Power

9.5 Power Generation in 1998-99 at 448.4 billion kWh recorded a growth of 6.6 per cent over 1997-98. The total generation of power in April-November, 1999 at 313.8 billion kWh recorded a growth, of 7.6 per cent over the generation during April-November 1998. Thermal and Nuclear generation grew by 9.9 per cent and 12.8 per cent respectively while hydro generation decreased by 1.9 per cent (Table 9.2). Owing to low Plant Load Factor (PLF) of thermal plants, heavy transmission and distribution (T & D) losses suffered by State Electricity Boards (SEBs) and other operational and technical inefficiencies, full benefits are not being derived from existing capacities.

9.6 The installed capacity of power generation as on March 31, 1999 was 93249.6 MW and the Capacity addition in 1998-99 was 4242 MW. Against a target of an additional capacity of 2308 MW in April-October, 1999, 1958 MW was added.

9.7 The Plant Load Factor (PLF) is an important indicator of operational efficiency in thermal power plants. The average PLF in the Central Public Sector Undertakings (CPSUs) in the 1998-99 and during April-November 1999 was appreciably higher than that achieved by the SEBs. Wide inter-state variations are noticed in the average PLF of thermal power plants. The average PLF for Eastern and North-Eastern regions continues to be much lower than the All-India level (Table 9.3). Thermal plants at present account for 79.9 per cent of the total power generation, hydro-electricity plants contribute 17.7 per cent and the remaining 2.4 per cent accrue from nuclear plants.

TABLE 9.3
Thermal Plant Load Factor

(Per cent)

	1994-95	1995-96	1996-97	1997-98	1998-99*	April-November* 1998-99 Actual	1999-2000 Target	1999-2000 Actual
I State Electricity Boards	55.0	58.1	60.3	60.9	60.7	58.3	60.6	61.8
II Central Sector	69.2	70.0	71.1	70.4	71.1	67.4	63.2	70.5
III Private Sector	65.8	72.3	71.2	71.2	68.3	71.4	62.2	70.0
IV Region								
Northern	59.1	62.1	64.7	66.7	67.2	63.2	64.0	69.2
Western	63.8	68.1	70.2	70.3	70.5	68.3	68.1	70.0
Southern	69.1	74.7	75.8	77.1	75.4	72.4	73.8	77.0
Eastern	43.7	42.8	42.2	43.0	44.3	43.1	39.1	43.7
North Eastern	26.7	28.6	27.1	21.3	18.7	17.9	18.5	17.9
All India	**60.0**	**63.0**	**64.4**	**64.7**	**64.6**	**62.0**	**61.6**	**65.1**

*** Provisional**

TABLE 9.2
Trends in the Power Sector (utilities only)

	1997-98	1998-99*	April - November* 1998	1999	Change over previous year 1998-99	1999-2000@
			(Billion Kwh)			*(per cent)*
1. Power generation	420.6	448.4	291.6	313.8	6.5	7.6
(i) Hydro-electric	74.5	82.7	58.3	57.2	8.8	-1.9
(ii) Thermal	336.1	353.7	225.8	248.2	4.6	9.9
(iii) Nuclear	10.0	12.0	7.5	8.4	14.1	12.8
2. Plant load factor of thermal plants (per cent)	64.7	64.6	62.0	65.1	—	—

*** Provisional.** **@ April-November**

Note : These figures exclude captive power generation.

9.8 Restoration of the financial health of SEBs and improvement in their operational performance continue to remain a critical issue in the power sector. Under Section 59 of the Electricity Supply Act, 1948, SEBs are required to achieve a rate of return (ROR) of not less than 3 per cent of their fixed assets in service, at the beginning of the year, after providing for interest and depreciation charges less consumer's contribution. In 1997-98, 13 SEBs out of 16 SEBs (excluding Orissa SEB) had a positive ROR (including subsidy). Further, only 3 SEBs (MSEB, HPSEB and BSEB) had a ROR of more than 3 per cent in 1997-98 (with subsidy). Managerial and financial inefficiencies in State sector utilities have adversely affected capacity addition and system improvement. While the SEBs do not have enough resources to finance future programmes, they are also unable to raise investible funds from alternative sources due to their poor financial and commercial performance. Also, the inability of SEBs to pay their dues, in full, to Central Power Utilities adversely affect the finances and investment plants of these CPSUs. In none of the SEBs does unit revenue realisation from the agriculture sector cover even a reasonable fraction of its unit average cost and this is leading to heavy financial losses. The hidden subsidy for the agriculture and domestic sectors has increased from Rs. 7,248 crore in 1991-92 to Rs. 29,807 crore in 1998-99 and is projected to go up further to Rs. 37,604 crore in 2000-2001 (Table 9.4). The introduction of the proposed national minimum agricultural tariff of 50 paise/kwh, even if implemented, will leave uncovered a substantial proportion of the subsidy provided to the sector. In addition, the SEBs, have continued to suffer from high T & D losses. T & D losses, which stood at 24.5 per cent in 1996-97, have marginally decreased to 24.4 per cent in 1997-98. These T & D losses are due to a variety of reasons, viz., substantial energy sold at low voltage, the sparsely distributed loads over large rural areas, inadequate investment in distribution systems, improper billing and high pilferage.

