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Assessing the Impact of Power
Sector Reforms in Orissa

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International Water
Management Institute

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HARIBANDHU PANDA, IRMA



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Assessing the Impact of Power Sector Reforms in Orissa

Haribandhu Panda

Abstract

Power sector reform in Orissa has not brought the desired results. The major reasons are over-expectations, incomplete and incorrect information about the sector at the beginning of the reform process in a short time span, financial constraints, poor employee discipline, government apathy and economic downturn. An all out effort needs to be made by the government, distribution companies, regulatory authority, media, body politic and public at large to improve the health of the distribution system, for in it lies the success of reform.

1. Introduction

India's electricity sector in general and State Electricity Boards (SEBs) in particular chronically suffer from poor technical, commercial and managerial efficiency. It is evident from the fact that, in 1998/99, the demand constrained electricity shortages were 5.9% of total electrical energy and 13.9% of peak electrical power demand, the average plant load factor of thermal power plants stood at 64.6% (ranging from 22.6% in Bihar to 81.7% in Karnataka) and transmission and distribution losses were as high as 23.2% (ranging from 16.6% in Tamil Nadu to 42% in Orissa). The annual commercial loss of SEBs in 1998/99 was Rs 11,217 crore.¹ Managements of SEBs are fraught with unhealthy political interference, poor workforce discipline and archaic systems. SEBs' pricing policy of subsidised (domestic and agriculture) and cross-subsidised (industry and commerce vs. domestic and agriculture) electricity supply made them financially sick, kept the electricity sector away from planned growth and brought bad management practices. To take care of the unreliable and costly electricity supply system, captive electricity generating sets have become a norm in industries, commercial establishments and agricultural sector. Thus, in addition to sub optimal investment in electricity sector, SEBs are gradually losing more and more creamy customers. The managements of SEBs, in their race to hide staggering transmission and distribution (T&D) losses (technical and non-technical), artificially increases the unmetered consumption to the priority (agriculture and rural) sector. The financial losses incurred by SEBs were made up from the state budget. With the dwindling state resources a time came when the states found it extremely difficult to support the SEBs and they became sick one by one.

To revitalize the electricity sector (to reduce the reliance on government, to make available power at reasonable cost, to ensure stable and qualitative power supply and to supply power on demand) government in 1991 removed power from the list of activities reserved for the public sector in the Industrial Policy Resolution, 1956. Electricity Supply Act, 1948 was amended to lift many regulatory disincentives to private investment in electricity sector. The amended legal framework of 1991 and 1998 facilitated private investment in generation and transmission respectively. The restructuring process that was initiated in Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Karnataka, Rajasthan, Gujarat and Delhi faced resistance from a number of politically sensitive stakeholders. For example, farmers in Haryana, Gujarat and Andhra Pradesh agitated against any upward revision of electricity tariff for agriculture. Employees of SEBs opposed restructuring for the fear of being sacked and likely loss in earning through their collusion with the consumer. Orissa is the first

state in the country that has made significant progress in the reform process towards its logical end of unbundling and privatising the key activities such as electricity generation, transmission and distribution. The process is on for the last five years and it would be educative to understand and assess the gains and losses from the reform and their future direction for consideration by other states that are yet to move ahead in the reform process.

The rest of the report is divided into five sections. Section 2 deals with the evolution of electricity sector in Orissa. In the next section, broad impacts of power sector reform in Orissa are discussed. In Section 4, the impact of power sector reform on rural areas including agriculture and ground water irrigation are discussed. In section 5, experiments in decentralised electricity retailing are discussed. Finally, in the last section, future direction of electricity reform in Orissa is mentioned and concluding remarks are made.

2. Evolution of Electricity Sector in Orissa

In line with the provisions of the Electricity Supply Act 1948 Orissa State Electricity Board (OSEB), formed in 1962, was responsible to develop and manage the electricity sector in Orissa. It was involved in all three major activities such as electricity generation, transmission and distribution. It depended heavily on state government and was not accountable to customers. It concealed areas of weaknesses (distribution) under an overall system performance (low cost hydro generation). An absence of cost plus tariff led to low revenue and higher loan capital. OSEB's tariff level was low and industrial sector's share in total consumption declined from 69% in 1960/61 to 31% in 1996/97.² There was high T&D loss in the form of technical and commercial losses (unauthorised connection, faulty meters and misclassification of consumers). Billing was incorrect and collection was very poor. MIS at central and field level was dated. Government enterprises were major defaulters. Quality of service was poor due to deteriorating asset base, lack of spares and absence of preventive maintenance. OSEB was infected with overstaffing. Skill and motivation level of staff were low. Government was misusing the Section 78A of the Electricity Supply Act, 1948 which gave a mandate to the state government to provide directives to the SEBs in policy matters. Thus, poor operating performance, lack of modernisation and skilled personnel, tariff hike of central sector plants and huge accumulation of electricity charges, incoherent subsidy policy and theft led to poor health of OSEB.

