

Power

4. Power generation in 1997-98 was 420.6 billion kwh indicating a growth of 6.6 per cent over 1996-97. The total generation of power during April-November 1998 was 290.4 billion kwh which is higher than the 273.6 billion kwh achieved during April-November 1997, thereby recording a growth of 6.1 per cent. Thermal, nuclear and hydro generation grew by 4.3 per cent, 10.4 per cent and 13.4 per cent respectively (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.

5. Captive power generation units in industry are used to supplement the power drawn from the grid, as a stand by, in case of power cuts. As of end-March 1996, the installed captive generation capacity of 10 selected major industries in the country, was 9463 MW. Policies relating to captive generation have also been liberalised. A 50 per cent threshold level has been prescribed for the industry's own consumption from the captive units and capacity in excess of this level is permitted for sale into the grid.

6. 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 accrues from nuclear plants. The installed capacity of power generation as on March 31, 1998 was 89,090 MW. As against a target to install an additional capacity of 1300.9 MW during April-November 1998, 1050.2 MW has been added. The PLF is an important indicator of operational efficiency

in thermal power plants. The average PLF in the Central Public Sector Undertakings (CPSUs) in 1997-98 and during April-November 1998 was appreciably higher than that achieved by the SEBs. Wide inter-state variations are noticed in the average PLF of thermal plants. The average PLF for Eastern and North-Eastern regions continues to be much lower than the all-India level (Table 9.3).

7. In the power sector, SEBs are responsible for distribution to all end users other than a small segment under the purview of private distribution companies. Restoration of the financial health of SEBs and improvement in their operational performance remain a critical constraint in the future development of 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. This provision was to become operative from the accounting year 1985. While in 1993-94, 14 SEBs, out of 17 SEBs (including OSEB) had a positive ROR (including subsidy), in 1996-97 13 SEBs out of 16 SEBs (excluding OSEB) had a positive ROR (including subsidy). Further, only 4 SEBs (MSEB, HPSEB, PSEB & TNEB) had a ROR of more than 3 per cent in 1996-97 (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

TABLE 9.2
Trends in the Power Sector (utilities only)

	1996-97	1997-98*	April - November*		Change over previous year	
			1997-98	1998-99	1997-98	1998-99@
			<i>(Billion Kwh)</i>		<i>(per cent)</i>	
1. Power generation	394.5	420.6	273.6	290.4	6.6	6.1
(i) Hydro-electric	68.6	74.5	50.8	57.6	8.6	13.4
(ii) Thermal	316.9	336.1	216.1	225.4	6.1	4.3
(iii) Nuclear	9.0	10.0	6.7	7.4	11.1	10.4
2. Plant load factor of thermal plants (per cent)	64.4	64.7	62.5	62.0	-	-

* Provisional.

@ April-November

Note : These figures exclude captive power generation.

Central Power Utilities adversely affect the finances and investment plans of these CPSUs. In none of the SEBs does unit revenue realisation from the agricultural 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. 24,257 crore in 1997-98 and is projected to go up further to Rs. 31,205 crore in 1999-2000 (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.

8. In addition, the SEBs have continued to suffer from high T&D losses. T&D losses, which stood at 22.3 per cent in 1995-96, have increased to 23.4 per cent in 1996-97. The

losses are extremely high when compared with the international average of less than 10 per cent for the advanced countries of the world. These T&D losses are due to the sparsely distributed loads over large rural areas, substantial energy sold at low voltage levels, inadequate investment in distribution systems, improper billing and high pilferage.

