at a cost of Rs. 2200 crores, and is being executed by NHPC. It is scheduled to be commissioned in 2006-2007.

PFC ACTIVITIES IN NORTH EASTERN REGION

Power Finance Corporation has been giving special attention to the development of power projects in the North-Eastern Region. Projects/schemes of this region qualify for additional 1% subsidy under the GoI's AG&S Programme on disbursements made during the 9th Plan period. With an effective marketing approach, PFC has increased its loaning operations substantially in the region during the year under report. During the year 2000-01, Rs.230.24 crores were sanctioned for 9 projects/ schemes and an amount of Rs. 121.74 crores has also been disbursed to the projects/schemes in the region. With this, a total of Rs.707 crores has been sanctioned and Rs.450.70 crores has been disbursed till date to the projects/schemes in the Region. During the year, PFC has sanctioned major loans to Karbi Langpi HEP (2x50 MW) of ASEB, Likimro HEP(3x8 MW) of Nagaland Power Department and Doyang HEP(3x25 MW) of NEPPCO.

ACTIVITIES OF NPTI IN NORTH EASTERN REGION

To improve the performance of the Power Stations in the North-Eastern Region, NPTI is proposing to start the training and HRD activity for the Power Sector personnel by establishing a Power Block in IIT premises or in the adjoining institutional area in Guwahati. A provision of Rs.14.76 crores has been allocated for this purpose in the Xth plan.

CHAPTER - 13

Vigilance Activities/Disciplinary Cases

MINISTRY OF POWER

During the year 2002-03, seven cases of disciplinary proceedings were pending/ contemplated and were at different stages of processing. Proposal to initiate disciplinary proceedings against one officer has already been approved; inquiry against two persons has been completed. Penalty of dismissal has been imposed on one person. In one case advice of UPSC has been received for implementation of penalty. Vigilance cases against officers of PSUs have also been decided with the approval of CVC.

In the changing security environment, security of vital Power Projects has been reviewed and necessary follow-ups have been taken up with concerned organization. Ministry of Home Affairs has also been apprised of the security requirement of various power installations in the country. Meetings were held with CVOs of PSUs for ascertaining the security requirements of various PSUs. CVOs of all PSUs were advised to strengthen the security arrangements in their respective Projects.

During the year extension of tenure of the CVOs of NTPC, NHPC, PGCIL has also been accorded after due consulatation with CVC and DOP&T.

Instructions/guidelines regarding vigilance clearance & related matters were strictly complied with. Guidelines as received from DOP&T and CVC were circulated to all concerned from time to time.

Vigilance Awareness Week was celebrated in the Ministry and its attached offices/PSUs from 31st October to 6th November 2002 to renew the message of integrity and transparency.

NATIONAL THERMAL POWER CORPORATION
(Year 2002-03, upto 30.11.2002)

During the period NTPC had received 65 complaints. All the 65 cases were taken up for investigation. There were 39 cases pending under investigation as on 31st January, 2002. Out of the total 104 cases investigation has already been completed in 68 cases. As on 30th Nov. 2002 there are 36 cases under investigation, 08 of them are pending between 06 months to 01 year. In these cases the investigation could not be completed because evidence & documents from outside parties are to be collected.

1. Out of 39 cases that were submitted to the Disciplinary Authorities, in 07 cases major penalty action has been approved against 08 officials; & in 15 cases minor penalty action has been approved against 20 officials; in 11 cases involving 13 officials for initiation of administrative action was approved. 06 cases were closed where no evidence had come to prove the allegations. 23 charge sheets were issued upto Nov. 30, 2002.
2. During the period up to 30.11.2002 major penalties were imposed on 02 officials and minor penalties were imposed on 22 officials, 05 officials were exonerated.
3. Apart from above as on 30.11.2002 recoveries effected was Rs.12,78,771/- & savings made comes to Rs.64,56,434/- against the recommended recoveries of Rs.79,96,187/-.
4. 243 Nos. of surprise checks were conducted till 30.11.2002 out of which 18 Nos. of cases was instituted.
5. Departmental inquiries were in progress in 02 cases against 06 officials and minor penalty action was in progress against 05 officials in one case.
6. In 04 cases CVC advised for initiation of major penalty action against 08 officials, minor penalty action against 11 officials and administrative action against 02 officials from Jan. 01, 2002.
   - The case against 01 official is under submission to the Board of Directors for decision on initiation of major penalty action against him as per the CVC advice. Charge sheets are under drafting in respect of 05 officials for major penalty action and 07 officials for minor penalty action.
   - 01 case is under departmental enquiry for which Inquiry Officer & Presenting Officers have since been appointed.
   - In 01 case involving 02 officers, enquiry is over, Inquiry Reports received and the same have been processed for approval of dissenting notes with the findings of the IO. The cases will be processed for 2nd stage advice by the CVC after receipt of comments from the COs.
   - In another case involving 04 officers, the case has been processed for seeking 2nd stage advice from the CVC.
   - In 01 minor penalty case against 02 officials, while the penalty of 'Censure'

has been imposed on 01 officer, the case against the other officer is under submission to the Disciplinary Authority for decision.

- In 01 case involving 05 officials facing minor penalty action penalty of "withholding of one increment for six months" has been imposed on 03 officials and 02 officials have been exonerated. Orders are under issue.
- In the remaining 02 cases, of minor penalty action, the cases have been processed but kept in animated abeyance pending clarification from CVC.
- Initiation of Administrative action against 02 officials is also in progress.

7. Vigilance department of NTPC creates general awareness amongst the employees through series of workshops and periodic discussion with HOD at projects, regions and stations. During the period under review, 38 workshops have been organized in different projects for executives, supervisors and workmen. Regular monitoring of vigilance cases is being done.
8. Based on the Audit conducted by American Quality Assessors in Oct., 2002, NTPC Corporate Vigilance Deptt. has been recommended by the Audit Team to register for ISO 9001:2000 Standard on Oct. 29, 2002.
9. NTPC observed the Vigilance Awareness Week from 31st October, 2002 to 6th December, 2002 in all the projects, regions, offices as well as Corporate Centre of NTPC. Debates, Essay Competitions, Poster Competitions were organized to create awareness. Banners and Posters on the theme of anti-corruption were displayed at prominent locations. Special Journals/News Letters were brought out in projects on this occasion.

POWER GRID CORPORATION OF INDIA LTD.

It is essential that in the war against corruption, everyone is made aware of the various strategies and principles that have been evolved so far. Keeping this in mind, POWERGRID has been committed towards bringing about transparency in all its activities and in its endeavour towards conducive environment. Significant achievements were made on this front by the corporation involving personnel from various management levels in **preventive anti-corruption work**.

POWERGRID added a feather to its cap by publishing a unique and landmark policy document **"Works and Procurement Policy and Procedure"** for the pre-award activities. Policies laid down in the manual are unambiguous & transparent, backed up by established & time-tested procedures and systems. The manual protects interest of the company and generates confidence in Managers in taking decisions. Meticulous follow up and System Audit have been implemented to identify and plug any deviations and to provide feed back for up-gradation/improvements. Similar document is being developed for post award activities as well as for other functional areas like Engineering, Finance and Quality Assurance.

During the year, a number of workshops, seminars, debates and elocution contests were organized all over the country on the occasion of the Vigilance Awareness Week. The in-house journal of the Vigilance Department **"Candour"** was also published for the second time with contributions from all quarters. A successful seminar on **'Morality in Public Life'** was also organized in association with **SANKALP**, a voluntary organization, where eminent personalities from various spheres of life participated.

POWERGRID also implemented **"Vigilance Information Database"** software for the first time on the guidelines and formats of the Central Vigilance Commission. This advanced software enables retrieving of vigilance information with speed, efficiency and accuracy.

Spreading awareness and transparency in its operation along with a viable strategy of motivation and prevention has been and will be the mantra of POWERGRID in fight against corruption.

RURAL ELECTRIFICATION CORPORATION

A. Progress made during the current year upto November, 2002

1. Prescribed periodical statistical returns were sent to CVC, CBI and MOP timely. Instructions received from the Central Vigilance Commission from time to time were complied with. Eight regular inspections were carried out by the officers of Vigilance Division in different Project Offices of REC across the country. In addition to the 5 complaints brought forward as on 1.4.2002, 11 complaints were received, of which 9 have been settled so far. In addition to the 4 disciplinary cases pending as on 1.4.2002, 6 cases were received upto November, 2002. Of these, 5 have been finalised and the remaining 5 cases are at various stages of completion.
2. Emphasis was also laid on the preventive vigilance. Existing procedures of loan

documentation, reimbursement of medical expenses and reimbursement of claims were reviewed and streamlined.

3. Annual Property Returns have been computerised.
4. Vigilance-Awareness Week was observed in REC offices in the country from 31st October to 6th November, 2002.
5. As per norms, performance of Vigilance Division was reviewed by the CMD, REC, Chief Vigilance Officer of the Ministry of Power and Central Vigilance Commission in addition to the periodical reviews undertaken by the CVO, REC.

B. Anticipated targets to be achieved during the remaining period of the year i.e. upto 31st March, 2002.

1. Efforts would be made to get all the pending complaints and disciplinary cases completed.
2. Regular inspection would be carried out in the left out Project Offices of REC.

NORTH EASTERN ELECTRIC POWER CORPORATION

1. 5(five) Cases / complaints have been received during the period upto November ' 2002 .Out of them 2 (two) complaints are under scrutiny by Vigilance, 1 (one) Case has been registered by CBI, 1 (one) complaint has been referred to CBI and the other is with Inquiry Committee.
2. 6(Six) officers involved in 2 (two) different Cases have been Charge sheeted by the Disciplinary Authority during the period. Apart from above 9(nine) Cases / Complaints are under investigation by CBI for which full co-operation and assistance are rendered as and when ask for. 5 (five) Nos. of Surprise /Routine Inspections/ Checks had been carried out in various Projects during the period.

   " Vigilance Awareness Week – 2002" was observed from 31/10/2002 to 06/11/2002 as per directives of CVC.

NATIONAL HYDROELECTRIC POWER CORPORATION

Vigilance department of NHPC creates general awareness amongst the employees through series of workshops/training programmes/vigilance appreciation programme and periodic discussion with HODs/ HOPs at projects, Regions and offices. In the period under review, three one-day workshops and one two-days regional training programmes were organized in different projects for executives, supervisors and workmen. Emphasis was given on preventive vigilance and procedural improvement. In all 370 regular/ surprise checks were conducted till October 31, 2002.

NHPC has observed the Vigilance Awareness Week from October 31 to November 6, 2002, in all projects, Regional Offices and Corporate Office. The "Vigilance Awareness Week" was inaugurated by Shri Yogendra Prasad, Chairman & Managing Director, NHPC and on this occasion, third edition of NHPC Vigilance Journal 'Chetna' and 'Vigilance Handbook' were released by him. Banners and posters on the theme of anti-corruption were displayed at prominent locations in Corporate Office as well as in projects, sites and offices on this occasion.

NATIONAL POWER TRAINING INSTITUTE

Vigilance activities at NPTI are carried out by a Director nominated for these purposes.

The status of vigilance activities till December 2002 is as under :

1. Enquiry for three vigilance cases has been completed and report submitted.
2. Two departmental enquiries have also been completed.
3. Reports are sent to MOP from time to time.
4. Vigilance Awareness week was observed at the Institute from 31st October to 6th November 2002.

POWER FINANCE CORPORATION

In PFC Vigilance Unit functions as a resource to the top management for carrying out investigation into complaints, suggesting corrective measures for improving the control systems and compliance of laid down procedures, and also carrying-out preventive vigilance exercises.

As a part of preventive vigilance function, the Vigilance Unit continuously reviewed property return of the employees, ensured job rotation in the sensitive posts and worked towards maintenance of transparency in administration.

Vigilance Unit also organised workshops on Business Environment &Eco Vigilance, Business Ethics in Administration. Further as part of preventive vigilance, two competition viz. ,Poetry Competition and Poster-cum-Slogan Competition were organised with the objective of involving employees and encouraging them to come out with innovative ideas and methods in spreading awareness about the ill effects if corruption.

As directed by Cen0tral Vigilance Commission (CVC)Vigilance Awareness Week was observed from 31st October to 6th Nomember,2001.

CHAPTER - 14

Activities Relating to Women Employees

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	Strength	Percentage of overall staff strength
A	02	0.64%
B	22	7.07%
C	21	6.75%
D	02	0.64%
Total	**47**	**15.11%**

POWER GRID CORPORATION OF INDIA LTD.

At present there are 351 no. of Women Employees working at different levels in the corporation out of a total of 6930 employees.

RURAL ELECTRIFICATION CORPORATION

Employment situation of Women Employees in various post(s) in REC upto 30.11.2002 are as follows:-

Sl.	Post(s)	No. of employees	No. of women employees	%age of women employees to total number
1.	Executive Director	3	-	-
2.	Chief/C.S.	7	-	-
3.	Joint Chief(s)	8	-	-
4.	Deputy Chief (Eco./Fin./Engg.)etc.	40	2	5%
5.	Finance Executive-I	2	1	50%
6.	DD(Eco)/Gen./ Hydro./DPE	49	7	14.29%
7.	ACAO	7	-	-
8.	Finance Executive-II	3	1	33.33%
9.	AD(Eco./Gen./Isolated) etc.	84	23	27.38%
10.	Sr. Accounts Officer	21	1	4.76%
11	Accounts Officer/SO	8	2	25%
12.	Acctt./Sr. Asstt./Sr. PA/ Sr.T. Asstt./Sr. D/man/ SCD(Hr. Grd.) or equivalent	216	38	17.59%
13.	Asstt.(A/cs)	18	2	11.11%
14.	Asstt./UDC/LDC/PA/. Steno.III/Comp.Opr.	208	41	19.71%
15.	SCD/L. Asstt./Jr. EDP Analyst	28	-	-
16.	DMO/PMO/BMO	8	-	-
17.	Electrician/AC Mech/Lift. Optr.	3	-	-
18.	Class-IV	173	12	6.94
	Total	**886**	**130**	**14.67%**

The Rural Electrification Corporation has adopetd various welfare measures for the women employees. A Women Cell has been created by the Corporation to look after the welfare activities of the women employees. A lady doctor has been engaged in the Corporation for providing better medical facilities to the women employees and a separate common room has also been provided to the women employees. A representation in the various Committees consituted by the Corporation is also been given to the women employees.

NATIONAL HYDROELECTRIC POWER CORPORATION

Cadre	Total no. of Employees	No. of Female Employees	% Female Employees
Executive	2491	122	4.89
Assistant Officer/AE/Supervisor	2034	148	7.27
Workmen	8629	715	8.28
Total (NHPC)	**13,154**	**985**	**7.48**

75 female employees are professionally qualified

Steps taken for welfare of women employees :

Generally women employees are not transferred barring cases of administrative exigency. If inevitable due care is taken to ensure that both husband and wife are posted to the same station. No women employee is posted to hard projects.• Special care is taken to nominate deserving women employees to training programms/seminars organized exclusively for women employees. • Free membership of WIPS (Women in Public Sector) at Corporation expense. • Extension of Creche facility for the benefit of women employees with infant children. • Suitable mechanism to prohibit harassment at work place to ensure safety and security including formation of special committees to look into the complaints of harassment to women.

NATIONAL THERMAL POWER CORPORATION

Category of Employees	Total Employees	Female Employees
Workmen	12850	588 (4.58%)
Supervisors	2240	169 (7.54%)
Executives	8490	231 (2.72%)
Total NTPC	**23580**	**988 (4.18%)**

NTPC has a well defined Welfare Scheme covering all aspects of development programs for uniform implementation across the organization. The scheme applies equally to both the men and women employees. The funds which are allotted for the welfare/training scheme are also utilized for both men and women employees.

Under Welfare Policy of the company, it is envisaged to encourage the ladies of NTPC family at projects/stations/offices to form mahila Samitis/ Ladies Club. Financial support is also extended to them as matching grant to promote active participation of members. These Mahila Samitis/ Ladies Club take up various development activities for women every year such as imparting vocation training, adult education etc.

Further, a Women Cell has been set up at all NTPC Offices/Projects/Stations primarily with the objective to ensure protection of rights and privileges of women employees and to take care of their interests against sexual harassment/gender discrimination issues, if any.

BADARPUR THERMAL POWER STATION

There are total no. of 55 women employees at BTPS, 25 in Workmen category, 11 in Supervisor category & 19 in Executive category. BTPS has recently recruited 3 Physically Handicapped persons out of which two are women and are Orthopedically Handicapped (OH).

BHAKRA BEAS MANAGEMENT BOARD

In BBMB, the following measures have been taken for the welfare of women employees.

For redressal of grievances of female employees working in BBMB, a Women Cell headed by a woman has been set up in Board's Corporate Office. A committee of the female employees has also been constituted to look after the interest of women employees.

Support facilities are being provided to women employees to discharge their duties such as Rest Room facilities, school/creches etc., where-ever necessary.

Widows of the employees who die while in service are being provided employement on priority basis on compassionate grounds.

Instructions have been issued that the problems of widows working in BBMB should given special and prompt attention and action is taken expeditiously.

Women employees have been/are being provided responsible jobs that commensurate with their capabilities and qualification.

In all training courses opportunity is being given to the eligible women employees.

Special attention is being paid to the genuine grievances of women employees with special emphasis on areas of discrimination, denial of opportunities etc.

In view of Hon'ble Supreme court Judgement in Writ Petition (Civil) No.666-70 of 1992 decided on 13.8.97, an appropriate Complaint Mechanism has been created in BBMB by way of constituing Complaint Committees for the redressal of complaints regarding sexual harassment made to the female employees.

Women employees working in BBMB are granted 6 months Maternity Leave. Besides this, medical facilities are also being provided to the female employees as per rules.

NORTH EASTERN ELECTRIC POWER CORPORATION

The North Eastern Electric Power Corporation Ltd., Shillong has a total employees strength of 3669 out of which 381 are women employees. There are 52 Executives and 329 Non Executives among the Women employees.

The NEEPCO Women Welfare Association is a Corporate Life member of the Forum of Women in Public Sector under the aegis of SCOPE. Every year two or three members of the Association are nominated to attend the Annual Meet of the Forum. The NEEPCO Womens Welfare Association is engaged in the Welfare of the Women employees of the Corporation and in Social activities such as helping the disabled children, giving cash prizes to the children of employees who excell in various examinations, organising knitting, Embrodery and Weaving classes, etc. They raise funds by Organising cultural Programmes, fete etc. In addition, they receive funds from the Corporation for organising specific Programmes.

In the year 2002-2003, the Corporation contributed Rs.50,000/- to the Association for its various Programmes. Three members of the Association were nominated to attend the 13th National Meet of Forum of Women in Public Sector at Mumbai on 12th & 13th Feb.'03. In addition three instructors for knitting, weaving and embrodiery are appointed and their honorarium is paid by the Corporation.

NATIONAL POWER TRAINING INSTITUTE

Two physically handicapped women and one SC/ ST woman have been recruited during 2002-03.

CENTRAL POWER RESEARCH INSTITUTE

A Women's Cell was constituted in the year 1997 to look after the welfare of the women employees (about 90 in strength) and facilitate redressal of their grievances and caters to the issues/grievances concerning them.

One of the initiatives taken up by the Women's Cell is opening of a Creche for the employees' children. The Creche is functioning satisfactorily over the last 4 years. The Women's Cell also promotes all round development of women employees of the Institute, dependant female children of male as well as female employees through non-formal/adult education, health care, family care assistances, training for skill formation, etc.

The Cell also conducts a survey within the organization and collect suggestions/ recommendations from women, on issues concerning them so that appropriate action could be taken in the matter with a view to helping them. The Women's Cell also review various schemes and programmes of the Institute and ensures that wherever possible, the aspect of women's development is promoted through these schemes/ programmes and a component for women's development introduced in the activity by getting the schemes amended suitably.

TEHRI HYDRO DEVELOPMENT CORPORATION

• With a view to facilitate redressal of grievances of women employees in the Corporation, Women Welfare Cell was constituted vide Circular dated 05.06.1997. Regular meetings of this Cell are held and their grievances are redressed by the Management from time to time. • A provision has been incorporated in the CDA Rules of the Corporation to deal with the cases of sexual harassment of working women.• A Sexual Harassment Committee has also been constituted with a view to redress complaints of women employees. The Committee is headed by Women officer of the rank of Dy. General Manager and more than 50% members of the Committee are women employees. • A woman officer is associated in the Departmental Promotion Committee of workmen.

Woman employee has also been nominated in the House Allotment Committee both at Tehri and Rishikesh to protect the interests of women employees in allotment of house.• Recently, it was approved to provide Uniform to all employees of the Corporation and woman employee was associated as member in the Committee to decide the Uniforms. • Women employees are deputed for in-house as well as external training programmes. Exclusive in-house training programmes are also conducted for women employees with a view to improve their attitude and enhance their skills and job knowledge. • One woman employee was deputed to Sweden for training programme of 40 days duration. • Women employees are nominated / encouraged to take part in the cultural programmes organized by Power Sports Control Board. • Women employees regularly take part in the recreational/ cultural activities being held at Tehri and Rishikesh from time to time. • Ladies Clubs are in operation in Tehri and Rishikesh, for which matching grant is provided by the Corporation for carrying out their welfare activities.• In line with Govt. Orders, the Maternity Leave benefit to Women employees has been enhanced to 135 days.

CHAPTER - 15

Physically Challenged Employees

MINISTRY OF POWER

Implementation of reservation for Physically Challenged persons in Ministry of Power, its attached/ subordinate offices, etc is monitored by an SC/ST Cell which functions under the direct control of the Deputy Secretary(Administration). Periodical reports and returns are sent to the Ministry of Social Justice and Empowerment, Department of Personnel & Training and Department of Public Enterprises.

RURAL ELECTRIFICATION CORPORATION

Employment situation of Physically Challenged Employees in various post(s) in REC upto 30.11.2002 are as follows:-

Sl.	Post(s)	No. of employees	No. of Physically Challenged Employees
1.	Executive Director	3	-
2.	Chief/C.S.	7	-
3.	Joint Chief(s)	8	-
4.	Deputy Chief(Eco./Fin./Engg.)etc.	40	-
5.	Finance Executive-I	2	-
6.	DD(Eco)/Gen./Hydro./DPE	49	-
7.	ACAO	7	-
8.	Finance Executive-II	3	-
9.	AD(Eco./Gen./Isolated)etc.	84	1
10.	Sr. Accounts Officer	21	-
11	Accounts Officer/SO	8	-
12.	Acctt./Sr. Asstt./Sr. PA/Sr.T. Asstt./Sr. D/ man/SCD(Hr. Grd.) or equivalent	216	2
13.	Asstt.(A/cs)	18	-
14.	Asstt./UDC/LDC/PA/. Steno.III/Comp.Opr.	208	4
15.	SCD/L. Asstt./Jr. EDP Analyst	28	-
16.	DMO/PMO/BMO	8	-
17.	Electrician/AC Mech/Lift. Optr.	3	-
18.	Class-IV	173	1
Total		**886**	**8**

NATIONAL HYDROELECTRIC POWER CORPORATION

Cadre	Total no. of Employees	No.of Phy. Challenged	% of PC employees
Executive	2491	18	0.72
Assistant Officer/AE/Supervisor	2034	38	1.86
Workmen	8629	30	0.34
Total (NHPC)	**13,154**	**86**	**0.65**

NATIONAL THERMAL POWER CORPORATION (as on 30.11.2002)

Category of Employees	Total Employees	Physically Handicapped Employees
Workmen	12850	200 (1.56%)
Supervisors	2240	8 (0.36 %)
Executives	8490	21 (0.25%)
Total NTPC	**23580**	**229 (0.97 %)**

BADARPUR THERMAL POWER STATION

At BTPS, in view of existing manpower strength, no new recruitment is being done. But, as far as recruitment of Physically Handicapped persons is concerned, BTPS has recently recruited 3 Physically Handicapped persons who are working as Asstt. Accounts Trainees out of them two are Orthopaedically Handicapped (OH) women and one is male who is Hearing Handicapped (HH).

POWERGRID CORPORATION OF INDIA LTD.

At present 25 physically challenged employees are working at different levels in the corporation out of total of 6930 employees.

NATIONAL POWER TRAINING INSTITUTE

During 2002-03 five vacancies reserved for physically handicapped candidates were filled up including two women candidates.

POWER FINANCE CORPORATION

Instructions of the Government of India on the subject were followed.

CHAPTER - 16

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 encourage 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 as amended from time to time all documents required to be issued bilingually, are being issued bilingually by the Ministry. Similarly, all communications received in Hindi are essentially replied to in Hindi.

To accordance 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 has been introduced.

In compliance with Official Language Policy, a Hindi fortnight was organized from 13th September, 2002 to 27th September, 2002. During this period various programmes like Hindi Essay Competition, Hindi typing competition, Hindi debate competition, Hindi poetry competition and Hindi workshops were organized for the officers as well as staff of the Ministry and cash prizes were awarded to the winners.

With a view to assessing the progressive use of Hindi in the organizations under the administrative control of the Ministry, periodic inspections were carried out. During the period under review 08 offices were inspected. Inspection reports of the offices inspected were prepared and necessary directions were issued on the basis of these reports. This has been beneficial in promoting the use of Hindi in Official work.

Meetings of Hindi Salahkar Samiti and Official Language Implementation Committee of Ministry of Power were convened regularly in which progress made by the Ministry well as its attached, subordinate offices were reviewed. Suitable measures have been taken to implement the decisions taken in these meetings.

POWERGRID

In pursuance of Govt. of India's policy to promote extensive use of Rajbhasha in the corporation, POWERGRID has put in its sincere efforts and the results achieved are praiseworthy.About 400 employees have been imparted training in subjects related to Rajbhasa and a large number of employees have been imparted training in Hindi software.

NATIONAL POWER TRAINING INSTITUTE

Hindi Computerization

All out efforts were made to implement Hindi language in official working in compliance to the provisions enshrined in our constitution. Three (3) programs were organized on computer applications in Hindi during the months of June & July 2002 for NTPC, PGCIL, THDC and IWC personnel.

POWER FINANCE CORPORATION

In PFC all the competition during the Vigilance Awareness Week wee held in Hindi and a smarika (souvenir) was also published in Hindi. A Hasya-Vyangya Hindi Kavi Sammelan was also organised on this occasion wherein several renowned poets participated. The Corporation was entrusted to organised 90 road shows in various districts of Delhi and Haryana as a public awareness campaign under the ageis of Ministry of Power for 'Mission-2012 - Power to all'. All these road show were organised in Hindi with all the presentations, speeches and printed material distributed in Hindi only.

To create interest in hindi and to add to their knowledge, approximately 90% amount of total budget of library was spent on purchase of Hindi Techinical Books. To provide knowledge of the usage of bilingual package 'Leap Office', computer workshops were organised.

Meetings of Official Language Implementation Committee were organized regularly. 'Hindi Day' and Hindi Year were observed. Various Hindi competitions were organized during the whole year and prizes were given to the winners. Several workshops were also organized for the employees having working knowledge in Hindi.

The Corporation received 'Vidyut Rajbhasha Shield (first prize)' for the year 200-01 and 'Vidyut Rajbhasha Shield (third prize) for the year 1999-2000 for the outstanding implmentation of Official Language Policy in the Corporation under Vidyut Rajbhasha Puraskar Yojna of Ministry of Power.

National Thermal Power Corporation Ltd. (NTPC)

National Thermal Power Corporation (NTPC) was set up in 1975, as a central sector generating company to plan, promote and develop thermal power in India. The Corporation has rapidly grown to become largest thermal generating company in India. The total approved investment of the corporation as on **30.11.2002** stands at **Rs 55,095.15crores**.

The commissioned capacity of NTPC owned stations, as on 30.11.2002 is 20,435 MW (statement enclosed as **Annexure)**. Presently, NTPC has to its credit 13 coal based thermal power projects and 7 gas/liquid fuel based combined cycle projects.

In addition, NTPC has acquired 314 MW of Captive Power Plants of SAIL through formation of Joint venture Companies with SAIL.

Besides its own stations, NTPC also manages the Badarpur Thermal Power Station in Delhi (705 MW). NTPC had been managing the Captive Power Plant (BCPP) of Bharat Aluminium Company Ltd. (BALCO) since commissioning of lst unit i.e. 29.6.1987. Consequent upon disinvestment of BALCO by Govt. of India, BCPP has been handed over to the new management of BALCO with effect from 1.7.2002

NTPC PERFORMANCE HIGHLIGHTS: as on 30.11.2002

- During the year 2002-2003, upto 30.11.2002, a record generation of over **90950 Million Units** was achieved, as against the last year's generation of **86773 Million Units** during the same period..
- During the year 2001-2002, seven NTPC coal stations namely, Dadri (coal), Korba , Unchahar,Singrauli, Rihand & Ramagundam and NTPC managed Badarpur achieved more than 85% PLF. Dadri (Coal) and Korba achieved more than 90% PLF and were ranked third and Fourth in the country .
- NTPC received **Excellent MOU rating for the year 2001-2002, and thus for 15 consecutive years** in a row since the inception of MOU system by Government of India.
- As a part of debt management strategy and with the objective of effecting savings in Interest costs, the Govt of India loans amounting to Rs. 1988.72 crore were prepaid in April 2002 (Rs. 1500 Crore) and August 2002 (Rs. 488.72Crore) by way of fresh issue of Bonds in the domestic capital market. This has resulted in a saving of Rs.528 crores over the life of the GOI loans.

  The first unit of **Simhadri Project (2x500MW)** was synchronised in February 2002 in a **record time** and this unit has started commercial generation. Second Unit of 500MW has also been synchronised ahead of schedule on 25th August, 2002.
- The Company is at present implementing four power projects with a capacity of **4300 MW** viz. 2000 MW Talcher Stage-II in Orissa, 1000 MW Rihand Stage-II in Uttar Pradesh, 500 MW Ramagundam Stage-III in Andhra Pradesh and 800 MW Koldam Hydro Electric Power Project in Himachal Pradesh.
- **NTPC Electric Supply Company Ltd**. formed to take up power distribution.
- Subsidiary companies formed to take up **Power trading and to take up small hydro projects.**
- NTPC has paid a **dividend** of **Rs.707.93 crores** for the financial year 2001-02.
  The commercial realization against billing during the current year (upto 30.11.02) reached a level of 89% as against 76.7% during the previous year.

GENERATION (as on 30.11.2002)

NTPC Stations

As on 30.11.2002, a total capacity of 20,435 MW (and 314 MW of SAIL's JV) is under operation at various NTPC stations. This comprises 32 units of 200/210 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhyachal, Dadri, Unchahar and Kahalgaon, 18 units of 500 MW at Singrauli, Korba, Ramagundam Farakka,,Vindhyachal, Rihand, Talcher-Kaniha and Simhadri , 6 units of 110 MW at Tanda and Talcher, 4 units of 60 MW at Talcher and 22 Gas Turbines and 10 Steam

Turbines at Anta, Auraiya, Kawas, Dadri, Gandhar, Kayamkulam & Faridabad combined cycle power plants.

The generation performance of NTPC Stations has consistently been at high level. **The gross generation from NTPC stations during the year 2002-03 (upto 30.11.2002) has been 90950 MUs as against 86773 MUs generated during the same period last year.**

The PLF of coal-based stations excluding the stations of Eastern Region (where constraints of generation backing down is being faced due to low demand) during the period (Year 2002-03 upto 30.11.2002) was 86.94%. However, the Plant Load Factor including Eastern Region is 81.27%

Station Managed by NTPC

Badarpur Thermal Power Station (BTPS), Delhi (705 MW)

Badarpur Thermal Power Station (BTPS), Delhi (705MW) owned by GOI is being managed by NTPC since 1st April 1978. 100% power from this station is supplied to DVB now being called Delhi Power Supply Company Limited (DPSCL) During the year 2002-03, upto 30.11.2002, the station has generated 3608.8 MUs at a PLF of 87.4% against 3559.3 MUs at a PLF of 86.2% during the same period last year.

OUTSTANDING DUES OF NTPC

The sales for the year 2002-03 (upto 30.11.2002) were Rs.13202.53 crores with realisation of Rs.11751.41 crores, i.e. 89%. The total outstanding dues as on 30.11.2002 were Rs.25884.20 crores (including surcharge of Rs.9838.45 crores).

A major portion of these dues is proposed to be securitised pursuant to the decision taken in Chief Ministers Conference on 3.3.2001. Government of India had constituted an Expert Group under the Chairmanship of Member, Planning Commission to suggest a Scheme for One-Time Settlement of Dues payable by SEBs to CPSUs and ensuring full payment of current bills. The recommendations of the Expert Group, as endorsed by an Empowered Group of Chief Ministers, were approved by the Cabinet Committee on Economic Affairs on 23.3.2002. The Scheme was implemented by Government of India on 17.4.2002.

The scheme provides for securitisation of dues (after waival of 60% surcharge) against energy supplied upto 30.9.2001 in the form of 15 year 8.5% tax-free bonds to be issued by the State Govts. to CPSUs. For ensuring full payment of current bills, the Scheme stipulates opening of Letter of Credit equivalent to 105% of the average monthly billing of preceding 12 months with six monthly adjustments. State power utilities complying with the provisions of the Scheme by opening and maintaining LC for 105% and making full payment of bills during the next four years would be given yearly cash incentives aggregating 21% of the total value of bonds. At the same time, if bills remain unpaid for more than 90 days, the same would be recovered from the State's account maintained with the Reserve Bank of India for which a Tripartite Agreement would be signed amongst the State Government, Government of India and RBI.

