

The Punjab State Electricity Board: Past, Present and Future

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The Punjab State Electricity Board is passing through a transitory phase. Previously, the Board had contributed to the development of Punjab Economy by playing a key role in the onset of green revolution through intensive rural electrification programmes. But at present, the Board is under severe strain due to various administrative, operational and political reasons. Most of the states have already introduced sweeping power sector reforms but The Punjab State Electricity Board (PSEB), though preparing to follow this course, is rather hesitant in bringing about drastic changes in its structure as the experience of reforming states indicates that reforms have been slow in gathering momentum. Moreover, they have not been free from lacunae. Therefore, instead of blindly accepting the World Bank prescription of reform, the state of Punjab has been wise in adopting the policy of wait and watch and the decision of not privatising the PSEB in haste is perfectly justified.

INTRODUCTION

Energy plays a key role in our everyday life and one cannot deny the fact that it has become an integral part of life support system. The world has entered a new age of energy and besides food, shelter and clothing, a fourth essential has been added to the necessities of life, i.e. energy. Of all the forms of energy, electricity is the most versatile and its unique feature lies in the ease of transmission and its high efficiency of conversion for utilisation. Today it is widely accepted that per capita consumption of electricity is an index of the standard of living of an area. A study conducted by NCAER¹ reveals that the demand for electricity tends to grow not only more rapidly than that of other forms of energy but also at a higher rate than the Net National Product. This is because of the fact that electricity with its high efficiency of use is constantly replacing other sources of energy as the main source of mechanical power. Therefore, the importance of power development cannot be overemphasised in the state of Punjab which has been selected for the present study. Our main concern will be to analyse the power sector of Punjab with special emphasis on the reform process being carried out in the sector. Amongst various energy sources, electricity is the most crucial in Punjab. The industrial sector as well as the agricultural sector in the state is dependent on it. Besides this, due to the improving living standards of the people of the state, the demand for power is also

increasing every year. The main objective of planning is to expand and strengthen the power generation system so that adequate power supply is available on demand to consumers in various sectors of the economy.

As far as the sources of energy are concerned, coalmines, natural gas, tidal power and oil are not available. The scope for wind energy and tidal energy is also limited due to low velocity of winds and the distant location of the state from the sea. The scope of solar energy is wide but the commercial exploitation of this source is negligible as yet. For many years there has been a demand for nuclear power station in the state but it has not yet materialised. The main source of power in the state is hydro and thermal electricity. Three perennial rivers –Ravi, Beas and Sutlej flow through the state and are exploited to produce hydroelectric power. Besides hydropower, there are three thermal power stations, which today contribute the major share of total power supply. Electricity is also produced using vegetable waste. Recently, there has been a problem in hydroelectric power generation due to the fall in water levels in the rivers of Punjab. As a result of this, our dependence on costlier thermal power has increased. Coal has to be transported from far-off places to Punjab to generate thermal power; it causes pollution and increases cost of generation. Keeping in view these developments, due consideration is being given to the development of non-conventional energy sources. Recently, the Lehra Mohabbat thermal plant and Ranjit Sagar dam projects have been completed and various projects are in pipeline. At present the state has achieved cent per cent rural electrification and the per capita consumption of electricity in Punjab is the highest among the states.²

OBJECTIVES AND METHODOLOGY

The main objective of this study is to enquire into the working and performance of the Punjab State Electricity Board (PSEB) and the progress of power reforms in the state. Considering the feedback from other states where reform process has not taken off, such an analysis is necessary. After a detailed analysis, a few suggestions can be given to make the Board financially viable without introducing drastic structural changes in it. First of all, a general profile of the Punjab State Electricity Board is given. Then an analysis has been made of the weaknesses of the Board. The process of reforms and its likely implications are studied thereafter, and finally, some policy implications have been put forward.

