Indian Management Studies Journal 16 (2012) 33-53

Indian
Management
Studies Journal

An Inter-state Analysis of Power Sector Reforms in India with Special Reference to Punjab

Nisha Bhargava*, Shakuntla Gupta and Gurdip Sharma*****

** Deptt. of Economics, DAV College Hoshiarpur, Punjab*

*** Deptt. of Economics, Punjabi University, Patiala*

**** GGDSD College, Hariana, Hoshiarpur*

Abstract

As a sequel to the wave of reforms in Indian economy, various structural changes have been introduced in state power utilities. However, the reform experience across states indicates that reforms have been slow in gathering momentum as the early reforming states have done poorly on basis of various performance criteria. Therefore, it is inferred that the World Bank prescription of reforms cannot be blindly implemented everywhere as each state has its unique circumstances and accordingly has to evolve its own reform model. The state of Punjab has, therefore, been wise in adopting the policy of wait and watch and the decision of not privatising the state utility in haste is perfectly justified.

Key Words

Efficiency, power reforms, Punjab State Electricity Board

INTRODUCTION

Reforms are being introduced in each and every area of economic activity and power sector is no exception. Earlier there existed a division of the world into two broad categories namely capitalist and socialist countries. As socialism/ communism became weak, deficiencies of public sector came to the fore and it became evident that role of government in economic activities had to be curtailed to enhance productivity and efficiency. Thus, this transition from public ownership

of means of production to privatisation is taking place as reforms. Reform may be defined as a change in the existing system to meet future challenges which it is not in a position to meet. Generally it involves a macro overhaul of the working of the system. Reforms in energy literature, where electricity is an important source, refer to the development of new sources and the need to have a fresh perspective on the innovative applications of energy use.

Reforms can be both technology driven as well as society driven. For instance, whereas a hydro dam was initially conceived to control floods and act as a premier source of supply of irrigation water, an externality of it emerged as a source of generation of electricity. This source of electricity was found to be very cheap and clean. Later nuclear science related developments aimed at developing defence deterrents in the form of nuclear bombs etc. also yielded a peaceful use of them in the form of electricity generation. Such kind of reforms may be called technology driven. However, when production relations are thought to be unsustainable and unviable, the reforms that are introduced may be called society driven. These days both technology driven as well society driven reforms are being introduced all over the world. The present study makes an attempt to suggest a policy framework for Punjab state on the basis of the reform experience elsewhere. The objectives of this study are :

(a) To review the power sector reforms at international and national level,
(b) To formulate policy for Punjab's power sector.

2. SURVEY OF LITERATURE

2.1 Indian References :

A joint study by IIM Ahmedabad and Institute for International Studies, Stanford University (IIM Ahmedabad, 2003) sheds light on impact of reforms on ownership risks, investment flows, and market structure and emissions baseline at state and sector levels. The project makes a comparative analysis of Indian states with Chinese provinces of Guangdong, Liaoning and Hubei.

Saunders (1993) and Sagar (2002) prescribe commercialisation, corporatisation and private participation in power sector. Baijal (1999), on the other hand says that privatisation is not indispensable as competition not ownership is important in reform programme.

Agarwal (2002) observes that the single buyer model is suitable to Indian conditions because it offers the maximum competition. Ruet (2003), however, feels that single buyer model has failed in India and says that reforms don't necessarily mean privatisation and basically the internal organisation of the State Electricity Boards (SEBs) needs improvement.

The studies by Sant et al. (1995), Prayas (2001, 2005), Abhyankar (2005) and Narendranath et al. (2005) reveal that the Purchasing Power Agreements (PPAs) signed by various state governments with Independent Power Producers (IPPs) have been flawed.

Almost all of the states in India have appointed Electricity Regulatory commissions (ERCs). However, they lack financial and administrative autonomy. Dixit et al. (1998), IEA (2001), Rao (2001, 2004), Mukherji (2004) and Virmani (2004) look into the issue of weaknesses of ERCs.

Some recent studies such as by The Distribution Policy Committee (GOI, 2002), Abraham (2003), Morris (2003), Sinha (2003) and Godbole (2004) have recognised the fact that the main problem of power sector lies in the distribution sector, therefore, distribution reforms are mainly required.