This was vigorously pursued with State Governments and SEBs as a result of which a large number of State Governments have agreed to support the Scheme. So far 23 states have accepted the scheme out of which 21 states namely Andhra Pradesh, West Bengal, Tamil Nadu, Gujarat, Kerala, Karnataka, Assam, Goa, Uttar Pradesh, Chhattisgarh, Haryana, Madhya Pradesh, Punjab, Jammu & Kashmir, Nagaland, Uttaranchal, Orissa, Himachal Pradesh, Rajasthan, Bihar & Sikkim have signed the Tripartite Agreement. In-principle approval for signing of Tripartite Agreement was also received from Maharashtra and Jharkhand.

All states, except Bihar, Orissa and Kerala have opened Letters of Credit equal to 105% of average monthly billing. The L.C. as on 30.11.2002 for Rs.1660.62 crores covers 93% of monthly sales.

Availability Based Tariff (ABT) has been implemented in Western Region from 1.7.2002, in Northern Region from 1.12.2002 and will be implemented in Southern Region

from 1.1.2003. In Eastern Region, SEBs have proposed implementation from 1.04.2003.

Govt. of India has constituted a High Level Committee for formulation of the Tariff Policy keeping in view the need for resource mobilisation in the sector and ensuring optimum utilisation of available resources.

DOMESTIC BORROWINGS

NTPC has received funding proposals aggregating over Rs.8000 crores from various Banks and Financial Institutions for participating in the capacity addition programme of company.

Beginning from November 1999 NTPC has tied up loans aggregating Rs. 6489 crore and utilized Rs. 3410 upto 30th November 2002.

EXTERNAL ASSISTANCE/BORROWINGS

Japan bank for International co-operation Assistance for Simhadri (1000MW)

Simhadri TPP (1000 MW) is being implemented with Japanese Official Development Assistant (ODA) extended by Japan Bank for International Cooperation (JBIC). The Tranche-I one of the JBIC loan amounting to JPY 19,817 million was signed on 25.02.1997 and the same was declared effected from 24.06.1997. During the year 2002-03 (period April 2002 to November 2002) NTPC has utilized JPY 73.93 million (Rs.2.86 crores). The cumulative utilization till the end of November'2002 is JPY 19,080 million (Rs.736.66 crores).

The loan Agreement for Tranche-II of JPY 12,194 million was signed on 30.03.2001 and the same was made effective on 31.05.2001. During the year 2002-03 (for the period April 2002 to November 2002) NTPC has utilized JPY 209.55 million (Rs.8.03 crores). The cumulative utilization under Tranche-II of the loan at the end of November'2002 is JPY 11,802 million (Rs.459.12 crores).

Tranche-III of JBIC loan amounting to JPY 27.473 billion was signed on 13.02.2002 and the same was declared effective on 26.03.2002. During the year 2002-03 (for the period April 2002 to November 2002) NTPC has utilized JPY 8,184 million (Rs.318.25 crores) and the cumulative utilization as at the end of November 2002 is JPY 23,559 million (Rs.882.68 crores).

The total JBIC utilization extended for Simhadri Project amounts to JPY 59,484 million and as against this, JPY 54,441 million has been utilized till November 2002.

Further, discussions are under way with JBIC to extend Tranche-IV of the loan amounting to JPY 5,600 million by the end of financial year 2002-03.

Revision of rates of interest applicable under French and Belgian Loans

In order to part finance the capital expenditure of Kawas gas-based project, during the year 1991, NTPC had entered into two export credit vis. FRF 1515.718 Million with French Banks supported by French Export Credit Agency – COFACE and BEF 1250.681 Million with Belgium Banks supported by Belgian Export Credit Agency – OND. These export credits carried provision for payment of fixed rate of interest @ 9.20% p.a. and 10.40% p.a. respectively.

In order to align these rates of interest with the rates currently prevailing in the International Market, after protracted discussions and negotiation with the lenders, the above interest rates were revised to floating rate of interest linked to Euribor + 75 basis points. Further, to remove the uncertainty associated with floating rate of interest, the above rate of interest was converted to fixed rate of interest payable at 4.3575% p.a. under each of the said credits. This arrangement implies a saving of approx. Rs.30.52 crores in case of French Credit and Rs 4.61 crores under Belgian Credit.

MOU PERFORMANCE

NTPC is the first power sector corporation to have signed a Memorandum of Understanding (MOU) with the Govt. of India and has a consistent record of surpassing the set targets in MOU year after year. NTPC achieved all the Excellent targets set under the Memorandum of Understanding (MOU) signed with GOI and achieved Excellent Rating for all the 15 years upto 2001-02 since inception of the MOU system.

Based on the Memorandum of Understanding (MOU), signed between NTPC and theMinistry of power for the year 2002-03, the targets in respect of major performance parameters are as follow:

Sl.No.	Parameters	Unit	Target 2002-2003	
			V.Good	Excellent
1.	Generation	MUs	133000	136000
2.	Heat Rate	Kcal/kWh	2480	2470
3.	Gross Margin	Rs.Cr.	4812*	5016.09*
4.	Net Profit to Net Worth	%	8.67*	9.22*
5.	Ash Utilisation	%	14	15

* based on ABT (Availability Based Tariff)

GROWTH STRATEGY

NTPC has adopted multi-pronged growth strategy to become 40,000 MW plus Company by year 2012. The strategy, inter-alia, includes capacity addition through green field projects, expansion of existing stations, joint ventures and take over of SEBs' stations. Further, new business opportunities are being continuously explored through environment scanning and new business plans are adopted through mid-course corrections.

Capacity Addition Programe

With a view to achieve a capacity of 40,000 MW by the year 2012, NTPC has formulated an ambitious capacity addition programme as follows:

Installed Capacity	—	20,435 MW
On-going Projects	—	4,300 MW
New Projects	—	15,170 MW
- CEA Cleared	—	*9,540 MW*
- FR Submitted	—	*2,680 MW*
- FR under finalization	—	*2,950 MW*

Ongoing Projects

4300 MW capacity for Talcher-II, Rihand-II, Ramagundam-III and Koldam are already under construction. Details are given below:

Talcher-II (4x500 MW), Orissa

Commissioning Schedule : Unit-III–Nov.'03
Unit-IV–Aug'04
Unit-V–May'05
Unit-VI–Feb.'06

Present Status: Work in progress in all the units as per schedule. Unit-III has been test synchronized on 4th January 2003 and commissioned on 21st Feb. 2003

Rihand-II (2x500 MW), Uttar Pradesh

Commissioning Schedule : Unit-III – Aug.'05
Unit-IV – May'06

Present Status : Civil construction and erection work is in progress in all the units as per schedule.

Ramagundam-III (1x500 MW), Andhra Pradesh

Commissioning Schedule : Unit-VII – Aug.'05

Present Status : Civil construction and erection work is in progress in all the units as per schedule.

Koldam HEPP (4x200 MW), Himachal Pradesh

Commissioning Schedule : Unit-I–Nov.'08
Unit-II–Jan.'09
Unit-III–Mar.'09
Unit-IV–April'09

Present Status : Infrastructure work including land acquisition, construction of roads, R&R etc. in progress. Work on diversion tunnel in progress. NIT issued for main dam and other major packages.

NEW PROJECTS

Brief status of the new projects is given below:

A. CEA Cleared Projects

Sl. No.	Projects (Location)	Capacity (MW)
1.	Sipat Stage-I (Chhattisgarh)	1980 (3x660)
2.	Barh (Bihar)	1980 (3x660)
3.	Kahalgaon II (Bihar)	1000 (2x500)
4.	Sipat Stage-II (Chhattisgarh)	660 (1x660)
5.	Vindhyachal-III (M.P.)	1000 (2x500)

The following projects with a total capacity of 2600 MW, for which CEA's TEC are available are under review and shall be taken up on confirmation of availability of LNG/NG at reasonable and firm price, finalization of fuel supply agreement with the LNG/NG suppliers and reconfirmation of PPA's with the beneficiary states.

Sl. No.	Projects/Location	Capacity (MW)
1.	Anta Stage-II/(Rajasthan)	650
2.	Auraiya Stage-II/(U.P.)	650
3.	Kawas Stage-II/(Gujarat)	650
4.	Gandhar Stage-II/(Gujarat)	650

B. Feasibility Reports for the following three projects with a total capacity of 2680 MW have been submitted to CEA for techno-economic clearance.

Sl. No.	Projects/Location	Capacity (MW)
1.	North Karanpura (Jharkhand)	1980 (3x660)
2.	Unchahar TPP Stage-III (U.P.)	210 (1x210)
3.	NCTPP, Stage-II (U.P.)	490 (1x490)

C. The feasibility reports for following projects with a total capacity of 2950 MW are under finalization:

Sl. No.	Projects/Location	Capacity (MW)
1.	Kayamkulam Stage-II (Kerala)	1950
2.	Cheyyur (Tamil Nadu)	1000

Hydro Power Projects

NTPC has taken up implementation of mega project :Koldam Hydroelectric Power Project (800 MW) in Himachal Pradesh. EdF, France has been appointed as Prime consultant for Engineering-cum-Project Management for this project. Infrastructure development activities are in progress at site. Revised TEC, for the project, has been conveyed by CEA in June 2002. Work on the Diversion tunnel has been started in July 2002.The investment approval for the project by NTPC Board at an estimated cost of Rs. 4527 Crs. has been accorded. The tenders for the major civil works (Dam/ Spillway and Intakes, Power house and Penstoks, Hydro-Mechanical works etc) have already been invited. The project is scheduled to be commissioned in the 11th plan.

NTPC intends to take up development of hydroelectric projects in the States of Himachal Pradesh, Uttaranchal and States in the Southern and Western Regions. A major breakthrough in this regard has been achieved by NTPC with the allotment of two more Hydro projects viz. Tapoban-Vishnugad(360 MW) and Lohari-Nagpala (520 MW) to NTPC by Govt. of Uttaranchal. NTPC shall undertake detailed survey & investigation for establishing the Techno-Economic viability of both the projects for their implementation. MOU for both these projects has been signed with Govt. Of Uttaranchal on 31.12.2002.

LNG Procurement

In a bid to source cheapest fuel for expansion power projects at Anta, Auriaya, Kawas, Gandhar and Kayamkulam NTPC has resorted to source Liquefied Natural Gas (LNG) / Natural Gas through International Competitive Bidding (ICB) process. The process is being undertaken in two stages. As part of stage-I, the Request for Qualification (RFQ) has already been invited against which good response has been received. As part of stage-II, Request for Proposal (RFP) is expected in the early part of 2003.

JOINT VENTURES & DIVERSIFICATION

(A) Existing Joint Ventures

a) JV with BSES (UPL)
UTILITY POWERTECH LTD (a 50:50 Joint Venture Company of NTPC & BSES) has registered a turnover of Rs 67.66 crore for the year 2001-2002 and profit before tax was Rs 5.44 crore.

b) JV for Renovation and Modernisation (NASL)
"NTPC ALSTOM POWER SERVICES PVT. LIMITED" (NASL),(a 50:50 Joint Venture Company with ALSTOM POWER GENERATION AG, formally ABB KRAFTWERKE AG) has registered a turnover of Rs 9.41 crore for the year 2001-2002 .

c) JV for Power Trading (PTC)
Power Trading Corporation was incorporated as Joint Venture Company among PGCIL, NTPC and PFC with an equity sharing ratio of 30%, 15% and 15% respectively. Balance 40% was to be offered to the Financial Institutions, SEBs, Public etc. With the induction of NHPC as a member of the JVC the revised share holding pattern of CPSUs are placed at 8% each. Balance 68% will be offered to Financial Institutions, SEBs, Public etc. PTC has registered turnover of Rs 366.4 crore for the year 2001-02 and net profit after Tax was Rs 7.34 crore.

d) Joint Venture with SAIL

(i) NTPC formed a Joint Venture with SAIL on 16thMarch 2001, by acquiring 50% of SAIL's equity shares in SAIL Power Supply Co. Ltd. (SPSCL), a subsidiary of SAIL, for a consideration of Rs 58.65 crore. This

Joint Venture is operating & maintaining the CPP-IIs' of Durgapur and Rourkela Steel Plants (120 MW each).

The name of the Company has subsequently been changed to "NTPC-SAIL POWER COMPANY (Pvt.) LTD. (NSPCL). The turnover of the company for the year 2001-2002 was Rs. 158.57 crore (excluding coal). It declared a Dividend of Rs. 16.00 crore for the year 2001-02.

(ii) NTPC has formed another Joint Venture with SAIL on 22ndMarch 2002, by acquiring 50% of SAIL's equity shares in Bhilai Electric Supply Company Ltd. (BESCL), a subsidiary of SAIL for a consideration of Rs 16.60 crore, to take over, operate & maintain the CPP-II (74 MW) of Bhilai Steel Plant.

(B) Joint Ventures on the anvil

a) Joint Venture with Tamil Nadu Electricity Board (TNEB)

An MOU for a Joint venture between NTPC and TNEB has been signed on 12th July 2002 for setting up a coal based power station of 1000MW capacity at Ennore, using Ennore port infrastructure facilities. A shell company has been formed to take up all activities for setting up a power plant in joint venture. Presently suitable site is being identified for the project.

b) Joint Venture with Railways

NTPC has signed an MOU with Ministry of Railways on 18.02.2002 for setting up one or two power plants of approximate 2000 MW capacity to meet the traction and non-traction power requirements of Railways. Suitable site selection is in progress.

c) Formation of JV Company with Bangladesh Power Development Board (BPDB) and Petro Bangla

NTPC is exploring the possibility of setting up Gas-Based Combined Cycle Power Plant in Bangladesh through Joint Venture with BPDB and Petro Bangla. Proposal in this regard along with a copy of draft MOU was handed over to BPDB and Govt of Bangladesh. In the meantime, recently, BPDB has invited Request for Proposal (RFP) for the development of a 450 MW gas-based power plant to be set up as a Joint Venture Company. NTPC is proposing to submit the bid.

(C) Diversification

a) Distribution Company

A wholly owned subsidiary Company for power distribution business namely, **NTPC Electric Supply Company Ltd.** has been formed to take up power distribution activities. Presently discussions are on with UPPCL and UP Govt to take over Kanpur Electric Supply Co (KESCO) by this subsidiary company. Discussions are also on with Govt of MP and MPSEB for the take over of Gwalior City Circle by the subsidiary company.

b) Subsidiary company for Power Trading

NTPC has formed a wholly owned subsidiary company viz. **NTPC Vidyut Vyapar Nigam Limited** for trading in power. The excess power available with NTPC during the off-peak periods will be sold by this company to states that have a requirement for power at that time.

c) Subsidiary company for taking up Small Hydro Projects

"NTPC Hydro limited" a third subsidiary company has been incorporated on 12th December 2002. It is a wholly owned subsidiary company of NTPC for taking up small hydro projects of capacity less than 250 MW.

ADOPTION OF NEW TECHNOLOGY

NTPC is introducing 660 MW super critical units in its Sipat Power Project for the first time in India. This technology generates lower Carbondioxide per unit of generation due to higher conversion efficiency.

A study under USDOE/USAID funding has been initiated to conduct a techno-economic study for setting up a commercial scale demonstration power plant in India using Integrated Gasification Combined Cycle technology (IGCC).

NTPC is adopting **Flue Gas Conditioning (FGC)** system for new projects like Rihand-II (2x500 MW) as well as for retrofit of some operating plants.

CONSULTANCY SERVICES

Consultancy Wing was set up in 1989 to provide single window services to all domestic and international clients. Consultancy Wing, an ISO 9001 certified unit of NTPC has secured 25 Nos. orders valued at Rs. 28.19 crore, achieved turnover of Rs. 14.43 crore and booked a profit of Rs. 4.26 crore in the year 2001-2002. In the current year (2002-2003) upto November 2002 ,the consultancy wing has secured Eighteen orders valued at Rs. 38.97 Crores

SPECIAL PURPOSE VEHICLE FOR AFFORESTATION

A Special Purpose Vehicle for Afforestation has been registered as a society by the name of National power Afforestation Society (NPAS) under Societies Registration Act (1860) with the objective to increase forest cover and facilitate quick forest clearance for the projects that are likely to be taken up by NTPC and other power utilities in the near future.

The MOU covering the modalities for operationalising of NPAS between MOP and MOEF is under finalization at MOEF.

ASH UTILISATION

During the year 2001-2002, about 37.0 lakh tons of ash has been utilized for various productive purposes against MOU Excellent target of 34.0 lakh tons, which is approximately 14% of the total ash generation. The major ash utilization was in the areas of Cement and Asbestos Industry, Ash Dyke Raising and Land Development & Road Embankment. For the current year 2002-2003, the MOU target for excellent category (15%) shall be met.

NTPC's PARTICIPATION IN DEVELOPMENT OF POWER SECTOR

NTPC has played active role in the awareness campaign launched by MOP. Under the Accelerated Power Development and Reforms Programme, NTPC has been assigned major responsibilities under both distribution reforms and Renovation & Modernization. In its role as Adviser-cum-Consultant, NTPC is assisting the States in formulation of detailed project reports for strengthening of their distribution system, review implementation and carry out capacity building for the SEBs.

ISO CERTIFICATION

NTPC's pursuit for excellence with good system orientation has seen Engineering Division, Operation Services Division, Contracts & Materials Division, Consultancy Wing, Corporate Commercial, Corporate HR and the Power Management Institute (PMI) achieving **ISO-9001** certification. **Seventeen (17)** out of Twenty (20) Stations of NTPC have been accredited with **ISO – 9002** certification and Eighteen (18) out of Twenty (20) Stations of NTPC have been accredited with **ISO-14001** certification in the area of Environment Management systems.

AWARDS

NTPC has been the recipient of various prestigious awards for its performance in various areas and the major Recent Awards in this year have been:

NTPC's CENPEEP has received the Climate Technology Initiative Award from International Energy Agency in October 2002.

NTPC has been awarded the '**ICC – UNEP World summit Business Award** for Sustainable Development Partnerships' in recognition of contribution to sustainable development.

NTPC awarded **Golden Peacock Award for Excellence in Corporate Governance-2002** by the World Council for Corporate Governance in association with Centre for Corporate Governance and Institute of Directors.

NTPC is the recipient of **Shell Helen Keller Award 2002 –National Centre for Promotion of Employment for Disabled People (NCPEDP)**

NTPC has recently bagged the 2002 **Global Energy Award** presented by **M/s Deloitte Touche Tohmatsu and Platts** in the category of 'Community Development Program of the year'. NTPC has won the Confederation of Indian Industry award for excellence in infrastructure 2002.

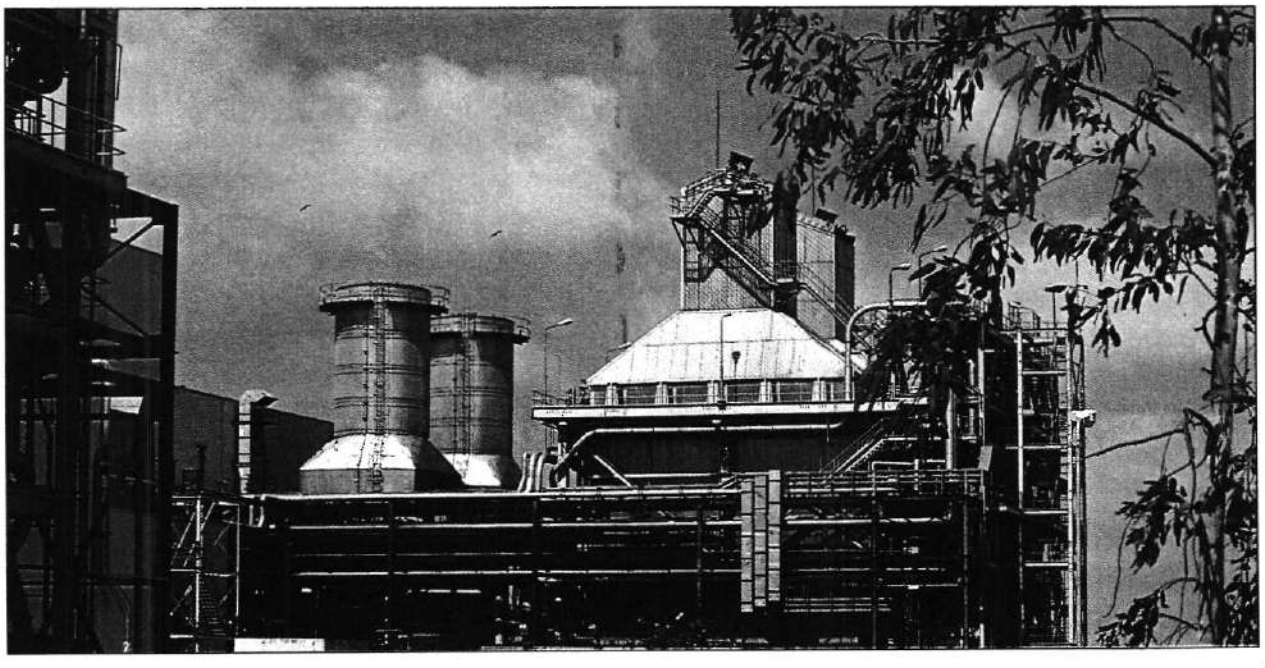
NTPC bagged Gold Award for 2001-02 in the Corporate Sector category from the Greentech Foundation, for Environment Excellence.

DETAILS OF NTPC PROJECTS ALREADY COMMISSIONED

I. COAL BASED PROJECTS

S.No.	Project	State	Commissioned Capacity (MW)
1.	Singrauli	UP	2000
2.	Korba	Chhattisgarh	2100
3.	Ramagundam	AP	2100
4.	Farakka	WB	1600
5.	Vindhyachal	MP	2260
6.	Rihand	UP	1000
7.	Kahalgaon	Bihar	840
8.	NCTPP	UP	840
9.	Talcher STPP	Orissa	1000
10.	Talcher TPS	Orissa	460
11.	Unchahar	UP	840
12.	Simhadri	AP	1000
13.	Tanda TPS	UP	440
	Total (Coal)		**16480**
II. COMBINED CYCLE PROJECTS			
1.	Auraiya	UP	652
2.	Anta	Raj	413
3.	Kawas	Gujarat	645
4.	Dadri	UP	817
5.	Jhanor-Gandhar	Gujarat	648
6.	Kayamkulam	Kerala	350
7.	Faridabad	Haryana	430
	Total (Gas)		**3955**
	TOTAL (Coal + Gas)		**20435**
III. CAPTIVE POWER PLANTS			**314**
	GRAND TOTAL		**20749**

Auriya Gas based Project



National Hydroelectric Power Corporation Ltd. (NHPC)

National Hydroelectric Power Corporation (NHPC) was set up in 1975. NHPC has become the largest organization for Hydro Power development in India, with capabilities to undertake all the activities from conceptualization to commissioning of Hydro Projects. Execution of Geothermal and Tidal Power Projects in the country has also been included in the corporate objectives of NHPC.

NHPC is a Schedule "A" Enterprise of the Government of India with an Authorized Share Capital of Rs. 7,000 Crores and an Investment base of over Rs. 13,500 Crores. The Government of India has approved in principle the enhancement of Authorized Share Capital to Rs. 10,000 crores.

The Corporation has following operating power stations and under-construction projects -

A. OPERATING POWER STATIONS

Following seven Projects have been commissioned by NHPC in India:

1.	Baira Siul (HP)	180 MW (3x60 MW)
2.	Loktak (Manipur)	105 MW (3x35 MW)
3.	Salal (J&K)	690 MW (6x115 MW)
4.	Chamera-I (HP)	540 MW (3x180 MW)
5.	Tanakpur (U'chal)	120 MW (3x40 MW)
6.	Uri (J&K)	480 MW (4x120 MW)
7.	Rangit (Sikkim)	60 MW (3x20 MW)
		2175 MW

During the current financial year (upto November 2002), NHPC Power Stations generated 7937.33 MU against the target of 7550.01 MU excluding a deemed generation of 129.57 MU. Anticipated energy generation for the balance months of the year 2002-03 is 1450 MU.

B. ONGOING PROJECTS

(Status ending November 2002)

1. Dulhasti HE Project (3x130 MW), J&K.

Out of the total length of 10581 m of headrace tunnel (HRT) to be constructed, so far 9901 m (94%) excavation of tunnel and 3368 m (34%) of concrete lining has been achieved. All other components of the Project have been completed. 400 kV GIS and oil filled cable have been successfully tested. In HEM works, cumulative progress of 97.35% has been achieved so far.

The Project is likely to be completed in December 2003. Total expenditure incurred upto Oct. 2002 is Rs. 3457.18 Crores.

2. Dhauliganga HE Project, Stage-I (4x70 MW), Uttaranchal

The Revised Project Cost Estimate of Rs. 1578.31 crores (Aug.'99 PL) including IDC was cleared on 07.07.2000. Major achievements during the year include completion of downstream portion of HRT (1920 m) from package Lot-II and excavation of powerhouse cavern ahead of schedule. The downstream of HRT (1920 m) in Lot-II has been day-lighted 5 months ahead of schedule. Excavation of Surge Shaft (pilot hole), Pressure Shafts I & II, Transformer cavern and tailrace tunnel have been completed.

So far about 4,28,500 cum (43%) Dam Embankment placement, 6276 sq. m (84%) Cut off wall concreting, complete excavation of Chambers of Desilting Basins (DB)-I & II and Hopper of DB-I, 4680m (88.5%) of Head Race Tunnel excavation, 765m (14.5%) of HRT lining, lowering of Draft Tube elbows of Units-2, 3 & 4, and lowering of Scroll Case of Unit-4 have been completed. In Dam area hill slope treatment and rock excavation is in progress. About 4,23,000 cum rock excavation has been completed, out of total one million cum. expected quantity.

Total expenditure incurred upto Oct.'02 is Rs. 765.34 Crs.

3. Chamera HE Project Stage-II (300 MW), HP

The Project is being executed on Turnkey basis and agreements with the consortium members were signed on 18.7.99. M/s Indo Canadian

Hydro Consortium, the turnkey contractor has completed mobilization and major work has started. About 82000 cum (92%) of Dam Concreting, 44500 cum (90%) of Stilling basin concreting, 245000 cum (95%) of excavation in Desilting Chambers I & II, 3100 m (89%) concrete lining of TRT, 1676 cum (90%) of Concrete Lining of Silt Flushing Tunnel and 7717 (99%) HRT Lining has been completed upto Nov. 2002.

The Project is scheduled for commissioning by May 2004, but all efforts are being made to complete it by June 2003. Total expenditure incurred upto October 2002 is Rs. 1316.34 crores.

4. Teesta HE Project Stage-V (3x170 MW), Sikkim

Teesta-V, located in East Sikkim is a run-of-the-river peaking scheme on Teesta River. The Project is to generate 2573 MU energy in a 90% dependable year. Development of infrastructure facilities is in progress. All major milestones including Diversion of River have been achieved. Excavation of all the Adits for Dam, HRT and Power House area has been completed. About 3500 m (20.5%) of HRT heading excavation out of a total of 17080 m has been completed. Excavation of all the three Intake Tunnels, Tailrace Tunnels, Gate Operation Chambers of Desilting Chambers has been completed. In Powerhouse and Transformer caverns, heading excavation has been completed and benching is under progress. The E&M and HM works have been started and most of the major works are progressing ahead of schedule.

The project is scheduled to be completed by February, 2007 Total expenditure upto Oct. 2002 is Rs. 500.68 crores.

5. Loktak Downstream H. E. Project (3x30 MW), Manipur

Loktak Downstream HE Project (90 MW) is located in Tamenglong District of Manipur. The Dam site is connected to Bishenpur town by a 56 Km long fair-weather road. It is a run of the river scheme to utilize the discharges of the Loktak Power Station that is in operation since March'84. The Project will yield benefits of 7 hours of peaking power daily and an annual energy generation of 420.25 million units in a 90% dependable year. It was sanctioned in December 1999 for a cost of Rs. 578.62 crores including IDC of Rs. 46.95 crores (at April 1999 price level) and was scheduled to be completed by December 2008. However, no active work has taken place due to the adverse law and order situation. The Ministry of Power is continuing to review and monitor the issues and concerns affecting the execution of the Project at senior levels with the state govt and the Ministry of Home Affairs. Total expenditure incurred on the Project upto Oct 2002 is Rs. 19.26 Crores.

6. Parbati HE. Project, Stage-II (4x200 MW), H.P.

Parbati HE. Project Stage-II on River Parbati (a tributary of Beas river) in Kullu District is a run of the river scheme. The Government of Himachal Pradesh has signed an agreeement wtih NHPC for the execution of all Stages of Parbati Hydroelectric Project (2051 MW) as Central Sector Projects through NHPC.

Parbati-II comprises of a Concrete Gravity Dam 91m above deepest foundation level, a 31230 m long 6 m diameter circular Headrace Tunnel, a 17 m diameter underground restricted orifice type Surge Shaft and two steel Penstocks that further feed 4 Pelton Type generating units of 200 MW each in a Surface Power House. The flow of river Parbati has been augmented by utilizing the water of Jigrai, Hurla and Jiwa Nallahs by constructing trench weirs, desilting works, interconnection feeder tunnels and drop shafts.

The Project is proposed to be operated as a peaking station and will generate 3076.95 MU in a 90% dependable year with 95% machine availability for Northern Grid. Investment approval to the Project was given on 11.09.2002 for an amount of Rs. 3919.59 Crores including IDC of Rs. 811.84 Crores at December 2001 Price Level.

At present land acquisition is in process. Road and Bridge works are in full swing.

C. NEW SCHEMES

S. No.	Projects	State	Inst. Capacity (MW)
1.	Koel Karo	Jharkhand	710
2.	Subansiri (Lower)	Ar. Pradesh	2000
3.	Sewa-II	J&K	120
4.	Teesta Low Dam-III	West Bengal	132
5.	Teesta Low Dam-IV	West Bengal	168
	Total		**3130**

1. Koel Karo HE. Project (710 MW), Jharkhand

The active work on the Koel Karo HEP in Jharkhand is yet to be started in the absence of R&R Plan to be finalised after a fresh survey of PAPs is conducted by the Govenment of Jharkhand. The arrangements for off-take of power are also to be finalised.

2. Subansiri (Lower) HE Project (2000 MW), Ar. Pradesh

Subansiri Lower HE Project (2000 MW) was entrusted to NHPC on 1st May 2000. Techno Economic clearance to the project has been accorded by CEA. Investment approval is under process.

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

Commercial viability has been ascertained and estimate for Stage-II works has been sanctioned. Technical clearance to DPR was accorded by CEA on 18.10.2002.

Investment approval is under process.

4. Teesta Low Dam Stage-III Project (132 MW), W.B.

A revised notification under Sec. 18(A) of the Electricity Supply Act was issued on 20.9.2002 for an installed capacity of 132 MW instead of 100 MW.

Site clearance for stage I and II activities was accorded by MOEF on 1.6.2001 and 5.12.2001 respectively. Techno-economic clearance has been accorded by CEA. The Government of West Bengal will purchase the entire power from it. Investment approval is under process.

5. Teesta Low Dam Stage-IV HE. Project (168 MW), W.B

Commercial viability has been ascertained. MOEF accorded site clearance for Stage I works but intimated their inability for Stage II site clearance in view of Supreme Court's decision, as the Project would affect some portion of Mahananda Wildlife Sanctuary. MOEF has been requested to organize the site visit to the Project at the earliest, so that the proposal could be considered by the Standing Committee of Indian Board for Wild Life (IBWL). DPR is under preparation.

