

Power sector development in India: performance of state electricity boards in the pre-reform period

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Abstract

Objectives: The objective of this paper is to examine the financial allocations in the plan periods for the power sector and performance of State Electricity Boards before the implementation of reform process in 2003.

Methods/Statistical analysis: In this paper the financial outlays during the plan period particularly from first plan to ninth plan for the power sector development of India has been evaluated. In the process how the State Electricity Boards filled with institutional, administrative, infrastructural problems coupled with using the board to get political mileages were misused and organised, resulting in great financial losses. Ultimately under performances of the boards resulted in introduction of reform process in the sector. Historical and descriptive method was used to study the reasons behind various developments in the power sector in India.

Findings: Subsidies to the agricultural sector negatively affected the SEBs. The state governments over-stretched themselves to provide electricity at a sixth of the actual cost of generation, which means 16 paise per unit versus a production cost of 92 paise. Because of this high debt service and operation and maintenance expenses, the revenue flows could not cover not even a small share of investment costs adversely affecting investments in new capacity additions. Deficiencies arise because of the project delays, resulting in time loss and lost over runs, inadequate budgetary support, constraints regarding acquiring land environmental clearances and rehabilitation plans, constitute infinite drains on the SEBs. At the same time there was no comprehensive plan to address the vital matters. Besides these other problems were over employment, poor plant maintenance, lack of financial control and accountability resulted in low plant load factor and low productivity.

Application/Improvements: This study is relevant for policymakers concerned with the power sector in India and in States on how the sector can enter into problems unless using it as a professional body to address the power supply efficiently without political interference.

Keywords: Power Sector, Five year plans, State Electricity Boards, Pre-reform period, Subsidies

1. Introduction

Indian power generation capacity increased from 1100 MW in the year 1950 to 100136 MW by the year 2000. This is about 95 fold increase, at an annual growth rate of 9.5 percent. In spite of this growth, per capita consumption of electricity in India is about 613 Kwh [1] which is one of the lowest compared to other developing countries. In Brazil the per capita electricity consumption is about 1783 Kwh, in Egypt 787 Kwh and in China 719 Kwh [2]. This low level of consumption of electrical energy in India is mainly due to the inability of the public sector dominated system to augment the supply rapidly [3].

In 1991-92, India faced a peaking shortage of about 19 percent and energy shortage of about 8 percent. The capacity of deficiency of the Indian power system, lagging far behind the growing demand has plunged the country into a chronic shortage situation, with an energy deficit of 6.2 percent and peaking shortages of 12.4 percent in 1994[4]. The increasing inadequate investment tempo and the inordinate delays in project completion also delay the investment and operation in new generation companies. This affected both central and state owned power generation[5]. As a result as per 1991 census, only 42 percent of the Indian households had electricity facility. About 71 percent in the rural and 24 percent in urban areas had not been electrified [6].

2. Outlays in the Plan periods

The outlay on power sector recorded an increase of Rs. 393.44 crore in the first plan period (1951-56) to Rs. 124526 crore in the ninth plan (1997-2002) period. The relative share of the power sector in total outlay did not appear to have undergone any perceptible change during the plan period. During the sixth plan, the percentage share of power sector was 20.13 percent of total outlay but spent only 16.74 percent. Investment in the sector remained more or less same on percentage basis even during the post energy crisis after 1974. The expenditure in this sector exceeded the total outlay during the major part of the plan periods except during the first plan and the sixth plan. The ninth plan witnessed much decrease in the share of power sector in total allocations. Closely related to the investments and expenditure, the targets and achievements in the five year plan periods are crucial in the analysis of the growth of power sector on the basis of government policies [7].

An examination of the plan wise targets of installed capacity as well as the corresponding achievements, we can observe that till the 4th five year plan the targeted capacity addition remained lower than 10000 MW. One reason for this was the relatively low importance accorded to power, as during the pre energy crisis of 1974, power was largely used for lighting purposes, the dominant forms of energy then being coal and oil. Power targets began to go up from the 5th five year plan. The actual achievement in relation to the targeted power expansions remained very low, over the major part of the plan period. The extent of shortage which was only 15.4 percent during the first plan almost increased to 50 percent during the fourth plan. Though the position in regard to achievement slightly improved during the fifth plan, in the following years the extent of shortfall during 1979-80 annual plan reached about 39 percent and 27.7 percent in the sixth plan. This trend again followed in the same manner in other annual plans of 1990-92 with 37.5 percent. In the Ninth plan from 1997-2002 this further decreased to 20.7 percent [ibid].