2.2 INTERNATIONAL PERSPECTIVE

Let us first of all have a look at the power sector reform experience of different countries. The current wave of power sector reforms started around nineteen seventies. In the beginning, the sector was partially opened up to new entrants. In 1978, the United States adopted the Public Utility Regulatory Policies Act requiring the utilities to buy electricity from qualified facilities. In 1982, Chile enacted a law introducing competition in electricity sector by allowing bulk consumers to choose their power supplier and negotiate prices for it. The England and Wales electricity market permitted competitive generation in 1990. Norway established a competitive pool in 1991. The national electricity market of Australia was created in 1998. Power sector reforms have been introduced in many other countries such as Canada, Germany, Italy, Latin America, New Zealand, Switzerland and Zimbabwe and these countries are opening up their electricity markets to end-users. Some countries are even allowing their consumers to choose their power suppliers. However, most of the countries have not given this option to small consumers as it is felt that open access benefits only large consumers. In most of the reforming countries, the three activities of generation, transmission and distribution have been unbundled and license is compulsory for generation. There are a number of reform models, which are in vogue all over the world today. They are: Grid access model, competitive pool model, single buyer model, bulk competition model and retail competition model. Regulators are common in power sectors of developed countries. Government controls these regulators in markets where opening is limited. The countries, which adopt a rigid unbundling policy, have strong regulators. In many countries, regulators work independent of ministries while elsewhere ministries are performing their functions.

Kozulj and Sbroiavacca (2004) have made an assessment of the energy reforms in three Latin American countries namely Argentina, Peru and ElSalvador. The study clearly indicates the regressive nature of reforms as there is a decline in the electrification rates and a significant increase in prices and tariffs for the poor post reform. Moreover, the reforms have adversely affected employment generation, increased foreign indebtedness, and led to the problem of poverty. Evidence shows that because of reforms, large consumers have benefited due to decrease in price and small consumer had to bear an increase in price. It has been observed that reforms have not lowered prices (not even for bulk buyers) except only if regulator has intervened.

A study by International Energy Agency (IEA, 1999) observes that in developed countries, reforms have shown some positive results also because generation costs declined by 40 per cent and labour productivity increased by 60 percent. Plant availability improved from 60 to 87 per cent and prices were reduced by 20 percent in wholesale market and by 13-19 per cent in retail market. It is evident that in developed countries, restructuring was introduced in well functioning systems and basic aim of reforms was to increase efficiency and productivity. In under developed countries, however, reforms were introduced to get rid of numerous problems plaguing the power sector (Ranganathan, 2004).

At the outset, it must be emphasised that reforms do not per se imply privatisation of the existing organisations. It implies removal or minimisation of ills of the sector/organisation. Privatisation whenever/wherever experimented aims at jolting the permanent employees of public sector units to enable them to come out of their slumber and the phenomenon of resistance to change. It is only an enabling process as advocated by World Bank. It is for this reason that a review of reforms across countries reveals absence of complete privatisation; partial to major control continues to rest with respective governments. It has been observed that privatisation itself cannot lead to increase in competition and efficiency though long-term efficiency gains are, at times, higher in private sector than those in the public sector.

3. REFORMS EXPERIENCE IN INDIA

In India, reform programme started almost a decade ago. Basically all the State Electricity Boards (SEBs) in India suffered from the problems like high indebtedness and mounting losses due to subsidised power and resultant shortages of generating capacity. After independence, there was a remarkable growth of power sector in India, facilitated by the fact that power development was under government control which earmarked large outlays for power sector, provided cheap loans and followed the policy of cross subsidy by charging high prices from industrial and

commercial consumers and low prices from agricultural and domestic consumers.

Flat rate tariff for agriculture was introduced in mid-seventies to promote agriculture. The number of agricultural pump sets was low and the flat rate tariff was comparable to metered tariff so there was no significant burden on the SEBs. Till the nineteen eighties, the Indian power sector was growing at a satisfactory pace. During the year 1991, there was a severe foreign exchange crisis in India. Since then power sector all over India has been facing severe financial crisis and an acute shortage of capital to expand power generating capacity. This resulted in the continuous deterioration of SEBs and hence the reform prescription by the World Bank. The Bank decided to provide loans to only those states which adopted measures such as unbundling of SEBs into separate entities for generation, transmission and distribution, encourage private participation in power sector, relating electricity prices to costs and introducing transparency in provision of subsidies and creation of independent regulators.

As a consequence of reform strategy advocated by the World Bank, the Government of India opened up power generation for foreign and Indian private investment. Initial investments did not follow the competitive bidding route and the state governments signed a large number of PPAs with IPPs. During the initial three years of this policy, the agreements were signed for a capacity addition of more than 90,000 megawatts (mw), which was equivalent to the existing generating capacity of the country at that time. In fact, more than 250 potential IPP projects were identified but very few actually materialised. Experience shows that IPP policy has not only resulted in costly projects but has also failed in enhancing generating capacity to a significant extent. The main reasons for the same are: (a) low financial credibility of SEBs, (b) delays in clearance of projects, (c) huge time and effort required for developing new projects, (d) demand of a single state is limited for large IPP generation, (e) difficulty regarding fuel supply as many of the IPPs want to import the fuel and many of the projects are caught up in public interest litigations and (f) in most of the contracts, SEBs bear most of the risks and liabilities whereas most of the benefits are usurped by IPPs.