D. PROJECTS UNDER SURVEY AND INVESTIGATION

S. No.	Projects	State	Inst. Capacity (MW)
1.	Parbati-III	H.P.	520
2.	Siang Lower	Ar. Pradesh	1700
3.	Siang Middle	Ar. Pradesh	1000
4.	Siang Upper	Ar. Pradesh	11000
5.	Subansiri Middle	Ar. Pradesh	1600
6.	Subansiri Upper	Ar. Pradesh	2000
7.	Uri-II	J&K	280
8.	Pakal Dul	J&K	1000
9.	Bursar	J&K	1020
10.	Shivsamudram	Karnataka	270
11.	Bav-I	Maharashtra	18
12.	Bav-II	Maharashtra	50
13.	Devade	Maharashtra	6
14.	Chamera-III	H.P.	231
15.	Upper Krishna	Karnataka	810
16.	Nimmo Bazgo (Alchi)	J&K	30
17.	Chutak	J&K	18
	Total		**21553**

Status of these projects is furnished below-

S. No.	Name of HE Project	Status
1.	Parbati-III (520 MW), H P	Commercial viability ascertained and Stage-II estimate approved. EIA/EMP studies under process. Infrastructure development in progress.
2.	Siang Lower (1700 MW), Ar. Pradesh	Feasibility Report may not be formulated till hydrological and meteorological data are obtained from China as major part of the catchment area falls in Tibet.
3.	Siang Middle (1000 MW), Arunachal Pradesh	Feasibility Report submitted on 10.9.02. for commercial viability CEA accorded concurrence for preparation of DPR and infrastructure development. Stage-II estimate amounting to Rs. 49.57 crores covering expenditure on preparation of DPR, EIA/EMP studies, and infrastructure development submitted.
4.	Siang Upper (11000 MW), Ar. Pradesh	Feasibility report may not be formulated till hydro-meteorological data are obtained from China as major part of catchment falls in Tibet.
5.	Subansiri Middle (1600 MW), Arunachal Pradesh	Feasibility Report for commercial viability has been submitted.
6.	Subansiri Upper (2000 MW), Ar. Pradesh	Feasibility Report submitted for commercial viability. CEA accorded concurrence for preparation of DPR and infrastructure development. Stage-II estimate amounting to Rs. 48.85 crores covering expenditure on preparation of DPR, EIA/EMP studies, and infrastructure development has been submitted. Topographical and Geological surveys completed. EIA Studies have been entrusted to M/s. MECON.
7	Uri Stage-II (280 MW), J&K	Commercial viability ascertained. Stage-II estimate sanctioned. Survey & investigations (S&I) works for preparation of DPR under progress.. Work of EIA/EMP studies awarded.
8.	Pakal Dul (1000 MW), J&K	Commercial viability ascertained. Stage - II estimate sanctioned but Work not progressing well due to non-availability of proper security coverage as law and order situation is not conducive.
9.	Bursar (1020 MW) J&K	Commercial viability ascertained. Planning, S&I works for preparation of DPR, and infrastructure development to be taken up.
10.	Shivasamudram (270 MW), Karnataka	Commercial viability accorded to feasibility report. Stage-II estimate held up due to interstate dispute. No work under progress. Proposal for Site Clearance Stage-II submitted. Clarifications sought by MOEF on land requirement for the Project being furnished
11.	Bav Stage-I (18 MW) Maha.	Clearance accorded to Stage-I estimate. S&I works for preparation of feasibility report taken up.
12.	Bav Stage-II (50 MW), Maharashtra	Project not found commercially viable. Review of technical features in progress. Proposal for Site Clearance St-II submitted and is under vetting by MOE&F.
13.	Devade (6 MW), Maharashtra	Stage-I estimate for survey & investigation recommended. S&I works for preparation of feasibility report in progress.
14.	Chamera St-III (231 MW), H.P	Commercial viability ascertained. Stage-II estimate sanctioned. S&I works for preparing DPR under progress. Land acquisition and infrastructure development being taken up.
15.	U. Krishna Cascade Projects 810 MW, Karnat.	All 3 Projects found commercially unviable with existing water availability. Karanataka Govt requested to release additional water from Narayanpur Dam to make them commercially viable.
16.	Nimoo-Bazgo (Alchi), (30 MW) Laddakh, J&K,	Stage-I estimate sanctioned. S&I works for preparation of feasibility report in progress. Hydrological and meteorological observations are continuing.
17.	Chutak (18 MW), J&K	Stage-I estimate sanctioned. S&I works for preparation of feasibility report in progress.

E. JOINT VENTURE PROJECTS

Indira Sagar Project (1000 MW) and Omkareshwar Project (520 MW) were being executed by the Govt. of Madhya Pradesh in the State Sector. On 17.4.2000, Govt. of MP requested the Govt. of India to get Indira Sagar and Omkareshwar Projects implemented through a Joint Venture between Government of India / NHPC and Govt. of Madhya Pradesh on mutually agreed terms and conditions. Subsequently an MOU was signed between NHPC and GOMP on 16.5.2000 for execution of Dam and Appurtenant Works (Unit-I) and Power House (Unit-III) of Indira Sagar and Omkareshwar Projects excluding transmission lines. Consequently, a joint venture Company called Narmada Hydroelectric Development Corporation (NHDC) was incorporated in August 2000 for execution of Indira Sagar and Omkareshwar Projects.

1. **Indira Sagar HE Project (8 x 125 MW), M.P.**

   The Union Government has accorded sanction to the incorporation of NHDC and to the cost estimate for execution of Indira Sagar Project in March 2002.

   The construction of all the project components is going as per schedule and the Project is expected to be commissioned by May 2005.

2. **Omkareshwar HE Project (8 x 65 MW), M.P.**

   TEC accorded for an estimated cost of Rs. 2006.06 crores at Sept. 2000 PL including IDC of Rs. 316.83 crores for the power component. The same has been updated to Rs. 2270.00 crores for Unit-I and Unit-III works at March 2002 PL. Infrastructure development has been taken up. The Project is scheduled to be commissioned in X Five Year Plan. Investment approval is under process.

3. **Purulia Pumped Storage Scheme (4 x 225 MW), West Bengal**

   An MOU was signed on 25.5.2001 between Govt. of West Bengal and NHPC for implementation of Purulia Pumped Storage Project (900 MW) as a joint venture project. After approval of Union Government a joint venture company (JVC) called National Pumped Storage Development Corporation Ltd. will be set up. Presently, the Project is being executed by WBSEB with financial assistance from Japan Bank for International Co-operation (JBIC).

   The process of investment approval has been initiated.

F. SMALL/MINI HYDROELECTRIC PROJECTS

1. **Kambang Small HE Project (6 MW), Ar. P.**

   The Project is under execution with NHPC on deposit basis from Arunachal State Government and is scheduled for commissioning in March 2003.

2. **Sippi Small HE Project (4 MW), Ar. P.**

   The Project is under execution with NHPC on deposit basis from Arunachal State Government and is scheduled for commissioning in March 2003.

3. **Halaipani Small HE Project (12 MW), Ar. P.**

   The Project is under transfer from Arunachal Pradesh Govt. to NHPC for execution on deposit basis. Pre-qualification of contractors for civil works has been done while that for E&M contractors is under finalization.

G. DEVELOPMENT OF GEOTHERMAL POWER

NHPC has been appointed as the Nodal Agency for exploitation of geothermal energy in the country by Ministry of Non-Conventional Energy Sources (MNES). Since the know-how for harnessing geothermal power for generation of electric power is not available either with NHPC or elsewhere in the country, an international Consultant/Contractor viz., M/s Geother Ex. USA have been hired for the purpose and ranking of geothermal projects of India has been got done. The pilot geothermal plant of 300 KW at Tattapani was not found viable hence a proposal for installation of 1 MW pilot plant was submitted to MNES, approval of which is still awaited. Further, pre-feasibility report for installation of another geothermal plant at Puga (J&K) is under preparation. .

H. COMMERCIAL

Dues against beneficiaries, as on 31/10/2002, are Rs. 2472.56 crores including surcharge of Rs. 1308.49 crores. Total payment received during the year upto 30/11/2002 is Rs. 1020.86 crores.

I. CONSULTANCY SERVICES

Consultancy Services Division acts as a window for generating additional business for the Corporation. Consultancy Services in all facets of hydropower from "Concept to Commissioning" are rendered. Domestic financial institutions like IFCI Ltd. and ICICI Ltd. that are funding major hydroelectric projects in private sector have engaged NHPC as "Lender's Engineer". During the financial year 2001-2002 Consultancy Services Division received assignments worth Rs. 1691 Lakhs and payments of Rs. 1116 Lakhs. In the current financial year till 30.11.2002, assignments worth Rs. 1691 Lakhs and payments totaling to Rs. 368 Lakhs have been received.

Completed Consultancy Assignment during 2002-2003 (as on 30.11.2002)

- Feasibility Study of Kalpong Downstream HE Project in N. Andaman for A&N Administration for a consultancy fee of Rs. 26.25 Lakhs.
- Design & Drawings for Vehicular Access at Nathpa & Wadhal Adits of Head Race Tunnel for NJPC Project for a consultancy fee of Rs. 7.49 Lakhs

Registration with International Institutions as Consultant

- NHPC has been registered as a "Consultant" with World Bank (WB), Asian Development Bank (ADB), African Development Bank (AfDB) and Kuwait Fund for Arab Economic Development (KFAED), Kuwait.

Major Ongoing Assignments 2002-03 (As on 30.11.2002)

- NHPC has been appointed as "Lender's Independent Engineer" by Industrial Finance Corporation of India Ltd. (IFCI) for 400 MW Maheshwar HE. Project for a consultancy fee of Rs 170.31 Lakhs. It is maiden entry of NHPC as Consultant to Financial Institutions for Projects in the Private Sector.
- Lender's Independent Engineer" for 300 MW Baspa-II HE. Project in HP appointed by IFCI (now lead bank is ICICI Ltd.) for a consultancy fee of Rs. 206.98 Lakhs.
- Techno-Commercial Evaluation of the offer received by Damodar Valley Corporation (DVC) from M/S. ALSTOM–BHEL Consortium, techno-commercial negotiation, associating in joint inspection and witnessing of major tests for Refurbishment of one Hydel Unit for Maithon HE. Project of DVC for a total fee of Rs. 157.50 Lakhs.
- Assistance for Indirasagar & Omkareshwar HE Projects of Narmada Hydroelectric Development Corporation Ltd. (NHDC) for a consultancy fee of Rs. 624.83 Lakhs.
- Commercial Management for Nathpa Jhakri HE Project (1500 MW) of NJPC Ltd. for a consultancy fee of Rs. 36.25 Lakhs.
- Contracts Management for Electro-Mechanical Works for Nathpa Jhakri HE Project for a consultancy fee of Rs. 39.70 Lakhs.
- Design & Engineering of Electro-Mechanical Works for Nathpa Jhakri HE Project for a consultancy fee of Rs. 40.32 Lakhs.
- O&M Management for Nathpa Jhakri HE Project for a consultancy fee of Rs. 38.96 Lakhs.
- Generating Equipment Review and Erection Review for Nathpa Jhakri HE Project for a consultancy fee of Rs. 33.60 Lakhs.
- Development of EDP & Communication Infrastructure for Nathpa Jhakri HE Project for a consultancy fee of Rs. 71.40 Lakhs.
- Feasibility Study for 6 mini/micro HE Projects in Andaman & Nicobar Island for A&N Administration for a consultancy fee of Rs.18.11 Lakhs
- Survey & Investigation for setting up large hydro Projects in Kaimur and Munger Distt., Bihar – Reconnaissance Survey (Phase-I) for a consultancy fee of Rs. 63 Lakhs.
- O&M of Gyelpozhing-Gelephu Single Circuit 132 KV Transmission Line in Bhutan for Kurichu Project Authority for a fee of Rs. 75.00 Lakhs, @ Rs. 15.00 Lakhs p.m. for 5 months.
- Association in Preparing & Filing of Petition with SERC / CERC for determination of tariff for energy generated from any one hydroelectric project of Uttaranchal Jal Vidyut Nigam Ltd. (UJVNL) of capacity larger than 25 MW for a consultancy fee of Rs. 21.74 Lakhs
- Detail study for existing Dhanikhari Concrete Dam, Port Blair for A&N Administration for a consultancy fee of Rs. 73.50 Lakhs.
- Consultancy Services for turnkey execution of 10 MW Mahanadi Reservoir Project (through EPC Contractor) at Gangrel (Dhamtari) for Chhatisgarh SEB for a fee of Rs. 36.50 Lakhs.
- Assistance in O&M of Kalpong HE Project for A&N Administration for a consultancy fee of Rs. 38.85 Lakhs for six months.
- Preparation of DPR for seven HE Projects identified in the Madei River Basin in North Goa, for a consultancy fee of Rs. 546 Lakhs.
- Consultancy Services for Preparation of Scope of Work for repair & maintenance of HM Equipment of Gangrel HE Project for Chhatisgarh State Electricity Board.
- Consultancy Services for Construction of Kambang (6MW) and Sippi (4 MW) Small HE Projects in Arunachal Pradesh on deposit basis.

Completed Consultancy Assignment during 2001-2002

- Techno-Economic Feasibility Study of Earthen Dam to be constructed downstream of the existing concrete Dhanikhari Dam for water supply to Port Blair for Andaman & Nicobar

Administration for a consultancy fee of Rs. 44.10 Lakhs.

- Construction Management, Quality Control and other services for Bakreshwar Thermal Power Project for WB Power Development Corporation for a consultancy fee of Rs. 331.13 Lakhs
- Construction of Nganglam-Tintibi-Gelephu Single Circuit 132 KV Transmission Line on Turnkey Basis for Kurichu Project Authority (KPA), Bhutan. Award value of the assignment is Rs. 4500 Lakhs out of which Agency Charges of NHPC are Rs. 600 Lakhs.
- Operation and Maintenance of Gyelpozhing-Gelephu Single Circuit 132 KV Transmission Line in Bhutan for KPA for a fee of Rs. 75 Lakhs.

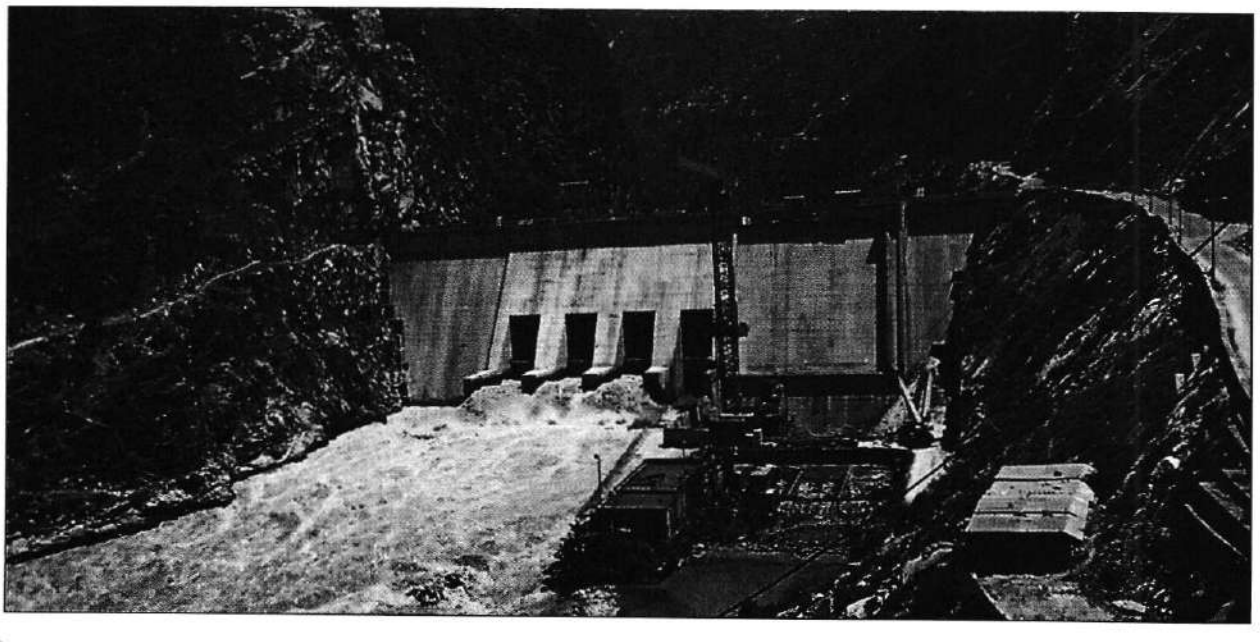
MOUs signed by NHPC

- With BBMB for establishing JVC for providing consultancy services on Hydropower.
- With Harza Engineering Co. International L.P., USA for jointly providing consultancy services to outside agencies in the field of Hydropower in India and abroad.
- With Heavy Engineering Corporation (HEC), Ranchi for mutual sharing of expertise and resources for development of hydropower projects in India & abroad
- With Lahmeyer International GmbH, Germany for mutual collaboration for providing consultancy and management services for consultancy and turnkey execution of projects in the field of hydropower plants and associated structures in India and other countries.
- With IFCI Ltd. for sharing expertise and experience for accelerated development of hydro potential of the country, for providing consultancy services for turnkey execution and as Lender's Independent Engineer for projects financed by IFCI Ltd.
- With UTI Bank Ltd. for providing Techno-Commercial Advisory services to various organizations in state/private/joint venture companies/Government of India undertaking engaged in execution/operation of hydro projects in India and for providing services as "Lender's Engineer" for various projects financed by UTI Bank Ltd.

J. PERFORMANCE AGAINST MEMORANDUM OF UNDERSTANDING (MOU)

MOU was signed between NHPC and Ministry of Power in March 2002 for the year 2002-03 setting targets of different performance parameters such as Capacity Index, Generation, Financial parameters of Gross Margin and Net Profit as percentage of Net Worth, achievement of project implementation milestones, Implementation of CAT plan, R&D activities, HRD Programme, Survey and Investigation, IT and Communication, Consultancy assignments and Corporate Plan etc. NHPC has been rated as "Excellent " for the seventh consecutive year till March 2001. For the year 2001-02 also, provisional "Excellent " rating has been accorded by DPE.

Dulhasti HE Project (390 MW), J&K



CHAPTER - 17.3

Rural Electrification Corporation Limited (REC)

Rural Electrification Corporation Ltd.(REC) was incorporated under the Companies Act, 1956 in the year 1969 with the main objective of financing rural electrification schemes in the country. 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.

UPGRADATION OF REC TO SCHEDULE 'A'

The Govt. of India upgraded the status of REC from Schedule 'B' to Schedule 'A' Enterprise in December, 2001 in recognition of REC's consistent outstanding performance over the years.

The current mission of REC is to facilitate availability of electricity for accelerated growth and for enrichment of quality of life and to act as a competitive, client-friendly and development oriented organization for promoting and financing projects covering power generation, power conservation, power transmission and power distribution network in the country. REC is thus endeavouring to promote and finance projects covering integrated system improvement, power generation, power conservation, power transmission, decentralized and non-conventional energy sources, renovation and maintenance, power distribution with focus on pumpset energisation, rural households electrification and other related works and to expand and diversify into other related areas and activities.

In the recent years, REC has been consistently achieving outstanding performance and surpassing previously established records in all key areas of its operations viz. Loan Sanctions, Disbursements, Recoveries, Profit before Tax etc. For the year 2001-02 also, REC attained highest ever levels of achievements and crossed Rs.500 crore mark in Profit before Tax for the first time.

PERFORMANCE OF REC AT A GLANCE

The highlights of performance of REC for the year 2001-02 alongwith the comparative figures for the preceding 4 years are given below:-

(Rs. in Crore)

	1997-98	**1998-99**	**1999-2000**	**2000-01**	**2001-02**
Loan sanctioned	1214	2879	4678	6308	**6764**
Loan Disbursed	1094	2203	3051	4109	**4722**
Recovery of Dues	1156	2276	2716	3582	**4064**
Resource Mobilisation	355	436	981	1611	**3360**
Profit before Tax	127	391	426	453	**503**
Profit after Tax	95	299	314	336	**388**
Networth	1284	1579	1892	2148	**2466**
Dividend	10	50	50	67	**120**
Business per employee	2.37	4.81	6.22	8.29	**9.72**
	1979-80	**1989-90**	**1999-00**	**2000-01**	**2001-02**
Budgetary support as % of total Resources	86%	32%	13%	10%	1.42%

MEMORANDUM OF UNDERSTANDING (MOU)

Against the performance parameters set in the MOU entered into by REC with the Ministry of Power, Govt. of India, for the year 2001-02, REC recorded "Excellent" results both in terms of gross margin as well as net profit to networth and it has qualified for "Excellent" grading for the 9th year in succession.

SHARE CAPITAL

The Govt. of India contributed a sum of Rs.50 crore during the year towards Equity Share Capital of REC. The paid-up Equity Share Capital of REC as on 31st March, 2002 was Rs.780.60 crore. During the year, the Authorized Share Capital of REC was increased from Rs.800 crore to Rs.1200 crore.

MOBILISATION OF FUNDS

The Govt. of India granted Capital Gains Bonds benefits to REC with effect from 1.4.2001, under Section 54 EC of the Income Tax Act, 1961 and also gave it permission to float Infrastructure Bonds under Section 88 of the Income Tax Act, 1961. REC thus floated Capital Gains Tax Exemption Bonds and Infrastructure Bonds for the first time by tapping
individual investors, in addition to the traditional institutional investors, mobilising therefrom Rs.1397 crore and Rs.5 crore respectively during the year. This resulted in an increase of the investor base of REC from about 1000 at the beginning of the financial year 2001-02 to more than 15000 at the end of the year. The total amount mobilised from the capital market during the year was Rs.3360 crore which included amount raised by issue of Priority/Non-Priority Sector Bonds and Mumbai Inter-Bank Overnight Rate (MIBOR) Linked Bonds.

The Debt Instruments/Bonds being floated by REC continued to enjoy 'AAA' Rating – the highest rating – during the year.

PRE-PAYMENT OF GOVT. LOANS

For the first time, REC did not borrow any money from the Govt. of India (other than JBIC Loan of Rs.37 crore) and in view of its improved finances, REC pre-paid Govt. Loan of Rs.643.60 crore during the year 2001-02.

CUMULATIVE PERFORMANCE OF REC UPTO 31.3.2002

Cumulatively, upto the end of March, 2002, 38314 projects have been sanctioned by REC involving a loan amount of Rs.35353 crore. Against this, a sum of Rs.24687 crore has been disbursed in accordance with
phasing of projects and their physical progress. It includes a sum of Rs.317 crore disbursed to SEBs, Power Depts. and State Govts. as grant from Govt. of India under Kutir Jyoti Programme towards provision of 48.50 lakh single point light connections to the households of rural poor.

PROGRESS OF PERFORMANCE DURING THE YEAR 2002-2003 UPTO NOVEMBER, 2002

REC has sanctioned 207 new projects involving a loan amount of Rs.4,745 crore and disbursed a sum of Rs.2308 crore to various SEBs and Power Utilities which includes a grant of Rs. 15 crore under Kutir Jyoti Programme.
The main thrust of REC in sanctions and disbursements has been to meet the emerging needs of the SEBs and Power utilities for investment in areas of system improvement, procurement/ replacement and installation of energy meters, transformers, conductors and other modern equipments required for strengthening and augmenting rural power distribution infrastructure.

CENTRAL INSTITUTE FOR RURAL ELECTRIFICATION (CIRE) OF REC BASED AT HYDERABAD.

Upto November, 2002, CIRE conducted 13 Training Programmes. A total number of 294 officers from various Electricity Boards, Generation, Transmission and Distribution Companies, Regulatory Commissions, Private Power Companies and Manufacturers participated in the programmes accounting for 1013 participant days. The programmes were held in the areas of Power Sector Reforms, PPA, Distribution Technology Management, Energy Efficiency & Conservation and Information Technology for Power Sector. 12 progammes are scheduled to be conducted from December, 2002 to March 2003, including two seminars, one on "100% Metering – Implications and Challenges" and the other on "SCADA Systems to Power Utilities".

North Eastern Electric Power Corporation Ltd. (NEEPCO) Shillong

The North Eastern Electric Power Corporation Ltd. (NEEPCO) was constituted in 1976 under the company's act 1956 with the objective of developing the power potential of the North Eastern Region of the country through planned development of power generation projects which in turn would effectively promote the development of the North Eastern Region. Since then NEEPCO has grown into one of the pioneer companies with an authorised share capital of Rs. 2500.00Crs. The main objectives of the North Eastern Electric Power Corporation are to add to the power generating capacity in the North Eastern Region by installing Hydro and Thermal power plants, to ensure optimum utilisation of commissioned generation projects, to generate adequate internal resources ensuring justifiable return on investment, to continue sustained efforts to obtain the receivable from State Electricity Boards/ Departments and to undertake long term feasibility studies for optimum development of Hydro Power resources of the North Eastern Region.

Out of the total installed capacity of 1785.72MW (Grid) in the North Eastern Region, NEEPCO is contributing a total of 1105 MW (Comprising 375 MW of Thermal and 730 MW of Hydro Power), thus meeting more than 61.87% of peak demand / energy needs of the region.

1. Capacity Addition Programme for the 10th Plan :

During the 9th Plan, NEEPCO achieved 754 MW (174 MW Thermal and 580 MW Hydro Power) as targeted. Capacity addition programme for the 10th Plan of NEEPCO has been set at 585 MW (500 MW Thermal and 85 MW Hydro power).

2. Projects under operation and maintenance :

The following completed Projects are under Operation and Maintenance:

Sl No.	Name of the Projects	State	Installed Capacity
1	Kopili H.E. Project.	Assam	150 MW
2	Kopili H.E. Project Ist Stage Extension.	Assam	100 MW
3	Assam Gas Based Combined Cycle Power Project.	Assam	291 MW
4	Agartala Gas Turbine Power Project.	Tripura	84 MW
5	Doyang H.E. Project.	Nagaland	75 MW
6	Ranganadi H.E.Project.	Arunachal Pradesh	405 MW
	TOTAL		**1105 MW**

POWER GENERATION :

During 2002-2003, generation of power up-to 30-11-2002 was 1048.1536 MU against a target of1489.00 MU by Hydro Power Stations and 865.9612 MU against a target of 1211.00MU by Thermal Power Stations. The cumulative generation since inception till Nov' 2002 by NEEPCO projects was 21308.0460 MUs. Project wise anticipated targets to be achieved during the remaining period of the year 2002-2003 i.e. from Dec' 2002 to March' 2003 are given below:

I)	Kopili H.E. Project	113.00 MU
II)	Kopili H.E. Project - Ist Stage Extension	97.00 MU
III)	Assam Gas Based Power Project.	582.00 MU
IV)	Agartala Gas Turbine Power Project.	207.00 MU
V)	Doyang H.E. Project.	36.00 MU
VI)	Ranganadi H.E.Project.	140.00 MU
	Total	**1175.00 MU**

Total earnings (Provisional) in terms of sale of Power during the year upto 30-11-2002 from Kopili H.E. Project is Rs. 57.79Crs., Assam Gas Based Power Project, Kathalguri is Rs. 90.56Crs., Agartala Gas Turbine Project is Rs. 64.23Crs., Doyang H.E. Project is Rs.11.63Crs. and that of Ranganadi H.E is Rs. 29.22 Crs.

3. PROJECTS UNDER EXECUTION

i) **Tuirial H.E. Project (60 MW) - Mizoram:** The Tuirial H.E. Project in Mizoram is located in the Border of Cachar District of Assam and Aizwal District of Mizoram and comprises of construction of a 77 M high Homogenous Earth fill Dam across the Tuirial river with an installed capacity of 2 x 30 MW, surface Power House on the left bank of the river. The cost of the Project at June' 97 price level is Rs. 368.72Crs.(including IDC) and completion cost of the Project is Rs.448.19Crs. at Jan '97 price level. The project has been taken up as a Central Sector Scheme under loan assistance of JBIC, Japan with 85% of the project cost being financed under JBIC loan assistance and balance 15% from Govt. of India's assistance. The infrastructural work for the project is nearing completion. Land acquisition for the project area is completed and for submergence area is in progress.

   The Project is scheduled to be commissioned in 2006 - 07.

ii) **Kopili H.E. Project -Stage - II (25 MW) - Assam**: During the construction of the Ist Stage of the Kopili H.E. Project, it was found feasible to set up a second Power House at Khandong with an installed capacity of 1 x 25 MW named as 2nd Stage. The proposed location of the Power House is near the existing Khandong Power House. The scheme consists of a bye-pass tunnel of length 325 M. from Khandong by pass tunnel, one 2.75 M. Dia. Penstock, a surface Power House & a tail race to release the water into Umrong Reservoir. The boring of the bye-pass tunnel was completed during Ist Stage works of Khandong System. The HRT had been designed to cater to the additional water requirement for this scheme. The estimated cost is Rs. 76.09Crs.(including IDC) at Sept' 98 price level and completion cost of this Project is Rs. 99.35Crs (including IDC). All the 3 (three) packages have already been awarded. The Project envisaged producing additional 301 MU per year. The Project is scheduled to be commissioned by July, 2003.

iii) **Tuivai H.E. Project (210 MW)- Mizoram :** The proposed Tuivai H.E. Project is located in Aizwal district of Mizoram. The project comprises of construction of a 155 M.high Rock-fill Dam across the Tuivai river. The impounded water is proposed to be taken by one 4.95 km. Long HRT of 6 M. dia. to a surface Power House located in the right bank of the river with installation of 3 (three) units of 70 MW each. The project was initially investigated by CWC. All statutory clearances including Forest and Environmental clearance from MOEF & GOI have been received. TEC for the project has also been accorded. During the year 2002 - 03, pre- construction activities like development of infrastructural facilities and detailed survey and investigation works are in progress. Telecommunication System on the project site has been established. The 2nd stage proposal under the three stage clearance procedure, for the Hydro Project is under examination. The Project is scheduled to be commissioned within a period of 66 months from the date of 3rd Stage investment approval.

iv) **Kameng H.E. Project (600 MW) - Arunachal Pradesh:** The proposed Kameng H.E. Project is located in the West Kameng district of Arunachal Pradesh. The project comprises of construction of a 96.50 M. high concrete gravity Dam across the river Bichom and diverting the water through a 6.70 M. Dia., 8.75 km long Tunnel to Tenga reservoir created by constructing a 60.50 M. high concrete gravity Dam across the Tenga river. Water of both these rivers is proposed to be taken through a 7.0 M. dia, 5.86 km long HRT to Kimi Power House with an installed capacity of 4 x 150 MW = 600 MW. The Techno-economic clearance and Forest & Environment clearance of the project has been obtained. Approval for 2nd stage clearance under Three-Stage Clearance procedure at a cost of Rs.94.54 Crs. of the project has been accorded on 11/01/02. Agreement for Turnkey – execution of Balipara –Tenga – Kimin Power House 132 KV Transmission line and sub- station at Balipara and Tenga, between NEEPCO & Powergrid Corporation of India Ltd. has been signed. 432.456 Ha., land has been acquired by NEEPCO. Accommodation for Staff and works for road communication, are in progress.

v) **Tipaimukh H.E. Project (1500 MW)- Manipur :** This Project was initially investigated by CWC and then by Brahmaputra Board. It has been

handed over to NEEPCO for execution. MOU with the Govt. of Manipur has been signed. NEEPCO has submitted the Revised DPR of the Project to the State Government of Manipur. CEA has considered techno-economic appraisal and found in order at a cost of Rs.5163.86 crs. including IDC of Rs.757.26 Crs. at Dec.2002 price level. NEEPCO is continuing Hydro- meteorological observations after taking over from the Brahmaputra Board through the Staff transferred from Brahmputra Board. Government of Mizoram and Government of Assam issued NOC in August 2001 and on 12th July 2002 respectively. TEC and investment approval are to be obtained.

NEW SCHEMES FOR EXECUTION :

The following new schemes have been identified for execution as Central Sector Projects by NEEPCO:

1. **Lower Kopili H.E. Project (150 MW) - Assam :** The proposed Lower Kopili H.E. Project is located in N.C. Hills district of Assam. The proposal comprises of construction of a 71.35 M. high concrete gravity Dam across the Kopili river in the down stream of the Kopili Power station. The impounded water is proposed to be lead through a 6.8 M dia. (Horse shoe) and 3.56Km long Head Race Tunnel to a semi-under ground Power House with installation of 3 (three) units of 50 MW each. Presently Hydro-meteorological investigation of the project is being continued.

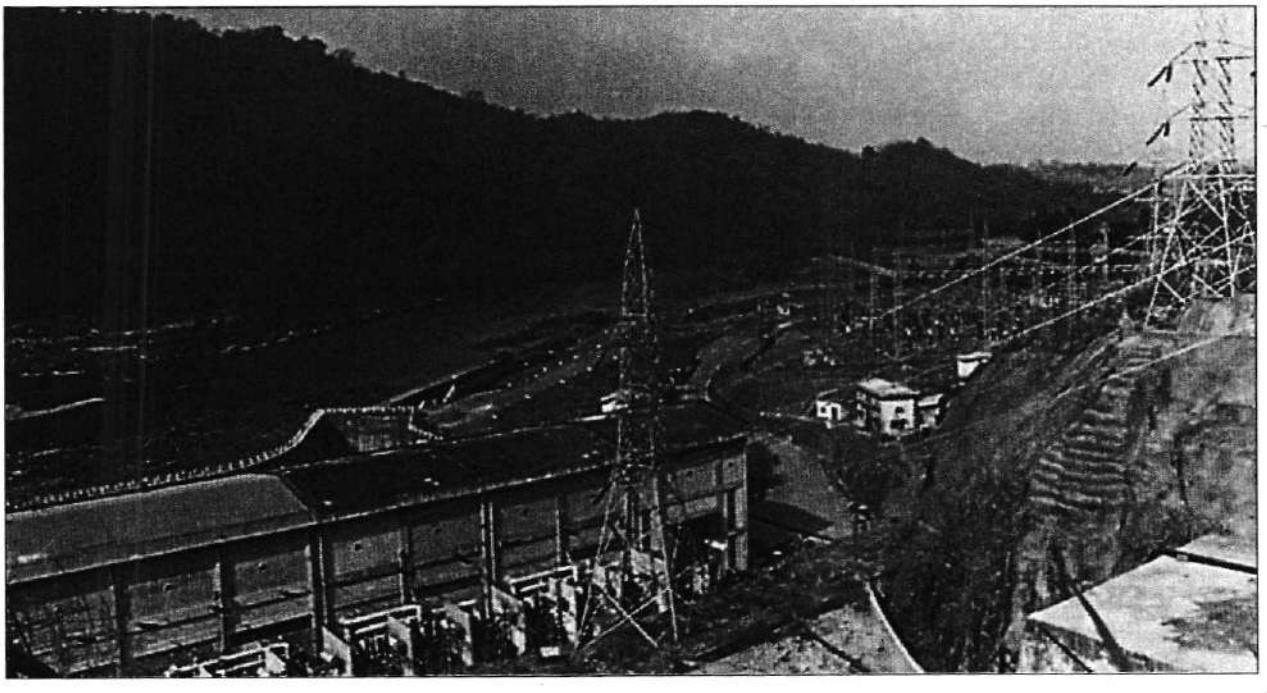
   i) Feasibility Report submitted during the month of Oct'2000.

   ii) Notification under Section 18A of the Electricity (Supply) act 1948 has been obtained on 18/10/2002. The MOU with the Govt. of Assam for execution of the project and other statutory clearances required for granting TEC could not be obtained yet. Estimate for 2nd Stage activities is under preparation and will be submitted shortly

2. **Ranganadi H.E. Project -Stage-II (180 MW) - Arunachal Pradesh :** This Project is located 10 KM upstream of the present Ranganadi Diversion Dam. The Project envisages construction of a 134M high concrete Dam with installed capacity of 180MW. Pre-feasibility report has already been submitted. However, 2nd stage clearance of the Project is under progress. Commercial viability obtained.