In November 1993 Government of Orissa decided to go for restructuring of the Power Sector in the state mainly due to the fact that it could no longer sustain huge investment in the growing power sector. The Government wanted to bring in professionalism and good governance to the electricity sector and ensure reliable power supply. The restructuring process was envisaged to unbundle generation, transmission and distribution; privatisation of generation and distribution; developing new generation capacities through competitive bidding; putting in place an independent and transparent regulatory commission; and undertaking tariff reforms at bulk transmission and retail levels. The Orissa Electricity Reform Act, 1995 was passed by the state legislative assembly in November 1995, received President's assent in January 1996 and came into force from 1st April 1996.²

Reform in generation front started with the sale of Talcher Thermal Power Station (TTPS) to the National Thermal Power Corporation (NTPC). This has resulted in an increase of plant load factor (PLF) from 30% to 60%. OSEB was wound up on 1st April 1996. Its resources and liabilities were transferred to the two Corporations of the Government of Orissa – the Orissa Hydro Power Corporation (OHPC) (responsible for hydro generation) and the Grid Corporation of Orissa (GRIDCO) (responsible for transmission and distribution). 49% of Orissa Power Generation Corporation's (OPGC) share was disinvested in 1998 to American Electricity Supply Company (AES Transpower). OPGC, a fully owned Government of Orissa Company had 420 MW of thermal power capacity.

Orissa Electricity Regulatory Commission (OERC) was established on 1st April 1996 and became functional from 1st August 1996. The powers of OERC include issuing as well as revoking licence for transmission and distribution, granting approval to tariff revision proposal through consultative process, setting technical standards for consumer protection and arbitrate between licensees. Its major role includes facilitating the development of an efficient electricity industry in the state, safeguarding the interest of the consumers, preventing monopolistic behaviour by the operators and establishing independent and objective decision making process.

The entire distribution system of Orissa was divided into four strategic business units under GRIDCO. They were subsequently corporatised and remained as wholly owned subsidiaries of GRIDCO. On 1st April 1999 three distribution companies namely North Eastern Electricity Supply Company of Orissa Limited (NESCO), Western Electricity Supply Company of Orissa Limited (WESCO) and Southern Electricity Supply Company of Orissa Limited (SOUTHCO) were privatised and Bombay Suburban Electricity Supply Company (BSES) took 51% of their stakes. The AES Transpower and Jyoti Structure took over 51% stake of Central Electricity Supply Company of Orissa Limited (CESCO) through a negotiated settlement with effect from 1st September 1999.³ 39% stake of the privatised distribution companies is held by GRIDCO and remaining 10% share is kept with the Employees Welfare Trust. The phases of reform are shown in Figure 1.

While OPGC could successfully sell its 49% stake in a competitive environment, the distribution companies faced a rather tough situation while divesting. This was simply because OPGC had brand new plants and was a profit making enterprise with assured rate of return under the law. In contrast, the distribution companies had poor infrastructure, large employee base (a large number of them were demotivated and unskilled), and poor technological and managerial capability and were loss-making concerns. Additionally, they were to face regulatory uncertainty in terms of their future income earning ability.

As on April 2001 the structure of electricity sector of Orissa is presented in Figure 2. Orissa's total installed capacity of 4178 MW is contributed by independent generators such as Orissa Hydro Power Corporation (OHPC), National Thermal Power Corporation (NTPC), Orissa Power Generation Corporation (OPGC) and Captive Power Plants (CPPs).⁴ OHPC is a wholly owned Government of Orissa company. NTPC is owned by Government of India. AES owns 49% share of OPGC and manages it (51% of share of OPGC is owned by Government of Orissa). A number of private and public sector companies own captive power plants. In addition, Orissa can

avail 632 MW as its share from the Central sector (NTPC's Talcher Super Thermal Power Project). Presently it avails only 200 MW, leaving a surplus availability of 432 MW.

GRIDCO (the transmission company) purchases power under Power Purchase Agreement from the independent generators and provides in bulk to private distribution companies at bulk supply price. GRIDCO is a 100% Government of Orissa owned company. Four private distribution companies (NESCO, WESCO, SOUTHCO and CESCO) supply electricity to the end users.