The International Energy Agency (IEA, 2002) assigns an active role for central government to facilitate reform process and as a sequel to this the Government of India enacted the Electricity Regulatory Commission Act of 1998 to set up regulatory commissions (ERCs) at central and state level. By now twenty-eight states have constituted ERCs. Their functions include regulating monopolies, determining tariffs, improving quality standards, promoting transparency and they also act as advisors to government. Yet they have not been able to make any significant impact on the Indian power sector because they lack autonomy and skill

and also because of persistent political interference.

The new Electricity Act (The Electricity Act, 2003) was passed in the year 2003. Though all the provisions of the Act have not come into force as yet, still there is a tough resistance to reforms. It is felt that the involvement of private sector may not bear much fruit. Specifically, the entry of companies such as Reliance has increased apprehensions that consumer interests will not be protected. The Act is also opposed on another ground i.e. it curtails the power of states to create legislative framework in power sector, which comes under the concurrent list in the Indian constitution.

After an overview of power sector reforms at national level, we shall now have a look at the reform experience of some of the major reforming states of India to formulate policy for Punjab's power sector.

3.1 Orissa

The state of Orissa had a classic reform experience. What is being promoted in the country today to introduce privatisation is the World Bank-Orissa Model. It is so called because it was propounded by the World Bank and was first of all tried in the state of Orissa. A peculiar feature of Orissa's economy is that agricultural load is only seven per cent of total, so it was considered an ideal state to introduce reforms. The Orissa Electricity Reform Act (1999) was enacted with an aim to make the power sector viable and to attract private sector to bring investment in the sector. Subsequently, OERC was constituted but was not able to perform effectively due to political interference. Kanungo Committee (Govt. of Orissa, 2001) on power sector reforms in the state of Orissa concludes that power reforms in Orissa have proved to be a fiasco. OSEB was unbundled in 1995 and generation as well as distribution functions were privatised. The financial health of OSEB deteriorated because of high losses, low tariffs and a very large work force. But the main reason of failure of reforms in Orissa was 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 privatisation is a slow moving process and the expected gains of privatisation take time to materialise.

3.2 Andhra Pradesh

Reforms in Andhra Pradesh were initiated by enacting the Andhra Pradesh Electricity Reforms Act (1998). Under this Act, APSEB was unbundled into Generation and Transmission Companies. Reforms have shown satisfactory progress in the state. PLF of thermal plants improved to 87 per cent in 2004. Subsidy and debt payments are timely and employee interest is taken care of. The power stations in

the state are rated among the best in the country. However, the state is providing free power to agriculture, which is affecting financial viability of power sector. Transmission & Distribution (T&D) losses stand at 24 per cent and metered sales are 47 per cent of total. Subsidy needs to be targeted and tariffs rationalised.

3.3 Delhi

Delhi Electricity Supply Undertaking (DESU), which was later on constituted as Delhi Vidyut Board (DVB) continued to incur losses for many years. The reason is that unlike other power utilities, it works in a highly urbanised area with hardly any agricultural load. DVB was privatised in the year 2002 and it was split into six companies. The government gave strong cash support to transmission company during transitory phase though recently, government support is replaced by additional revenue due to loss reduction. Distribution has been privatised and high level information technology is adopted for consumer services. Yet, improvement under DVB has been slow and it owes huge debts to central power undertakings. On the other hand, several efficiency gains have been achieved after reforms and distribution companies have succeeded in reducing losses.

3.4 Gujarat

The Gujarat Electricity Board has been restructured into seven independent companies to bifurcate the activities of generation, transmission and distribution. State government is making subsidies payments on time. Improvements have been made in the area of distribution. Anti-theft legislation has been passed. Debt servicing has improved in the state though commercial viability has deteriorated as losses still stand at 30 per cent. Cost recovery (without subsidy) is less than 80 per cent and metered sale is less than 50 per cent.

3.5 Haryana

Here, separate companies were created for generation, transmission and distribution. However, privatisation has not been done in haste. HSEB has been unbundled gradually and reform law has been enacted. Efforts are on to improve the recovery of dues and to check theft of power. T&D system is being strengthened and PLF has improved. ERC is trying to function effectively but interference in its functioning can not be ruled out as its members are from political background. Yet the state is showing signs of a turnaround in the sector.

3.6 Karnataka

Karnataka is the only state where the power entity earned profits in each year during the period 1990-2002. The main objectives of reforms in the state were

to improve viability of power sector, to invite private sector for generation, and to encourage power conservation. Anti-theft law has been passed and additions to generating capacity have been satisfactory. Captive generation has been made less attractive by levying a duty on it. The government has provided transition support and the financial position of state power sector is better than many other states. However, T&D losses stand at 30 per cent, which are high by any standards.

3.7 Kerala

Power reforms in the state were not introduced by the World Bank or other financial institutions and the purpose was not to introduce privatisation in the state but to increase generation. The pattern of electricity consumption in Kerala is different from other states as domestic sector consumes half of the total electricity available and agricultural load is only four per cent of the total. It has been observed that middle class in the state is most adversely affected by reforms because they don't get any subsidy and are paying significantly more than the cost of supply.