3. **Tripura Gas Turbine Power Project - Tripura :** The proposed Tripura Gas Turbine Project is located at Manarchak of Tripura and its phased capacity will depend on availability of gas. The MOU between NEEPCO and Govt. of Tripura was signed on 31/12/2000. TEC clearance was accorded on 19/02/2002. MOEF clearance for this Project is still awaited.

Kopili HE Project Stage-II



CHAPTER - 17.5

Power Finance Corporation (PFC)

The Power Finance Corporation Limited (PFC) was incorporated in 1986 under the Companies Act,1956. The mission of PFC is to function as the prime Development Financial Institution dedicated to the growth and overall development of the Power Sector. The borrower-portfolio of PFC comprises of State Electricity Boards (SEBs), State Generation Transmission & Distribution Companies, Municipality-run power utilities and also central, private, joint sector and co-operative sector power utilities. The funds provided by the Corporation are in the nature of additionality to Central Plan Allocation (in respect of SEBs, etc.) and based on the merits of the individual projects. The Power Finance Corporation is a schedule 'A' organisation.

SHARE CAPITAL

The entire paid-up share capital of the Corporation is held by the President of India and his nominees. During the year there has been no change in the paid-up share capital of the Corporation, and at the end of March, 2002, it stood at Rs. 1030.45 crores.

PERFORMANCE HIGHLIGHTS

As on 30.11.2002, PFC sanctioned loans of the order of Rs. 8590 crores (during 2002-03) for a wide range of power projects in various parts of the country and disbursements are to the tune of Rs. 3761 crores. As on 30 November, 2002 the Authorised Capital and the Paid-up (equity) capital of the Corporation stood at Rs. 2000 crores and Rs. 1030 crores, respectively. The Profit Before Tax (provisional), as on 30.09.2002 was about Rs. 665 crores. In addition to the above, PFC had paid a dividend of Rs. 200 crores for the year 2001-02 and Rs. 11 Crs. interim dividend for 02-03 to the Govt. of India which owns all its equity. Besides being a consistently profit-making Corporation, PFC was placed in the highest category of 'Excellent' for the Ninth consecutive year, by Govt. of India on the basis of its overall performance during the year 2001-02.

A table showing at a glance year-wise financial performance of PFC, for the past 3 years, is as under:

FINANCIAL PERFORMANCE AT A GLANCE (LAST 3 YEARS)

Year	1999-2000	2000-01	2001-02
Sanctions	6492	7706	8506
Disbursements	3405	3230	5150
Profit before tax	777	772	963
Profit after tax	622	604	778
Realisation	993	1416	1992
Dividend	124.5	150	200

RESOURCE MOBILISATION – DOMESTIC

The Corporation has continued to mobilise funds from the domestic market at competitive rates through bonds/term loans from banks/FIs. Upto Nov. 2002, Corporation has raised Rs. 4290 crores out of which Rs. 630 crores were raised through long term loans at fixed rate from banks, LIC/FIs, Rs.2247 crores as short term loans from various banks at a fixed rate and Rs. 1414 crores by way of taxable bonds.

EXTERNAL CREDIT UTILISATION

Asian Development Bank:

Second line of credit from ADB is approved by ADB for an amount of US $ 150 Million for the projects in the reform-oriented states, and the agreement for the same will be signed shortly.

Kreditanstalt fur Wideaufbau(KfW);

PFC signed loan agreement with KfW of Germany in June, 1995 for mixed credit of DEM 46.5 Million under Energy Investment Programme, for financing rehabilitation of existing Power Plants and distribution system. Rehabilitation of Koyna HEP Stage I &II in Mahrashtr and Hirakud HEP Stage I (Unit 3 & 4) are to be covered from the loan. PFC has disbursed Rs. 54.4 crores as on 30th Nov.2002 for Koyna HEP of MSEB and Rs. 9.7 crores to OHPC.

INSTITUTIONAL DEVELOPMENT OF 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 is view OFAPs consisting of series of time bound action plan for different functional area of the utilities are

formulated. The OFAPs are formulated with active participation of the concerned utility and approved by the respective Board of the Utilities as well as State Govt. The implementation of various activities included in OFAP are monitored quarterly and progress report on the same is sought from the utilities. As on 30th Nov.2002, OFAPs are in place for 9SEBs, 14 SGCs, 1 autonomous body, 8 transmission & distribution companies and 4 department run power utilities. OFAPs have been instrumental in bringing about a perceptible change in quantitative and qualitative performance of State Power Utilities functioning.

It was not possible to achieve improvements beyond a limit on the basis of OFAP within the existing structure and with a view to take the reform process to its logical conclusion, PFC facilitates formulation of Reform OFAP. R-OFAP besides aiming at bringing about efficiency improvements in the state power sector and focuses on reform/restructuring activities needed to create an institutional mechanism for the self sustainability of the sector in the long run.

During the year 2002-03, R-OFAPs have been entered into with PSEB, TNEB, APGENCO, KPCL, APTRANSCO, HVPNL, RRVPNL, Jodhpur VVNL, Ajmer VVNL

FINANCIAL ASSISTANCE FOR POWER SECTOR STUDIES

Power Finance Corporation (PFC) being a developmental financial institution provides technical and financial assistance by strategically providing grants, interest free and/or concessional loans to carry out such power sector/R&M/Distribution system studies. The major studies completed during the current financial year 2002-03 are Renovation, Modernisation & Upgradation/ LE Studies of Vaitarna HEP and RLA/ LE Studies of Bhusaval TPS Unit I of MSEB, R&M/LE Study of GND TPS Unit III (Bhatinda TPS) of PSEB and Study for framing HR Policies of UPRVUNL.

Grants worth Rs. 1.3 crores is sanctioned by PFC during the year 2002-03 and an amount of Rs. 2.8 crores disbursed upto Nov. 2002 towards studies R&M Thermal, Reform & Restructuring and Institutional Development etc. So far PFC has sanctioned Grants worth of Rs. 36 crores (till Nov. 2002) and released grants worth Rs.25.5 crores.

RENOVATION MODERNISATION & LIFE EXTENSION OF THERMAL & HYDRO PLANTS

PFC, as on Nov. 2002, has cumulative sanctioned loans worth Rs.604.5 crores towards R&M (Hydro) and Rs. 2701.6 crores towards R&M (Thermal). The corresponding cumulative disbursements till Nov. 2002 are Rs. 471.6 cores and Rs.2045.2 crore for R&M (Hydro) and R&M (Thermal) respectively.

PRIVATE SECTOR FINANCING

PFC has so far supported 7352 MW of Generation Capacity by way of sanctioning financial assistance of about Rs.5521 crores to 31 Private Power Projects. This includes important generation projects viz. Lanko Kondapalli Power Projects in Andhra Pradesh, Captive Power Plant of Sanghi Industries in Gujarat, Malana Power in Himachal Pradesh, Balaji Power in Tamil Nadu etc. During the current Financial Year 2002-03, PFC has sanctioned a number of loans to important private power projects including 156 MW CCGT of Gujarat State Energy Generation in Gujarat, 454 MW Gas based TPS of Gautami Power Projects and 4 nos. Bio-mass based Private Power Projects in Andhra Pradesh.

During the current Financial Year so far PFC has sanctioned project loans worth Rs.416.45 crores and Rs.20.50 crores stands disbursed. Cumulatively, 714 MW generation capacities in Private Sector have been commissioned with PFC's support, so far.

ACCELERATED GENERATION & SUPPLY PROGRAMME (AG&SP)

During the 9th Plan, the programme has helped in commissioning of new Generation Capacity of 5859 Mw consisting of 5454 MW in the State Sector and 405 MW in the Central Sector. Generation Capacity addition in the State Sector during the 9th Plan is 88% of the original targeted capacity.

The disbursement under AG&SP during 2001-02 was Rs.2855 crores and the cumulative disbursement in 9th Plan was Rs.9609 crores.

The AG&SP scheme has now been extended to Tenth Plan with the following modifications

a) The eligibility for funding is linked to performance on agreed minimum milestones of reform
b) Interest subsidy is reduced from 4% to 3%
c) The scope of assistance under the scheme to be limited to only the State Sector generation and R&M projects.

CONSULTANCY SERVICES

PFC offers Consultancy Services to both state-owned and private power utilities in 7 broad areas; Restructuring and Reform activities, operationalisation of reformed entities; Financial management of resources including mobilisation and accounting systems; Project-structuring/ planning/ development/ Specific studies, implementation management, efficiency improvement projects; Development of sustainable human resource plans; Communication and information dissemination; Information management systems; and Legal and contract related services for the power sector.

The thrust area for consultancy is to provide support for operationalisation of new power entities including SERC and to broaden the equity base of the power entities in an effort towards their commercialization of operations.

PFC has an unmatched record of having undertaken 9 tariff related assignments covering the whole spectrum of tariff fixation; assistance to the Utility in formulation of Tariff, to the Regulator in scrutiny of the Tariff Petition, to the State Govt. in preparation of objections to the petition as well as assistance to a utility in filing of review petition. PFC has in the area of resource mobilisation been retained as advisors to Government of Himachal Pradesh for three consultancy assignments wherein PFC assisted GoHP in raising a total of about Rs.1250 crores. In addition, PFC has undertaken assignments on feability of JV Partner Selection for Nuclear Power Corporation India Ltd. (NPCIL) Kaiga 3 & 4 Atomic Power Project located in Karnataka; Consultancy Services in the area of contractual, (commercial and legal) aspects of "Refurbishment contract for Panipat TPS (4x110 MW)" of Haryana Power Generation Corporation Ltd. (HPGCL); in the area of Project Appraisal for an IPP in Karnataka and in developing Accounting Systems for unbundled entities in Rajasthan.

PFC has since October 2000 and upto November end 2002 undertaken 16 Consultancy Assignments in 10 different states and plans to carve out a niche in the field of Contract Management related assignments in the time to come.

TARGETS, ACHIEVEMENTS (1/4/2002 TO 30/11/2002)

Under AG&SP scheme the achievements under gross margin, net profit to closing networth and operating ratio are as per the half yearly results as on 30.9.2002. Further, apart from the sanction of loans to the extent of Rs.8590 crores, PFC has sanctioned Rs.25 crores to be invested in equity fund of power projects

(Rs. in crores)

Parameters	Target for 2003	Achievement as on 30.11.02 (Unaudited Financial Result)	Different between Target & Achievement 1.4.2002 to 30.1102
Sanctions	7500	8590	-
Disbursements	4500	3761	739
Realisation	92%	95%	-
Resource Mobilisation	2620	3091	-
AG&SP (Disbursement)	1200	-	-
Gross Margin	695	665	30
Net Profit to Closing Networth (%)	11.80%	11.14%	-
Operating Ratio (%) (Operating cost to Operating Revenue)	66.92%	47.57%	-

FUTURE PERSPECTIVE – PLANNED DURING THE YEAR 2002-03

During the current financial year 2002-03, PFC has committed to achieve a disbursement level of Rs.4800 crores to achieve the excellent rating for disbursement under the MoU signed with the Government of India and are confident of exceeding that level. During the 10th Plan, PFC's target for disbursement is Rs.43,300 crores for various power and allied projects.

CHAPTER - 17.6

Power Grid Corporation of India Ltd (POWERGRID)

Power Grid Corporation of India limited (POWERGRID) was incorporated on October 23, 1989 with an authorized share capital of Rs. 5,000 crores 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 Organisations during 1992-93 in a phased manner. In addition to this, it also took over the operation of existing Regional Load Despatch Centres from CEA in a phased manner, which are now being 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 has also been notified as **Central Transmission Utility** of the country after amendments in the Electricity Laws in 1998.

ACHIEVEMENTS OF POWERGRID

As on 1/12/2002, POWERGRID is operating about **42,000 ckt. kms**. transmission lines, which include 563 ckt. kms. of 800 kV, 2,999 ckt. kms. of HVDC system, 29,045 ckt. kms. of 400 kV , 7,252 ckt. kms. of 220 kV lines, 2,042 ckt. kms. of 132 kV & 37 ckt. kms. of 66 kV level along with 75 Sub-stations with transformation capacity of over **39,000 MVA**. The transmission system availability is maintained consistently over 98.5% by deploying best Operation and Maintenance practices at par with international utilities and today POWERGRID is **one of the largest transmission utilities** in the World. POWERGRID continues to wheel about 40% of total power generated in the country through its gigantic transmission network.

Based on the results for the FY 2001-02, POWERGRID has achieved "Excellent" Performance rating as per its MoU entered with Ministry of Power for the 9th successive year. POWERGRID has also bagged the prestigious **Prime Minister's MoU Award** for the years 1999-2000 & 2000-2001 and is the only Public Sector Enterprise in Indian Power sector to receive this honour for four successive years since inception of this Award.

During the financial year 2001-02, the company earned a Profit after Tax of Rs. 688.62 Crore on a Turn Over of Rs. 2455.52 Crore, thereby netted 28.04% of the Turn Over as profit against 27.68% during 2000-01. At the end of the financial year 2001-02, the company has an impressive Gross Asset base of Rs. 13,777 Crore and the capital employed by the organisation stood at Rs. 10413.59 crores. Paid up capital of the company, including Share Capital Deposit as on 31st March, 2002 stands at Rs.3068 Crore, as against that of 3064 Crore as on 31st March, 2001. The Return on Net Worth for the company was at 10.19 % in 2001-02, creating significant value for the shareholders.

During the year 2001-02, POWERGRID has been able to mobilise the requisite resources to an extent of Rs. 2518 Crore to carry out its investment programme. During the year 2001-02, POWERGRID executed a loan agreement with the World Bank for an amount of US$ 450 million for implementation of its various projects. Apart from tapping international market, POWERGRID raised about Rs.2245 Crore from the domestic market through loans and Bonds. These were raised through private placement of bonds as well as through long-term loans. As a result of the prudent fund mobilization strategy, the company could not only attract the coupon rates, lower than prevailing market rates, but also of longer tenures than usual. Moreover, the private placement issues were over-subscribed by more than two times, which shows the company's reputation in the Indian debt/ capital market.

POWERGRID has adopted an advanced and cost effective Integrated Project Management and Control System (IPMCS) for total project review and monitoring on regular basis. Some of the initiatives taken to reduce time period of project commissioning are, advance action to develop specifications, standardization of design and collection of project data, survey and soil investigation, undertaking tendering activities etc., in parallel with project approval process. These proactive measures have led to substantial economic benefits to the nation.

Efficient management ensured completion of stringing of **1351 ckt. Kms.** of transmission lines

during the year 2001-02, exceeding the MoU target (Excellent) of **1155 ckt. Kms**.

During the year 2001-02, 864 **ckt. Kms**. of transmission lines were commissioned into the network, which include 400 kV Biharshariff-Sarnath I & II, 220 kV Jallandhar-Hamirpur I & II, 220 kV Neyveli-Bahoor and LILO of 400 kV Neyveli-Trichy II. A **new 400/220 kV sub-station at Allahabad has also been established**; besides extension of many existing sub-stations. POWERGRID also completed 400 kV D/c Nathpa-Jhakri-Nallagarh line, last part of the transmission system associated with Nathpa-Jhakri HEP, which could not be commissioned due to delay in the generation project.

In addition to above, construction activities of about 9,890 ckt. kms. of transmission lines of various voltage levels and 14 sub-stations are progressing well. Transmission systems associated with Ramagundam-III, Chamera-II, Dhauliganga, Dulhasti HEP and Tehri are some of the major generation linked projects under construction. Construction works in respect of Inter-regional links like East-South Inter-connector - II project (Talcher – Kolar), East-North HVDC Inter-connector (at Sasaram) and East-West AC inter-connector (Raipur-Rourkela) transmission system are also in their final phases. New generation linked schemes to be commenced during FY 2002-03 include transmission systems for Tala HEP, Rihand-II, and Tarapur 3&4.

POWERGRID has planned the implementation of several new system improvement schemes across the country for optimal utilisation of generating resources. On-going grid strengthening schemes include System strengthening I & II in SR, Kahalgaon-Biharshariff line, Series compensation of Panki-Muradnagar line, Bihar grid strengthening scheme, Ranganadi-Ziro line, Mau-Balia Transmission line, System improvement scheme in UPPCL, etc. The new schemes, which are under investment approval stage include, Tala Supplementary transmission system, Raipur-Chandrapur 400 kV D/c, System strengthening - III in SR, Neelmangala-Mysore 400 kV lines in SR etc.

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. Thus, it is in a position to offer its expertise to utilities at a global level.

POWERGRID has generated consultancy business of Rs. 41 Crore during 2001-02. Such business development activities yielded in consultancy fee realisation of Rs. 11.85 Crore as compared to Rs. 12.83 Crore during last year. Some of the major clients from whom turnkey execution contracts were secured are Electricity Dept, Goa; Electricity Dept, UT Chandigarh; Electricity Dept, Pondicherry; Accelerated Power Development and Reform programme (APDRP), Ministry of Power; UPPCL, NEEPCO, BSES, Uttaranchal Power Corporation Ltd. etc.

POWERGRID is also providing consultancy for establishing optical fibre network on the T&D network of various SEBs, viz APTRANSCO, RSEB, KSEB, TNEB, WBSEB, DVC, DVB etc. as well as BSES, a private transmission utility which has diversified into telecom business. POWERGRID has successfully executed more than 100 Km. Fibre Optic Communication network for BSES involving Engineering, Contract Award, Installation, and Testing & Commissioning.

POWERGRID is the only Asian consultant short-listed by Nepal Electricity Authority, for execution of ADB funded transmission line projects in Nepal. MOU with Tala Hydro Electric Authority of Bhutan is being signed for providing consultancy for Engineering and Award of optical fibre communication on their transmission system and setting up of National Load Despatch Centre for Bhutan. POWERGRID has strengthened its relations with M/S KEMA Consultancy, an organization of international repute in the area of System Coordination and Control to share the expertise for tapping the international market potential.

UNIFIED LOAD DESPATCH & COMMUNICATION FACILITIES

POWERGRID has achieved a unique landmark with the commissioning of the largest Unified Load Dispatch & Communication schemes, in Northern & Southern Regions with three hierarchical levels as against two levels being implemented worldwide, which were dedicated to the nation by Hon'ble Prime Minister and Hon'ble Minister of Power, respectively. The implementation of Unified Load Despatch & Communication schemes in the rest of the three regions (Eastern region, North-Eastern region and Western region) are in different stages of execution.

These complex projects involving the modern state-of-the-art technology shall result in real time monitoring and control of the grid to enhance reliability, stability, and security in all the regions of the country. These facilities are likely to

minimize grid disturbance/failure and facilitate quick grid restoration, in case of failure. The concerned agencies including consultants and international financial agencies were apprehensive about smooth and timely completion of the project, as similar projects attempted by other utilities in the world had to face problems during procurement and execution leading to inordinate delays. POWERGRID, however, commissioned the projects ahead of contract schedules, which is testimony of POWERGRID's teamwork.

RESEARCH & DEVELOPMENT

To maintain technological leadership, POWERGIRD has embarked upon a conscious policy to pursue the Research and Developmental efforts to remain at par with international organizations in the field and to enable sustained growth of the company in time to come. POWERGRID is associated with premier academic institutions like IIT Delhi and IIT, Kharagpur for Research and Development in the various fields of Power system. Apart from involving academic institutions, POWERGRID is taking active assistance from Central Power Research Institute (CPRI), Bangalore and Bharat Heavy Electricals India Ltd. (BHEL).

Some of the major R&D activities undertaken by the company are as follows;

- **Controlled Shunt Reactor:**

  The Controlled shunt reactor gets connected and disconnected automatically as per the preset voltage conditions of the system for controlling system voltages. A 50 MVAR controlled shunt reactor has been developed in association with BHEL and installed on 400 kV Jabalpur – Itarasi line at Itarasi S/S.

- **Use of composite Insulators:**

  Composite insulators offer many advantages such as better pollution performance, ease in erection and reduced maintenance etc. However experience of its use in Indian environment is limited. POWERGRID has used composite insulators on trial basis on a small stretch of 400 kV Ramagundam - Hyderabad line and performance is being monitored regularly. The results are quite encouraging. Further efforts are on along with M/S BHEL to develop indigenous technology for composite insulators.

- **In house design of transmission tower & sub station structures:**

  With an objective of standardization of design to achieve the benefits of reduction in inventories & project execution time, in-house designs have been undertaken. 9 Nos. of 400 kV AC towers including towers for ice loading conditions were designed and successfully tested. Further, in-house design of 7 nos of towers and 400 kV & 220 kV substation structures have been completed during the last year. In addition to this, POWERGRID has designed and carried out field demonstration of strengthening of existing towers on Nalagarh-Hissar 400 kV D/C Transmission Line.

- **Design Optimization Studies for 800 kV D/C Line.**

  POWERGRID completed preliminary design optimization studies for 800 kV D/C Transmission line and commenced in-house tower designs for the line.

- **Modern maintenance technique for HVDC transmission line.**

  The corporation carried out a trial-cum-demonstration exercise at Kanpur on ± 500 kV HVDC Rihand – Dadri transmission line with quad conductor. The exercise primarily involved using the specially developed prototype fixtures and were tested under various O&M activities. These are expected to greatly reduce shutdown time and consequently increase availability for both HVDC and HVAC lines.

- **Real time monitoring of transmission lines for maintenance.**

  For the first time in Asia (other than JAPAN), POWERGRID is in the process of installing a system for REAL TIME MONITORING OF TRANSMISSION LINES FOR MAINTENANCE (REMTRAM), on Dadri – Ballabgarh line, on an experimental basis. When commissioned, it would provide valuable data related to various parameters of a transmission line, thus not only making it possible to take preventive measures, but also providing important information for future designs.

- **Punctured Insulator Detector (PID).**

  POWERGRID is giving special emphasis to on-line testing of the insulator strings on critical lines to detect the punctured insulators, which cannot be detected during routine maintenance. Through PID, the punctured insulators are detected on live line and appropriate action is taken in advance to avoid long outage of the line.

INFORMATION TECHNOLOGY

POWERGRID recognizes Information Technology as a key organizational resource to be leveraged for enabling smooth core business operation and communication. The Corporate IT plan and Road Map drawn up by POWERGRID are strictly adhered to in progressive implementation of IT in the organization. As a result of dedicated efforts, MoU parameters pertaining to Information Technology have successfully been achieved well ahead of the targeted dates. Keeping abreast with the technology developments, POWERGRID has strengthened the Information Technology infrastructure in all of its offices. The **Corporate INTRANET** implemented in POWERGRID is serving as a common information repository and knowledge base. Web based applications for **Grid Parameter monitoring; Operation Status reporting, and Human Resources information** are being regularly launched on POWERGRID INTRANET besides other repository of information, reports and utilities.

A **web based Inspection Call Management system**, developed in-house, has been implemented on POWERGRID INTRANET website, **e-enabling** the Equipment inspection call logging, tracking and reporting process with the vendors, sub-vendors and QA&I officers as users. POWERGRID has also leveraged its in-house expertise to develop an enterprise wide Financial Accounting application, which is being deployed in all its offices.

ASSISTING SEBs

POWERGRID has extended its expertise to assist the State Electricity Boards in improving their sub-transmission and distribution networks.

Inadequate shunt compensation in the distribution network of State utilities has been a consistent problem faced in the country leading to higher T&D losses, degradation of voltage profiles, under-utilisation of EHV transmission network. SEBs or the successor utilities on account of financial constraints have not been able to accord a high priority and raise funds from multilateral/ international lenders. To cope up with this, POWERGRID, as a facilitator has offered its services to various SEBs on "no profit-no loss basis". SEBs are required to come up with their proposals in this regard.

POWERGRID has been appointed by Ministry of Power as Advisor-cum-consultant for Accelerated Power Development Reform Programme (APDRP). Nineteen distribution circles in the country have been entrusted to POWERGRID to develop as centers of excellence / profit centers and models for emulation by others. Detailed project reports for these distribution circles were submitted within a time bound schedule to MOP. In addition to this, POWERGRID is also supervising the work assigned to three other Advisor-cum-consultants namely NPC, WAPCOS and ERDA in respect of eighteen identified distribution circles. Development of Jodhpur city in Rajasthan as model distribution circle in association with Jodhpur Vidyut Vitran Ltd. has also been entrusted to POWERGRID. Possibility of floating **subsidiaries** are being examined, which in turn may take up the management of distribution areas in certain States / Union Territories.

HUMAN RESOURCE MANAGEMENT

Uniting the human chain

The Corporation has rationalized and standardized a number of schemes, which will facilitate overall satisfaction amongst employees. New methods have been implemented to assess the potential and performance of employee and friendly systems have been designed to reward employees demonstrating consistently outstanding performance.

Employees' Well being

During the year, the Corporation has rendered facilities and support for creating avenues for recreational activities for employees and their family and to encourage them to act as an agent for the community participation/development. In January, 2002, POWERGRID hosted a Inter Power Sector PSU Cricket Tournament at Secunderabad, in which all the PSUs under the Ministry of Power participated. In some of the remote substations, POWERGRID has facilitated the establishment of schools for the benefit of employees' wards. The corporation has always taken care of health of the employees and their family members & to this end at least one hospital has been empanelled in the vicinity of POWERGRID establishment. This has provided a considerable relief to those employees who are posted in the remote location.

Social justice

The Corporation has implemented all Govt. Directives to take care of the interests of Scheduled Caste, Scheduled Tribe and Other Backward Classes. For monitoring it, POWERGRID has nominated Liaison Officers in the Corporate Centre

and Regional Establishments. Further, appropriate funds have been earmarked for the welfare of the SC/ST community and have implemented a number of welfare schemes in the SC/ST populated villages near its establishments.

RECOGNITION OF EMINENT PERSONALITIES

POWERGRID instituted **"POWERGRID Award of Excellence"** to honour eminent / outstanding personalities / organisations. The award will carry citation and cash prize of Rs. 1 lakh (Rupees one lakh only) in each field and will be announced every year on Raising Day i.e. 23rd October to be presented at a suitable function subsequently.

To start with, for the year 2001, POWERGRID honoured two distinguished personalities in the field of Information Technology and Power Sector respectively. Subsequently, from the year 2002 **"POWERGRID Award of Excellence"** shall be awarded to eminent personalities / organisations in the fields of Power Sector, Information Technology and Environment.

TOWARDS THE GREENER ENVIRONMENT

In order to tackle environmental issues effectively, POWERGRID is religiously following its unique Environmental and Social Policy & Procedures (ESPP) in every sphere of project implementation. The ESPP outlines POWERGRID's commitment to deal with environmental and social issues relating to its transmission projects, lays out management procedures and protocol to address them.

- Rehabilitation Action Plan (RAP)/Social Assessment Management Plan (SAMP) were drawn up and implementation for all of its projects in line with ESPP. Then
- Executives were also trained to implement ESPP.

VENTURING INTO TELECOM BUSINESS

POWERGRID's EHV transmission network of about 42,000 ckt. kms. criss-crosses the entire length and breadth of the country connecting the major metropolitan cities/ towns viz. Delhi, Calcutta, Chennai, Bangalore, Hyderabad, Mumbai etc. Hence, it provides an excellent infrastructure for stringing optical fibre cable, which can be used to set-up a high-grade long distance telecom network of high capacity. This will maximise the returns to POWERGRID, which would be deployed for expeditious implementation of National Grid and will also accelerate application of Information Technology to urban and rural areas as well as increase the tele-density.

The Unified Load Dispatch & Communication (ULDC) schemes require dedicated wideband communications networks to transfer large amount of data & carry messages for reliable & efficient real time grid operation. To facilitate this, POWERGRID has already laid out an optical fibre network of over 4,700 kms. on its transmission lines, by deploying latest live line installation technique without compromising on the availability of its transmission network. POWERGRID is also in the process of installation of optical fibre cables in North-Eastern, Eastern and Western Regions and the total network under ULDC schemes will be about 6000 Kms across the country. The spare capacity available to POWERGRID on its all India optical fibre network in the ULDC telecommunication infrastructure are being utilised to exploit commercial telecom market.

POWERGRID has already commenced commercial operation of its telecom links between Delhi to Chandigarh, Jabalpur to Dhule, Delhi to Jaipur and Delhi to Meerut. The Service agreement for leasing out bandwidth for annual fee of Rs. 7.50 Crore was signed with Telecom service providers and revenue of Rs 2.47 Crore was realized against a target of Rs. 2 Crore during the financial year 2001-02. Further, POWERGRID has already completed the prestigious **Delhi-Mumbai link**, a high traffic route for tapping the market potential. POWERGRID is planning to establish a Telecom backbone network of about 14,000 Kms. connecting 56 cities including all metros and major towns. POWERGRID has already prioritised some of the important links, which include:

- **Delhi-Shimla**
- **Hyderabad-Bangalore-Chennai**
- **NorthEastern State capitals and major towns**
- **Delhi-Hyderabad**
- **Delhi-Calcutta**

Efforts are also on to develop state level telecom networks utilizing SEBs' T&D networks and infrastructure for which the process of forming Joint Venture with SEBs/ Telecoms are in full swing. In addition to this, POWERGRID has initiated dialogue with Bhutan for providing consultancy in Telecom and undertake execution of turnkey Telecom projects.

Further, various companies with high capacity bandwidth requirement viz. Dishnet DSL, VSNL, STPI etc. have shown keen interest in utilizing POWERGRID's stable, sturdy, vandalism proof, high availability network.

JOINT VENTURE CORPORATIONS

CHAPTER - 17.7

Tehri Hydro Development Corporation (THDC)

BACKGROUND

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'88, with the following objectives:

- To plan, promote and organise an integrated and efficient development of hydro resources of Bhagirathi river and its tributaries at Tehri and complementary downstream development (the Tehri Complex) for power generation and other purposes in all its aspects.
- To undertake in a similar manner the development and harnessing of such hydroelectric sites/projects in Bhagirathi/ Bhilangana valleys as may be entrusted to the company by the State Govt.

THDC is presently responsible for the implementation of the Tehri Hydro Power Complex (2400 MW), comprising the following components:

- **Tehri Dam & Hydro Power Plant (HPP) (1000 MW)** : 260.5 m high Rock Fill Dam (Stage-I of the Complex), with 1000 MW underground Hydro Power Plant having four conventional Turbine Generator sets of 250 MW each (Stage-I of the Complex).
- **Koteshwar Dam & HPP (400 MW)** : 97.5 m high Concrete Dam and 400 MW Hydro Power Plant at Koteshwar, 22 Km. downstream of Tehri. 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.
- **Tehri Pumped Storage Plant (PSP) (1000 MW)** :Tehri PSP scheme has been envisaged to generate 1000 MW of peaking power for enhancing system reliability and also to provide balancing load to the thermal base generation during off peak hours. The reservoir created by the Tehri Dam would function as upstream reservoir for this Project, while the Koteshwar Dam reservoir shall be the lower reservoir.

The Corporation has an authorised share capital of Rs.3000 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 Stage-I cost) is to be entirely funded by the Govt. of U.P.

The Corporation is engaged in the implementation of Tehri Project (Stage-I). The 400 MW Koteshwar HEP has also been cleared by the Govt. for implementation and work has been taken up.

The updated Detailed Project Report (DPR) for Tehri PSP(1000 MW) has been prepared by M/s EdF and M/s CoB , French Consultants under French Aid. Based on the updated DPR, the updated Cost Estimate has been cleared by CEA. The process of Govt. approval is under way.

THDC by virtue of its expertise, its area of operation, presence in the area, and objectives, is in a position to take up further projects, particularly the expeditious development of hydro potential of Uttaranchal, where THDC's area of operation presently lies.

THDC has taken up the matter with the Govt. of Uttaranchal for handing over further projects to THDC. In this regard Ministry of Power has also urged the Govt. of Uttaranchal for handing over of some Projects in Garhwal region of Uttaranchal State to THDC for expeditious development of the vast untapped hydro potential of the State.

THDC and Engineers India Limited (EIL) have recently signed Memorandum of Understanding (MOU) to co-operate and leverage their respective strengths and competencies for getting New Projects in the field of Hydro Power Development in India and abroad.

BENEFITS

The benefits from the Tehri Hydro Power Complex will be as under :

- Addition to the installed generating capacity 2400 MW

  in the Northern Region (1000 MW on completion of Tehri Stage-I)
- Annual energy availability (Peaking) 6200 MU (3568 MU on completion of Tehri Stage-I)
- Irrigation (additional) 2.70 Lac ha.
- Stabilisation of existing irrigation:6.04Lac. ha.
- Besides above, 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.

TEHRI DAM & HPP, STAGE-I (1000 MW)

Tehri Dam Project is a multipurpose hydro Project under construction on the river Bhagirathi in Uttranchal State. Tehri Hydro Power Plant (Stage-I) includes the construction of the 260.5m high rockfill Dam, spillway structures, power tunnels and an underground power cavern with an installed capacity of 1000 MW (4X250MW).