OVERVIEW OF THE BOARD

The PSEB is a statutory body formed on 01.02.1959 under the Electricity Supply Act 1948. Subsequently, with the reorganisation of Punjab in 1966, the Board came into its present form on 01-05-67. Starting with a modest capacity of 62 MW, the board has today a capacity of 5984MW (as on 31.03.05). It operates its own generating plants and also gets its share of power from Bhakhra Beas Management Board (BBMB) and is allocated power from central sector power projects. It constructs and maintains its own transmission and distribution system to efficiently provide services to various categories of consumers in the state. It serves about 59 lac consumers and employs more than eighty thousand persons.³

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Table I gives information regarding various parameters relating to the power sector of Punjab. It can be seen that prior to the inception of reforms in the state, 35-40 per cent of the plan allocations were for the power sector. Evidently, these were not optimally used to enhance capacity otherwise the state power sector would not have been in a critical situation today. After the beginning of reforms (after the PSERC was constituted in 1999), the share of power sector in state plan has decreased and it was only 18.5 per cent of plan outlay in the year 2001-02. However, the plant load factor of thermal plants has shown a marked improvement after the introduction of reforms. This is mainly due to the reason that because of decreased hydro generation, thermal plants are being used more to meet the peak load demand. The percentage recovery of cost shows no significant improvement as a result of reforms as it has behaved erratically during the period under consideration. Same is the case with rate of return on capital. The rate of return was -19.9 per cent in the year 1992-93 and it hit a low of -45.85 per cent in 1998-99. As the reforms progressed, it improved to -18.16 per cent in 2001-02 but remained negative.⁴

Table No.1: Power Sector of Punjab: Miscellaneous Parametres

Year	Share of Power in Plan (%)	PLF of Thermal Plants (%)	Recovery of cost (%)	Agricultural Subsidy (Rs.Crores)	Rate of Return With Subsidy (%)	Subvention Received From Govt. (Rs.Crores)	Rate of Return Without Subsidy (%)
1992-93	34.67	58.3	64.3	687	-19.9	0	-19.9
1993-94	36.8	63.5	66.44	797	-20.9	0	-20.9
1994-95	38.62	56.7	72.64	781	-19.4	0	-19.4
1995-96	41.75	55	80.31	829	-21.1	0	-21.1
1996-97	36.9	65.7	80.4	1009	-18.18	0	-18.18
1997-98	37.33	69.1	74.02	1314	-31.99	0	-31.99
1998-99	33.12	69.4	73.66	1779	-45.85	0	-45.85
1999-00	23.13	74.7	68.34	2141	-42.72	403.7	-52.81
2000-01	23.05	77.9	70.18	2251	-36.26	0	-36.26
2001-02	18.5	79.2	67.24	2339	-18.16	0	-18.16

Source: 1. *Punjab State Electricity Board, Patiala.*
 2. *Central Electricity Authority, Delhi.*
 3. *GOI (2002), The Working of State Electricity Boards and Electricity Departments, Annual Report (2001-2002). Planning Commission, New Delhi.*

For the last many years, the PSEB has been facing some serious problems. An important segment of electricity supply in Punjab is the rural supply to irrigation pump sets. Around one third of total electricity supply goes to agriculture in Punjab. In fact, one of the main factors responsible for green revolution in Punjab has been the extension of electricity supply to agriculture at subsidised rates. In fact it is believed that The Punjab State Electricity Board and the Government of Punjab have worked together to usher-in green revolution in the state. But besides this, supply to the agricultural sector has a dark side also. In the late nineteen sixties, when extensive rural electrification programme was started in the state and Punjab was one of the first few states to electrify all of its villages, there were only a small number of irrigation pump sets in the state and agricultural electricity supply formed only a small fraction of total supply and it did not adversely affect the finances of the Board. But with the passage of time the number of irrigation pump sets continued to grow and subsidised supply of electricity to them ultimately became free supply, thanks to the election sops announced by the successive state governments. As of today, there are about nine lakh pump sets in the state and free electricity supply has eaten into the vitals of the power sector. So bad is the condition of finances of Punjab State Electricity Board that there is no money even to repay the loans taken, what to say of capacity additions and renovation of existing plants. The share of agriculture in total sales of electricity was 35.53 per cent in the year 2001-02 and the share of revenue from agricultural sales was zero per cent due to free of cost supply. To compensate for this loss, a high price is charged from industrial and commercial consumers. The Table I shows the subsidy to agriculture, which increased, from Rs. 687 crores in 1992-93 to Rs. 2339 crores in 2001-02. During this decade, the government granted subvention to the PSEB only once i.e. in the year 1999-2000 and this is one of the primary reasons of continuously deteriorating rate of return on capital. Due to this reason, private investment in power sector is not forthcoming in the state. On the other hand, since electricity is available free of cost, there is no incentive to save it.⁵ Due to excessive withdrawal of groundwater, water level is going down at an alarming rate in the state of Punjab and at some places there is the problem of water logging. During the summer season, when demand for electricity is at its peak, the board imposes heavy cuts on those consumers, who pay the highest price for electricity (i.e. the industrial and commercial consumers) so that electricity can be supplied to agriculture free of cost. Now-a-days, expensive electricity is purchased from outside to fulfill the requirements of agriculture. The financial burden of this exercise is unbearable especially if the government does not compensate the Board for this free of cost supply and it has crippled the economy of the state. Despite the progress of reforms in power sector, there has been no turnaround in the policy of free power supply. In case of rural electrification too, promotional aspect seems to have outweighed all other factors; in fact it has been the sole criterion for fixing below the cost tariffs for rural consumers and all economic considerations have been overlooked while providing free power to agriculture.