3.8 Maharashtra

Here, along with Maharashtra State Electricity Board (MSEB), three other power utilities also operate. They are; Tata Power Company (TPC), Bombay Electricity Supply and Transport Company (BEST) and Bombay Suburban Electricity Supply Ltd. (BSES). It is the largest power entity in the country. It continued to earn profits till 1990s but became unmanageable due to its large size and increased agricultural consumption, which was characterised by low tariffs and high wastage. Reforms were adopted as a remedial measure. However, initially the whole of reform process lacked transparency. The reform experience of Maharashtra speaks volumes against privatisation where, lucrative areas have been overtaken by the private companies and rural, less paying areas have been left with the MSEB. But this outcome is nothing in comparison to a bigger fiasco i.e. the Enron project which has been the most unpleasant IPP experience in India (Bhargava & Gupta 2006).

However, recently the efforts are on to increase transparency in the system as public participation process is being introduced in power sector. In June 2005, MSEB was unbundled into four companies. Recently, cost coverage is improving and government is making subsidy payments to the MSEB. Still metered units are only 48 per cent of total and free power is being supplied to agriculture which may cause a setback to reform process.

3.9 Rajasthan

Rajasthan Power Sector reform Act (1999) marked the onset of reforms in the state. The SEB has been unbundled into five separate companies for performing different functions. The state expected lots of generation coming from private sector. However, this expectation did not materialise due to poor finances of RSEB. Therefore, now the government is keen to enhance generation. Anti-theft law has been passed and government is making timely subsidy payments to RSEB. Still cost recovery is dismal and there are high levels of unmetered agricultural consumption.

3.10 Tamil Nadu

Reforms are progressing at a satisfactory pace in the state. The SEB has one of the lowest T&D loss levels as compared to power entities of the same size. Significant capacity additions have been made in the state. Interface metering has been completed. Government is making timely payment of subsidies and loans. PLF of thermal plants is high. A great achievement of power sector is the addition of 813 mw of wind generating capacity. But here also free power to agriculture is a major drawback of power system.

3.11 Uttar Pradesh

Uttar Pradesh (UP) is privatising power generation and distribution system in the state. Unbundling of SEB was completed in the year 2003-04. The electricity subsidy to agriculture in the state is the highest in India. Uttar Pradesh has allowed private sector to set up captive power projects and any surplus power generated will be purchased by state power utility. Reliance Energy is setting up a project in the state, which is the biggest gas power project in the world. Tata Power also wants to set up hydro and thermal projects in UP. The state Government plans to privatise distribution but employees are opposing this move. Financial condition of SEB is poor and cost recovery is only 75 per cent. Efforts are being made to improve efficiency, transparency and quality of service.

4. Overall Analysis

A review of progress of power reforms across Indian states can be made on the basis of various performance indicators shown in Table 1.

It is evident from the table that though regulatory commissions have been constituted in most of the states, yet the transitory support by government has been weak and commercial viability of SEBs has been low. The progress in financial and restructuring parameters is also dissatisfactory. High T&D losses prevail in most of the SEBs. Thus, the inter-state analysis of power sector reforms in India shows that

Table 1
Progress of Reforms across States

State	PARAMETERS							
	Regulatory Commission	Tariff Orders	Financial Condition	Restructuring Of Utility	Interface Metering	Commercial Viability	T&D Losses	Government Support
Andhra Pradesh	Yes	Yes	Moderate	Yes	Completed	Low	High	Strong
Gujarat	Yes	Yes	Moderate	Yes	Completed	Low	High	Strong
Delhi	Yes	Yes	Moderate	Yes	Completed	Low	High	Strong
Karnataka	Yes	Yes	Moderate	Yes	Incomplete	Low	High	Strong
Tamil Nadu	Yes	Yes	Moderate	No	Completed	Low	High	Strong
Goa	Yes	No	Moderate	No	Completed	High	High	Weak
Himachal Pradesh	Yes	Yes	Moderate	No	Completed	High	Moderate	Weak
West Bengal	Yes	Yes	Poor	Yes	Completed	Moderate	High	Weak
Uttar Pradesh	Yes	Yes	Poor	Yes	Incomplete	Low	High	Strong
Chhatisgarh	Yes	No	Poor	No	Incomplete	High	High	Weak
Rajasthan	Yes	Yes	Poor	Yes	Incomplete	Low	High	Strong
Maharashtra	Yes	Yes	Poor	No	Completed	High	High	Weak
Punjab	Yes	Yes	Poor	No	Completed	Moderate	High	Weak