Government of India on 15.3.1994 accorded approval for execution of Tehri Dam & HPP(Stage-I) alongwith the essential and committed works of Tehri Pump Storage Plant and Koteshwar Dam Project at a cost of Rs. 2963.66 Crs. (at March, 1993 Price Level).The Revised Cost Estimate amounting to Rs.5209.10 Cr. at Aug'99 price level (excluding IDC & FC of Rs. 481.54 Cr.) for Tehri Stage-I has been cleared by PIB in its meeting held on 07.03.2000.

STATUS OF THE PROJECT WORKS

The work on Tehri Stage-I is in advance stage of completion. The present status of the Project is as under:

i) Dam

The 260.5 m. high Earth & Rock Fill Dam, which would be the highest Earth & Rockfill Dam in the Asian Region and 4th highest in the world is in progress. The Dam has been raised to an average level of EL.806.5 m. Balance height left to be raised is only 33 m. Over 84% of the total fill placement is complete.

ii) Spillways

Work on Spillways at various fronts viz., Chute Spillways, Right Bank Shaft Spillway and left Bank Shaft Spillway is progressing well. The open excavation has been completed almost for the entire reach of Spillway area and concreting at various fronts is in advance stage of execution. The work of Stilling Basin has been taken up after closure of Right Bank Diversion Tunnels T-3 & T-4 in Dec.,2001 and the work is in full swing.

iii) Power House

a. Civil Works

Works at various fronts of Power House are in progress. The underground excavation of complete water conductor system, Machine Hall, Transformer Hall has been completed. Around 87% of overt concrete lining in Tail Race Tunnels has been completed.

b. Electrical Works

Erection of Generating Plant and Equipment of the Power House is in progress. The erection of Turbine Operating Mechanism in Unit IV has been completed and winding of Startor is in progress. Rotor Assembly in Service bay is also in progress. Erection of Spiral Casing and Hydraulic testing for Unit-III has been completed and concreting is in progress. Erection of Speed Rings for Unit-II has been completed and erection of Spiral Casing has been taken up. Erection of Draft Tube Elbow Liner for Unit-I is in progress.

iv) E&M

Contracts for Turbine, Generator, Valves and Control Systems with financing arrangements by way of Suppliers Credit/Buyers Credit from KfW, Germany have been awarded to a consortium of manufacturers from Russia/ Ukraine, and ABB-Germany.

Supplies of Generating Plant and equipment from Russia/Ukraine are in progress. The majors components of Unit-4, 3, 2 and 1 have already reached to Project Site. Computerized Control System supplies have also been received.

The fabrication of Penstock Steel Liners is in advance stage of completion.

COMMISSIONING SCHEDULE

Commissioning of the project is likely to commence with in 2003.

EXPENDITURE

Total expenditure incurred on Tehri Stage-I (1000 MW) upto September,2002 is Rs.4632.09 Cr.

REHABILITATION

Rehabilitation is being implemented in two phases. The Phase-I covers those families affected by construction of Coffer Dam, including the Old Tehri Town. In Phase-II, all remaining families to be affected due to impoundment are being rehabilitated.

The Phase-I Rural Rehabilitation is nearly completed, with 98.5% of the families i.e. all those families who have come forward have been paid compensation and rehabilitated. In Phase-II, 1447 out of 3365 rural families have been rehabilitated

through allotment of land or payment of cash in lieu thereof. The entire Phase-II affected population would be rehabilitated well before the impoundment of the reservoir.

The Urban affected population has been rehabilitated in New Tehri Town and at Rishikesh/ Dehradun as per their option. The NTT has been developed at a height of 1350-1850 M., and has all modern facilities including a University Campus, Hospital, Educational and Financial Institutions, Markets, Places of worship and public utility buildings.

The major recommendations of the Hanumantha Rao Committee, approved by the Govt. in Dec.,1998 in regard to rehabilitation of the affected population include definition of family so as to make all major sons and major daughters who attained the age of 21 years, and dependent parent (Mother/Father) of the fully affected entitled land owner on 19.07.1990, eligible for ex-gratia payment of 750 days minimum agricultural wage each, grant of house construction assistance to the urban land owner families, linked with the progress of construction and shifting, allotment of one constructed shop to shop owners not running the shops, recognition of the right of people, living in the villages upstream of Tehri reservoir, over the water from Bhagirathi and Bhilangna rivers and tributaries for drinking and irrigation purposes.

The responsibility for the Rehabilitation & Resettlement was transferred to the State Govt. in 1999, to be carried out under the overall supervision and control of Commissioner, Garhwal assisted by various State Govt. officials, with funds for R&R to be provided by THDC.

At the request of Govt. of Uttaranchal, the Govt. of India sanctioned/agreed to sanction additional packages of rehabilitation benefits to various categories of people, costing about Rs.98.59 Cr.

ENVIRONMENT

Environmental clearance was accorded by MOEF on 19.7.1990. Various studies as per the Environmental clearance conditions have been completed and Action Plans drawn up wherever required. Action for the protection and upgradation of environment is being actively pursued.

THDC is carrying out Catchment Area Treatment in the high and very high erodibility classification. An area of 52,204 ha. was to be treated under the Catchment Area Treatment Programme. Around 40478 Ha. area has been treated till Sept.2002. All the direct draining areas have been completely saturated (which were to be completed before the impoundment of the reservoir). In accordance with the conditions laid down by the MOEF, Forest Deptt., Govt. of Uttaranchal had submitted a proposal for setting up of a Botanical Garden at Koti in Tehri Garhwal. The construction work and establishing of the Botanical Garden has been taken up by the Forest Deptt. The proposed Botanical Garden is to be located adjacent to the Reservoir in an area of 14.28 Ha.

The consultancy and implementation of the Action Plan for mitigating the possible impact on "Mahseer Fish" due to construction of Tehri Dam has been taken up by the National Research Centre on Cold Water Fisheries, Bhimtal, Distt. Nainital.

MOEF granted forest clearance in June, 1987 with stipulation that the project authorities will carry out compensatory afforestation in an area of 3815 ha. of non forest land. An area of 4516 ha. has already been planted in districts of Jhansi and Lalitpur in U.P. The plantation done on non-forest land is now being converted into protected forest by State Forest deptt.

KOTESHWAR PROJECT(400 MW)

Koteshwar Project comprises a 97.5 m. high concrete dam and surface power house housing 4 units of 100 MW each. The Project is located around 22 Km. downstream of Tehri Dam. Koteshwar Project is a run-of-the-river scheme with minimum diurnal storage. There are only two villages, with 103 families which are likely to be submerged with the coming up of the reservoir. In addition, there would be only 14 villages, which would be partially submerged, involving 280 families. The approved rehabilitation package for Tehri Stage-I would also be applicable for affected families of Koteshwar Project.

Environment clearance was accorded to entire Tehri complex, including Koteshwar in July'90. Certain essential/committed works of Koteshwar Project were approved while conveying the sanction for Tehri Stage-I.

CCEA has approved the proposal for 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.

COMMISSIONING SCHEDULE

The Project is scheduled for commissioning in the year 2006.

EXPENDITURE

Total expenditure incurred upto Sept.,2002 is Rs. 79.41 Cr. on Koteshwar HEP.

STATUS OF PROJECT WORKS

Necessary access to the Project in the form of the all-weather road is available; also accommodation and communication facilities, and construction power for the project is available.

As a prelude to take up the work of construction of Main am and Powerhouse, the excavation of Diversion Tunnel was completed.

The major Civil works of Dam and Surface Power House have been awarded and the works taken up.

Techno-commercial Bids from approved pre-qualified parties for Electro-Mechanical Equipment package have been opened and are under evaluation.

TEHRI PUMPED STORAGE PLANT (PSP) 1000 MW

Tehri PSP Scheme has been envisaged to generate 1000 MW of peaking power for enhancing system reliability and also to provide balancing load to the thermal base generation during off peak hours. Annual generation from the Project would be around 1400 MU. Reservoir created by the Tehri Dam would function as the upstream reservoir for this Project. Koteshwar Dam, will create a balancing reservoir to regulate the releases from Tehri Reservoir and serve as the downstream reservoir for the PSP.

Certain essential works of PSP were taken up alongwith the execution of Stage-I works. Excavation and lining of Head Race Tunnels for PSP has been completed. The Intakes for PSP are being constructed alongwith the Stage-I works. The Transformer Hall constructed in Stage-I would also serve the PSP. Thus, major Civil Works to be taken up in PSP would involve only the Machine Hall, Surge Shafts and Tail Race Tunnels.

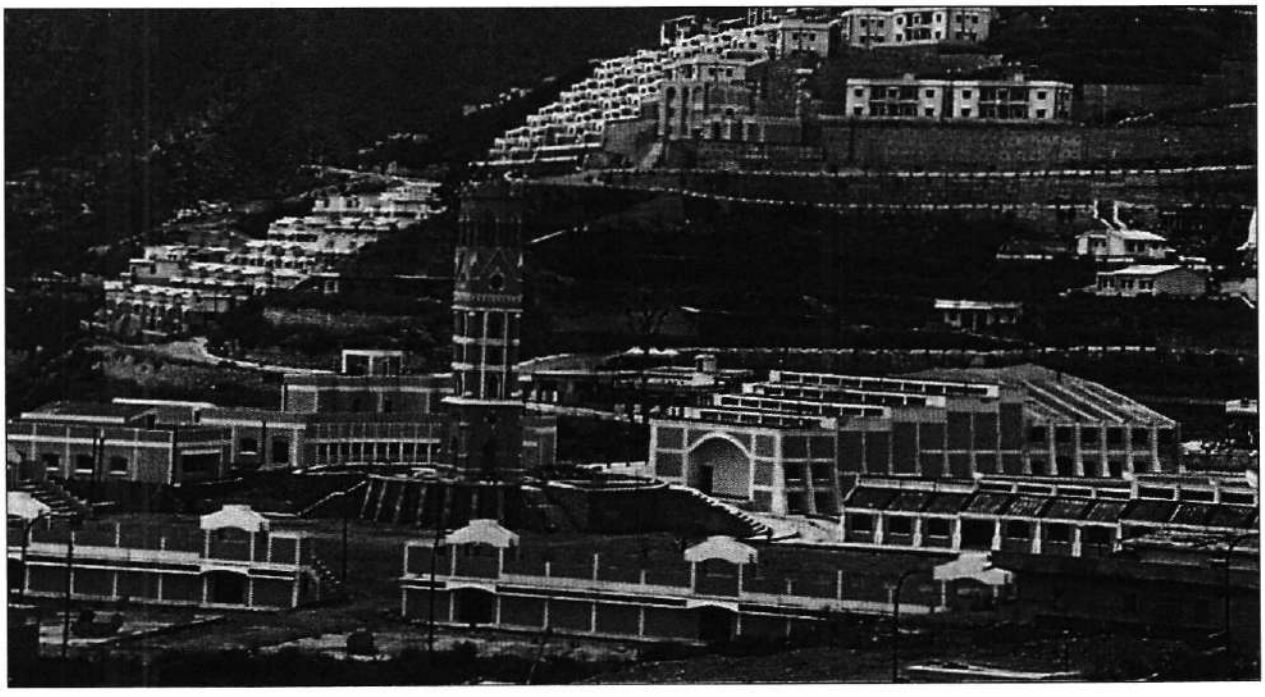
The Pump Storage Plant envisages 4 reversible units of 250 MW each. The main feature of the Project is the large variation of about 90 m between the maximum and minimum head, under which the reversible units shall operate.

The updated Detailed Project Report (DPR) for Tehri PSP(1000 MW) has been prepared by M/s EdF and M/s CoB , French Consultants under French Aid. Based on the updated DPR, the updated Cost Estimate for Rs.1799.67 Crs. (excluding IDC of Rs.126.73 Crs. at March,02 Price Level) prepared by THDC has been cleared by CEA and Govt. approval for the implementation of the project is under process.

COMMISSIONING SCHEDULE

The Project is scheduled for commissioning in the year 2006-07, i.e., by the end of Xth Plan.

New Tehri Town



CHAPTER - 17.8

Satluj Jal Vidyut Nigam Limited (SJVN)
(Formerly Nathpa Jhakri Power Corporation Limited)

Satluj Jal Vidyut Nigam Limited (SJVN) (Formerly NJPC) was incorporated on May 24, 1988, as a joint venture of the Govt of India (GOI) and the Govt. of Himachal Pradesh (GOHP) to execute hydro power projects in Satluj basin within Himachal Pradesh. The present authorized share capital of SJVN(formerly NJPC) is Rs. 4500 crores. The equity-sharing ratio of GOI and GOHP is 3:1 respectively.

NATHPA JHAKRI HYDRO-ELECTRIC POWER PROJECT

Nathpa Jhakri Hydro-electric Project (NJHEP) is the first project undertaken by SJVNL(formerly NJPC) for execution and shall be commissioned during the 10th Plan.

Location

The 1500 MW Nathpa Jhakri Hydro-electric Project (NJHEP) derives its name from the names of two villages in the Project vicinity - Nathpa in district Kinnaur and Jhakri in district Shimla - in the interiors of Himachal Pradesh. The Project's Dam is being constructed near village Nathpa and its Power House is being constructed on the left bank of the river Satluj at Jhakri. The power house site is about 150 km from the nearest railhead (narrow gauge), Shimla. The Project stretches over a length of about 50 kms. from the Dam site to the Power House site, on the Hindustan-Tibet Road (NH-22), which also connects the rail head to the Project.

Salient Features

On completion, NJHEP would consist of the following :

- A 57.50 m high concrete Dam on Satluj river at Nathpa to divert 405 cumecs of water through four Intakes.
- An underground Desilting Complex, comprising four chambers, each 525 m long, 16.31 m wide and 27.5 m deep (one of the largest underground desilting complexes for hydro-power in the world).
- A 10.15 m dia and 27.39 km long Head Race Tunnel (one of the longest hydro power tunnel in the world), terminating in a 21 m dia and 301 m deep Surge Shaft.
- Three circular steel-lined Pressure Shafts, each of 4.9 m dia and 633 m long bifurcating near the Power House to feed six generating units.
- An underground Power House with a cavern size of 222 m x 20 m x 49 m having six Francis Turbines of 250 MW each to utilize a design discharge of 405 cumecs and design head of 425 m.
- A 10.15 m dia and 982 m long Tail Race Tunnel to discharge the water back into the river Satluj.
- Annual energy generation of around 6950 million units in a 90% dependable year.

PROJECT BENEFITS

Besides the social and economic upliftment of the people in its vicinity, on commissioning, the 1500 MW NJHEPP will generate 6950 MU of electrical energy in a 90% dependable year. It would also provide 1500 MW of valuable peaking power to the Northern Grid.

Out of the energy generated at the bus bar, 12 percent is to be supplied free of cost to the state of Himachal Pradesh. From the remaining 88% energy generation, 25% is to be supplied to HP at bus bar rates and the balance to the other states of the Northern Region Including HP, in accordance with allocation to be made by Govt. of India.

In addition, thousands of people living in the project vicinity have been provided direct and indirect employment by various national and international contracting agencies working on the project.

Project Cost & Commissioning Schedule

The approved cost of NJHEP is Rs. 7666.31 cores at June 1998 price level and completion cost at Rs. 8058.34 crores with project commissioning scheduled by March 2002.

However, on account of the unprecedented flash floods that occurred in the river Satluj in the early hours of August 01, 2000, the project suffered time and cost overrun.

On account of the above the six units of the project were re-scheduled to be commissioned from Sept. 2003 to July 2004.

FINANCING DETAILS

Funding Plan

The Project is to be financed in a 1:1 debt equity ratio. The equity portion is to be shared between Govt. of India (GOI) and Govt. of Himachal Pradesh (GOHP) in the ratio of 3:1 respectively.

Loans

The World Bank has sanctioned a loan of US$ 447 million for Civil Works and the Power Finance Corporation also sanctioned a loan of Rs. 1118 crores. Commercial foreign currency loans equivalent to Rs.1192 crores have also been finalized for Electro-Mechanical packages with various European Commercial Banks.

BRIEF STATUS OF PROJECT EXECUTION (AS ON END NOVEMBER 2002)

Civil Works:

Most of the civil works have been completed and balance civil works are nearing completion. After completion of excavation in the Dam and Intake area about 98% concreting has been completed in the Dam area and about 99.7% concrete in the Intake area . In Desilting chambers 80% excavation have been completed and hopper concrete lining is in progress in chamber #4. In the HRT after completion of heading and benching excavation, 98.4% concrete lining of the overt and 77% invert concrete lining has been completed. The excavation and concrete lining of surge shaft have been completed. The erection of steel liners in the three Pressure Shafts has been completed. In the Power House the excavation and concreting of the Transformer Hall and Machine Hall has also been completed. The concreting of the Tail Race Tunnel (TRT) has also been completed

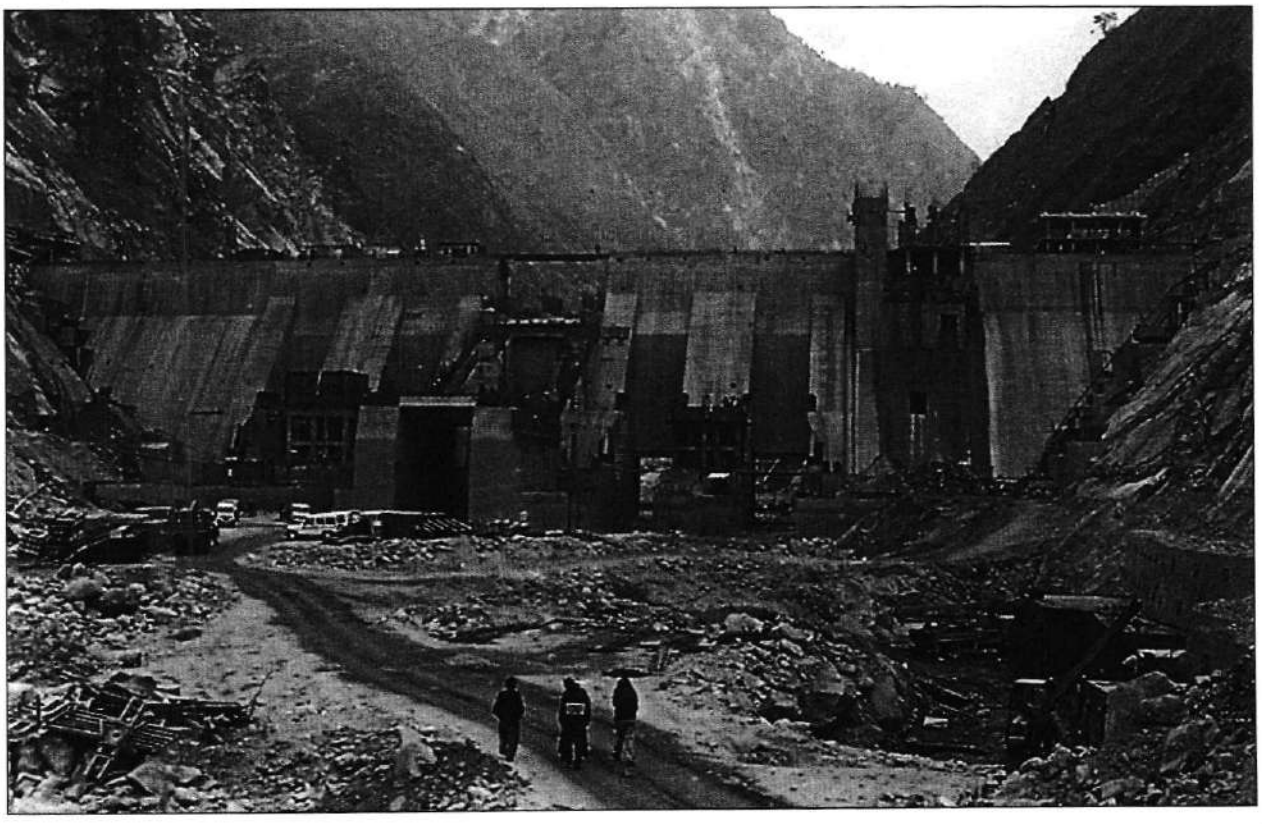
Electro-Mechanical Works

The boxing up of Generating Unit – 6 has been completed after alignment of Generator and Turbine Shaft. Test spinning of this unit has been carried out Dec.30, 2002.

The boxing up of Generating Unit – 5 has been completed after alignment of Generator and Turbine Shaft.

The erection of Draft Tubes for Units I to VI and the erection of spiral casings of Units I, II III & IV have been completed. The critical hydraulic

Nathpa Jhakri HEP - View of intake structure



pressure testing activity for Units I to IV have also been successfully achieved. The turbine runner along with shaft for Units I to IV have been put in position. The Stator Assembly of Units I, II, III and IV have also been lowered into their pits. The pressure testing of MIV for Units I, II & III had been completed.

Assembly of all three Butterfly Valves have been completed alongwith pressure testing.

All the Generator Transformer have reached at site and 99% erection works have been completed.

The entire work of 420 KV GIS and CGI Bus Ducts have been completed.

In the Power House, 75% erection of 24 KV bus duct has been completed. Installation of Battery Rack , Batteries, DCDB's and Battery Charger in Power House and Pot Head Yard has been completed.

All the UAB panels for Units I to VI have been installed. All 420KV control & relay panels have been erected in the Pot Head Yard. In the Pot Head Yard 94% works of installation of towers, beams and equipment structures have been completed.

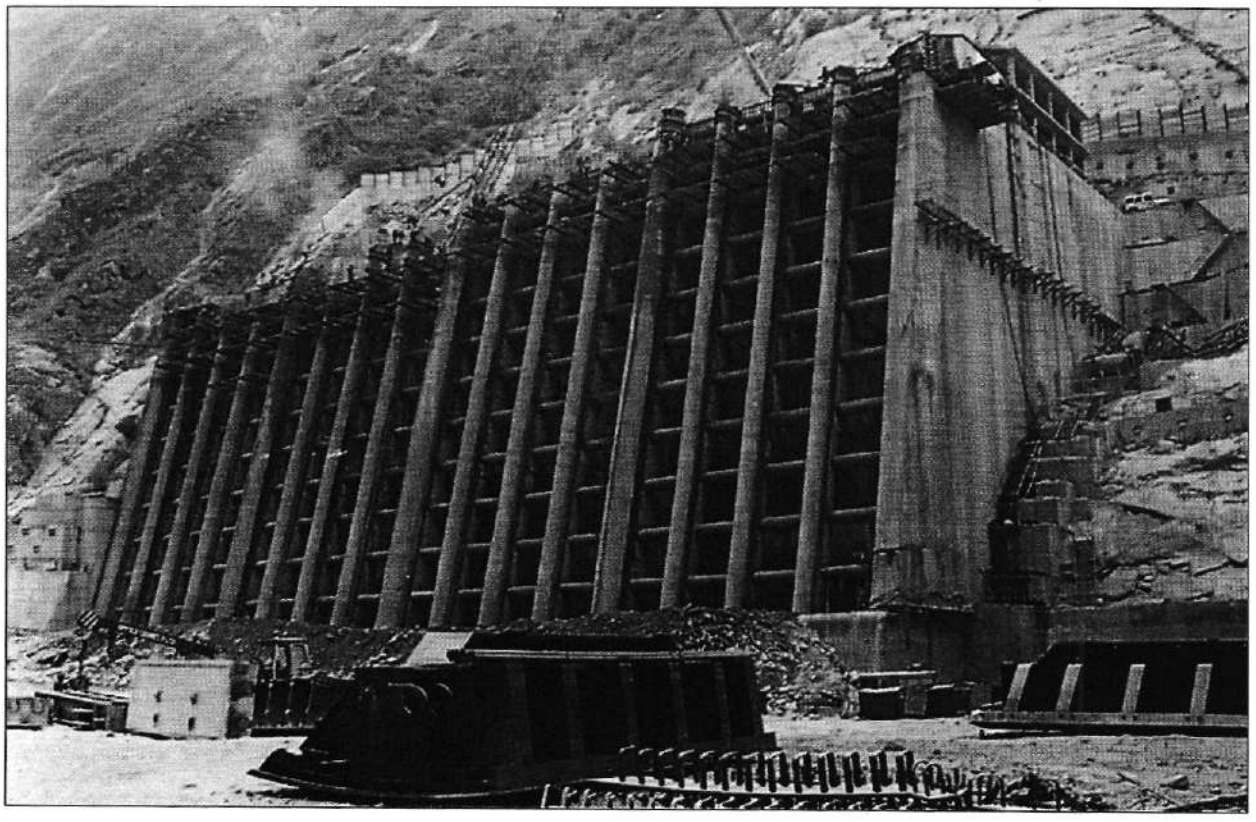
Hydro-mechanical Works

In the Dam area installation of 2nd stage parts of all the Radial Gates is in progress. Erection of 2nd stage parts and 2nd stage concreting for three no. Intake Gates have been completed and handed over to the Gates contractor for assembly of Gates. Erection of 2nd stage parts and 2nd stage concreting of three HRT Intake Gates have been completed and erection of Side Guide Flat is in the progress in remaining gate. In Rampur Intake Gate no. 1 &2 after erection of 2nd stage parts grinding and welding of studs has been completed. In TRT Outfall Gates installation of Hoists & connection of Hoist to Gate for commissioning, painting and trial work is in progress.

FISCAL STATUS

Against the Revised Budget Estimate of Rs. 1159.96 crores (Rs.1063.06 crores for NJHEP, Rs.3 crores for Rampur and Rs. 93.90 crores towards repayment of loans of NJHEP) for the year 2002-03, the total financial expenditure incurred up to November 2002 is Rs. 6978.55 crores about 91 % of the approved Revised Cost Estimate (RCE-II) of NJHEP of Rs. 7666.31 crores at June, 1998 price level.

Nathpa Jhakri HEP - View of intake structure



The balance funds shall be utilized towards the execution of the Major Civil, Hydro-mechanical and Electro-mechanical works.

ENVIRONMENT, REHABILITATION & RESETTLEMENT

Environment

NJHEP is one of the most eco-friendly power projects in the country. Being a run of the river Project, it has minimum adverse impact on the ecology of the area, minimum number of Project Affected Persons (PAPs) and least disturbance to the flora and fauna. 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.

Rehabilitation & Resettlement

SJVN(formerly NJPC) as a responsible corporate citizen takes utmost care for the resettlement and rehabilitation of the few project affected families (PAFs) whose land or house or shop got affected due to construction of the NJHEP. Further, appropriate compensation to all the PAFs in accordance with the extant policies of the Government and SJVN (formerly NJPC) have been/ are being made.

FUTURE PROJECTS

Rampur Hydro-electric Power Project

The Rampur Hydro-Electric Power Project (439 MW), utilizing the tail race waters of NJHEP is a run of the river scheme. The Implementation Agreement and R & R plan approved by the Board of Directors have been sent to the Ministry of Power for consideration and approval. After approval of same by GOI, the process of signing of Implementation Agreement shall be taken up with GOHP.

OTHER PROJECTS

SJVN(formerly NJPC) is also planning to approach GOHP for taking up the execution of other hydro-electric projects in the Satluj river basin in the Himachal Pradesh, during the Xth - XIth Plan period, prominent amongst which are:

-Thopan Powari Hydro-electric Power Project (approx. 650 MW)

-Shongtong Karcham Hydro-electric Power Project (approx. 780 MW)

Damodar Valley Corporation (DVC)

Damodar Valley Corporation (DVC) came into existence by an act of the Central Legislature on 7th July, 1948 as the first Multi-purpose Integrated River Valley Project of the country & since then DVC is carrying out the multi-faceted responsibilities for economic and industrial growth of the region. DVC is committed to the economic and industrial growth of the Damodar Valley region which extends over an area of 24235 sq. km. in the States of Jharkhand and West Bengal.

As per DVC Act, the organization has the following major objectives:

- Generation, Transmission and Distribution of Power
- Flood Control
- Promotion & Operation of Scheme for Irrigation water supply for industrial and domestic use, navigation & drainage.
- Promotion of Afforestation & Control of soil erosion in the Valley area.
- Promotion of Public Health & Agriculture, industrial, economic & general well being of DVC's area of operation.

POWER SYSTEM

Generation

DVC has constructed five Thermal Power Stations, three Hydel Power Stations and one Gas Turbine Station for generation of electrical energy in its command area. Out of 2761.5 MW total installed capacity of DVC power system, 2535 MW is from thermal route which comprises of the thermal units of different vintages ranging from 1953 to 1998, 144 MW from Hydel and 82.5 from Gas Turbine Station. The existing power plants of DVC are

Thermal:

Bokaro A	:	175 MW (3 x 45 MW) & (1x40 MW)
Bokaro B	:	630 MW (3 x 210 MW)
Chandrapura	:	750 MW (3 x 130 MW) & (3 x 120 MW)
Durgapur	:	350 MW (1 x 140 MW) & (1 x 210 MW)
Mejia	:	630 MW (3 x 210 MW)
Gas Turbine		
GTP, Maithon	:	82.5 MW (3x27.5 MW)

Hydel

Tilaiya	:	4 MW (2 x 2 MW)
Maithon	:	60 MW (3 x 20 MW)
Panchet	:	80 MW (2 x 40 MW)

Transmission

DVC started with 66 KV transmission system and switched over to 132 KV system to transmit electricity to different consumers. To cater the need of new generation bulk consumers as well as inter-state transfer of power, DVC gradually added 220 KV Double Circuit transmission lines. DVC's transmission system is spreaded over its area of command and even beyond in the States of West Bengal & Jharkhand. It is also inter-connected with NTPC, NHPC (Chukha) and operates as a constituent of integrated Eastern Regional Power Grid. The transmission infrastructure of DVC is as under :

Pressure	Line Length (Ckt. Km)	No. of Sub-stations
220 KV	1242	8
132 KV	3177	33
33KV	1504	15

OVERALL PERFORMANCE AND ACHIEVEMENT

During the year 2001-2002 DVC system generation was 7835.411 MU against a target of 9195 MU. The gap between the target and achievement has been due to low thermal generation for planned shut-downs of different units for carrying out preventive maintenance and overhauling activities as part of the five year rolling maintenance plan.

During April 2002 to 31st October 2002 DVC's system generation was 4967.666 MU comprising of 4742.400 MU from thermal, 218.546 MU from Hydel & 6.720 MU from Gas Turbine units. During the period, DVC's turn over from sale of power was around Rs. 1268.61 crore (provisional) leading to profit of Rs. 205.93 crore (provisional).

Performance Highlight

(April, 2002 to December, 2002)

System Generation : 6519.561MU

PLF of Thermal units : 40.26 %

Anticipated Target during the remaining period of the year 01.01.03 to 31.03.2003)

System Generation : 2340.439MU

ENVIRONMENTAL MANAGEMENT

Ash evacuation and utilization from the ash ponds of Power Stations are carried out regularly. The ash evacuated is dumped in the abandoned open cast mines of ECL, CCL & BCCL. For better utilization of ash generated at Mejia TPS, M/s Lafarge India Ltd. is in the process of installation of a Cement Plant at Mejia TPS.

RENOVATION & MODERNISATION

It has been planned to conduct RLA study and Renovation & modernization of the old units of DVC system and it is anticipated that there will be some improvement in performance of those units after thorough renovation & modernization. Unit wise list of renovation & modernization activities and progress thereof of Power Stations are as follows:

Station	Activity	Status
BTPS'A' U-1 to 3	RLA study of TG & Aux and BOP	Study completed. Final report along with test results/data forwarded to NTPC.
BTPS'A' U -1 to 3	RLA study of Blr & Aux	Study completed. Draft study report is expected shortly.
CTPS U– 1 to 3	RLA study of TG & Aux and BOP	Study completed.
CTPS U- 1 to 3	RLA study of Blr & Aux	Study completed. PET reports of Blr., ESPs, ID & FD fan of U-3 submitted. Draft RLA/CA report is expected shortly.
CTPS U- 4 to 6	RLA study including PET for TG, Blr & their aux & BOP	Draft report including BOP submitted.
DTPS U- 3	RLA study of TG & Aux and BOP	Study completed. Final report along with test results/data forwarded to NTPC.
DTPS U- 3	RLA study of Blr & Aux including PET	Study completed. Final report for warded to NTPC

- Bipartite agreement between NTPC & DVC for Consultancy Services for R&M/ LE work of CTPS U # 1 to 6 has been finalized/ signed.
- Matter related to signing of similar agreement for consultancy services of DTPS U # III is under process.
- Regarding BTPS 'A' U # I, II & III, NTPC would furnish a report analyzing the present conditions of the equipment so that decision can be arrived at either to retire these units or to carry out R&M and to add ESPs.
- PFC has been approached for grant in respect of R&M of CTPS U # 1 to 6.
    - Maithon Hydel Station: U # I, II & III (20 MW each): M/S NHPC has been engaged as consultant for R&M/ LE work. Order placed on consortium of ALSTOM, ALSTOM INDIA & BHEL. Intake gantry crane has been made operational. Work on Dam gantry crane is in progress. Refurbishment of intake emergency gate and service gates completed. Turbine inspection completed.

FUTURE PROJECTS

The Corporation has planned to go in a big way for capacity addition to the tune of 6210 MW during Xth Plan period in DVC system:

List of the projects according to priority of implementation is placed below. Considering the various issues/ constraints, implementation of Mejia TPS Unit # IV, V & VI and Chandrapura TPS Unit VII & VIII are viable for commissioning during Xth Plan period. while the green field projects may spill over to XIth Plan.