9.9 During 1997-98 all India energy and peaking shortages were 8.1 per cent and 11.3 per cent respectively, while in 1998-99 these were 5.9 per cent and 13.9 per cent respectively. Conservation and efficient use of

TABLE 9.4
Financial Performance of the State Power Sector

(Rs. Crore)

	1991-92	1998-99	1999-2000 (RE)	2000-01 (AP)
A. Gross Subsidy involved				
(i) On account of sale of Electricity to:				
(a) Agriculture	5938.0	22536.9	25576.7	28217.2
(b) Domestic	1310.0	7270.1	7892.9	9387.1
(c) Inter-State Sales	201.0	538.4	351.1	357.8
Total	**7449.0**	**30345.4**	**33820.6**	**37962.1**
(ii) Subventions Received from State Govts.	2045.0	7851.9	4707.2	5562.6
(iii) Net Subsidy	5404.0	22493.6	29113.4	32399.6
(iv) Surplus Generated by sale to other sectors	2173.0	6876.8	6090.6	6901.7
(v) Uncovered Subsidy	3231.0	15616.7	23022.8	25497.9
B. Commercial Losses @	**4117.0**	**18081.3**	**20706.6**	**22346.3**
C. Revenue Mobilisation				
(i) Rate of Return (ROR) #	-12.7	-27.5	-31.0	-30.7
(ii) Additional Revenue Mobilisation from achieving				
(a) 3 per cent ROR	4959.0	19987.1	22709.9	24533.0
(b) From introducing 50 paise/unit from Agriculture/Irrigation	2176.0	2734.1	2912.7	2746.5

RE : Revised Estimates. AP : Annual Plan Projections. # In per cent.

@ Commercial losses are different from uncovered subsidy because they include financial results of other activities undertaken by the SEBs.

Note : The information relating to the subsidy for Agriculture, Domestic and Inter-State Sales in respect of Orissa is not available. Therefore, projections for 2000-01 have been kept at the level of 1999-2000 (AP).

energy has been treated as one of the major thrust areas keeping in view the need to bridge the gap between the demand and availability of various forms of energy. Measures to promote conservation of energy have been taken both on the supply side and the demand side.

9.10 Since about 70 per cent of the installed generating capacity is in thermal, number of steps have been taken to increase generation, improve reliability, efficiency and safety as also reduce pollution in these plants. Special Schemes have been devised to renovate/ modernize, refurbish old plants to improve their performance. The on-going second phase of this programme covers 44 old power plants. This scheme envisages additional of 7864 MU per annum from renovated units.

9.11 Plants that are on the verge of retirement are being taken up for extension of their lives by induction of latest technology.

9.12 A scheme to carry out energy audits is presently, being implemented. Owing to this scheme secondary fuel oil consumption in power plant has come down from 6.1 ml./kWh in the year 1991-92 to 4.53 ml./kWh in 1995-96 resulting in overall saving of the order of 5.8 kl. of fuel oil in comparison to the 1991-92 level.

9.13 On the side of management of demand, there is a tremendous scope for energy conservation in agriculture and industrial sectors. The Government is giving liberal assistance to SEBs, REC and other state agencies to carry out modification in pump sets and motors to improve their efficiency. The industrial sector accounts for about 40 per cent of total energy utilization. Efforts are being made to create awareness about energy conservation potential by better house keeping, proper maintenance, and better controls of instruments and adaptation of latest technologies. Efforts are also being made to popularize use of energy efficient lighting devices like Compact Fluorescent Lamps (CFLs), electronic ballasts, etc.

9.14 During 1998-99, Government of India announced a Policy on Hydro-Power Development with a view to exploiting the vast hydropower potential available in the country at a faster rate. During 1999-2000, guidelines were issued simplifying the procedure for techno-economic clearance by the Central Electricity Authority (CEA), reducing the normative availability factor for hydro power stations from 90 per cent to 85 per cent , allowing the sale rate of secondary energy at the same rate which is applicable for a primary energy in order to provide an additional incentive for attracting investment in hydro-electric-projects. Emphasis is being laid on the timely completion of on- going projects, taking up new hydro-electric projects and survey & investigation of the greenfield areas and preparation of bankable Detailed Project Report (DPR). Action has been initiated to add 4095 MW hydel capacity in the Central Sector by 2004-05.