Contd. Table 1

Haryana	Yes	Yes	Poor	Yes	Completed	Low	High	Weak
Tripura	Yes	Yes	Poor	Yes	Incomplete	Low	High	Strong
Kerala	Yes	Yes	Poor	No	Completed	Low	High	Weak
Assam	Yes	Yes	Poor	Yes	Incomplete	Low	High	Weak
Meghalaya	Yes	No	Poor	No	Incomplete	Low	High	Weak
Madhya Pradesh	Yes	Yes	Poor	No	Incomplete	Low	High	Weak
Sikkim	Yes	No	Poor	No	Incomplete	Low	High	Strong
Uttaranchal	Yes	Yes	Poor	No	Completed	Low	High	Weak
Nagaland	No	No	Poor	No	Incomplete	Low	High	Weak
Orissa	Yes	Yes	Poor	Yes	Incomplete	Low	High	Weak
Jammu & Kashmir	Yes	No	Poor	No	Incomplete	Low	High	Strong
Arunachal Pradesh	No	No	Poor	No	Incomplete	Low	High	Weak
Mizoram	Yes	No	Poor	No	Incomplete	Low	High	Weak
Manipur	Yes	No	Poor	No	Incomplete	Low	High	Weak
Bihar	Yes	No	Poor	No	Incomplete	Low	High	Weak
Jharkhand	Yes	Yes	Poor	No	Incomplete	Low	High	Weak

Source : 1.Generated from Crisil, (2005), Power Sector Rating, Consolidated Report to the Ministry of Power, New Delhi.

2. GOI, Annual Report, various vols. Ministry of Power, New Delhi.

the experience has been a mix of successes and failures and it has not been decisively proved that reforms have actually benefited the states introducing them.

Today it is being felt that unmet targets in power sector in the form of non-creation of additional generating capacity, financial bankruptcy of SEBs and recurrence of unsustainably high T&D losses may hinder the growth of Indian economy as power is an essential input for most of the economic activities. If the economy is to be kept moving ahead at the present growth rate of 8-9%, urgent measures are required to rectify the problem.

5. Punjab Experience

The Punjab State Electricity Board is passing through a transitory phase. Earlier, 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 programme. 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 and The Punjab State Electricity Board, though preparing to follow 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. To look into the progress of reforms in our state, we need to have a glance at the historical background of reforms.

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 01-05-1967. Starting with a modest capacity of 62 mega watts (mw), the board has today a capacity of 6356 mw. It operates its own generating plants and also gets its share of electricity from BBMB and is allocated electricity from central sector power projects. It constructs and maintains its own transmission & distribution system to provide services to 5.9 million consumers and it employs more than eighty thousand persons. At present Punjab has achieved cent per cent rural electrification and the per capita consumption of electricity in the state is the highest among Indian states (Singh et al. 2004).

However, the present power scenario in Punjab is not so promising. In fact, it is mired in a deep-rooted crisis. For many years now, the PSEB has been facing numerous problems (Bhargava & Gupta, 2007) e.g. the bankruptcy of the board mainly due to subsidised/free supply to agriculture, poor cost recovery (that has varied between 65-80% during different years), high transmission and distribution losses, theft of power, high auxiliary power consumption, high heat rate of thermal plants, poor quality of coal, delay in construction of projects, over-employment and lack of accountability like any other administrative department. Due to these reasons,

Table 2

Various Performance Indicators of Power Sector in the State Of Punjab

Year	Consumption of Electricity (mu[a])	Installed Capacity (mw[b])	Generation (million Kwh[c])	T & D Loss (%)	Power Purchase (mu)	PLF[d] of Thermal Plants (%)	Per capita Consumption of electricity (kwh)
1990-91	11907	3049	14618	19.00	2515	53.78	597
1991-92	12653	3289	14677	18.70	3115	52.01	608
1992-93	13896	3499	15718	19.24	3491	58.30	671
1993-94	14607	3509	16322	18.46	4027	63.50	689
1994-95	15507	3509	17175	16.70	4080	56.70	772
1995-96	15779	3509	16898	18.30	4904	55.00	744
1996-97	17163	3509	18455	18.00	5045	65.70	774
1997-98	17491	3719	17900	17.90	6647	69.10	782
1998-99	19264	3929	20880	16.83	6190	69.40	845
1999-00	20930	3929	22563	18.40	5834	74.70	905
2000-01	19346	5683	21528	27.00	4519	77.90	790
2001-02	19851	5700	22188	26.25	4220	79.20	788
2002-03	20964	5702	21760	25.07	81	69.77	816
2003-04	22310	5701	29654	25.33	109	70.60	889
2004-05	22414	5964	30080	24.27	34	74.6	N.A.[e]
2005-06	24192	5919	32658	25.07	221	77.0	N.A.
2006-07	26309	5919	36412	23.92	N.A.	79.6	975
2007-08[f]	23660	6356	34193	N.A.	N.A.	N.A.	N.A.