Sl No	Name of Project & Location	Capacity (MW)
1	MTPS Extn-U # 4 : 1X 210 MW (Bankura, W.B)	210
2	MTPS Extn-U # 5 & 6 : 2 X 250 MW (Bankura, W.B)	500
3	CTPS U # 7& 8 : 2 X 250 MW (Chandrapura, Jharkhand)	500
4	Maithon R/B TPS : 4 X 250 MW (Jharkhand) (JVC with BSES)	1000
5	DSP TPS – U # 1 : 1 X 500 MW (Burdwan, W.B)	500
6	Maithon L/B TPS U # 1 & 2 : 2 X 500 MW (Burdwan, W.B)	1000
7	BSP TPS – U # 1 : 1 X 500 MW (Bokaro, Jharkhand)	500
8	Koderma TPS –U # 1 & 2 : 2 X 500 MW (Jharkhand)	1000
9	Ramgarh TPS –U # 1& 2 : 2 X 500 MW (Jharkhand)	1000

WATER MANAGEMENT

For flood control, the Corporation has so far constructed four multi-purpose dams at Tilaiya, Konar, Maithon & Panchet and an irrigation system comprising of a barrage on River Damodar at Durgapur and a canal system of 2495 km. The existing infrastructure for water management is

- Dams & Barrage : 4+1
- Flood Reserve Capacity : 1270 MCM
- Irrigation Potential Created : 3.64 lakh Hec.
- Irrigation Command Area : 5.69 lakh Hec.
- Canals : 2 4 9 5 k m .

management of Barrage and Irrigation System has, however, been transferred to Govt. of West Bengal in 1964. DVC continues to supply irrigation water for Rabi, Kharif & Boro cultivation in the lower valley area including supply of water for industrial use.

SOIL CONSERVATION & AFFORESTATION

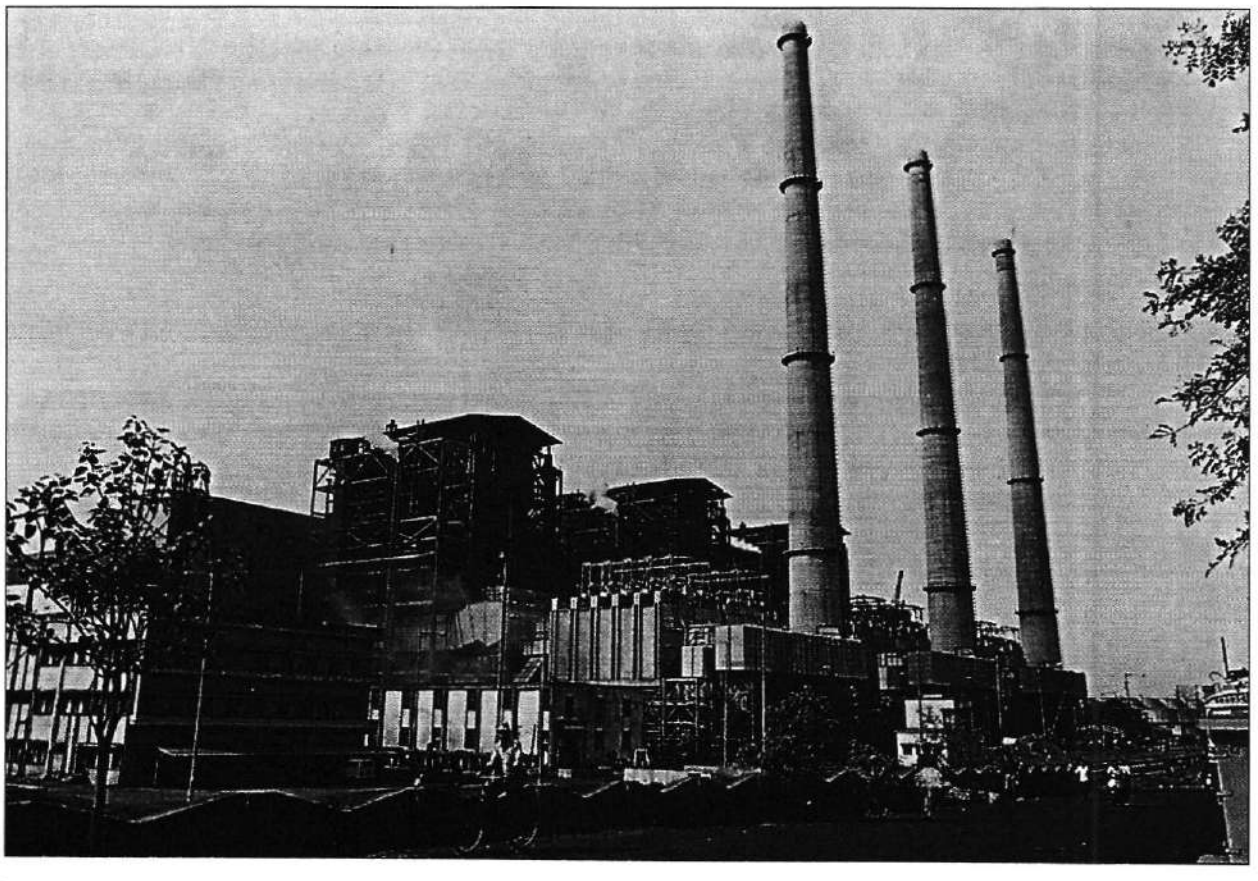
Soil Conservation & Afforestation are some of the important activities of DVC. These are carried out effectively to control soil erosion and land degradation in upper Damodar-Barakar catchment by adopting integrated soil conservation/watershed management and to check siltation of DVC reservoirs. These activities also retain soil fertility for sustained production of food, fuel, fiber etc. Since 1993 micro watershed concept in soil conservation was adopted by DVC as per the guideline of GOI. The whole Damodar-Barakar catchment area was categorized into 716 micro-sheds, out of which 219, 178, 180 & 139 came under VERY HIGH, HIGH, MEDIUM & OTHERS respectively. The critical areas were pin-pointed and emphasis was given to treat more vulnerable ones considering erosity factor.

JOINT VENTURE

Maithon Right Bank TPS (4x250 MW) Project is being implemented by M/s. Maithon Power Ltd (a Joint Venture Company of DVC & M/s. BSES Ltd., Mumbai.)

Bokaro Power Supply Company Limited (BPSCL); a joint venture company of DVC and SAIL has taken over the ownership of the existing Captive power station of Bokaro Steel Plant.

Bokaro Thermal Power Station



CHAPTER - 17.10

Bhakra Beas Management Board (BBMB)

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 w.e.f. 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) w.e.f. 15.5.1976.

FUNCTIONS

The Bhakra Beas Management Board is responsible for the administration operation & maintenance of Bhakra Nangal project, Beas Sutlej Link Project and Pong Dam including Power Houses and a network of transmission lines and grid sub-stations. The functions of Bhakra Beas Management Board are:

- To regulate the supply of Sutlej and Ravi-Beas waters to the States of the Punjab, Haryana, Rajasthan and Delhi, through a wide network of canals.
- To distribute power from Bhakra Nangal and Beas Projects to the States of Punjab, Haryana, Rajasthan, Himachal Pradesh and U.T. of Chandigarh.

Keeping in view the technical expertise available with BBMB, the Govt. of India through a notification in April, 1999 has also entrusted additional functions to Bhakra Beas Management Board of providing and performing Engineering and related technical and consultancy services in various fields of Hydro Electric Power and Irrigation Projects and to carry on all kind of business related thereto either independently or as a joint venture with any Central/State/Public Sector Undertaking(s) or Establishment(s) under the administrative control of Ministry of Power or as a joint venture with any other Agency/Organization with the approval of Government of India.

The works being managed by the BBMB are broadly grouped as three large multipurpose projects viz. Bhakra Nangal Project, Beas Project Unit-I (BSL Project) & 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 and Kotla Power Houses. Bhakra Dam is a majestic monument across the river Sutlej. It is a high straight gravity concrete Dam rising 225.55 m above the deepest foundation and spanning the gorge with 518.16 m length at the top. The Gobind Sagar Lake created by the Dam has 168.35 Sq.Km. area and a gross storage capacity of 9621 million cubic-metre. The two power houses, one on the Left Bank and the other on the Right Bank have a combined installed capacity of 1325 MW. The Ganguwal and Kotla Power Houses fed from Nangal Hydel Channel have an installed capacity of 168.15 MW.

The Beas Project Unit-I(BSL Project) diverts Beas Water into the Sutlej Basin, falling from a height of 320 metre and generating power at Dehar Power House having an installed capacity of 990 MW. This project comprises a diversion dam at Pandoh, 13.1 Km long Pandoh Baggi Tunnel having capacity of 9000 Cusec, 11.8 Km. Long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 Km. Long Sundernagar Sutlej Tunnel, 125 Metre high Surge Shaft and Dehar Power Plant.

The Beas Dam at Pong is the highest earth fill (earth core, gravel shell) Dam in India, being 132.6 metre high with a gross storage capacity of 8570 million cubic metre. The Pong Power Plant (2x60+4x66=384 MW) is located in the stilling basin d/s of pen stock tunnels.

The total installed generating capacity of the BBMB Power Houses is 2861.15 MW detailed as under:-

Power House	Installed Capacity	MW
Bhakra (Right Bank)	5x157	785
Bhakra (Left Bank)	5x108	540
Ganguwal	1x29.25+1x27.63+1x26.70	83.58
Kotla	1x29.25+1x27.20+1x28.12	84.57
Dehar	6x165	990
Pong	2x60+4x66	384
Total		**2867.15**

GENERATION & TRANSMISSION SYSTEM

The generation during 2001-2002 was 9937 MU against the target of 9648 MU. During the current year 2002-2003 the generation from the BBMB Power Houses has been 7443 MUs upto 31.10.2002 against the target of 6426 Mus. It is expected that the generation target of the current year of 2002-2003 i.e. 9650 MUs shall be achieved keeping in view the position of water in the Reservoirs. The plant availability of BBMB Power Stations during 2002-03 (upto Oct., 2002) has been 90.19%.

The power generation at BBMB Power stations is being evacuated through BBMB Power evacuation system running into 3735 Circuit KM length of 400KV, 220KV, 132KV and 66KV transmission lines and 24 EHV Sub-stations. The BBMB 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 POWER GRID and the States of Uttar Pradesh, Rajasthan and Delhi. The availability of transmission system during the year 2002-03 (upto Oct, 2002) has been 99.05%.

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 the northern India into Granary of the Nation.

The Bhakra Nangal & 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 State of Punjab, Haryana and Rajasthan are being supplied on an average about 28 MAF of water per year, which irrigates 1 crore 20 lac acres of land.

RENOVATION, MODERNISATION AND UPRATING (RM&U)

All the 5 units of Bhakra Right Bank Power Houses, which were commissioned during the year 1966 to 1968 have been uprated from original capacity of 120MW to 157MW each.

The RM&U of two units each at Ganguwal and Kotla Power Houses have already been completed adding about 13.69 MW.

RM&U of four units of 60 MW to 66 MW on Pong Power Plant has already been completed. This has resulted in additional capacity of 24 MW. The RMU of 5th unit of Pong has been taken in hand on 1.10.2002 and is expected to be completed on 28.2.2003. The RMU of 6th Unit is scheduled to be completed during 2003-2004 & this shall uprate the capacity of the existing machines by another 12 MW.

BBMB plans to undertake the RM & U works of Bhakra Left Bank Power House machines (5x108 MWs) which are in operation for the last about 40 years. All the five units are proposed to be uprated from 108 MW to 126 MW. The R M & U of Bhakra Left Power House is expected to provide additional capacity of 90 MW to the system and is expected to generate additional 88 MU annually due to improved efficiency. This work shall be carried out in Xth and XIth plan. The capacity addition shall be 18 MW during Xth Plan and 72 MW during XI Plan.

One unit each of Ganguwal and Kotla Power Houses which were supplied by M/S Hitachi Japan, are also planned for R&M. With the proposed R&M of each machine at Ganguwal & Kotla Power Houses, the derated capacity of the machines shall be restored to the original capacity adding 4.44 MW to the system and shall also result in additional annual generation of 36 MU. During renovation replacement of major component like runner, governors, stator, unit transformers and other associated equipment is envisaged. The work on this scheme is proposed to be undertaken during Xth Plan.

The RM&U work on the old Power Plants has given another about 30 years lease of life to the machines and is a significant step towards meeting the aspiration of the Nation for adding low cost peaking power to the system through Renovation, Modernization & Uprating of old power plants as per the National Hydro Policy.

CONSULTANCY SERVICES

In an endeavour to synergyse the existing potential of BBMB to boost the interests of its partner States, BBMB Consultancy Services were introduced.

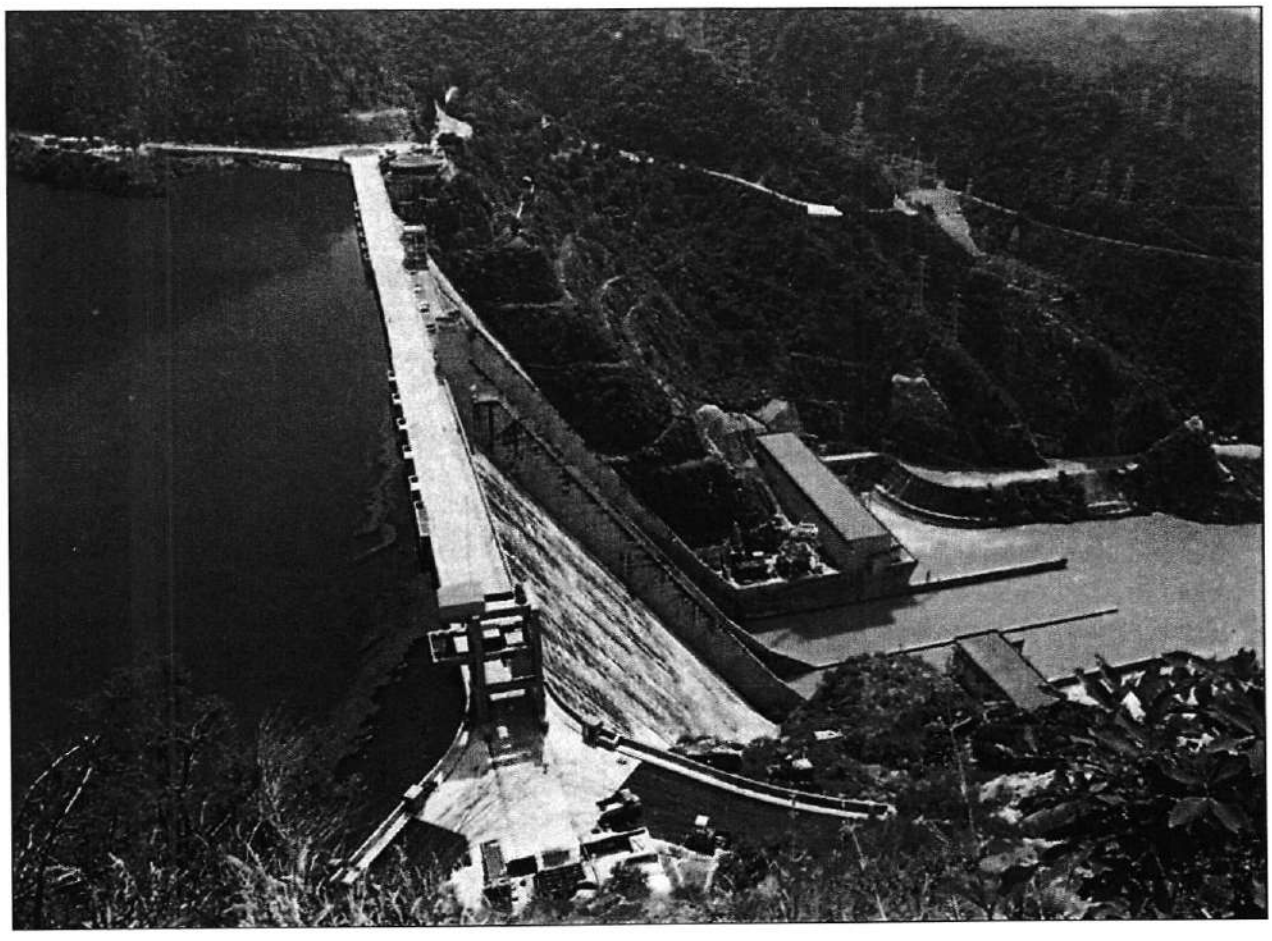
BBMB has also signed MOU with BHEL to provide consultancy services in the area of RM&U of HEP regarding RLA/LE Studies and Uprating of Plants; with NTPC to identify Hydro Potential sites,

preparation of Feasibility and Detailed Project reports, providing consultancy in computer application communication & MIS, R,M&U of existing hydro plants; with PFC to provide technical services as *Technical Adviser Hydro* in the area of Hydro Generation Projects and offer *Lender's Engineer Services* and with BSES in the field of Transmission and Distribution of 400KV Transmission Line Systems of APTRANSCO and for offering Consultancy Services to BSES in the sector of exploring Hydro Power Potential for development of hydro electric projects.

The following works have been executed by the Consultancy Services:-

- Third party inspections on behalf of UHBVNL & DHBVNL.
- Consultancy on procurement of Switchgear equipment to HVPNL.
- Preparation of Feasibility and Detailed Project Reports for our own Projects viz. Baggi PH (2x20 MW) & Mini Hydro Projects on BML Canal (around 19.18 MW).
- Preparation of Hydro Power Studies (in house & other SEBs viz. TNEB, MPSEB).
- Thermovision scanning, hot line maintenance
- DPR for upgradation of 220 KV ring main of DVB.

Panoramic View of Bhakra Dam



Bureau of Energy Efficiency (BEE)

Recognising the importance and benefits of energy efficiency, the Government of India has enacted the Energy Conservation Act, 2001 which has come into force from 1st March, 2002.

The Act empowers the Central Government and, in some instances, state governments to:

- notify energy intensive industries, other establishments, and commercial buildings as designated consumers.
- establish and prescribe energy consumption norms and standards for designated consumers.
- direct designated consumers to
  - designate or appoint certified energy manager in charge of activities for efficient use of energy and its conservation.
  - get an energy audit conducted by an accredited energy auditor in the specified manner and intervals of time.
  - furnish information with regard to energy consumed and action taken on the recommendation of the accredited energy auditor to the designated agency.
  - comply with energy consumption norms and standards, and if not so, to prepare and implement schemes for efficient use of energy and its conservation.
- prescribe energy conservation building codes for efficient use of energy and its conservation in commercial buildings.
- State Governments to amend the energy conservation building codes to suit regional and local climatic conditions.
- direct owners or occupiers of commercial buildings to comply with the provisions of energy conservation building codes.
- direct mandatory display of label on notified equipment and appliances.
- specify energy consumption standards for notified equipment and appliances.
- prohibit manufacture, sale, purchase and import of notified equipment and appliances not conforming to standards.

Under the provisions of the Act, Bureau of Energy Efficiency has been established with effect from 1st March, 2002 by merging the erstwhile Energy Management Centre of Ministry of Power. The Bureau would be responsible for spearheading the improvement of energy efficiency of the economy through various regulatory and promotional instruments.

The Governing Council of the BEE has been established and notified vide Gazette of India on 26.04.2002. The BEE is the central nodal agency for promoting energy efficiency, its conservation and to implement the various provisions of the Energy Conservation Act, 2001 in the country. The BEE has prepared an Action Plan, which was released by the Prime Minister on 23rd August, 2002 while inaugurating the International Conference on Strategies for Energy Conservation in the New Millennium in New Delhi. The Action Plan includes the following thrust areas:

- Indian Industry Programme for Energy Conservation (IIPEC)
- Demand Side Management (DSM)
- Standards & Labelling Programme
- Energy Efficiency in Buildings and Establishments
- Energy Conservation Building Codes
- Professional Certification and Accreditation
- Formulation of Manuals and Codes
- Energy Efficiency Policy Research Programme
- School Education
- Delivery Mechanism for Energy Efficiency Services

The BEE is taking steps to implement the Action Plan in a time bound manner.

- The following energy saving potential has been estimated in the next 5 years (by the 2006-07) through the programmes and activities of BEE as per details given below:-
- 3320 MW avoided capacity

(a)	Standard and Labeling	1960 MW
(b)	Designated Consumer through Implementation of IIPEC	1200 MW
(c)	DSM	160 MW

9 million tonnes of oil equivalent per year in thermal areas.

Central Power Research Institute (CPRI)

The Central Power Research Institute (CPRI) was established in Bangalore by the Government of India in 1960. It became an Autonomous Society in the year 1978 under the aegis of the Ministry of Power, Government of India. The main objective of setting up of the Institute was to serve as a National Laboratory for undertaking applied research in electric power engineering besides functioning as an independent National Testing and Certification Authority for electrical equipment and components to ensure reliability and improve, innovate and develop new products. More specifically the objectives cover the following :

OBJECTIVES:

- To serve as a national centre for applied research in electrical power engineering.
- To function as an independent and impartial authority for certification and testing of electrical equipments manufactured in the country for quality assurance
- To Perform tests for product development
- To offer consultancy on problems referred by utilities and industries.
- To Undertake sponsored research programmes on subjects of interest to Industries & power utilities

The Institute is headed by a Director General and has several research laboratories and testing facilities and employ about 280 qualified Scientists and Engineers besides other supporting staff. The Head Office of the Institute is at Bangalore and its other units are located at Bhopal, Hyderabad, Nagpur, Ghaziabad, Thiruvananthapuram and Raichur.

PERFORMANCE AND ACHIEVEMENTS - AT A GLANCE

The CPRI continued to play a vital role in quality assurance to ensure reliability of power equipment through testing and certification in accordance with National and International standards. Despite high recession in the electrical industry, the Institute revenue performance during the last six months of the year through testing and consultancy & other receipts stood at Rs. 1170.50 lakhs as against Rs.1020.43 lakhs for the same period last year.

IMPLEMENTATION OF CAPITAL SCHEMES

During the IX Five year plan period the following five projects were sanctioned with a total outlay of Rs. 4462 lakhs.

1. Augmentation of Power Supply facilities at CPRI
2. Improvement of test & handling facilities
3. Center for Software Engineering & Training
4. Establishment of Equipment Vibration Testing Centre
5. Establishment of Real Time Digital Simulator facility

First two of the above projects have been completed. Most part of the work has been completed on the third project namely 'Centre for Software Engineering & Training' & the project on establishing "Equipment Vibration Test Facility" is in the advanced stage of completion. The project on establishing Real Time Digital Simulator at an estimated cost of Rs. 500 lakhs was sanctioned on 30th March 2002 and is being implemented.

IMPLEMENTATION OF RESEARCH SCHEMES

Research Acitivites

The Institute continued its strides in the area of Research; 22 new Research projects amounting to Rs.412.50 lakhs were commenced from April 2002, along with 31 ongoing projects commenced during previous years.

During the reporting period, the following six technical reports were brought out in various areas and also 24 technical papers were presented in both National and International Seminars / Workshops

- Time Synchronization of EHV Substation equipment using GPS
- Active Power line Conditioner for power systems
- IC card operated Energy meter
- Technology development of Flame Retardant Low Smoke Cable compound
- Analysis of Furan compounds in insulating oil
- Polyol Esters as dielectric liquid.

SPONSORED TECHNOLOGY DEVELOPMENT / DEMONSTRATION

The Institute in its endeavor to help Utilities and Industries, expects to take up many sponsored projects of relevance to the Power-sector.

Some of the important projects taken up/ continued during the year are :

1. **Indo-Norwegian Environmental Project**
   The Institute took part in the Flyash demonstration project of KPCL funded by Norway government. Karnataka State Council for Science and Technology (KSCST) in collaboration with CPRI and KPCL, is coordinating the Environmental project funded by Norway Government at an outlay of Rs.580 lakhs. The project started in November 1999 and will be completed by December 2002. Under this project, CPRI has provided consultancy to establish a self sustaining Fly Ash Utilisation Demonstration Centre at Raichur. Till date all the plant & machinery pertaining to fly ash based mosaic tiles unit has been installed.

2. **Definite purpose contactor development**
   A joint R&D programme with M/s Sathyam GE Software Services Ltd., was taken up in April 2000 with a duration of two and half years at a cost of Rs. 25.00 lakhs. The objective under this sponsored programme was to develop & create test facilities for definite purpose contactor testing as per the specific requirement of Underwriters Laboratory of USA [UL 508 standards]and carryout measurement of special parameters to generate data for design & development. Under the programme the required facilities have been created and the prototypes tested as per the UL standards.

3. **Development of Technology for Fire retardant Low smoke Power cables**

   A joint R&D programme taken up with M/s Farcom Cables, Bangalore and sponsored by DSIR under PATSER scheme started in April 2001 with duration of three years, at a cost of Rs. 100.00 lakhs (Rs.12.50 lakhs for CPRI contribution) is progressing as scheduled. More than 100 PVC formulations have been compounded of which cable extrusion from a few combinations have undergone extensive testing and results obtained are suggesting that the additives developed not only reduce smoke generation but also improve the flame propagation. Commercial samples will be produced shortly.

INDUSTRY INTERACTIONS :

On request by the Plastic Capacitors Technology Center (PCTC), Bangalore, an Association of manufacturers of Plastic Film capacitors which showed keen interest in some of the R&D activities, a study on Bench Marking of Quality of Indigenous Capacitors against Imported Capacitors was taken up. This Study has helped the member industries to change their design, introduce stricter quality control, improve reliability and finally to come out with better product. In general, it has helped many industries overcome their failures, expand their export market and the business prospect. PCTC has communicated that an export business of US $ 00000/- was achieved by M/s PAN Electronics through export to China and Taiwan.

RESEARCH SCHEME OF POWER [RSOP] :

Ministry of Power provides funds under RSOP for Applied Research / Technology development to Academic Institutions / R&D organisations / Institutes / Utilities etc. This programme is now co-ordinated by CPRI. CPRI has advertised the scheme in several fora and also through the web so that Industry / Institutes / Utilities can collaborate in various research activities in the area of power. Till date, 38 proposals have been received and the Expert Committee has cleared 11 new project proposals. Other project proposals are under review.

ACCELERATED POWER DEVELOPMENT & REFORMS PROGRAMME [APDRP]

CPRI has been entrusted with assisting 9 distribution circles in the state of Karnataka , Kerala & Andhra Pradesh in improving the distribution network under APDRP prpogramme. CPRI has established Site Offices at these places and 9 Nodal Officers have been posted at these places. In order to create a better working environment at these places, specific facilities like Transport, Accommodation, Communication have been made available to these officers to make their operation more effective and to motivate the individuals to deliver the best. Detailed Project Reports for all three states have been prepared and sent to Ministry of Power containing specific initiatives to be implemented in the chosen circles. The DPRs of Karnataka and AP circles have already been approved and the funds have been released. The DPR's of Kerala circles are under consideration.

NATIONAL PERSPECTIVE PLAN FOR R&D IN INDIAN POWER SECTOR

The Ministry of Power had constituted Standing Committee on Research & Development to identify & formulate a perspective research & development

plan for 15 years for the Indian Power Sector. CPRI was identified as the member convener under the chairmanship of Chairman CEA to formulate the task. The final report on the National Perspective Plan for R&D in Indian Power Sector was submitted by CPRI to Ministry for power. Based on the report, 23 prioritised theme areas including 3 critical initiatives viz. Data Repository, Distributed Generation & HRD proposed to be completed within 2-4 years time have been identified along with the Lead Agencies [players]. CPRI has been identified as a Lead Agency in respect of Energy Metering, Residual Life Assessment, Data Repository & Load Research and HRD, also CPRI has been identified as a nodal agency and to act as interface between Lead Agencies and MoP in implementation of R&D initiatives in power sector.

MARKETING & PUBLICITY

The Institute has stepped up its marketing activities both within the country & abroad. Within the country, emphasis was laid on marketing of third party inspection services for Power equipment procured by Utilities. The Institute has bagged assignments from KPTCL, TNEB, APTRANSCO, UHBVN, DHVBN, HVPN, and J&K Electricity Board. Some of the important overseas orders received include: Testing of Transformers from M/s Energy Pac, Bangladesh, Testing of VCB Panel for M/s LKH Switchgear-Malaysia & Testing of 600V Pilot cable for M/s Oman Cable Industry. An order worth US $ 50,000 has been received from TNBR, Malaysia against stiff international competition for calibration of HV equipment and training of personnel for calibration.

NEW TEST FACILITIES

Some of the new facilities added during the year are as follows:

- 11kV 200 Amps Vacuum Type Capacitor Load Break Switch was tested successfully for "Special Electro Mechanical Endurance Test" for 4000 close and 4000 open operation. This test facility is unique in nature and it is not available elsewhere in India. On the request of SEBs and manufacturers, this test facility was developed at CPRI Bhopal with inhouse efforts.
- Cable charging current breaking test on 12 kV/7.2kV circuit breakers at a cable charging current of 50 Amps was conducted successfully as per IEC/IS standards. This test facility was developed due to demand from several clients.
- Test facility for measurement of switching transients on HT Capacitor Bank
- On-line measurements of Partial Discharges in electrical equipment
- Digital electromagnetic core imperfection detection system (ELCID) for detection of imperfection and hot spots in the Stator cores of Turbo, Hydro and large AC motors.
- Test facility for automobile cables testing as per IS: 2465 & relevant standards

SPECIAL TESTING / CONSULTING ASSIGNMENTS CARRIED OUT

- protection coordination studies for the FACTS project – TCSC project on the 400kV Kanpur – Ballabgarh line
- Energy audits in the specific areas carried out for the first time
- Milling system energy audit for one unit of 200 MW and one unit of 500MW unit at Korba Super Thermal Power Station NTPC, Korba
- Thermal Insulation audit for two HRSGs at Kayamkula
  Combined cycle power project, NTPC, Kayamkulam
- Lubrication conservation study at Rihand Super Thermal Power Project, NTPC, Rihand Nagar
- Water balance study at Rihand Super Thermal Power Project, NTPC, Rihand Nagar
- Air Preheater energy audit at Raichur Super Thermal Power Station, KPTCL, Raichur
- Remaining Life Assessment study on Bhusawal TPS, Unit 1 of 62.5 MW and DVC Chandrapur TPS, Unit No.4 of 120 MW

PATENTS

The Institute filed two patents applications during the year for the inventions relating to:

- Development of condensate depression monitor.
- Prepaid card operated digital energy meter using Novel Card Reading Mechanism.

TECHNOLOGY TRANSFER

The Institute intends to promote indigenously developed technologies by participating in

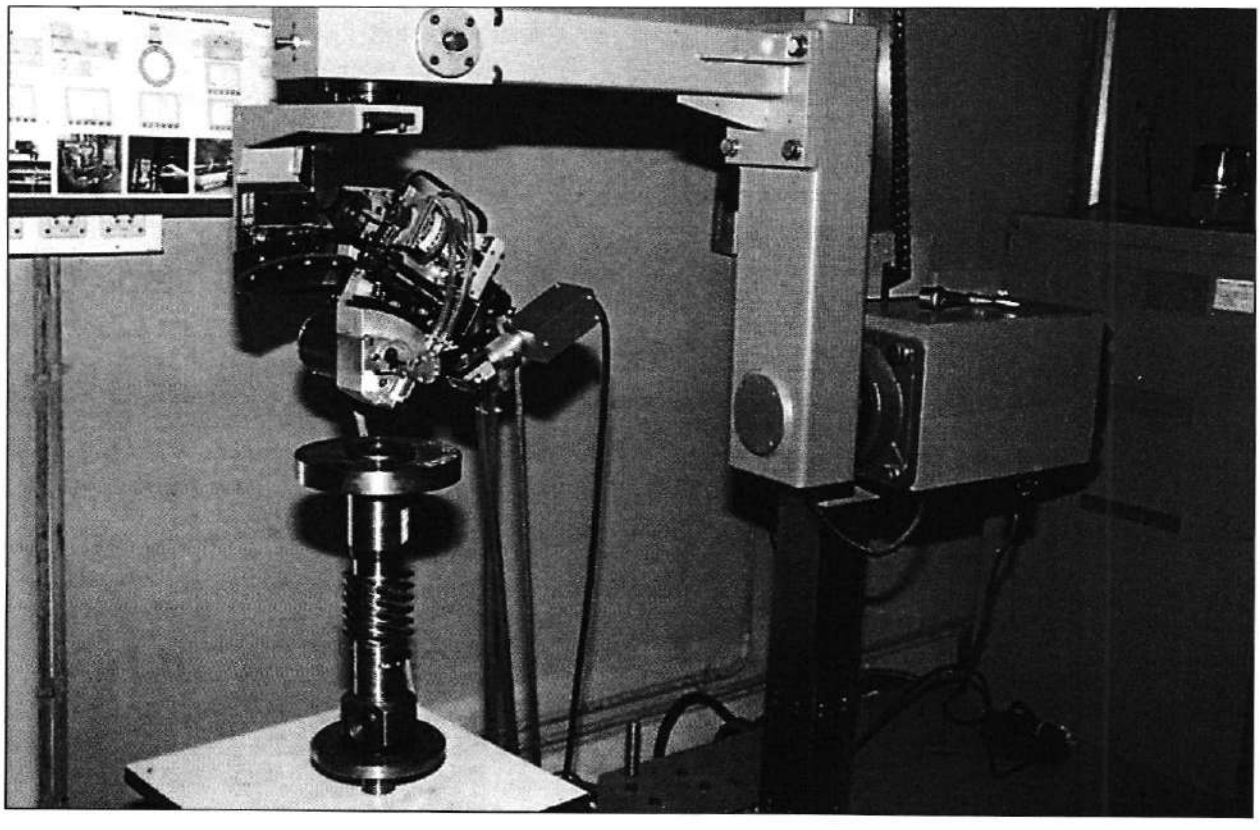
Exhibitions and Seminars etc. The technology know-how for the following

- Reclamation of discarded transformer oil was transferred to M/s. special Oils, Hubli.
- Ground Mat design software was procured by Maharashtra State Electricity Board, Mumbai and Tamil Nadu Electricity Board, Chennai.