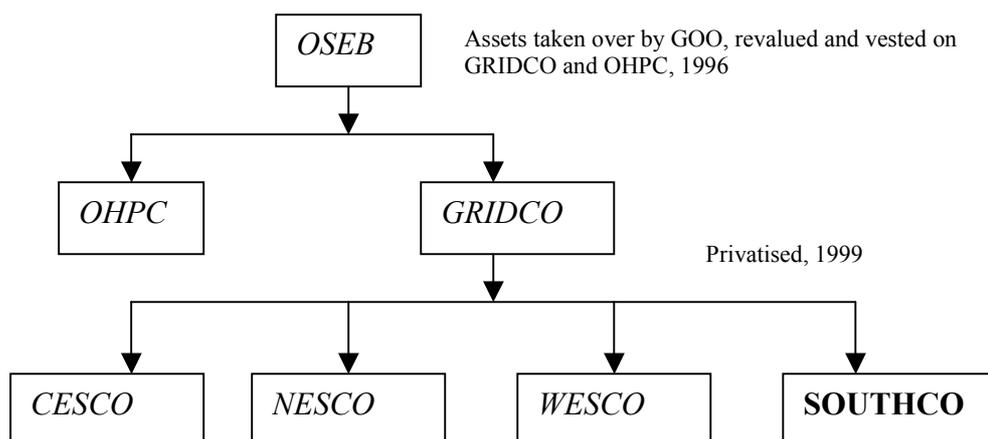


Figure 1: Reform Phases

3. Broad Impact of Power Sector Reform in Orissa

Sector-wise electricity consumption in Orissa is as follows: industry 57%, domestic 23%, commercial 5%, agriculture 3.5% and others 11.5%. In contrast, in 1998/99 the sector-wise consumption of electricity in the country as a whole was as follows: industry 34%, domestic 18%, commercial 5%, agriculture 30% and others 13%.⁵

Staff Appraisal Report (SAR) of the World Bank⁶ envisaged that the power sector reform would benefit all electricity consumers through bridging of the chronic gap between electricity demand and supply. Particularly industrial consumers were expected to benefit from the improved quality and quantity of the power supply system. It was expected to bring in additional industrial investment through expansion and new facilities.

It was hoped that higher electricity tariff, improved metering and collection system would result in electricity conservation in the State. Cutting subsidies and reducing public spending in power sector were expected to eliminate subsidies and reduce state funding for the sector. According to SAR “the key contribution of power reforms to the poor is to lift the burden the power sector has placed on the state government’s finances and simultaneously remove the power supply bottleneck to economic activity and growth”. SAR concluded with the observation that “without a complete power sector overhaul, electricity consumers in Orissa would face a scenario of deteriorating power supply, increasing average unit costs and higher costs to the state government”.

With these expectations in the background, some of the broad impacts of power sector reform in Orissa are summarised below.