3. Performance of State Electricity Boards

Two major factors responsible for poor technical performance of the Indian electric power system are the low level of capacity utilisation of the thermal plants managed mostly by the SEBs and high transmission and distribution losses which ranged between 21 to 26 percent in the country [8]. They were about 30.9 percent in the total production by the year 1999-2000 [ibid]. These high levels of T&D losses to a large extent have contributed to the non viability of the system [9]. This high proportion of T&D losses level includes non-technical losses like theft, pilferage, faulty metering and improper billing and technical losses include the low plant load factor and other operational and technical inefficiencies [10]. It also includes the substantial energy sold at lower voltage, sparsely distributed loads over large rural areas, inadequate investment in distribution system and indiscriminate grid extension despite low load densities as measured by demand in megawatt divided by the length of the T&D losses has resulted inefficiencies [ibid].

Transmission network is said to be the artery of a power system. Poor transmission and distribution system can result in system failure [11]. With an Electricity Generation of nearly 594456 GWh in 2004 the T and D losses were about 175534 GWh., which is about 32 percent (CEA, 2006:108). It costs approximately 4-5 crore to install one megawatt capacity [12]. Power experts view investment in T&D renovation as equivalent to investment in power generation sans environmental degradation [13].

The intensified agricultural activities have also led to extensive use of electricity for pumping water and other purposes also led to inadequate investment [14]. Considering the depletion of groundwater below the critical zone in most part of the country, energy intensive pumping for irrigation is not a viable option [15]. The inadequate investment is due to the pricing system, designed mainly for subsidized agricultural and domestic consumption has led to huge losses for SEBs. There has been large scale misuse of power, lack of demand side management and distortions in resource allocation [16]. They were not in a position to generate the required amount of financial resources for further expansion. As per section 59 of the Electricity (Supply) Act, 1948, the SEBs are required to earn a minimum return of not less than 3 percent on their fixed assets after fully meeting the fixed and operating costs, interest and tax liabilities [17].

The political leadership of the state governments as well as the management of the SEBs which are generally administered and controlled by the state bureaucracy never bothered to honour this statutory obligation. Political leaders indulge in competitive populism and try to appease their electoral constituencies by directing the SEBs to supply electricity at subsidised rates or free of cost without any valid socio economic rationale, thus landing these utilities into a financial crisis [18]. On the examination of the financial position of State Electricity Boards from 1984 to 2004-05, we can observe that till the year 1984-85 the losses were Rs.1647 crores, which rose to almost six folds

with in a decade accounting for Rs. 11110 crores in 2004-05. In between these years the losses decreased to Rs 350.2 crores in 1985-86 to Rs 1178 crores in 1995-96. Except few states like Karnataka, Kerala, Madhya Pradesh, Orissa and Meghalaya which increased their financial performance in a positive way recorded profits over a period of time, all other SEBs recorded huge losses in all these years. The southern state of Andhra Pradesh recorded highest losses with about Rs 5944 crores which were in a profitable in 1985-86 deteriorated into a loss making electricity board [19].

The operators' inadequate revenue flows could not cover even a reasonable share of investment costs, because they had to meet both debt service, operation and maintenance expenses adversely affecting investment in new capacity building [20]. The system has also proved conducive to political interference and distributional coalitions have taken advantage to influence pricing, employment, input purchase, output generation and distribution decisions to the serious detriment of efficiency and profitability [21]. The policy of fixing prices for electric power is very important to the whole power sector because combined with technical efficiency, it not only determines economic efficiency of the sector but also signals allocation decisions to the economy. Economic efficiency determines the financial performance which in turn determines the resources available for maintenance renovation and modernisation as well as reinvestment in the power sector. Pricing policy also influence intra-sectoral allocations of resources in the country [22]. This dismal financial performance of the electricity supply industry also adversely affected the consumers with power shortages, poor reliability and quality of power supply [23].

State Electricity Boards did not contribute to the internal resources but actually drew from the seventh plan to the extent of Rs. 1,812 crore [24]. This was because, according to Rajyadhyakshya Committee, the SEBs are often regarded as a political tool to attract voters by fitting them into different classes of consumers and without any control over production friendly tariff policy to make power sector self sustaining [25]. This tariff structure unrelated to the actual fiscal demand of the industry. Consequently the expenditure has been weighed the revenue collected which resulted in a large scale losses [26].

4. Conclusion

Subsidies to the agricultural sector negatively affected the SEBs. The state governments over-stretched themselves to provide electricity at a sixth of the actual cost of generation, which means 16 paise per unit versus a production cost of 92 paise [27]. Because of this high debt service and operation and maintenance expenses, the revenue flows could not cover not even a small share of investment costs adversely affecting investments in new capacity additions [28].

Deficiencies arise because of the project delays, resulting in time loss and lost over runs, inadequate budgetary support, constraints regarding acquiring land environmental clearances and rehabilitation plans, constitute infinite drains on the SEBs. At the same time there was no comprehensive plan at the state governments to look into the sector inefficiencies. Besides these other problems were over employment, poor plant maintenance, lack of financial control and accountability resulted in low plant load factor and low productivity [29].

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