9. Reform and restructuring of the state power sector has been initiated in several States. Orissa was the first state in the country to do so through the enactment of the Orissa Electricity Reforms Act 1995, which came into effect from April 1, 1996. The thermal and hydro generation, transmission and distribution have been corporatised and a State Electricity Regulatory Commission has been set up. The Haryana Electricity Reforms Bill has also been passed and the State Electricity Regulatory Commission

TABLE 9.3
Thermal Plant Load Factor (Per cent)

	1993-94	1994-95	1995-96	1996-97	1997-98	April-November*		
						1997-98 Actual	1998-99 Target	1998-99 Actual
I State Electricity Boards	56.6	55.0	58.0	60.3	60.9	58.5	62.2	58.3
II Central Sector	69.8	69.2	70.9	71.0	70.4	68.0	63.6	67.2
III Private Sector	57.0	65.8	72.3	71.2	71.2	73.4	68.3	71.3
IV Region								
Northern	64.0	59.1	62.0	64.7	66.7	63.9	65.9	63.2
Western	62.4	63.8	68.1	70.2	70.3	67.5	69.9	65.3
Southern	68.3	69.1	74.7	75.8	77.1	75.0	75.8	72.3
Eastern	44.8	43.7	42.7	42.2	43.0	41.9	38.1	42.8
North Eastern	19.9	26.7	28.6	27.1	21.3	22.6	25.8	17.9
All India	61.0	60.0	63.0	64.4	64.7	62.5	63.0	62.0

* Provisional

(SERC) has been set up. To restore the financial health of the power sector, the Government of India has, in a major policy initiative, enacted the Electricity Regulatory Commission Bill, in the current year, paving the way for setting up of the Central Electricity Regulatory Commission (notified on 24.7.1998) and enabling states to set up regulatory commissions at the state level. A Task Force on reforms and restructuring has also been constituted by the Ministry of Power to monitor the progress of the power sector reforms in various states. The Task Force has identified the States of Tamil Nadu, Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh, Uttar Pradesh, Rajasthan and Gujarat as those on the fast track of power sector reforms. All

these states have either set up the SERCs or are in the process of setting them up. The Government of Andhra Pradesh is undertaking reform and restructuring of its power sector with World Bank assistance (Box 9.2).

10. The procedures relating to foreign direct investment in the power sector have been further liberalised. Automatic approval for foreign equity participation upto 100 per cent is permitted for electricity generation, transmission and distribution for foreign equity investment not exceeding Rs.1500 crore (excluding atomic reactor power plants). The Government has also opened power transmission for private investment.

TABLE 9.4
Financial Performance of the State Power Sector

	(Rs. Crore)			
	1991-92	1997-98	1998-99 (RE)	1999-2000 (AP)
A. Gross Subsidy involved				
(i) On account of sale of Electricity to:				
(a) Agriculture*	5938.0	19090.7	21321.5	23847.2
(b) Domestic*	1310.0	5166.4	6262.6	7358.0
(c) Inter-State Sales*	201.0	258.2	220.4	394.2
Total	7449.0	24515.3	27804.5	31599.4
(ii) Subventions Received from State Govts.	2045.0	7213.4	5071.8	4617.2
(iii) Net Subsidy	5404.0	17301.9	22732.7	26982.2
(iv) Surplus Generated by sale to other sectors	2173.0	9058.8	9686.4	11731.2
(v) Uncovered Subsidy	3231.0	8243.1	13046.3	15250.9
B. Commercial Losses @	4117.0	11815.7	13807.9	13476.1
C. Revenue Mobilisation				
(i) Rate of Return (ROR) #	-12.7	-19.4	-21.2	-18.5
(ii) Additional Revenue Mobilisation from achieving				
(a) 3 per cent ROR	4959.0	13646.5	16224.0	15667.7
(b) From introducing 50 paise/unit from Agriculture/Irrigation	2176.0	2764.8	2670.8	2669.7
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.				
* This does not include the amount for Delhi except for 1991-92.				