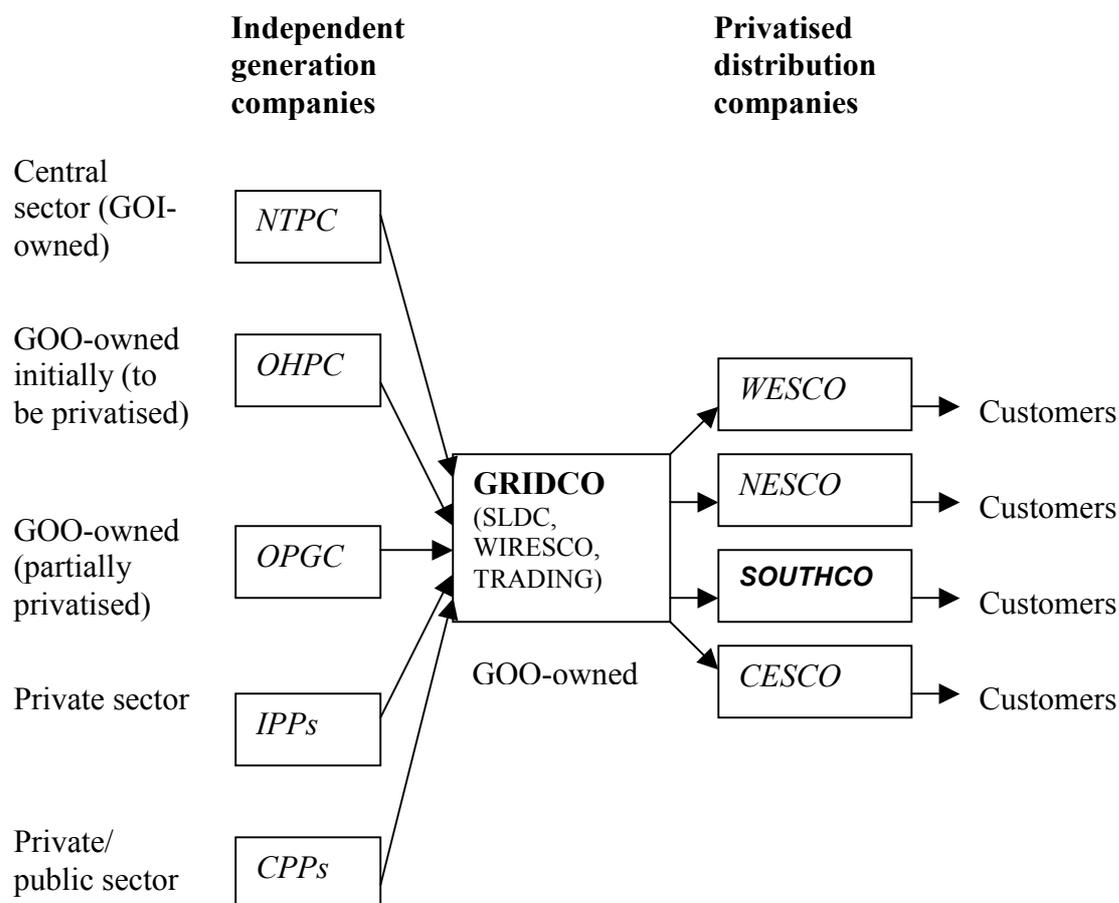


Figure 2: Structure of the Electricity Sector in Orissa (as on April 2001)

Operational efficiency

TTPS at the time of its sale to NTPC (June 1995) had an availability of 34.8% and PLF of 18.7%. By 1997 the availability had improved to 77% and PLF 52%.⁷ Presently its PLF is 75%. OPGC with private management consistently maintains a PLF of 70 to 80%.

Losses

Electricity companies face two types of losses viz.: as technical and commercial. Causes of technical loss are poor quality transformer and wire, long low voltage distribution system and overloading of transformer. Causes of commercial loss include non-functioning meter, unmetered electricity supply and theft. SAR (1996) estimated a T&D loss of 39.5% in 1997/98 and it was planned to bring down to 24.3% by 2000/2001. The real magnitude of loss in 1997/98 was 49.3%.⁸ OERC in their first tariff order (1st April 1997) asked for an impossible target of bringing down the loss to 35%. With actual loss far above the target loss, GRIDCO could not get 16% return on equity planned by SAR. The system loss targets fixed during processing of World Bank loan and subsequent revision are presented in Table 1.

Table 1: T&D System Loss Targets Fixed During Processing of World Bank Loan and Subsequent Revision

Year	System Loss Targets Fixed During Processing of World Bank Loan (%)	Revised System Loss Targets (%)
1997/98	39.5	50.5
1998/99	34.8	47
1999/2000	29.2	41
2000/01	24.3	35
2001/02	22.7	29
2002/03	21.7	23.7
2003/04	20.6	22.7
2004/05		21.7
2005/06		20.6

Source: OERC, 2001

The prevailing tariff structure and the high T&D loss do not permit adequate cost recovery by the independent distribution companies. They regularly default on their payment obligations to GRIDCO. From April 1999 to May 2000 distribution companies had an unpaid bill amounting to Rs. 460.86 crore. It constitutes 29.8% of the amount billed by GRIDCO to distribution companies.⁸ The operational performance of distribution companies from April to December 1999 is presented in Table 2. The private distribution companies in Orissa are being allowed to accumulate unsustainable losses without any clear road map as to when the losses will be wiped out. GRIDCO has failed in its payment obligation to independent generating companies. Starting with a total power purchase liability of Rs 615.5 crore on 1.4.1999 the same rose to Rs 1122.6 crore on 1.4.2000. GRIDCO's outstanding loan by the end of financial year 1999 stood at Rs 2489 crore.⁸ Under such a scenario it is unlikely to bring in additional generating capacity, modernisation of T&D infrastructure, tariff reduction and service improvement. Additionally, in some sensitive places, distribution companies find it difficult to take action against the commercial consumers who use their political links to nullify any disciplinary move.