NON PLAN EXPENDITURE

The Institute has been meeting its non-plan expenditure through revenue generated by testing and consultancy for the last fourteen years and the revenue has been increasing over the years. The trend is expected to continue also during the current year. CPRI has earned a revenue of Rs.2806 lakhs during 2001-02 representing a quantum increase of over two crores the revenue earned during 2000-01 inspite of recession in industries. However all efforts are made to increase the revenue earnings for the Institute and the target for the year 2002-03 is about Rs.3000 lakhs.

Residual Stress Measurements of Turbine Shaft by X-Ray Method, CPRI, Bangalore



CHAPTER - 17.13

National Power Training Institute (NPTI)

National Power Training Institute (NPTI) an ISO: 9001:2000 Organisation, is a registered Society set up under the Ministry of Power for development of Human Resources in the Indian Power and Energy Sector. With the main Institute at Faridabad (Haryana), NPTI operates on an all India basis through its Regional Institutes located at Neyveli (Tamil Nadu), Durgapur (West Bengal), Badarpur (New Delhi) and Nagpur (Maharashtra), equipped with world class Hi-tech infrastructural facilites for conducting different courses on technical as well as management subjects. Two Institutes of CEA viz. Power System Training Institute (PSTI), Bangalore and Hot Line Training Centre (HLTC), Bangalore have been merged with NPTI w.e.f. 1st April, 2002.

Since its inception, NPTI has shared its engineering and technology expertise with more than 72,000 Power Professionals besiders over 40,000 persons in its mass education programmes on Energy Conservation, Power Reforms etc. across the country.

NPTI entered into an MOU with the Ministry of Power in respect of achieving its principal parameters, the number of trainees, trainee weeks and revenue earning for the year 2002-03. The number of trainee weeks achieved during April-Nov 2002 is 29,495. The revenue earned during the April-Nov 2002 is Rs.443.53 lakhs.

NPTI launched two years full time MBA Programme in Power Management duly approved by AICTE and affiliated to Maharishi Dayanand University, Rohtak in its Faridabad Unit. It also launched 4 year full time Degree Course B.Tech (Power), duly approved by AICTE at Badarpur and Nagpur Unit affiliated to the Guru Gobind Singh Indraprastha University and Nagpur University respectively. This year, the B.Tech (Power) course was launched by NPTI at its Eastern Region Institute, Durgapur, duly approved by the AICTE and affiliated to the West Bengal University of Technology.

NEW CLIENTS OF NPTI

The NPTI is equipped with sophisticated training infrastructure at its Centre for Advanced Management and Power Studies at Faridabad and all its Regional Institutes like Laboratories and Workshops; hostel and library facilites, hi-tech training resources (e.g.equipment of graphic/ photographic studies, movie camera, digital cameras, desktop publishing facilities, etc for developing various training related material such as manuals, exhibits, state-of-the-art multimedia career based training facilities); computer laboratories; 500 MW & 210 MW Simultators at Faidabad, Badarpu and Nagpur. NPTI has been conducting various long term and short term courses for all levels of the technical and managerial personnel/executives of the Central and State Power Utilities. It has been extending its activities to various orgnaizations in the power sector. This year, Power Trading Corporation, IRCON International Ltd. and ACC Ltd. were added to the clientele of the NPTI. Besides its regular programmes, the NPTI had conducted the following special training programmes:-

1. Seven days Training Programme on High Voltage Sub Stations for the Executives of IRCON International Ltd.
2. Two weeks specialized training on operation control of Thermal Power Plants for Operators of Tata Power Company Ltd.
3. 26 weeks training for Engineers of ACC.
4. Training of the 8th Batch of Executive Trainees from Power Grid.
5. Special Training Programs for National Thermal Power Corporation (NTPC) Operators/Supervisors.
6. Training Program for Nuclear Power Corporation of India Limited.
7. Training Program for National Hydroelectric Power Corporation (NHPC) Junior Engineers.
8. Induction cum Orientation Training Program for West Bengal Power Development Corporation Ltd. (WBPDCL).
9. Special Training Program for Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (RRVUNL).
10. Lead Auditors Program on ISO 14001.
11. National Seminars in Collaboration with Central Board of Irrigation & Power (CBIP).
12. Workshop on Power Cables in Collaboration with CPRI.
13. Seminar on Welding Technology in association with L&T.
14. Marketing of Multimedia CBTs and Publications.

NTPTI have developed multimedia computer based training packages and are making rigorous efforts to market them to various utilities. During the year CBT packages were sold to NTPC, BBMB,

NHPC, APGENCO and Tata Power. NPTI publications have also been procured by different organizations.

TRAINING ON SIMULATORS

Training programs on the 500MW/210MW Simulators have been conducted covering 290 trainees from different organizations during April-November 2002.

ISTD PROGRAMME ON BENCHMARKING BEST HRD PRACTICES

NPTI was short listed by the Indian Society for Training and Development (ISTD) for the National Award for Best HRD Practices 2001-2002 along with 6 other premier organizations like NTPC, NPC, MMDC, L&T, HAL etc. Director General, NPTI presented an Award Winning case on "HRD Initiatives Towards Invigorating NPTI" during the event held on 10th July, 2002.

MOTIVATION - TEACHERS' DAY FELICITATIONS.

Nine faculty members from the 7 units of NPTI were felicitated on the Teachers Day i.e. 5th September, 2002 for their extraordinary dedication to teaching.

On the occasion of NPTI's Annual Day celebrations on 14th November, 2002, fifty six (56) awards were conferred on the faculty members and the students including the Benoy Sinha Gold Medals for the 'Best Trainee' and 'Best Faculty' of NPTI for the year 2001-2002.

HINDI COMPUTERIZATION

All out efforts were made to implement Hindi language in official working in compliance to the provisions enshrined in our constitution. Three (3) programs were organized on computer applications in Hindi during the months of June & July 2002 for NTPC, PGCIL, THDC and DVC personnel.

RECOGNITIONS

ISTD National Award 2001-02 was conferred upon NPTI for Best HRD Practices: Second Best Organisation.

Dr. B.S.K. Naidu, Director General, NPTI received Platinum Jubilee Eminent Engineer Award from the Institution of Engineers (India) for his significant contribution to Engineering Profession.

Shri V.S. Lothe, Principal Director (Western Region) received the Lal Bahadur Shastri Memorial National Award as Excellent Cheif Executive from International Greenland Society, Hyderabad.

Smt. Manju Mam, Dy. Director, NPTI Corporate Office received the National Award 2001-2002 from ISTD as "Best Young Women Trainer".

LOOKING AHEAD

In order to set new standards of training in the power sector, the following fresh activities have been envisaged:

- Obtaining ISO 14001 Certification for NPTI
- Conduct All India Distribution Reforms Program under APDRP
- Stepping up transnational training for revenue generation in foreign exchnage & international image building
- Setting up of Training Institute in the North Eastern Region.
- Establishing and maintaining a Mini Hydro Power Project for Training, Energy Conservation and self-sustenance
- Setting up of T&D Resource Centre.

STATUS OF NORTH-EASTERN REGIONAL INSTITUTE

To improve the performance of the Power Stations in the North-Eastern region, NPTI is proposing to start the training and HRD activity for the Power Sector personnel by establishing a Power lock in IIT premises or in the adjoining institutional area in Guwahati. Deliberations are being carried on with Director IIT Guwahati. A provision of Rs.14.75 crores has been allocated for this purpose in the X Plan funds.

CHAPTER - 18

Other Important Activities

POWER TRADING CORPORATION OF INDIA LTD. (PTC)

Power Trading Corporation of India Limited (PTC) was set up in April 1999 with an authorized capital of Rs. 150 Crores, with the paid up capital in the ratio of 30% from PGCIL, 15% each from NTPC and PFC and the balance 40% to be raised from the market. The capital structure of PTC has been restructured and the authorized capital has been raised to Rs. 750 Crores. The four Centre Power Sector companies namely NTPC, PFC, PGCIL and NHPC will contribute 8% each of the total paid up capital and balance is to be raised from the market. DVC has signed an equity subscription agreement for Rs. 10 Crores. Discussions with the FIs and Utilities are already going on for equity participation for the balance. The paid-up capital will be raised to the authorized level of Rs. 750Crores over a period of 3-4 years.

PTC's main function is to catalyse development of Mega Power Projects and other power projects by acting as a single entity to enter into Power Purchase Agreements (PPAs) with Independent Power Producers (IPPs) on the one side and Multipartite PPAs with users/SEBs under long term arrangement on the other, thus insulating the IPPs from protracted negotiations with multipartite SEBs and receivable risks. PTC has also been mandated for power trading to optimally utilize the existing resources in the country as also promoting exchange of power with neighbouring countries. Government of India has identified PTC as a nodal agency to deal with matters relating to exchange of power between India and its neighbouring countries.

PTC has set the following statement of purpose for itself, which acts as the vision for the company:

"To Be a Front Runner in Power Trading By Developing a Vibrant Power Market and Striving To Correct Market Distortions"

PTC has also set the following mission for itself:

- Promote Power Trading to optimally utilize the existing resources
- Catalyze development of Mega and other Power Projects including Hydro Projects
- Promote exchange of power with neighbouring countries
- Develop power market in not too distant a future

Identification of probable sellers and buyers (for short term and long term), coordination with various agencies for dispatch, metering and billing, revenue realization, energy accounting, co-ordination with REBs, RLDCs, SLDCs etc. and finding alternative buyer(s) are among the major services offered by PTC.

Trading of Power

PTC has embarked upon trading by organizing purchase of power from surplus locations and selling to deficit states. Seasonal diversity in generation and demand of different power utilities gives ample opportunities for short term trading. PTC started trading with limited transactions during 1999-2000 (28.35 MUs) but trading on sustained basis commenced from June 2001 which has grown to a figure of 1617.4 MUs for the financial year 2001-02. PTC has a target of 4000 MUs for the FY 2002-03, out of which it has achieved trading of 3314 MUs till January 2003. PTC's major trading partners include West Bengal, DTL, DVC, Haryana, Malana, Goa, UPCL, Andhra Pradesh etc. PTC is also entering into deals with timeframes varying from 7 days to 3 years. PTC has also introduced 'differential pricing' concept for 'round the clock' and 'off-peak power'. Due to this, customers can sell and buy power in the same time frame i.e. one can buy power in peaking period when it is power deficit and can sell power during off-peak hours when it is surplus in power and thus the vision of developing a dynamic power market is increasingly taking shape.

PTC has approached regulatory authorities for creation of enabling environment and is also working out on framework agreements to catalyse electricity trading and development of projects. To increase its trading activities in future, PTC has set its eye on the surplus power available with captive power plants (CPPs) and also pooling power from distributed generation viz., wind and small hydro power plants.

In addition to inter-state exchange of power within the country, there is scope for trade of electricity with neighbouring countries. PTC has been identified as the nodal agency for exchange of power between India and Nepal PTC has also taken over trading of surplus power from 336 MW of Chukha and 60 MW of Kurichhu Hydro Power Projects from Bhutan.

Development of Projects

PTC has shifted its focus from Mega-Power Projects to small and medium sized projects which are being promoted by IPPs. MoUs with developers have been signed in a number of cases like Lower & Middle Kolab, Samal hydro power projects etc.

A few project developers have approached PTC with indicative proposals for large, medium and small sized hydropower projects in the Himalayan Range (including some from Nepal), Jammu & Kashmir, Himachal Pradesh, Uttaranchal, North-Eastern States and other states like Orissa as also less costly thermal power projects. These proposals are under discussions.

Perspective

The present level of inter-state exchange is still quite limited. With full implementation of Availability Based Tariff (ABT), and the gradual development of the National Grid the prospects and volume of trade are likely to increase as has been shown in the case of the Western Region. ABT, proposed to be implemented for inter-state Generating Stations, along-with unscheduled interchange amongst various utilities will encourage trading of energy by providing correct commercial signals. The greatest benefit that may be derived from such trading is that it will help not only in achieving better economic efficiency and improved reliability but also in converting unscheduled interchanges to scheduled interchanges of power between the States and improving the quality of power supply.

PTC is making efforts to establish a dynamic power market in the country. This is a difficult and challenging task in the given environment due to lack of transmission facility for unconstrained flow of power from the surplus locations to the deficit locations and poor paying capacity of SEBs. PTC has taken several meaningful steps and hopes that with investment towards strengthening the grid at state/national level, open access to the grid and suitable institutional mechanism, there would be better infrastructural facilities and a more conducive environment for a power market in India.

CONSULTATIVE COMMITTEE OF MEMBERS OF PARLIAMENT

During the year 2002-2003, 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) "CAPACITY ADDITION PROGRAMME DURING THE 10TH FIVE YEAR PLAN" (ii)"RENOVATION AND MODERNIZATION PROGRAMME' (iii) "ENERGY CONSERVATION" (iv) "ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME" (v) "NATIONAL HYDRO-ELECTRIC POWER CORPORATION" and (vi) RESEARCH FACILITIES IN THE POWER SECTOR.

WELFARE OF SC/ST &OBC

An SC/ST Cell has been set up since the early nineties which functions under the direct control of the Deputy Secretary(Administration) and assists Liaison Officer (SC/ST) and Liaison Officer (OBC). The cell monitors the implementation of reservation policies of the Government of India in the Ministry as well as the organizations under the administrative control of the Ministry of Power. Periodical reports on the subject are sent as per prescribed schedule to the Department of Personnel & Training, Department of Public Enterprises, Ministry of Social Justice & Empowerment and National Commission for SC/ST.

2. During 2002, annual inspections of 23 (8 by LO(ST/ST)) and 15 by LO(OBC) offices were carried out. The LO(SC/ST) had interactions with the SC/ST officials which helped to alleviate many of the misconceptions/ misapprehensions about the management and the reservation policy.

3. In order to review the progress made by the organization under this Ministry's administrative control, to clear the backlog of reserved vacancies, a meeting was takeh by MOS(P) on 18.11.2002.

It was reiterated that wherever there were shortfalls, earnest efforts should be made to fill up the vacancies.

Recruitment of SC/ST candidates in National Power Training Institute

During 2002-03 three SC/ST candidates have been recruited.

WELFARE OF MINORITIES

Separate schemes do not exist in the Ministry of Power for welfare of the minorities, however, the schemes recommended for their welfare from time to time by the agencies concerned are scrupulously followed.

GRIEVANCE CELL

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 year ending on 31.12.2002 is as under: -

Brought Forward as on 31.12.2001	Number of grievances received during the year	Total number of grievances	Number of grievances disposed off	Number of grievances pending
10	10	20	16	4

The inspection of the Grievance Redressal Machinery of the various Public Sector Undertakings, Joint venture Corporations, Autonomous Bodies, Statutory Bodies and attached offices under the control of the Ministry of Power, with a view to improving their functioning, has been completed. A report in this matter has also been sent to the Department of Administrative Reforms and Public Grievances. Stray cases of public grievances referred to the Ministry have been disposed off.

INFORMATION AND FACILITATION CENTRE

There is an 'Information and Facilitation Centre' of the Ministry which is functioning at Ground Floor of the Shram Shakti Bhawan, New Delhi. The Website of the Ministry is accessible on NIC Webserver at the address of www.powermin.nic.in.

CONTROLLER OF ACCOUNTS (COA)

The Secretary is Chief Accounting Authority of Ministry of Power . The office of Controller of Accounts functions under overall supervision of JS & FA. It has Controller of Accounts with one Deputy Controller of Accounts and 7 Pay & Accounts Officers including one outstation Pay and Accounts officer in Bangalore having cheque drawing powers and one for Internal Audit. The monthly accounts of all the PAO's are submitted regularly to the Principal Accounts Office every month who is responsible for consolidation and submission of Accounts in Detailed Classified Form to Controller General of Accounts. The Principal Accounts Office is also responsible 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). Which is then compiled for the Govt. of India Accounts.

The Office of the Controller of Accounts has four Pay & Accounts Offices, working under his control, viz.PAO(CEA), New Delhi, POA (CEA), Bangalore, PAO (Sectt.) New Delhi and PAO (BMCC), New Delhi. The monthly accounts of these offices are submitted regularly to the Principal Accounts Office. Thereafter these are consolidated and sent to the Office of the Controller General of Accounts, Ministry of Finance in a detailed classified form.

The Principal Accounts Office is also responsible for the preparation of Appropriation Account. Statement of Central Transactions (SCT) and Finance Account of annual basis for submission to the Controller General of Account (CGA). The Principal Accounts Office also brings out the document 'Accounts at a Glance' which contains total transactions of the Ministry and it various organizations in most scientific way. The office of the COA is responsible for preparing the Receipt Budget of the Ministry.

Internal Audit Wing

The Internal Audit Wing ensures adoption of sound procedure, rules and financial propriety of transactions of accounts. This Wing also advises the DDOs to ensure Financial propriety on behalf of P & A.O.

Performance of the Internal Audit Wing during the year 2001-2002 is as under:

Year (Accounts Due of audit during 2001-02	No. of Units due / inspected	No. of Paras raised	No. of Paras settled	No. of Paras outstanding upto 30.11.2002
2001-02	**23/17**	**151**	**89**	**62**

AUDIT OBSERVATIONS

The Organisation-wise break up of Outstanding Audit Observations and Inspection Reports for Audit of C & AGs as on 31-3-2002 is as under:

S.No.	Organisation	No. of Inspection Reports	No. of Paras
1.	Ministry of Power	1	12
2.	Central Electricity Authority	8	43
3.	Central Electricity Regulatory Commission	-	-
4.	Controller of Accounts		
(i)	PAO (CEA),New Delhi	1	4
(ii)	PAO (Sectt), New Delhi	1	1
(iv)	PAO (CEA) Bangalore	1	2
	Total	**12**	**62**

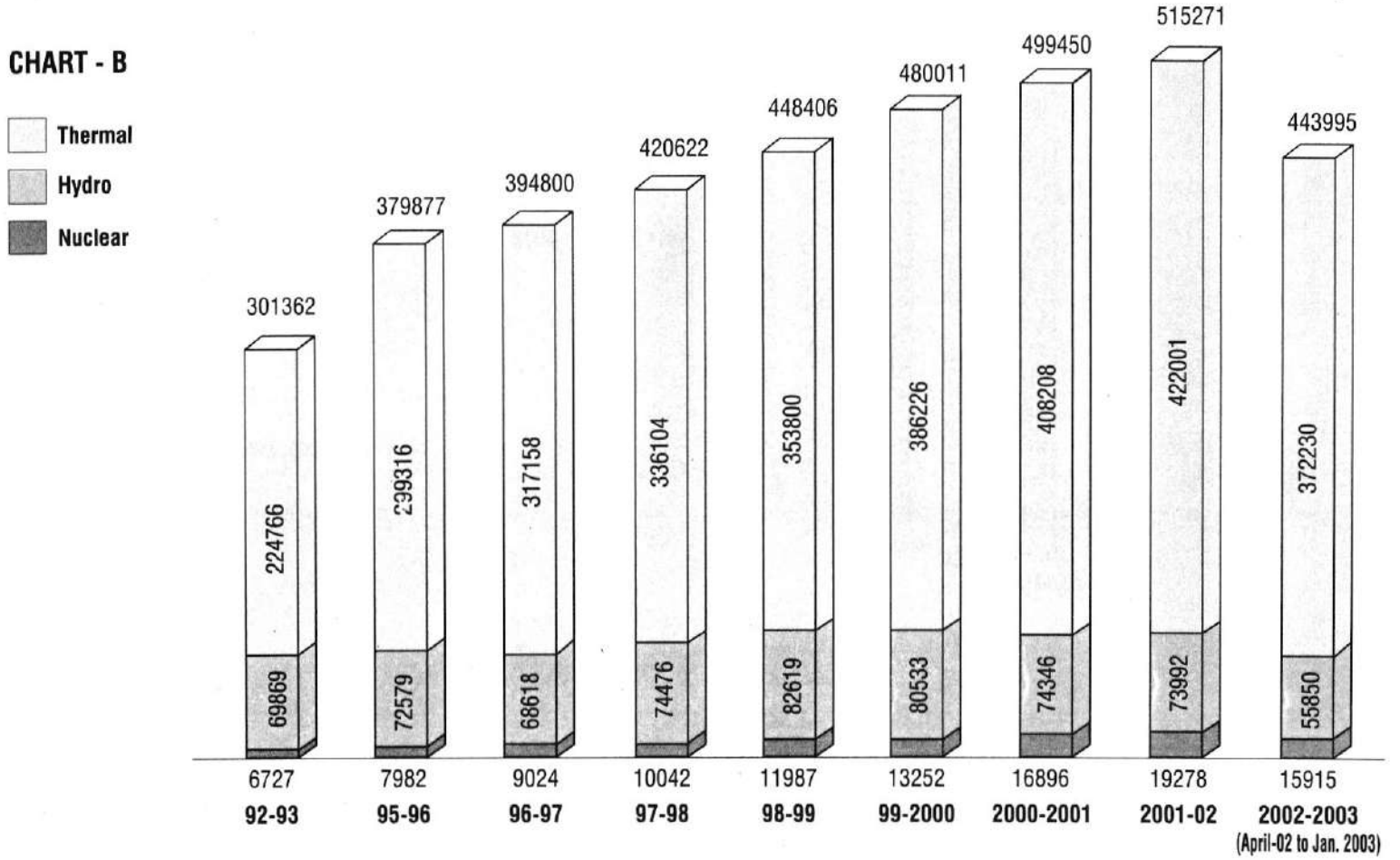
RECREATION ACTIVITIES

The Ministry of Power is promoting sports and cultural activities. Power Sports Control Board (PSCB), with the Minister in-charge of the Ministry of Power as Chairman, constituted as a nodal agency with the participation of Central Power organization i.e. Central Electricity Authority and all the Public Sector Undertakings/Autonomous bodies etc. under the administrative control of the Ministry of Power is arranging various tournaments in various disciplines every year, all over the country with the help of member organizations.

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 patorn, respectively. The teams from Ministry of Power have been taking part in different disciplines in various tournaments and cultural meets organized by PSCB and inter-ministerial tournaments organized by Central Civil Services Cultural and Sports Board of the Department of Personnel and Training, Government of India.

GROWTH OF ELECTRICITY GENERATION
(UTILITIES)
(IN MILLION UNITS)

CHART - B



GROWTH OF INSTALLED CAPACITY (UTILITIES) (IN MEGA WATTS)

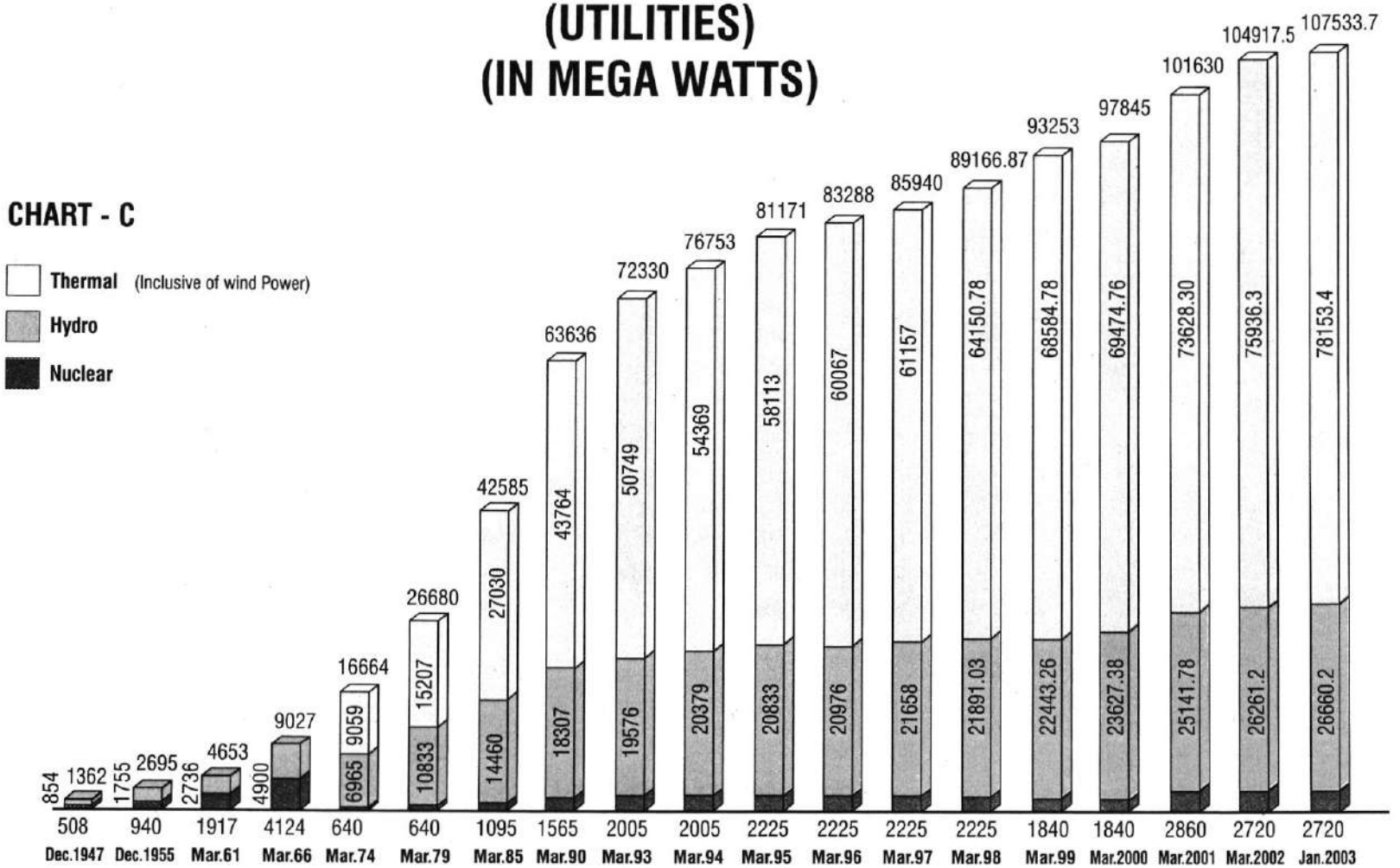
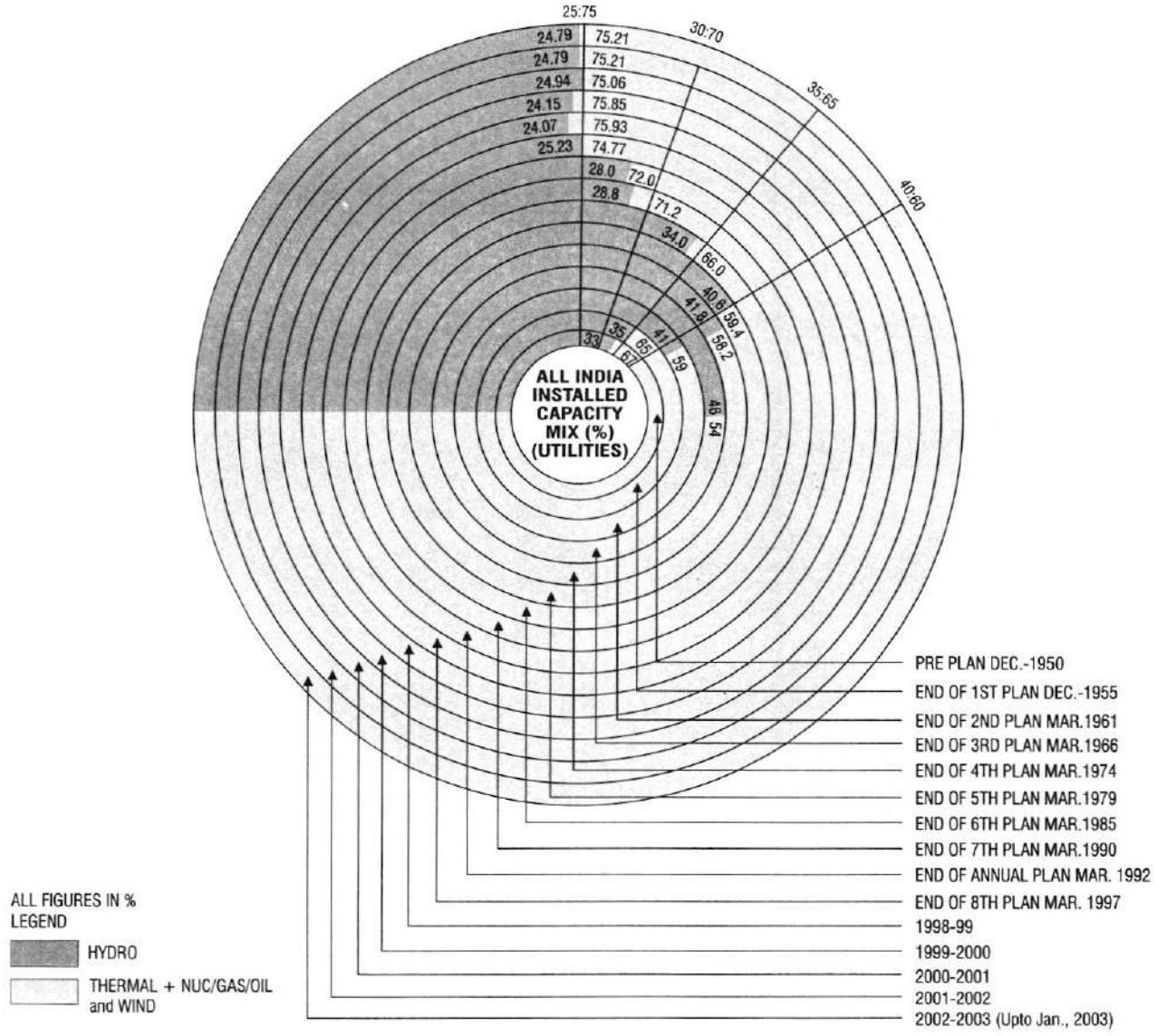


CHART - D

ALL INDIA INSTALLED GENERATING CAPACITY HYDRO-THERMAL MIX (%) (UTILITIES)



Statement - I

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN NORTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITES AS ON 31.1.2003

State	Ownership Sector	Total	Modewise breakup						
				Thermal			Total		
			Hydro	Coal	Gas	Diesel	Thermal	Wind	Nuclear
Delhi	State	932.40	0.00	320.00	612.40	0.00	932.40	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	2391.00	208.00	1797.00	207.00	0.00	2004.00	0.00	179.00
	Sub-Total	**3323.40**	**208.00**	**2117.00**	**819.40**	**0.00**	**2936.40**	**0.00**	**179.00**
Haryana	State	1990.32	883.90	1102.50	0.00	3.92	1106.42	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	1137.00	276.00	299.00	534.00	0.00	833.00	0.00	28.00
	Sub-Total	**3127.32**	**1159.90**	**1401.50**	**534.00**	**3.92**	**1939.42**	**0.00**	**28.00**
Himachal	State	323.80	323.67	0.00	0.00	0.13	0.13	0.00	0.00
	Private	86.00	86.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	255.00	125.00	54.00	62.00	0.00	116.00	0.00	14.00
	Sub-Total	**764.80**	**634.67**	**54.00**	**62.00**	**0.13**	**116.13**	**0.00**	**14.00**
Jammu	State	495.63	311.69	0.00	175.00	8.94	183.94	0.00	0.00
&	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kashmir	Central	738.00	429.00	114.00	129.00	0.00	243.00	0.00	66.00
	Sub-Total	**1233.63**	**740.69**	**114.00**	**304.00**	**8.94**	**426.94**	**0.00**	**66.00**
Punjab	State	4528.94	2398.94	2130.00	0.00	0.00	2130.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	1127.00	406.00	406.00	264.00	0.00	670.00	0.00	51.00
	Sub-Total	**5655.94**	**2804.94**	**2536.00**	**264.00**	**0.00**	**2800.00**	**0.00**	**51.00**
Rajasthan	State	3029.02	971.62	1975.00	76.00	0.00	2051.00	6.40	0.00
	Private	9.70	0.00	0.00	0.00	0.00	0.00	9.70	0.00
	Central	1472.00	179.00	453.00	221.00	0.00	674.00	0.00	619.00
	Sub-Total	**4510.72**	**1150.62**	**2428.00**	**297.00**	**0.00**	**2725.00**	**16.10**	**619.00**
Uttar	State	4658.60	556.60	4102.00	0.00	0.00	4102.00	0.00	0.00
Pradesh	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	2944.00	273.00	1983.00	550.00	0.00	2533.00	0.00	138.00
	Sub-Total	**7602.60**	**829.60**	**6085.00**	**550.00**	**0.00**	**6635.00**	**0.00**	**138.00**
Uttranchal	State	954.15	954.15	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	332.00	61.00	186.00	69.00	0.00	255.00	0.00	16.00
	Sub-Total	**1286.15**	**1015.15**	**186.00**	**69.00**	**0.00**	**255.00**	**0.00**	**16.00**
Chandigarh	State	2.00	0.00	0.00	0.00	2.00	2.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	62.00	27.00	15.00	15.00	0.00	30.00	0.00	5.00
	Sub-Total	**64.00**	**27.00**	**15.00**	**15.00**	**2.00**	**32.00**	**0.00**	**5.00**
	Central-Unallocated	884.00	26.00	533.00	261.00	0.00	794.00	0.00	64.00 *
Total	State	16914.86	6400.57	9629.50	863.40	14.99	10507.89	6.40	0.00
Northern	Private	195.70	186.00	0.00	0.00	0.00	0.00	9.70	0.00
Region	Central	11342.00	2010.00	5840.00	2312.00	0.00	8152.00	0.00	1180.00
	Grand Total	**28452.56**	**8596.57**	**15469.50**	**3175.40**	**14.99**	**18659.89**	**16.10**	**1180.00**

Note: * Based on derated capacity of 2 units each of 220 MW of Narora Atomic Power Station in U.P. & that of RAPP Unit No.1 as 100 MW. Unit 2 as 200 MW in Rajasthan.