Source : 1.Central Electricity Authority, Delhi. 2. Punjab State Electricity Board, Patiala.

a = million units b = megawatts c = kilowatt hour d = Plant Load Factor e = Data not available. f = Up to December 2007

capacity additions were delayed indefinitely. For many years, the increases in capacity have been very negligible as is evident from Table 2.

Generation shows an increase because it includes power purchased from out of the state. The problem is not with allocation of resources. In fact, a significant share of each plan outlay was earmarked for power sector. But due to corruption and lack of commitment, this money has not been used to enhance capacity. Now-a-days, expensive electricity is purchased from outside to fulfill the requirements of agriculture. Such purchases are depicted in the table. The table also 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 there was a misconception 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.

Thus, numerous causes are responsible for the poor financial performance of PSEB. The above review clearly shows that internal weaknesses are responsible for putting the Board in a crisis like situation and internal reforms can go a long way in making it viable (Jain, 2004).

5.1 THE REFORM PROCESS

The government of Punjab had sought an infrastructure loan of Rs. 5000 crores from the World Bank. The PSEB couldn't qualify the rate of return criterion so 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. The Punjab State Electricity Regulatory Commission (PSERC) was constituted in March 1999. 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 an 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. Following the recommendations of the Haldea Committee Report (Haldea, 2003) the Government of Punjab took the initiative to reform the PSEB. The expert group led by Sh. Gajendra Haldea suggested unbundling of PSEB into separate companies for generation, transmission and distribution. This was considered essential to improve accountability and privatise

investment in a competitive manner. The group suggested that there should be an independent system operator for dispatching load at state level and additional supply should be obtained through open access to T&D network. The group also recommended the rationalisation of present work force by about 15,000 employees.

Following these recommendations, 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 percent 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 computerised. With electronic metering, energy auditing and anti theft measures, T&D losses have been calculated as 23.92 per cent for the year 2006-07. (e) The Board has initiated various steps to reduce manpower. Consequently, 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 agreements have been signed with private companies for setting up power plants and various projects in pipeline are super thermal plants at Talwandi Sabo, Goindwal Sahib, Rajpura and Gidderbaha. (h) Development of renewable sources of energy form 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. There is a scheme to harness 750 mw electricity from renewable energy sources. In June 2005, PSEB got extension up to ninth June 2006 from MOP for unbundling itself. In November 2005, it was reported that PSEB would be unbundled into five separate companies for generation, transmission and distribution. Regulation for intra- state open access has been prepared. But the restructuring of PSEB has not taken place till date.

5.2 CRITIQUE OF REFORM PROCESS

As far as the progress of reforms in Punjab is concerned, almost a decade has passed since reforms were initiated in the state, yet there are severe power shortages. Though impressive regulatory and institutional framework is being created, consumer interest is totally ignored and people continue to have poor quality power. The lead sector of Punjab, i.e. agriculture, substantially owes its growth to rural electrification programme undertaken during the 1970s. But due to state politics (of subsidised or free electricity supply to agriculture) has, of late, become a contributor to the stagnation of power sector and has, in turn, jeopardised its own growth prospects and that of the economy owing to exodus of industrial units. The number

of industries has declined in the state in the past few years. During 2001-02, there were 7236 registered factories in Punjab and their number declined to 7062 in 2002-03. The industry from Punjab is shifting to neighboring states which are offering attractive sops to them. The shift of pharmaceutical industry from Jalandhar to the state of H.P. is particularly notable. The PSERC is not satisfied with the progress of reforms because the financial performance of the Board has not improved. Moreover, it has not been able to discharge its duties effectively due to various reasons such as lack of autonomy (both financial as well as administrative), political interference and also because the data provided by the PSEB to the regulator is flawed. Even the data regarding the number of consumers is not reliable because of unmetered agricultural consumers and illegal connections. Therefore, there is no way to verify the extent of T&D losses.

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 and therefore, its supply cannot be completely handed over to the private sector which is mainly profit-driven.

In order to implement the reforms prescribed by the Expert Group, unbundling of the Board is inevitable. The likely result will be that due to freedom of getting power from a source of one's own choice, the paying consumers, (i.e. industry and commerce), will either set up their own generating plants (most of them are already doing that) 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% of the total. In the coming years, the Board will be providing subsidised electricity primarily to these two sectors (because of its social obligation). It will be an unsustainable exercise for the PSEB with all of its cross subsidising consumers gone and its finances already miserable. 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 private utilities may be cited.

The Prayas Group (Prayas, 2003) prepared a report on the performance of Private Companies distributing power in India. They include Tata Power Company, Calcutta Electricity Supply Company, 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. 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. Apart from these utilities, we have the classic failure of Enron Project. Thus, the experience of private projects speaks volumes against privatisation.

There are divergent views of different groups on privatisation today. One that professes privatisation and the other vehemently opposes it. Apparently, the interests of these two groups are clashing. Therefore, an intermediate approach has to be adopted that appeases both of these groups. The state is under no obligation to adopt the reform models of other countries. Rather we should learn from the experiences of others and try not to repeat their mistakes.