Table 2: Financial/Operational Status of Distribution Companies (April-Dec 1999)

Company	Average bulk supply tariff/month in Rs crore	Salary/month in Rs crore	Total expenses in Rs crore	Average collection/month in Rs crore	Net profit/loss in Rs crore
WESCO	27.95	4.12	36.48	27.64	8.84
NESCO	25.81	3.66	27.24	19.7	7.54
SOUTHCO	15.01	3.84	24.78	13.41	11.37
CESCO	38.19	7.2	49.89	15.49	34.4
TOTAL	106.96	18.82	138.39	86.24	52.15

Source: GRIDCO, 2000

Quality of service to consumers

Although, frequency, voltage variation and interruption level records at GRIDCO's substation level are available, comprehensive reliability indicators at end-user level which are necessary to gauge the service level of distribution companies, are missing. Since last two years a beginning has been made for systematic monitoring of the level

of supply interruptions being faced by the consumers of various distribution companies. Under license conditions these companies are required to submit data to OERC for calculating various reliability indices. However, the quality of data submitted so far is not satisfactory. Based on discussion with some urban and rural consumers it is observed that electricity in the Capital – Bhubaneswar, is available round-the-clock while there is no perceptible improvement in the quality of service for the rural consumers (domestic, commercial and industrial). In a typical case, power supply quality for January 2001 to an Indo-Norwegian joint venture industry of 200 kW connected load is presented in Table 3.

Pricing and tariff

All the generating companies are required to sale entire amount of electricity generated to GRIDCO on a long-term power purchase agreement (PPA). They negotiate PPAs on a cost plus basis. Electricity tariff is fixed considering 16% returns on the asset base. In the absence of multiple buyers, since spot sales are not allowed, there is hardly any incentive for the independent power producers (IPP) to improve generating efficiency. Thus, it leads to higher tariff. GRIDCO should facilitate multiple buyers coming in direct transaction with independent generators.

Table 4 provides the comparison between pre-reform and post-reform electricity tariffs for selected groups. The retail tariff over the years is presented in Table 5. Tariff changes over the years are presented in Figure 3. In 1978 tariff for domestic consumer was 31 paisa per unit. In 1986 and 1992 it was increased to 35 paisa per unit and 67 paisa per unit respectively. The average increases in tariff in 1995/96, 1996/97, 1997/98, 1998/99 and 1999/2000 are respectively 17.5%, 17%, 10.33%, 9.3% and 4%.⁹ Considering 1994/95 as the base year the cumulative retail price hike in 1995/96, 1996/97, 1997/98, 1998/99 and 1999/2000 are respectively 17.5%, 37%, 51.3%, 66.1% and 72.7%. Considering the cyclone in 1999 and the loss incurred by agriculturists OERC did not allow increase in agricultural tariff that year.¹⁰ It is the long-term policy of OERC to eliminate cross subsidy and charge customers on the basis of the long run marginal cost.

Table 3: Power Interruptions in SAFA Marine Industries Ltd.

Date	Number of interruptions	Duration of interruptions (minutes)
05.01.2001	1	525
06.01.2001	3	10-290
07.01.2001	1	10
08.01.2001	3	15-100
09.01.2001	2	5-30
11.01.2001	1	30
12.01.2001	1	10
15.01.2001	2	10-60
18.01.2001	1	30
20.01.2001	1	240
22.01.2001	2	10-15
23.01.2001	1	10
27.01.2001	1	15
28.01.2001	5	10-165
31.01.2001	1	10

Table 4: Comparison Between Pre-reform and Post-reform Electricity Tariffs for Selected Groups of Consumers

Consumer group	1994/95 tariff (OSEB) (paise)	Tariff in 2001/02 (paise)	Percent increase
Domestic (up to 200 units)	80	230	287.5
Commercial (up to 200 units)	110	410	227.8
Small scale industry	124	320	258.1
Agriculture	50	110	220
Street lighting	115	320	278.3