Delay in construction of projects further creates problems due to escalated costs and delayed benefits. For example, the estimated original cost of Ranjit Sagar Dam was Rs.242.32 crores whereas its revised cost was Rs. 2186.28 crores. Similarly, the original estimated cost of the Satluj-Yamuna Link

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Canal (S.Y.L.) was Rs.103.64 crores and its revised cost was Rs. 163.74 crores.⁶ Due to this reason, capacity additions were delayed indefinitely. For many years now, the increases in capacity have been very negligible as is evident from Table No-II. It is clear that during the last five years, the growth of installed capacity and generation has been very negligible. Generation shows an increase because it includes power purchased from out of the state. The hydrothermal generation ratio has continued to decline from 97.11 per cent in 1971-72 to 46.4 per cent in 1999.⁷ The Board has been facing mounting Transmission and Distribution (T & D) losses for a long time now. It is also facing problems in curbing the menace of theft of electricity in Punjab. The theft has become more serious a problem with the connivance of corrupt persons in the Board.

Table No-II shows that despite power sector reforms, T & D losses are not coming down. In fact after the introduction of reforms, these losses suddenly shot up. It is a well known fact now that earlier the losses were clubbed together with agricultural consumption and an impression was there that agriculture consumed around forty per cent of total electricity supplied. But now the Board has started confessing that T & D losses (including theft) constitute a major part of the total power produced and theft of power causes a revenue loss of Rs. 400.0 crores per annum. Ranganathan⁸ is of the view that there is another reason because of which SEBs have started showing higher losses. He says if loss levels are high, the regulatory commission will set a loss reduction target, which will be easy to achieve and higher losses also meant that tariff allowed will be higher and a high tariff will improve the financial position of the boards.

Table No. II. Installed Capacity of Electricity Generation and T& D Losses in Punjab

Year	Installed Capacity	Generation (Million KWH)	T& D Loss (%)
1990-91	3049	14618	19
1991-92	3289	14677	18.7
1992-93	3499	15718	19.24
1993-94	3509	16322	18.46
1994-95	3509	17175	16.7
1995-96	3509	16898	18.3
1996-97	3509	18455	18
1997-98	3719	17900	17.9
1998-99	3929	20880	16.83
1999-00	3929	22563	18.4
2000-01	4443	21528	27
2001-02	4459	22188	26.25
2002-03	4451	21760	25.07
2003-04	4460	23268	25.33
2004-05	4450	21191	24.27

*Source: 1. Central Electricity Authority, Delhi.
Panjab State Electricity Board, Patiala.*

There is the problem of the poor quality of Indian coal. Its high ash content causes depreciation of machinery, enhances the cost of maintenance and causes pollution. Sometimes, due to lack of availability of spares, efficiency of thermal units decreases. This causes serious shortages of power. The highly capital intensive Electricity Board has been converted into a breeding ground for employment generation due to continuous political interference. According to an estimate, there is about thirty three per cent over employment. It causes a burden of Rs. 375 crores per annum on the state finances.