9.15 Government of India has formulated the revised mega power policy to develop mega power projects in both the private and public sector supplying power to more than one state. The main objective of the revised mega power policy is setting up of mega power projects to generate power at the lowest possible cost by utilizing the economies of scale and setting up of such plants at pitheads, in the hydel or coastal areas so that it can act as catalyst for the reforms in the beneficiary States. While formulating the revised mega power policy for the sale of power to more than one state from a private sector mega power project, it was considered necessary to develop a single power purchase entity.

9.16 The revised mega power policy envisages establishment of a Company called Power Trading Corporation (PTC) with majority equity participation by Power Grid Corporation of India Ltd. (PGCIL), along with NTPC, Power Finance Corporation (PFC) and other financial institutions. Concerned State Governments/ State Electricity Board (SEBs) would also be co-opted, if found feasible. The PTC would purchase power from the identified private projects and sell it to the identified State Electricity Boards. Security to the PTC would be provided by means of a Letter of Credit and recourse to the State's share of Central Plan Allocations and other devolutions. The setting up of PTC would enable mega-projects to negotiate with one buyer only and would eliminate mega-projects risk regarding payments. Such security would substantially bring down the tariff from such projects.

BOX 9.2

Reforms and Restructuring

- Reforms & Restructuring of Power Sector has gained momentum since the enactment of ERC Act, 1998. Orissa was the first state in the country to unleash the reforms process in the country, through the enactment of the Orissa Electricity Reforms Act, 1995, which came into effect from April, 1996.
- Under the provisions of the ERC Act, 1998, the Central Government has since constituted the Central Electricity Regulatory Commission (CERC). The Central Commission has become functional with the assumption of office by the Chairman and three Members and appointment of officers and staff. Under the provisions of the ERC Act, 1998, the Central Government has omitted the provisions of Section 43(A)(2) of the Electricity Supply Act, 1948, thereby transferring the tariff fixation powers to the Commission.
- Several State Governments have also initiated reforms in their power sectors. The reforms process in Orissa has gone furthest with privatisation of distribution in the state. The four subsidiary companies of GRIDCO have been disinvested in favour of the private companies. BSES Ltd. has taken over the three distribution zones (WESCO, NORTHCO & SOUTHCO) and the US based AES Ltd. has taken over the Central Zones. The power generation corporation (OPGC) has been disinvested to the extent of 49 per cent.
- Haryana, Andhra Pradesh, Uttar Pradesh, Karnataka have enacted their State Reforms Acts which provide inter alia for unbundling/corporatisation of SEBs, setting up of SERCs, etc. As many as 13 states (Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Karnataka, West Bengal, Tamil Nadu, Punjab, Delhi Gujarat, Madhya Pradesh, Arunachal Pradesh, Maharashtra) have either constituted or notified the constitution of SERC. The SEB's of Orissa, Haryana, Andhra Pradesh and Karnataka have been unbundled/corporatised. The Government of Uttar Pradesh is unbundling/corporatising its SEB. They propose to privatise distribution in Kanpur. The Government of Delhi has commissioned a study on corporatisation of electricity and generation.
- The World Bank and the Department for International Development (DFID) are providing assistance to Orissa, Harayana and Andhra Pradesh for reforms. The Power Finance Corporation is given technical and financial assistance for several other states.

9.17 Since the entry of private sector in the power generation, CEA has accorded techno-economic clearance (TEC) to 56 private sector power projects amounting to around 28,849 MW. Out of these, during the current financial year, 7 projects aggregating a capacity 5615 MW have been accorded TEC upto November 1999. 22 private sector power generation projects which do not require TEC of CEA having a total capacity of about 4760 MW have been commissioned. During the Financial year 1999-2000, 3 projects for 553 MW capacity were scheduled for commissioning, out of which 345 MW capacity has already been commissioned upto November 1999 and balance capacity is expected to be commissioned by end of the year. 17 projects (including those which do not require TEC of CEA) with a total capacity of around 5126 MW are under construction. During the current financial year, 6 projects for 2115 MW capacity have started construction and three projects for 1786 MW have achieved financial closure upto December 31, 1999. Issue of counter guarantee of Government of India has been approved on December 22, 1999 for the Mangalore Thermal power Project (1000 MW) of M/s. Cogentrix Energy Inc. in Karnataka and to the Ib Valley Thermal Power project (500 MW) of Ms AES Ib Valley Corp. in Orissa.