Source: OERC, 2001

Table 5: Electricity Tariff in Orissa from 21.5.1996

UNITS/ MONTH	1996-97 21/5/96	1997-98 1/4/97	Yearly Rise	1998-99 1/12/98	Yearly Rise	1999-00 1/2/00	Yearly Rise	2000-01 1/2/01	Yearly Rise	Rise in 2000-01 over 1996-97
	Paise/unit	Paise/unit	%	Paise/unit	%	Paise/unit	%	Paise/unit	%	%
100	94	106	12.77	130	22.64	130	0.00	140	7.69	48.94
200	122	141.63	16.09	145	2.38	155	6.90	230	48.39	88.52
100	210	235	11.90	290	23.40	300	3.45	320	6.67	52.38
200	250	280	12.00	320	14.29	330	3.13	410	24.24	64.00
200	65	80	23.08	100	25.00	100	0.00	110	10.00	69.23
20% LF	165	205	24.24	262.54	28.07	306.73	16.83	320	4.33	93.94
30% LF	230	265	15.22	285.37	7.69	295.37	3.50	320	8.34	39.13
40% LF	175	200	14.29	259.03	29.52	289.03	11.58	320	10.72	82.86
1000 U/M	155	200	29.03	254.13	27.07	298.26	17.37	320	7.29	106.45
50% LF(LT)	210.88	270	28.03	285.22	5.64	304.35	6.71	320	5.14	51.75
50% LF(HT)	215	290.88	35.29	320.88	10.31	330.88	3.12	300	-9.33	39.53
40% LF(HT)	281.1	306.1	8.89	336.1	9.80	346.1	2.98	300	-13.32	6.72
70% LF(HT)	248.49	273.49	10.06	294.92	7.84	293.49	-0.48	300	2.22	20.73
70% LF(EHT)	273.49	293.49	7.31	283.49	-3.41	280.63	-1.01	290	3.34	6.04
80% LF(HT)	268.05	288.05	7.46	283.05	-1.74	281.8	-0.44	300	6.46	11.92
80% LF (EHT)	268.05	288.05	7.46	270.55	-6.08	268.05	-0.92	290	8.19	8.19
70% LF(HT)	273.49	293.49	7.31	283.49	-3.41	280.63	-1.01	300	6.90	9.69
40% LF(HT)	238.1	276.1	15.96	316.1	14.49	336.1	6.33	300	-10.74	26.00
40% LF(HT)	306.1	326.1	6.53	326.1	0.00	336.1	3.07	300	-10.74	-1.99

Billing problem

SAR assumed 100% billing collection from 1997/98 onwards. By 1999/2000 only 74.6% of billing was collected. The comparative billing performance from 1995/96 to 1999/2000 is presented in Table 6.

Table 6: Comparative Billing Performance from 1995/96 to 1999/2000

Year	Energy Purchase (MU)	Energy Sale (MU)	T&D Loss (%)	Cost of Power Purchase (Rs crore)	Amount billed (Rs crore)	Amount Collected (Rs crore)	Collection as % of billing
1995-96	9244.93	4560.36	50.67	652.61	908.27	821.53	90.45
1996-97	9651.00	5089.00	47.27	982.71	1145.95	963.26	84.06
1997-98	10324.00	5439.00	47.32	1161.20	1374.90	1111.89	80.87
1988-99*	10630.59	5478.00	48.47	1094.54	1374.64	1108.36	80.63
1999-2000 (Time +Dial)	11130.26	6266.49	43.52	1205.57	1703.20	1270.53	74.60
1999-2000 (Transmission only)*	11130.28	10642.26	4.38	1205.57	1540.74	954.26	61.94

Source: GRIDCO, 2000 * Provisional

Collection as a percentage of billing has declined over the years from 90.5% in 1995/96 to 74.6% in 1999/2000. While 100% collection is made from industries the domestic and agricultural consumers largely remain defaulters. Private irrigators promptly pay the bill in comparison to OLIC.⁸

Payment to generating companies

During corporatisation, the transmission and distribution assets in GRIDCO were up valued by additional Rs 1194 crore from the Rs 1200 crore worth of book value plus capitalized expenses and interests. From this up valued amount Government of Orissa adjusted subsidy (Rs 301 crore) and energy charge (Rs 42 crore) of Government departments, and obtained Rs 253 crore worth of shares and Rs 400 crore worth zero coupon bonds. In addition, Rs 1146 crores of loan and liabilities were also assigned to GRIDCO. The up-valuation was necessary for having a higher capital base that could absorb large debt funds needed for T&D system up-gradation and for maintaining adequate debt equity ratio as per World Bank conditions. GRIDCO has an Escrow arrangement for payment of current dues in full to OPGC. Private distribution companies did not agree to take over the dues receivable from state undertakings and departments towards power supply and were retained with GRIDCO who is yet to receive the outstanding dues from Government.

The impact of financial restructuring, subsequent terms under which distribution companies were divested and the way OERC fixed the bulk supply tariff is visible in the poor financial health of GRIDCO.¹¹