11. The Government of India has recently announced a policy on Hydro Power Development with a view to exploiting the vast hydroelectric potential available in the country at a faster pace. It has, inter-alia, been decided to encourage greater private investment through IPPs and Joint Ventures in the coming years. To make investment in hydro projects more attractive, it is proposed to (i) provide funding support for survey and investigation of hydro projects so that fully investigated projects with detailed project reports could be offered to private developers; (ii) allow differential pricing for peaking power; (iii) create an institutional mechanism for dealing with geological risks; (iv) simplify the procedures relating to transfer of clearance from State Governments to Central PSUs and from the State Governments to the private sector; (v) enhance the ceiling limits for techno-economic clearance by CEA in respect of projects promoted through the MOU route; and (vi) promote small and mini hydel projects through a suitable incentive package.

12. The Government has recently recast its policy on the development of mega power projects. According to the revised policy, certain project sites, both in the public as well as private sector have been identified for setting up such mega projects which would cater to the power

needs of more than one state. The Standing Independent Group, constituted by the Government, would initially be the apex body to oversee the implementation of these mega private power projects. The principles of competitive bidding would be adhered to as far as possible, while obtaining tariff offers for private sectors projects. These projects are being linked to reforms and given certain concessions, which include exemption of the identified mega power projects from customs duty for import of capital equipment and deemed export benefit to the indigenous manufacturers of equipment for these projects. The policy encourages reforms as there are pre-conditions for the beneficiary state for receiving power from the mega projects. This stipulates that the concerned state would have to establish the SERC with full powers and would also have to privatise distribution in cities having a population of more than one million. The policy envisages the setting up of a power trading company, which would purchase power from the private mega projects and sell it to the concerned SEB. Besides, the projects would be offered to the developers only after all the clearances (including land) have been obtained so that projects can start soon after they are awarded to the most competitive bidder. A two-stage environmental clearance by the Ministry

BOX 9.2

Power Sector Reform in Andhra Pradesh

- Over the years, Andhra Pradesh has been experiencing severe power shortages and more than half of the additional capacity being established in Andhra Pradesh is from Independent Power Producers who need to finalise financial closures with national and international financiers for securing adequate finance for their projects. These developers have, in the past, been seeking recourse to a State Government guarantee and a Central Government counter-guarantee to cover the Andhra Pradesh State Electricity Board's (APSEBs) payment obligations. However, given the sheer magnitude of the power purchasing liability, and the existing constraints on the State's financial resources, which are expected to persist over the near and medium term, it is inconceivable that the comfort of guarantees as above can continue to be extended. It, therefore, became imperative to radically restructure the APSEB so as to convince financiers and lending agencies, of its financial sustainability over the medium and long term. In line with these developments, the State Legislative Assembly has enacted the Andhra Pradesh Electricity Reforms Act, 1998, which has received the President's Assent and has become effective from February 1, 1999. Under the provisions of the Reform Act, APSEB will initially be restructured into two functionally focussed entities—Andhra Pradesh Generation Corporation Limited (GENCO) for generation activities and Transmission Corporation of Andhra Pradesh Limited (TRANSCO) for transmission and distribution activities. To provide functional autonomy and transparency, GENCO and TRANSCO are incorporated under the Companies Act. The State Government owns 100 per cent shares in both the Corporations.
- Under the reform process, it is essential to ensure fair play and equity not only between the separate entities that interact in the generation, transmission and distribution activities, but also between these entities and consumers. Therefore, an independent Regulatory Commission is being set up (within 90 days), to safeguard consumers interests and ensure the efficient functioning of the power sector in the State. The Regulatory Commission will be mandated to introduce and put in place a tariff structure which will progressively reduce cross subsidies so that before the end of 3 years from the date of initiation of reform, no sector shall pay less than 50 per cent of the average cost of supply of electricity.
- The prime objective of the reform process is to promote efficiency both in terms of cost and technical parameters. In this context it is necessary to underscore that all future investments in the power sector will only be through the competitive bidding process. The introduction of the above, as also the management of the entire reform process would require continuous monitoring for securing the requisite pace in reform.

of Environment & Forests is envisaged, for which the site clearance would be given initially. These

steps are expected to result in timely implementation of mega power projects.