Recently, CRISIL (2005) prepared a report on the rating of power sector in India. The report reveals that there is a large reduction in tariff for subsidising categories as against subsidised categories in Punjab. 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 due to restricted supply. Hundred per cent interface metering has been completed in 6296 interface points. Auxiliary power consumption is lower (5.52%) than normative levels and the plant load factor has improved from 58.3 per cent in 1992-93 to 79.6 per cent in 2006-07 even without introducing significant reforms. The Board also exchanges electricity with other states through inter-regional grid. 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 and it would be wrong to presume that privatisation is the only solution to power sector woes. Therefore, at the very outset, an effort needs to be made to modify the internal organisation of the PSEB. The following policy measures can be particularly beneficial in the state.

5.3 DO'S

1. Private participation may be allowed in generation. However, the government, instead of waiting for private players to come, should itself start contributing to much needed generating capacity.
2. The government should observe utmost caution in the sanction of IPPs. it is very important to read the fine print of all PPAs and to ensure complete transparency in all proceedings.
3. Solar power generation needs to be encouraged on a large scale as Punjab has sufficient number of sunny days. This generation has not got its due in the state because of lack of awareness and also because this technology is expensive. Even simple solar cookers and lanterns elude the consumers due to lack of accessibility and proper publicity.

4. Distribution being the most loss prone area may be privatised first. Collection efficiency may improve if the function of meter reading, billing and collection is handed over to private sector. However, private players tend to cherry pick and therefore, they should be allotted mixed zones. To start with, distribution function can be decentralised by handing it over to municipalities and panchayats.
5. Distribution losses may be reduced by installing appropriate size of conductors, capacitors and electronic meters on all consumer premises. Surprise raids at early morning and late night time can be conducted to control theft.
6. Power tariffs should be linked to the quality of service. If some consumer categories get poor quality supply, they should be charged a low tariff.
7. Load dispatch function may be performed by computers to enhance efficiency of power distribution system. There may be alternate paths in a grid system through which power can be transmitted with minimum loss.
8. Some DSM (Demand Side Management) measures such as TOD (Time of Day) tariff, Use of CFLs (Compact Fluorescent Lamps), capacitors, designing green buildings and using energy efficient equipment in various consuming sectors may help balance the demand-supply equation.
9. Deadlines should be set up for gradual efficiency improvements. Like in USA, there are performance agreements between various ministries and departments. Such an agreement can be between PSEB and Ministry of Power.
10. People should be involved in reform process through awareness campaigns because such an act will make them more responsible.
11. Consumer protection should be an essential component of the reform programme. There should be speedy disposal of consumer grievances.

5.4 DON'TS

1. The state should not give free power to its farmers because it has failed to serve its purpose. Instead they may be given subsidy on price of tube wells and electricity bills.
2. The state should not install more thermal plants in the state. Instead the Government of India should make it a policy to install all such plants near the coal mines to avoid expensive transportation of coal. The required electricity can then be transmitted through the national grid.
3. Open access to transmission system should not be allowed till there is a shortage of power in the state. Instead captive generation (in the form of

inverters and generators) is a better option because people who generate electricity for themselves will use it more economically and surplus power can be purchased by the PSEB.

4. The government should not interfere in the working of the PSERC. Its autonomy can be the single most important factor in making power sector viable.
5. Though the expert group on Punjab's power sector has suggested the creation of separate companies out of PSEB, this should be avoided as it will only increase administrative expenditure and political interference.

6. CONCLUDING REMARKS

The above analysis shows that internal reforms in PSEB are required. If at all privatisation is to be introduced, it should be done partially. 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 process of transformation ought to be transparent in the eyes of the public. Political interference in the working of the Board should be minimised. If the state govt. announces subsidised electricity to any category, it should make timely reimbursements for the same to the Board. 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 with. Therefore, it should be ensured that episodes like that of Enron are not repeated in Punjab. For that to happen, all private players should be invited through competitive bidding and not through direct negotiations. All the decisions should take into consideration the welfare of general public as well as the criterion of viability so that the performance of the Board improves without complete privatisation. With such a system along with distribution privatisation and regulatory commission in place to regulate tariffs and looking after public interest, power sector in Punjab can be turned around.

Bibliography

Abhyankar, N. (2005), "Power Sector Restructuring in Madhya Pradesh", *Economic and Political Weekly*, Nov. 26.

Abraham, P. (2003), *Power Sector Reforms : Focus on Distribution*, New Delhi : Surya Kumari Abraham Memorial Foundation.

Agarwal, S. (2002), A Billion Watt Question", Crisil Young Thought Leader, IIM, Calcutta.

Baijal, P. (1999), "Restructuring Power Sector in India", *Economic & Political Weekly*, Sept. 25.