Load growth

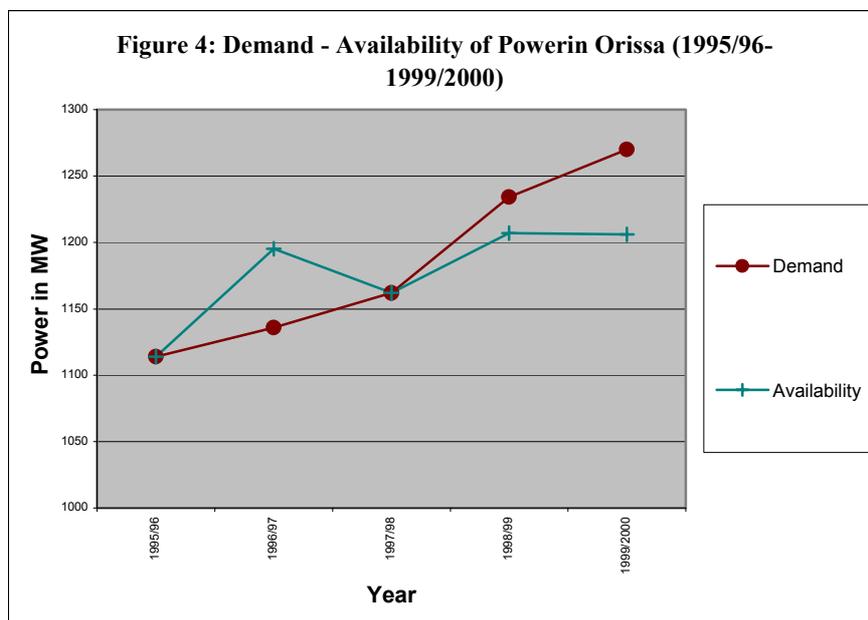
According to the World Bank, Orissa's electricity requirement in 2000/01 was put at 2180 MW. In reality by 1998/99 the actual demand was 1234 MW. It appears that such overestimation helped in shaping public opinion in favour of electricity sector reform. The demand-supply position of electricity in Orissa is presented in Figure 4. It is clear that the power situation in the state has declined in 1999-2000 vis-à-vis 1998-99.

SAR assumed a load growth of 11.4% in 1997/98, 16.7% in 1998/99 and 9.2% in 1999/00. In reality it turned out to be substantially less (due to captive generation and

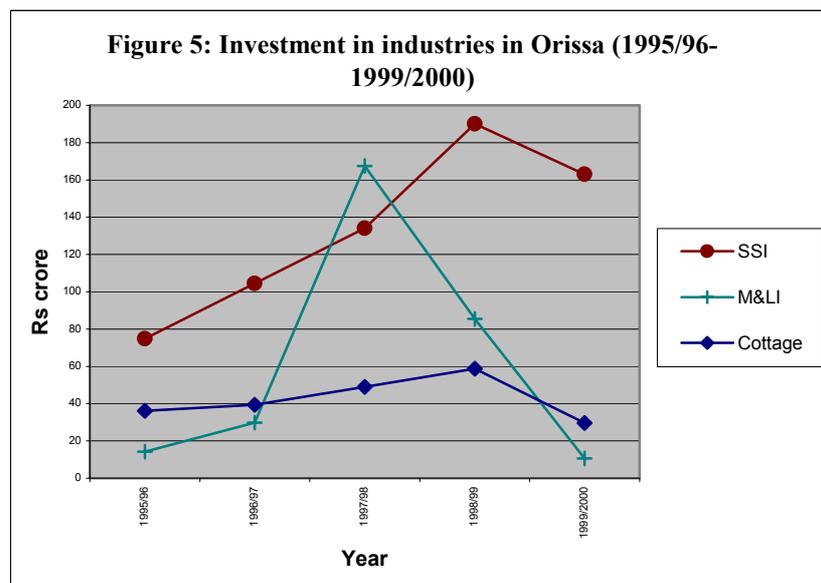
industrial recession). Actual load growth of about 5% occurred in 1998/99 and 1999/2000. Further high tension (HT) load (subsidising category) decreased by 14% and low tension (LT) load (subsidised category) increased by 25%.² Figures 5 and 6 indicate the trend of investment in industries and value addition in manufacturing respectively. It is apparent from the figures that since 1998/99 there is a decline in value addition in manufacturing and investment in medium and large industries.

Restoration of T&D system after cyclone

Orissa faced two cyclones in quick succession in October 1999 that affected two southern districts and ten northern districts. GRIDCO and three distribution companies (CESCO, NESCO and SOUTHCO) were affected by the cyclones. The total damage was estimated at Rs 372 crore (GRIDCO: Rs 266.5 crore, CESCO: Rs 86.5 crore, NESCO: Rs 12 crore and SOUTHCO: Rs 7 crore). Although World Bank agreed in principle to provide the loan, the same could not come through because of procedural delays.⁸