Further there is the lack of accountability like any other government department. The employee unions are so strong that they render high officials helpless. This problem persists at all levels.

Thus numerous causes are responsible for the poor financial performance of PSEB. The above analysis clearly shows that internal weaknesses are responsible for putting the Board in its unenviable position of today and internal reforms can go a long way in making it viable.

THE REFORM PROCESS

The government of Punjab had sought an infrastructure loan of Rs. 5000 crores from the World Bank. The World Bank provides loans to different countries for various development projects on the basis of the rate of return criterion. The PSEB has been incurring losses for long years now and it couldn't qualify this criterion. Accordingly, it became imperative for the Punjab Government to introduce reforms in the Board and to be eligible for the grant of loan, its reform strategy was supposed to include privatisation and unbundling.

The Punjab Disinvestment Commission examined the case of PSEB and recommended its restructuring and partial disinvestment. In the meantime, the Government of India enacted the Electricity Regulatory Commission Act of 1998 which envisages setting up of a Central Electricity Regulatory Commission and SERCs in the states. The PSERC was constituted in March 1999 and its function was to regulate tariff, act as an independent policy advisor and adjudicator between the government and the private parties. The commission has started issuing tariff orders. This has helped rationalising tariff structure as well as improving the revenue rationalisation to some extent. On 30th March 2001, the Punjab government signed a MOU with Government of India, Ministry of Power for carrying out reforms in the power sector of the state.

The central government gradually started withdrawing its financial support in order to facilitate privatisation process. Then due to the policy of subsidised power to agriculture, the financial position of the Board became precarious. All over the country, electricity tariffs were being revised in order to meet the escalating costs of inputs whereas PSEB was forced to borrow to meet even its routine expenses and was not able to pay the interest on its borrowings. The government was not compensating the Board for agricultural subsidy. Due to all these misfortunes, the credibility and the image of the Board deteriorated and it came to be viewed as a failed public sector undertaking, unable to meet the

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power requirements of the state. All these events encouraged the government to streamline the process of reforms. Following the recommendations of the Haldea Committee Report⁹ the Government of Punjab took the initiative to reform the P.S.E.B.

In the meanwhile, Electricity Act-2003, came into being (except for section 120) on June 10, 2003. It is stated to be the distilled wisdom of a series of commissioned international and national consultancy studies, seminars and conferences etc. held at All India level. It is supposed to be the roadmap for electricity industry, which will hasten the pace of reforms.¹⁰

The reforms which have been carried out in the power sector of Punjab are: (a) PLF of thermal plants in the state has improved to 80.2 per cent against the all-India average of 69 per cent. (b) Coal washery arrangements are being made to improve the quality of coal used in PSEB thermal plants. (c) Renovation & Modernisation of various generating stations is being undertaken. (d) All consumers (except Agricultural Pump sets) are metered and their bills have been computerized. With electronic metering, energy auditing and anti theft measures, T&D losses have been calculated as 25.35 per cent for the year 2003-04 showing an overall reduction of about 5.5 per cent for the last four years. (e) The Board has initiated various steps to reduce manpower. The recruitment and creation of new posts has been frozen and surplus staff is being redeployed through revision of staffing norms. With various measures taken, the number of employees has reduced from 93029 in 1998 to 87899 in 2004. (f) With the passage of the Electricity Act –2003, the process of unbundling and corporatisation of PSEB has already started. (g) Private sector participation is being encouraged and an agreement has been signed with a private company for setting up of a 500MW thermal power plant and various PPAs have been signed with NTPC, NHPC and NJPC. (h) Development of renewable sources of energy forms a part of the reform programme and for developing the non-conventional sources of energy, The Punjab Energy Development Agency (PEDA) has been set up.¹¹

Critique of the Reform Process

The reforms have yet to take-off because they are based on the strategy recommended by the World Bank and are not a result of self-analysis. The PSERC is not satisfied because the financial performance of the Board has not improved. It is worth mentioning that though the common man is becoming aware of the problems of power sector, there is strong opposition to privatisation. Not a day passes without a demonstration, strike or show of resentment by the employees union of the PSEB. We all know that electricity is a basic necessity, which must be provided at the minimum possible price. In view of this, therefore, its supply cannot be completely handed over to the private sector since private sector is mainly profit-driven. The Electricity Act has some provisions, which are in favour of the private sector and are likely to enhance resistance to reforms. For example, the Act doesn't mind if there are mergers in the private sector but it opposes strongly if the same thing happens in case of public sector undertakings. Thus, it is not even allowing a level playing field to the state electricity board.