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN WESTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITES AS ON 31.1.2003									
State	**Ownership Sector**	**Total**	**Modewise breakup**						
				Thermal			**Total**		
			Hydro	**Coal**	**Gas**	**Diesel**	**Thermal**	**Wind**	**Nuclear**
Goa	State	0.16	0.05	0.00	0.00	0.00	0.00	0.11	0.00
	Private	48.00	0.00	0.00	48.00	0.00	48.00	0.00	0.00
	Central	406.60	0.00	357.00	34.60	0.00	391.60	0.00	15.00
	Sub-Total	**454.76**	**0.05**	**357.00**	**82.60**	**0.00**	**439.60**	**0.11**	**15.00**
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	14.20	0.00	8.00	4.20	0.00	12.20	0.00	2.00
	Sub-Total	**14.20**	**0.00**	**8.00**	**4.20**	**0.00**	**12.20**	**0.00**	**2.00**
Gujarat	State**	4683.68	563.00	3759.00	327.10	17.28	4103.38	17.30	0.00
	Private	2639.80	0.00	1060.00	1430.00	0.20	2490.20	149.60	0.00
	Central	1538.30	0.00	829.00	424.30	0.00	1253.30	0.00	285.00
	Sub-Total	**8861.78**	**563.00**	**5648.00**	**2181.40**	**17.48**	**7846.88**	**166.90**	**285.00**
Madhya Pradesh	State	3078.01	919.91	2157.50	0.00	0.00	2157.50	0.60	0.00
	Private	22.00	0.00	0.00	0.00	0.00	0.00	22.00	0.00
	Central	1120.20	0.00	854.00	196.20	0.00	1050.20	0.00	70.00
	Sub-Total	**4220.21**	**919.91**	**3011.50**	**196.20**	**0.00**	**3207.70**	**22.60**	**70.00**
Chhatisgarh	State	1400.00	120.00	1280.00	0.00	0.00	1280.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	498.00	0.00	414.00	61.00	0.00	475.00	0.00	23.00
	Sub-Total	**1898.00**	**120.00**	**1694.00**	**61.00**	**0.00**	**1755.00**	**0.00**	**23.00**
Maharastra	State	9770.57	2427.17	6425.00	912.00	0.00	7337.00	6.40	0.00
	Private	3409.80	447.00	1650.00	920.00	0.00	2570.00	392.80	0.00
	Central	2027.90	0.00	1339.00	391.90	0.00	1730.90	0.00	297.00
	Sub-Total	**15208.27**	**2874.17**	**9414.00**	**2223.90**	**0.00**	**11637.90**	**399.20**	**297.00**
Dadra & Nagar-Haveli	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	15.50	0.00	9.00	4.50	0.00	13.50	0.00	2.00
	Sub-Total	**15.50**	**0.00**	**9.00**	**4.50**	**0.00**	**13.50**	**0.00**	**2.00**
	Central-Unallocated	891.30	0.00	650.00	175.30	0.00	825.30	0.00	66.00 *
Total Western Region	State	18932.42	4030.13	13621.50	1239.10	17.28	14877.88	24.41	0.00
	Private	6119.60	447.00	2710.00	2398.00	0.20	5108.20	564.40	0.00
	Central	6512.00	0.00	4460.00	1292.00	0.00	5752.00	0.00	760.00
	Grand Total	**31564.02**	**4477.13**	**20791.50**	**4929.10**	**17.48**	**25738.08**	**588.81**	**760.00**

Note: * Based on derated capacity of 2 units each of 160 MW of Tarapore Atomic Power Station in Maharastra.

**Retirement of 27 MW Dhuvaran Gas Turbine Unit-II w.e.f. 04-09-2001 and 3×15 MW Gas Turbine at Utran w.e.f. 19-9-2002.

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN SOUTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITES AS ON 31.1.2003									
State	**Ownership Sector**	**Total**	**Modewise breakup**						
				Thermal			**Total**		
			Hydro	**Coal**	**Gas**	**Diesel**	**Thermal**	**Wind**	**Nuclear**
Andhra Pradesh	State	6328.84	3271.94	2952.50	99.00	0.00	3051.50	5.40	0.00
	Private	1137.40	0.00	0.00	1013.40	36.80	1050.20	87.20	0.00
	Central	2001.00	0.00	1857.00	0.00	0.00	1857.00	0.00	144.00
	Sub-Total	**9467.24**	**3271.94**	**4809.50**	**1112.40**	**36.80**	**5958.70**	**92.60**	**144.00**
Karnataka	State	4508.07	2907.55	1470.00	0.00	127.92	1597.92	2.60	0.00
	Private	683.70	31.20	260.00	220.00	106.50	586.50	66.00	0.00
	Central	674.00	0.00	544.00	0.00	0.00	544.00	0.00	130.00
	Sub-Total	**5865.77**	**2938.75**	**2274.00**	**220.00**	**234.42**	**2728.42**	**68.60**	**130.00**
Kerala	State	2031.60	1795.00	0.00	0.00	234.60	234.60	2.00	0.00
	Private	207.84	12.00	0.00	174.00	21.84	195.84	0.00	0.00
	Central	804.00	0.00	398.00	350.00	0.00	748.00	0.00	56.00
	Sub-Total	**3043.44**	**1807.00**	**398.00**	**524.00**	**256.44**	**1178.44**	**2.00**	**56.00**
Tamil Nadu	State	5281.55	1995.15	2970.00	297.00	0.00	3267.00	19.40	0.00
	Private	1830.26	0.00	250.00	330.50	411.66	992.16	838.10	0.00
	Central	2179.00	0.00	1821.00	0.00	0.00	1821.00	0.00	358.00
	Sub-Total	**9290.81**	**1995.15**	**5041.00**	**627.50**	**411.66**	**6080.16**	**857.50**	**358.00**
Pondi-cherry	State	32.50	0.00	0.00	32.50	0.00	32.50	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	142.00	0.00	130.00	0.00	0.00	130.00	0.00	12.00
	Sub-Total	**174.50**	**0.00**	**130.00**	**32.50**	**0.00**	**162.50**	**0.00**	**12.00**
	Central-Unallocated	610.00	0.00	530.00	0.00	0.00	530.00	0.00	80.00*
Total Southern Region	State	18182.56	9969.64	7392.50	428.50	362.52	8183.52	29.40	0.00
	Private	3859.20	43.20	510.00	1737.90	576.80	2824.70	991.30	0.00
	Central	6410.00	0.00	5280.00	350.00	0.00	5630.00	0.00	780.00
	Grand Total	**28451.76**	**10012.84**	**13182.50**	**2516.40**	**939.32**	**16638.22**	**1020.70**	**780.00**

Note: * Based on derated capacity of 2 units each of 170 MW at Madras Atomic Power Station in Tamil Nadu.

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITES AS ON 31.1.2003									
State	Ownership Sector	Total	Modewise breakup						
				Thermal			Total		
			Hydro	Coal	Gas	Diesel	Thermal	Wind	Nuclear
Bihar	State	598.40	44.90	553.50	0.00	0.00	553.50	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	2460.76	13.26	2357.50	90.00	0.00	2447.50	0.00	0.00
	Sub-Total	**3059.16**	**58.16**	**2911.00**	**90.00**	**0.00**	**3001.00**	**0.00**	**0.00**
Jharkhand	State	1390.00	130.00	1260.00	0.00	0.00	1260.00	0.00	0.00
	Private	240.00	0.00	240.00	0.00	0.00	240.00	0.00	0.00
	Central	185.89	85.89	100.00	0.00	0.00	100.00	0.00	0.00
	Sub-Total	**1815.89**	**215.89**	**1600.00**	**0.00**	**0.00**	**1600.00**	**0.00**	**0.00**
West Bengal	State	3582.87	164.71	3305.00	100.00	12.06	3417.06	1.10	0.00
	Private	1201.52	0.00	1201.38	0.00	0.14	1201.52	0.00	0.00
	Central	1594.53	84.43	1510.10	0.00	0.00	1510.10	0.00	0.00
	D.V.C.*	171.92	11.92	160.00	0.00	0.00	160.00	0.00	0.00
	Sub-Total	**6550.84**	**261.06**	**6176.48**	**100.00**	**12.20**	**6288.68**	**1.10**	**0.00**
Orissa	State	2304.49	1883.00	420.00	0.00	0.00	420.00	1.49	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	1601.99	0.00	1601.99	0.00	0.00	1601.99	0.00	0.00
	Sub-Total	**3906.48**	**1883.00**	**2021.99**	**0.00**	**0.00**	**2021.99**	**1.49**	**0.00**
Sikkim	State	37.90	32.90	0.00	0.00	5.00	5.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	22.90	8.50	14.40	0.00	0.00	14.40	0.00	0.00
	Sub-Total	**60.80**	**41.40**	**14.40**	**0.00**	**5.00**	**19.40**	**0.00**	**0.00**
	Central-Unallocated	1303.51	0.00	1303.51	0.00	0.00	1303.51	0.00	0.00
Total Eastern Region	State	7913.66	2255.51	5538.50	100.00	17.06	5655.56	2.59	0.00
	Private	1441.52	0.00	1441.38	0.00	0.14	1441.52	0.00	0.00
	Central	7341.50	204.00	7047.50	90.00	0.00	7137.50	0.00	0.00
	Grand Total	**16696.68**	**2459.51**	**14027.38**	**190.00**	**17.20**	**14234.58**	**2.59**	**0.00**

Note: * Total of shares allocated to DVC from central sectors (NTPC's/Power Stations).

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN NORTH-EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITES AS ON 31.1.2003									
State	Ownership Sector	Total	Modewise breakup						
				Thermal			Total		
			Hydro	Coal	Gas	Diesel	Thermal	Wind	Nuclear
Assam	State @	597.19	2.00	330.00	244.50	20.69	595.19	0.00	0.00
	Private	24.50	0.00	0.00	24.50	0.00	24.50	0.00	0.00
	Central	497.80	319.80	0.00	178.00	0.00	178.00	0.00	0.00
	Sub-Total	**1119.49**	**321.80**	**330.00**	**447.00**	**20.69**	**797.69**	**0.00**	**0.00**
Arunachal Pradesh	State	45.43	29.55	0.00	0.00	15.88	15.88	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	117.00	96.00	0.00	21.00	0.00	21.00	0.00	0.00
	Sub-Total	**162.43**	**125.55**	**0.00**	**21.00**	**15.88**	**36.88**	**0.00**	**0.00**
Meghalaya	State	188.76	186.71	0.00	0.00	2.05	2.05	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	97.20	71.10	0.00	26.10	0.00	26.10	0.00	0.00
	Sub-Total	**285.96**	**257.81**	**0.00**	**26.10**	**2.05**	**28.15**	**0.00**	**0.00**
Tripura	State	127.36	16.01	0.00	106.50	4.85	111.35	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	93.10	60.10	0.00	33.00	0.00	33.00	0.00	0.00
	Sub-Total	**220.46**	**76.11**	**0.00**	**139.50**	**4.85**	**144.35**	**0.00**	**0.00**
Manipur	State	48.61	3.20	0.00	0.00	45.41	45.41	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	105.50	79.40	0.00	26.10	0.00	26.10	0.00	0.00
	Sub-Total	**154.11**	**82.60**	**0.00**	**26.10**	**45.41**	**71.51**	**0.00**	**0.00**
Nagaland	State	30.36	28.20	0.00	0.00	2.00	2.00	0.16*	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	71.10	52.10	0.00	19.00	0.00	19.00	0.00	0.00
	Sub-Total	**101.46**	**80.30**	**0.00**	**19.00**	**2.00**	**21.00**	**0.16**	**0.00**
Mizoram	State	37.20	8.26	0.00	0.00	28.94	28.94	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	49.10	33.00	0.00	16.10	0.00	16.10	0.00	0.00
	Sub-Total	**86.30**	**41.26**	**0.00**	**16.10**	**28.94**	**45.04**	**0.00**	**0.00**
	Central-Unallocated	179.20	123.50	0.00	55.70	0.00	55.70	0.00	0.00
Total North-Eastern Region	State	1074.91	273.93	330.00	351.00	119.82	800.82	0.16	0.00
	Private	24.50	0.00	0.00	24.50	0.00	24.50	0.00	0.00
	Central	1210.00	835.00	0.00	375.00	0.00	375.00	0.00	0.00
	Grand Total	**2309.41**	**1108.93**	**330.00**	**750.50**	**119.82**	**1200.32**	**0.16**	**0.00**

@ :- Under the column "Coal" which signifies Steam Turbine Gen. Sets in general, 2×30MW ST units at Chandrapur and 1×30MW ST unit at Namrup are using Gas fuel in their boilers.

Note - * Bio Mass Gassifire.

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE ISLANDS AS ON 31.1.2003									
State	Ownership Sector	Total	Modewise breakup						
				Thermal			Total		
			Hydro	Coal	Gas	Diesel	Thermal	Wind	Nuclear
Andaman & Nicobar	State	39.30	5.25	0.00	0.00	34.05	34.05	0.00	0.00
	Private	10.00	0.00	0.00	0.00	10.00	10.00	0.00	0.00
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	**49.30**	**5.25**	**0.00**	**0.00**	**44.05**	**44.05**	**0.00**	**0.00**
Laksha-dweep	State	9.97	0.00	0.00	0.00	9.97	9.97	0.00	0.00
	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	**9.97**	**0.00**	**0.00**	**0.00**	**9.97**	**9.97**	**0.00**	**0.00**
Total Islands	State	49.27	5.25	0.00	0.00	44.02	44.02	0.00	0.00
	Private	10.00	0.00	0.00	0.00	10.00	10.00	0.00	0.00
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grand Total	**59.27**	**5.25**	**0.00**	**0.00**	**54.02**	**54.02**	**0.00**	**0.00**
ALL INDIA	State	63067.68	22935.03	36512.00	2982.00	575.69	40069.69	62.96	0.00
	Private	11650.52	676.20	4661.38	4160.40	587.14	9408.92	1565.40	0.00
	Central	32815.50	3049.00	22627.50	4419.00	0.00	27046.50	0.00	2720.00
	Total	**107533.70**	**26660.23**	**63800.88**	**11561.40**	**1162.83**	**76525.11**	**1628.36**	**2720.00**

Statement - II

THERMAL UNITS COMMISSIONED DURING APRIL- FEBRUARY 2003					
SL No.	**Name of the project/ Unit No.**	**State/organization**	**Capacity (MW)**	**Commissioning schedule as envisaged at the beginning of the year**	**Actual**
A Central Sector					
1	Simhadri U-2	AP/NTPC	500	Dec 02	24.8.02
2	Neyveli Ext U-2	TN/NLC	210	Sep 02	21.10.02
3.	Talcher St-II U-3*	Orissa/NTPC	500		4.01.03*
		Sub-total	**1210**		
B State Sector					
1	Pragati CCGTT U-2	Delhi/DVB	104.6	Nov 02	9.11.02
2	Ramgarh CCGT ST-II	Raj/RRVUNL	37.5	July 02	7.8.02
3	Leimakhong DG U-4,5,6	Manipur/MPDC	18.0	Apr 02 Apr 03 Apr 04	10.4.02 16.4.02 12.4.02
4	Rokhia GT Ext Ph II	Tripura/DOP Tripura	21.0	July 02	11.7.02
5	Barauni LT Ext GT	Tripura/DOP Tripura	21.0	Oct 02	27.11.02
6	Raichur TPP Unit-7	Karnataka/KPCL	210.0	Feb 03	11.12.02
7	Valuthur CCGT	Tamil Nadu/TNEB	60.0	Jan 03	24.12.02
8.	Pragati CCGT	Delhi/DVB	121.2	Nov.02	31.1.03
		Sub-total	**593.3**		
C Pvt. Sector					
1	Peddaperum CCGT ST	AP/BSESAP	78	Sep 02	12.9.02
2	Neyveli TPS U-0	TN/M/s SHMS	250	Sep 02	11.10.02
3	Bambooflat DG U-2&4	A&N Island/Power Ltd.	20	Oct 02	06/02 - 02/03
		Sub-total	**348**		
		G.Total	**2151.3**		

* Talcher STPP (Stage-II) (500MW) Unit-3 Test synchronized on 4.1.2003 and commissioned on 21.2.03 ahead of commissioning schedule of November 2003

Note : Units not targeted during the year but commissioned :
Talcher, Central Sector (NTPC) - 500 MW

Statement - III

THERMAL UNITS TARGETED TO BE COMMISSIONED DURING BALANCE PERIOD 2002-03				
SL No.	Name of the project/ Unit No.	State/organization	Capacity (MW)	Commissioning schedule as envisaged at the beginning of the year
A Central Sector				
1	Neyveli FST Ext U-2	TN/NLC	210	Dec 02
B State Sector				
1	Ramgarh CCGT U-2 ST	Raj/RRVUNL	37.8	Dec. 02
2	Akrimota Lignite U-1	Guj/M/s GMDCL	125.0	Jan. 03
3	Valuthur ST	TN/TNEB	34.0	Sep. 02
		Sub-total	**196.8**	
C Pvt. Sector				
1	Dhabol CCGT Ph-II U-I,II	Mah/Dabhol Power Corpn.	1444.0	Uncertain
		Sub-total	**1444.0**	
		G. Total	**1850.8**	

Statement - IV

HYDRO UNITS ROLLED/COMMISSIONED DURING 2002-03
(APRIL 2002 TO FEBRUARY 2003)

SL No.	Name of the project/ Unit No.	State/organization	Capacity (MW)	Commissioning schedule as envisaged at the beginning of the year	Actual
A Central Sector		Nil			
B State Sector					
1	Bana sagar Tons. Ph-II-U-2	MP/MPEB	15	8/02	24.8.02
2	Barsingsar Tons. PS Ph-III U-3	MP/MPEB	20	8/02	20.8.02
3	Sri Sailam LBPH U-4	AP/APGENCO	150	10/02	26.11.02
4	Potteru Ph-I U-1	Orissa/OHPC	3	9/02	30.6.02
5	Potteru Ph-II U-1	Orissa/OHPC	3	9/02	30.6.02
6	Likim-Ro U-3	Nagaland/DoP Nagaland	8	7/02	April 02
		Sub-total	**199.00**		
C Pvt. Sector					
1.	Baspa HEP-II U-I	Himachal Pradesh	100.00		24.1.03
	U-II		100.00		08.02.03
		Sub-total	**200.00**		
Additional Units Commissioned not included in the programme					
1	Sardar Sarovar	U-2	50		4.9.02
		U-3	50		4.9.02
		Sub-total	**100**		
		G. Total	**499**		

Note : Units not targeted during the year but commissioned :
1. Baspa HEP, Private Sector, Himachal Pradesh - 200 MW
2. Sardar Sarovar, State Sector (Multi-State) - 100 MW

Statement - V

HYDRO CAPACITY TARGETED TO BE COMMISSIONED DURING BALANCE PERIOD 2002-03				
SL No.	**Name of the project/ Unit No.**	**State/organization**	**Capacity (MW)**	**Commissioning schedule as envisaged at the beginning of the year**
A Central Sector				
1	Tehri - I - U-4	Uttaranchal/THDC	250	March 03
		Sub-total	**250**	
B State Sector				
1	Sri Sailam LBPH U-5	AP/APGENCO	150	Feb. 03
2	Chandil LBC U-1	Jharkhand/JSEB	4	Dec. 02
3	Chandil LBC U-2	Jharkhand/JSEB	4	Dec. 02
		Sub-total	**158**	
C Pvt. Sector			Nil	
		G. Total	**408**	

Statement - VI

STATUS OF PROJECT COST AND FUND RELEASE UNDER APDP/APDRP

Sl	STATE	YEAR 2000-01 (Fig Rs. in Cr.)		YEAR 2002-03 (Fig Rs. in Cr.)	
		Project Cost	Fund Release	Project Cost	Fund Release
1	Andhra Pradesh	194.70	97.45	1476.50	111.82
2	Bihar	42.89	21.44	717.57	16.11
3	Chattishgarh	20.52	10.26	424.58	10.00
4	Delhi			946.46	
5	Goa			176.34	15.52
6	Gujarat	27.22	13.62	1035.80	75.42
7	Haryana	99.23	49.62	450.66	37.28
8	Jharkhand	43.96	21.97	444.85	12.00
9	Karnataka	162.98	81.50	1161.19	87.46
10	Kerala			350.35	30.43
11	Madhya Pradesh	99.06	40.32	598.98	51.35
12	Maharashtra	268.88	134.44	1107.85	91.74
13	Orissa	76.00	38.00	377(U/Review)	14.72
14	Punjab	75.40	37.70	667.46	41.72
15	Rajasthan	89.98	45.00	1255.05	90.64
16	Tamil Nadu	131.08	65.54	968.17	76.57
17	Uttar Pradesh	202.90	101.46	718.19	30.12
18	West Bengal	87.17	43.50	132.71	19.02
19	Assam	20.02	20.02	365.98	96.97
20	Arunachal Pradesh	6.32	6.32	67.29	0.00
21	Himachal Pradesh	25.32	25.32	105.51	33.04
22	Jammu & Kashmir	6.99	6.99		
23	Manipur	0.72	0.72	10.13	2.67
24	Meghalaya	1.81	1.81	26.29	6.57
25	Mizoram	1.06	1.06	9.77	3.78
26	Nagaland	1.89	1.89	47.22	13.14
27	Sikkim	6.38	6.38	63.48	17.20
28	Tripura	5.00	5.00	13.27	2.67
29	Uttaranchal	9.00	4.80	361.51	99.63
30	Bhuj	192	96.00		
	Total	**1898.48**	**978.13**	**13703.16**	**1087.59**

Statement - VII

EXISTING/PROPOSED INTER-REGIONAL POWER TRANSFER CAPACITY
(By the end of XI Plan i.e. 2012)

(Figures in MW)

	EXISTING Under Phase-I	X PLAN & XI PLAN	TOTAL
EAST-NORTH			
Dehri-Sahupuri 220 kV S/c	200		
Sasaram HVDC back-to-back	500		
Muzaffarpur-Gorakhpur 400 kV D/c (Tala Transmission System)		2500	
Barh/Kak/N.K'pura 765 kV 2x S/c Pooling station – West of Delhi		5500	
2000 MW HVDC Bipole line		2000	
Hirma-Jaipur HVDC bipole		2500	
Sub-Total	**700**	**12,500**	**13,200**
EAST-WEST			
Bodhipadar-Korba 220 kV 3 circuits	450		
Rourkela-Raipur 400 kV D/c		1000	
Hirma-Raipur 400 kV D/c		1000	
Hirma-Seepat 400 kV D/c		1000	
Sub-Total	**450**	**3,000**	**3,450**
WEST-NORTH			
Vindhyachal HVDC back-to-back	500		
Existing 220 kV AC lines	350		
Malanpur-Bhiwadi 765 kV S/c		2500	
Zerda-Sirohi 400 kV D/c		1000	
Sub-Total	**850**	**3,500**	**4,350**
EAST-SOUTH			
Gazuwaka HVDC back-to-back	500	500	
Existing 220 kV AC lines	200		
Talcher-Kolar HVDC bipole		2000	
2nd HVDC bipole		2500	
Sub-Total	**700**	**5,000**	**5,700**
WEST-SOUTH			
Chandrapur HVDC back-to-back	1000		
Karnataka-Maharashtra		500	
Existing 220 kV AC lines	300		
Sub-Total	**1,300**	**500**	**1,800**
EAST-NORTH EAST			
Bongaigaon-Malda 400 kV D/c	800		
Bipara-Salakati 220 kV D/c	200		
Sub-Total	**1,000**		**1,000**
Total	**5,000**	**24,500**	**29,500**

Statement - VIII

ALLOCATION OF FUNDS UNDER PMGY

(Figure in Lakhs)

S.No.	STATES	2002-03
A.	**Non Special Category States**	
1.	Andhra Pradesh	1438.00
2.	Bihar	2417.30
3	Chattisgarh	515.00
4.	Goa	6.00
5.	Gujarat	0.00
6.	Haryana	142.90
7.	Jharkhand	1116.90
8.	Karnataka	1000.00
9.	Kerala	—
10.	Madhya Pradesh	1275.00
11.	Maharashtra	1664.00
12.	Orissa	100.00
13.	Punjab	444.00
14.	Rajasthan	1061.00
15.	TamilNadu	1608.20
16.	Uttar Pradesh	10187.00
17.	West Bengal	2774.00
	Sub-Total	25749.30
B	**Special Category**	
1.	Arunachal Pradesh	684.00
2.	Assam*	3000.00
3.	Himachal Pradesh	110.00
4.	Jammu & Kashmir	800.00
5.	Manipur	600.00
6.	Meghalaya	600.00
7.	Mizoram	598.00
8.	Nagaland	650.00
9.	Sikkim	400.00
10.	Tripura	500.00
11.	Uttaranchal	2000.00
	Sub-Total	9942.00
C.	**Union Territories**	
1.	NCT of Delhi	114.00
2.	Pondicherry**	53.40
3.	A& N Island	100.00
4.	Chandigarh	68.35
5.	Dadar & Nagar Haveli	13.00
6.	Lakshwdweep	17.20
7.	Daman & Diu	11.10
	Sub-Total	**375.05**
	Grand Total	**36066.35**

Statement - IX

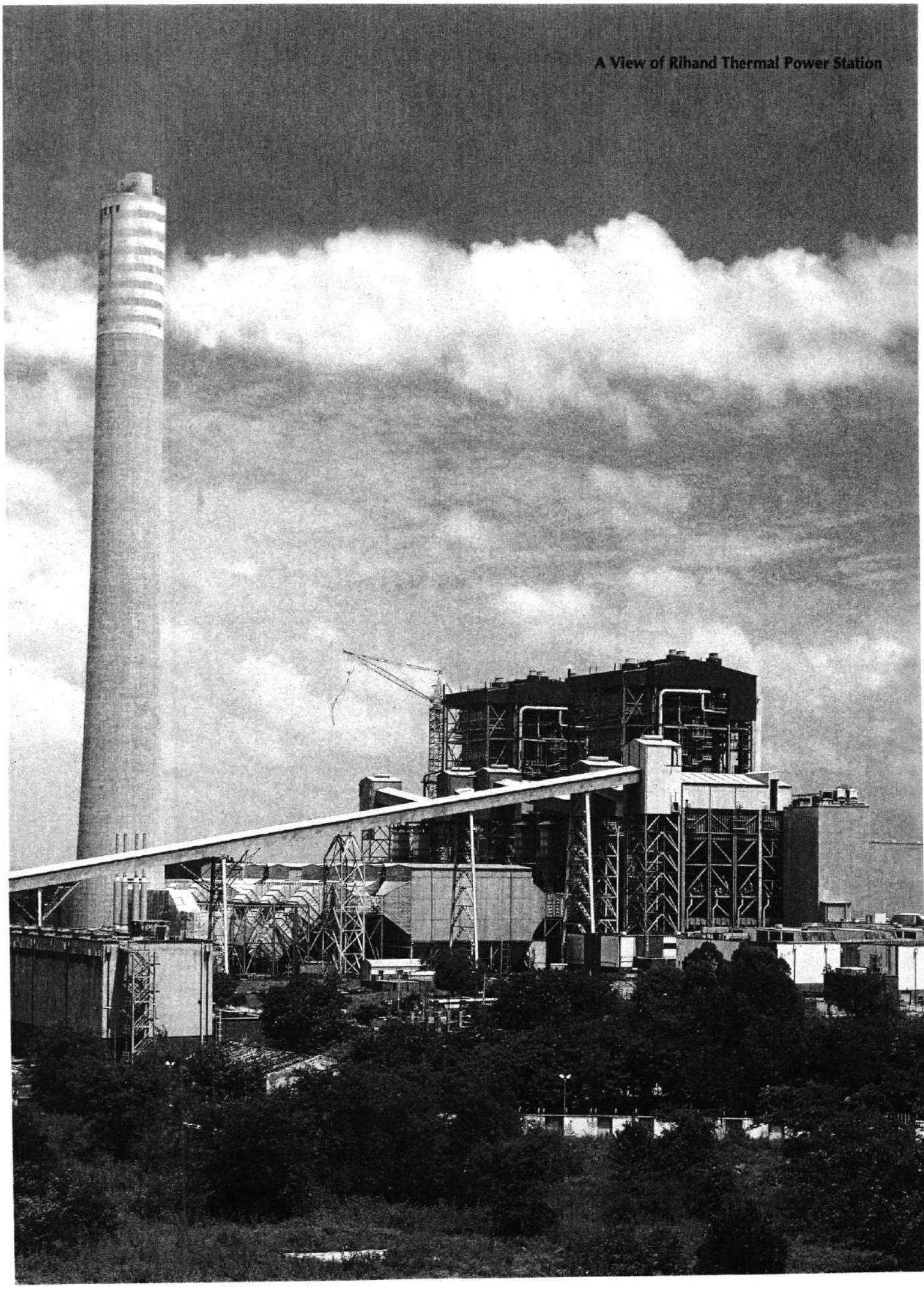
YEAR WISE PROGRESS OF KUTIR JYOTI PROGRAMME				
	Physical (Nos./Lakh)		Financial (Rs. in Crore)	
Year	Target	Connections released by SEBs/States	Allocation	Amount drawn by SEBs/States
1988-90	11.82	10.39	25.00	21.90
1992-93	1.25	0.63	5.00	2.84
1993-94	2.50	3.74	10.00	12.13
1994-95	1.25	1.34	5.00	7.14
1995-96	6.25	5.10	25.00	20.79
1996-97	2.80	3.35	25.00	22.48
1997-98	4.27	3.73	36.93	29.18
1998-99	4.45	5.30	40.00	49.17
1999-2000	5.40	4.97	54.00	47.09
2000-01	6.50	5.25	65.00	48.78
2001-02	7.00	4.70	70.00	55.80
Total	**53.49@**	**48.50**	**360.93**	**317.30**

@ There was upward revision of unit rate in 1992-93 (from Rs.220/- to Rs.400) and again in 1996-97 (from Rs.400 to Rs.800/Rs.1000). The unspent grant amount in the begining of these years were converted equivalent new targets at higher unit rate, resulting in reduction of target by 1.14 lakh connections. Hence the effective target is, therefore, 52.35 lakh connections.

Statement - X

Allocation, Programme Accepted by States / SEBs and Progress under Kutir Jyoti Programme during financial year 2002-2003

Sl No.	STATES	Programme		Programme Accepted by State/SEBs		Achievement as on 15.2.03	
		Allocation	Conn.	Grant Amt.	Conn.	Disbursement	Conn.
		(Rs. lakhs)	(Nos.)	(Rs. lakhs)	(Nos.)	(Rs. lakhs)	(Nos.)
1	Andhra Pr.	309.90	20660	1500.00	100000	1417	90360
2	Arunachal Pr.	27.90	1550	27.90	1550	20	
3	Assam	720.00	40000	720.00	40000		
4	Bihar	1327.05	88470	1327.05	88470	240	70161
5	Jharkhand	430.65	28710	430.65	28710		17531
6	Goa	7.50	500	0.00	0		
7	Gujarat	242.70	16180	91.50	6100	48	2636
8	Haryana	150.00	10000	150.00	10000	87	1802
9	Himachal Pr.	61.49	3416	22.86	1270	18	406
10	J & K	73.80	4100	0.00	0		
11	Karnataka	373.80	24920	373.80	24920	62	4480
12	Kerala	218.40	14560	218.40	14560	109	16605
13	Madhya Pr.	627.15	41810	627.15	41810	314	1444
14	Chhatisgarh	216.00	14400	457.50	30500	108	5580
15	Maharashtra	753.75	50250	225.00	15000	144	4416
16	Manipur	48.42	2690	0.00	0		
17	Meghalaya	54.18	3010	54.18	3010	27	
18	Mizoram	12.60	700	54.00	3000	54	3000
19	Nagaland	36.90	2050	90.90	5050	45	
20	Orissa	549.15	36610	1000.00	66667		
21	Punjab	69.15	4610	69.15	4610	35	800
22	Rajasthan	369.15	24610	225.00	15000	230	1419
23	Sikkim	13.86	770	13.86	770	7	
24	Tamil Nadu	473.85	31590	600.00	40000	422	17451
25	Tripura	86.15	4786	216.00	12000	97	4000
26	Uttar Pr.	1834.05	122270	1050.00	70000	525	
27	Uttaranchal	94.05	5225	728.10	40450	365	
28	West Bengal	818.40	54560	818.40	54560		
	Total	**10000.00**	**653007**	**11091.40**	**718007**	**4374**	**242091**



A View of Rihand Thermal Power Station

Ministry of Power

Government of India

Website : www.powermin.nic.in