Bhargava, N.; and Gupta, S. (2006), "The Punjab State Electricity Board : Past, Present and Future", *Punjab University Research Journal (Arts)*, Vol. XXXIII; No. 2; October: 93-104.

Bhargava, N.; and Gupta, S. (2007), "Power Scenario of Punjab with special reference to Forecasting and Management", *Indian Management Studies Journal*, Vol. 11, No. 2; October: 1-20.

Crisil, (2005), Power Sector Rating, Consolidated Report to the Ministry of Power, New Delhi.

Dixit, S.; Sant, G.; and Wagle, S. (1998), "Regulation in The World Bank- Orissa Model : Cure Worse Than Disease", *Economic & Political Weekly*, April 25.

Godbole, M. (2004), "Power Sector Reforms: No Takers", *Economic & Political Weekly*, Sept. 11.

Government of India (2002), Distribution Policy Committee Report, Ministry of Power, New Delhi.

Government of Orrisa (2001), Report of the Committee on Power Sector Reforms in Orissa, Orissa.

Haldea, G. (2003), Report of the Expert Group: Power Reforms in Punjab, National Council of Applied Economic Research, Delhi.

International Energy Agency (IEA), (1999), Electricity Market Reform, France.

IEA, (2001), Regulatory Institutions in Liberalised Electricity Markets, France.

IEA, (2002), Electricity in India: Providing Power for the Millions, France.

IIM Ahmedabad, Institute for International Studies, (2003), Electricity Sector Reforms : Impact on Development and Environment. Sponsored by USAID, Ahmedabad/Stanford University, California, USA.

Jain, V. (2004), "Punjab: Reviving Power Sector, Need for a Rethink", *Economic and Political Weekly*, March 27.

Kozulj, R.; Sbroiavacca, Nicolas D. (2004), "Assessment of Energy Reforms : Case Studies from Latin America", *Energy for Sustainable Development*, Vol. VIII, No. 4, Dec.

Morris, S. (2003), Restructuring Gujarat State Electricity Board: Outline of a Strategy and Proposal for Action, in : Ruet, J. (Ed.), Against the Current : Organisational Restructuring of State Electricity Boards, Manohar Publishers and Distributors, New Delhi.

Mukherjee, R. (2004), "Privatisation, Federalism and Governance", *Economic and Political Weekly*, Jan. 3-9.

Narendranath, G.; Shankari, U.; and Reddy K. R. (2005), "To free or Not to Free Power-Understanding the Context of Free Power to Agriculture", *Economic & Political Weekly*, Dec. 31.

Prayas Energy Group, (2001), "Godbole Committee on Enron Project : Expose and Way-out", *Economic & Political Weekly*, June 9.

Prayas Energy Group, (2003), Performance of Private Electricity Distribution Utilities in India : Need for In-depth Review and Benchmarking. Occasional Report, Pune.

Prayas Energy Group, (2005), "Restarting Dabhol: Who will Bear the Cost and Why?", *Economic and Political Weekly*, June 18.

Ranganathan, V. (2004), "Electricity Act 2003 : Moving to a Competitive Environment", *Economic and political Weekly*, May 15.

Rao, S. L. (2001), "Electricity Bill-2001: What it Reflects of Power Policy? ", *Economic and Political Weekly*, Sept. 22.

Rao, S. L. (2004), "Task Force Report on Electricity: Missing the Point", *Economic and Political Weekly*, March 20.

Ruet, J. (2003), Against the Current: Organisational Restructuring of State Electricity Boards, New Delhi : Manohar Publishers and Distributors.

Sagar, A. (2002), "India's Energy R&D Landscape, A Critical Assessment", *Economic and Political Weekly*, Sept. 21.

Sant, G. Dixit, S.; and Wagle, S. (1995), "The PPA between Dabhol Power Company And MSEB : The Structure and its Techno-Economic Implications", *Economic and Political Weekly*, June 17.

Saunders, R. J. (1993), The World Bank's Role in The Electric Power Sector, A World Bank Policy Paper, Washington D.C.

Singh, B.; Singh, S.; and Brar, J. S. (2004), *Border Risk and Unemployment Dynamics*, Punjabi University, Patiala.

Sinha, S. (2003), Orissa Power Sector Reforms : Getting Back on Track, in: Ruet, J. (Ed.), Against the Current: Organisational Restructuring of State Electricity Boards, New Delhi : Manohar Publishers and Distributors.

The Electricity Act (2003), The Universal Law Publishing Co. Pvt. Ltd. Delhi.

Virmani, A. (2004), "Forex for Infrastructure : Need for a Hybrid Proposal", *Economic and Political Weekly*, Dec. 25.

Websites Visited

i. www.cea.nic.in
ii. www.ercap.org
iii. www.mospi.nic.in.
iv. www.powermin.nic.in
v. www.prayaspune.org
vi. www.psebindia.org
vii. www.pserc.nic.in.
viii. www.Punjab.govt.in