In order to implement reforms, unbundling of the Board into separate companies for generation, transmission and distribution of electricity is necessary. As no date has been fixed for privatisation, the Board may continue to exist indefinitely. The likely result will be that those consumers, who are paying a high tariff to the Board (i.e. industry and commerce), will either set up their own generating plants or start taking power from private distributors because of efficient and assured supply. Recently, the share of domestic and agricultural consumers has been increasing in total demand as both of these sectors are getting subsidised power. During the year 2002-03, the share of these two sectors in total consumption in the state was 51.6 per cent of the total. This fact has serious implications for the future financial health of the Board. Because in the coming years, the Board will be providing electricity primarily to these two sectors at subsidised rates or it will have to withdraw subsidy, which is a dead option because the Board must have a human face too. It might be suggested that complete privatisation is not the answer. To further strengthen the case against the hasty implementation of privatisation, the experiences of some of the privatised utilities may be cited.

THE WORLD BANK - ORISSA MODEL

What is being promoted in the country today, to introduce privatisation is the World Bank-Orissa Model. It is so called because it was suggested by the World Bank and was first of all implemented in the state of Orissa. This model includes (a) creating separate companies for generation, transmission and distribution of electricity (b) Privatisation of SEBs (c) Creating regulatory commissions to monitor the working of private companies, assure them reasonable returns and also to protect public interest by regulating tariffs. But the reforms failed to perform in Orissa, because of the haste in which the distribution work was privatised. One of the most important lessons that can be learnt from Orissa's experience is that the process of privatisation is time consuming and the projected gains of privatisation do not accrue fast.¹²

The experience of Maharashtra also speaks volumes against privatisation where, lucrative areas have been overtaken by the private companies and rural, less paying areas have been left with the M.S.E.B. But this outcome is nothing in comparison to a bigger fiasco i.e. the Enron project.

The Enron Experience

The Enron project is among the first eight power projects cleared by the Government of India and it is the largest among them. Its installed capacity of 2000 Megawatts was 20 per cent of the total installed capacity of Maharashtra in 1992. In 1993, The Dabhol Power Company, A Joint Venture of Enron, Bechtel (BE) and General Electric (GE) of USA signed a Power Purchase Agreement (PPA) with MSEB. It was kept secret for more than a year by both the govt. and Enron despite repeated demands for transparency. It was the target of serious objections from experts due to various reasons. The researchers objected to such a large capacity and a high capital cost and pointed out that the total payment to

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Enron in the next twenty years (including the payments for power purchase) would vary in the range of Rs. 2, 20,000 crores to Rs. 3, 24,000 crores depending upon the chosen scenario, as against the official figure of Rs. 77,000 crores.¹³ Due to the serious objections against the project, the government ordered the cancellation of the project in the year 1995. But in the year 2005, after renegotiations between the government and promoters of the project, the project is going to restart. The known cost of the project to Indian govt. goes up to Rs. 11,000 crores apart from foregone interests by Indian Financial Institutions. Now, due to a new purchasing power agreement between Dabhol Power Co. and purchasing utilities, the Indian taxpayer will pay significantly more for a second hand project as compared to an equivalent new project.¹⁴

The Prayas Group prepared a report on the performance of Private Companies distributing power in India. They include Tata Power Company, Calcutta Electricity Supply Company (CESC), Surat Electric Company, Ahmedabad Electric Company and Noida Power Corporation among others. The report observes that even private utilities are not free from T & D losses, which were 11 per cent for CESC. There is a large variation in manpower efficiency and distribution cost. Performance of these utilities also varies from state to state and no uniform pattern can be observed.¹⁵

POLICY IMPLICATIONS

Thus the experience of these projects speaks volumes against privatisation. The above analysis shows that internal reforms in PSEB are required. In any case, the private players are not enthusiastic to take over this social obligation. Reforms have progressed at a slow pace in the state of Maharashtra, Andhra Pradesh and Orissa. Therefore, the PSEB is justified in following the policy of wait and watch. The PSERC has started issuing tariff orders. The Board is demanding high tariffs but the PSERC is not allowing unreasonably escalated tariffs. Moreover, the PSERC has directed the government of Punjab to pass on the cash subsidy to the Board and the state government has recently transferred Rs. 1600 crores to the Board for the purpose. It has also asked the government to prepare a balance sheet showing the restructuring plan for P.S.E.B. through stringent measures to help it become viable. Recently, CRISIL prepared a report on the rating of power sector in India.¹⁶ The report reveals that 93 per cent of the households in Punjab are already electrified. There is a large reduction in tariff for subsidising categories as against subsidised categories. The advantages and disadvantages of Time of Day (TOD) metering have been considered and it has been decided that the state is not yet ready for the same. 100 per cent interface metering has been completed in 6296 interface points. Auxiliary power consumption is lower (5.52 per cent) than normative levels. PSEB has reported profit after tax of Rs. 174 crores in 2003-04. Cash coverage of cost to the extent of 98.6 per cent is also an impressive achievement. It can be seen that the PSEB is already on the reform path without introducing drastic changes in the system. It proves that privatisation is not a precondition for viability. However, the recently announced government policy of free power to agriculture is not a rational decision. It will be a blow to the already critical condition of the PSEB. There should be other effective ways of giving relief to the needy farmers like giving subsidies on other inputs, giving some concessions on the bills

or by providing efficient pump sets to the farmers. The cost of these pump sets can be recovered from the electricity bills in instalments. Various studies in the field show that subsidised power to agriculture has failed to serve its purpose as free power availability has led to its wastage and lowered the water tables in the state at an alarming rate. Therefore, the government should avoid populist policies as the long-term quality of power will improve if the financial viability of the Board improves. Experience in the field of power sector shows, that private power is not inexpensive. Moreover, IPPs have not made a major impact on the power sector of Punjab as yet. That is why the policy of wait and watch followed by the Board is very appropriate. If at any time there has to be privatization, it should be in the field of distribution because that is the area where maximum losses take place. Such investment must involve appropriate size of conductors, appropriate loading of the system, and installing electronic meters on all consumers' premises. Moreover, with the theft of power becoming a cognizable offence very soon, the financial recoveries of the board are likely to improve significantly. Moreover, measures such as Demand Side Management (DSM) through enhanced efficiency of electronic appliances, Time- Of-Day metering and peak hour pricing etc. should be introduced to enhance viability of power sector because those who have an urgent demand for electricity, will be willing to pay a higher price for it and those who can postpone this demand to the time of the day when peak load is less, will have to pay a lower price. People should be involved in the process of reforms because it will make them more responsible. We all must know that electricity is essential for the all round development of the state. Privatisation may increase efficiency and quality, but only if competition increases as a result of privatisation. But that is a remote possibility as competition in electricity industry is very different from competition in transport and telecom sectors. In the absence of competition, it will also increase tariff much more than that if it remains in government hands so it is better to retain it as a public undertaking. Various studies have proved beyond doubt that even agricultural consumers want quality power and not free power. The tariffs should be fixed in such a way that they meet the social as well as rate of return obligations. The PSERC should have financial and administrative autonomy so that tough decisions can be taken. The autonomy and the competence of PSERC can be the most important factors which will ensure the independence of the Board and minimise the interference of politicians and bureaucrats. The experts from the relevant field, who know the intricacies of the sector and are capable of taking independent decisions, should manage the board. Generation and distribution profit centres can be made within this setup without unbundling the Board.¹⁷ The process of transformation ought to be transparent in the eyes of the public. All decisions should be widely publicised. Another important requirement is that employees of the Board, including those in the highest echelon, should be accountable to the public for their actions because when they enter into agreements with private power producers, it is the public money they are dealing in. It should therefore be ensured that episodes like that of Enron are not repeated in Punjab. All the decisions should take into consideration the welfare of the general public as well as the criterion of viability so that the

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performance of the Board improves without privatisation and if privatisation has to be, it should be gradual and partial and the interests of vulnerable sections must not be overlooked.

Notes

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