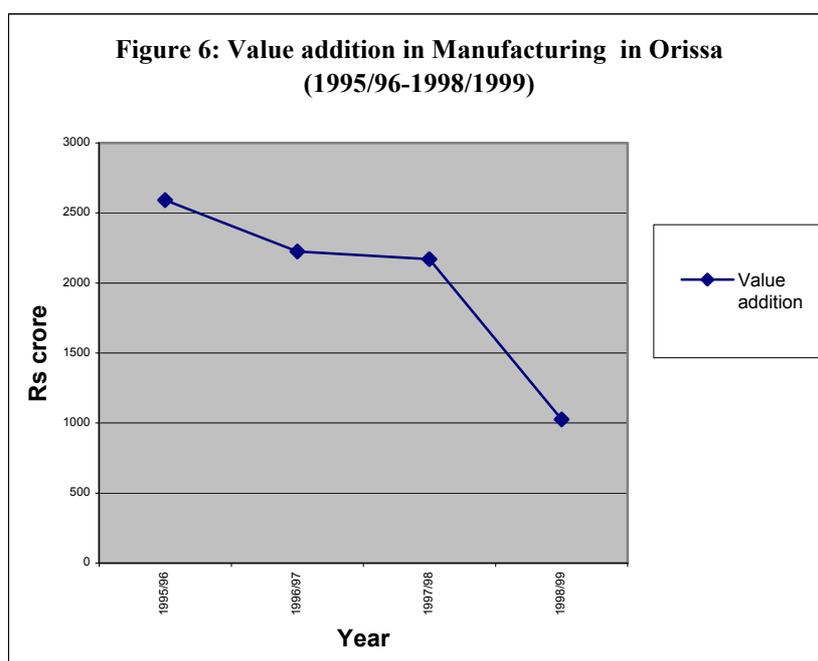
Source: Economic Survey (2000-2001), Government of Orissa



Source: Economic Survey (2000-2001), Government of Orissa

Using the facilities of the Emergency Restoration System (ERS) of Power Grid Corporation of India Limited (PGCIL) the transmission system was restored in a few days' time. Permanent restoration is at different stages of completion. The restoration status of distribution network for villages and lift irrigation points (LI) is presented in Tables 7 and 8. Even after 9 months from the time of damage to the (distribution network) electricity system of more than 400 villages were not restored by CESCO. Similarly SOUTHCO failed to restore the distribution network for 58 villages even after 9 months from the time of damage.

The electricity sector cannot reach equilibrium until the bulk supply tariff can support GRIDCO, and retail tariff can support the distribution companies. The sector does not have a long-term financial strategy and the inherited debt problem of the sector remains. The losses are increasing the debt daily (Table 2).



Source: Economic Survey (2000-2001), Government of Orissa

Table 7: Restoration of Electricity in Villages

Distribution Company	Number of villages affected	Villages restored		
		Numbers	Percent	Status as on
SOUTHCO	2030	1972	97	30 th June 2000
CESCO	9282	8879	96	31 st July 2000
NESCO	7750	7750	100	27 th December 1999
Total	19062	18601	98	

Source: GRIDCO, 2000

Table 8: Restoration of Lift Irrigation Points

Distribution Company	Number of lift irrigation points affected	Lift irrigation points restored		
		Numbers	Percent	Status as on
SOUTHCO	910	809	89	30 th June 2000
CESCO	3064	2445	80	31 st July 2000
NESCO	2935	2935	100	31 st December 1999
Total	6909	6189	98	

Source: GRIDCO, 2000

Government funding of the electricity sector

Government's annual subsidy of approximately Rs 340 crore to electricity sector has stopped since 1st April 1996. Disinvestments of 49% of Government share have unlocked a substantial amount of fund. OHPC and OPGC are now profit making entities, although they have large receivables from GRIDCO (Rs 153.7 crore for OPGC and Rs 202.2 crore for OHPC as on 1.4.200).⁸

Employee morale

The legacy of employees and their work culture are major problems for the privatised companies. Under the agreement of privatisation the service condition of employees are not to be downgraded. Private companies have very limited power to retrench even the most corrupt person. Besides overstaffing, according to some private companies their major problem is their own employees whose are hand in glove with the consumers. Any attempt to break such relationship is difficult.

About 35500 employees were with OSEB before reform. After reform the strength has come down to about 26000. There is provision to retrench employees above 50 years age. According to a rough estimate generation, transmission and distribution companies respectively have about 7%, 15% and 50% of employees in excess.

Socio-political perception

Over the years government has given an impression that electricity is a social need and through its provision it is fulfilling its social obligations. People have a feeling that it is their right to get electricity free or at a minimum rate.. They have never been told about its real cost and the problem electricity authorities face in meeting electricity needs of consumers.

In household and commercial establishments electricity meters have been placed in very difficult positions such as in bath rooms, store rooms, etc. Taking readings from such locations and checking proper wiring are very difficult.

Government provides little support to counter illegal tapping of electricity. There is rampant hooking of electricity in suburban and rural areas. In urban areas and commercial establishments it is done in a sophisticated manner bypassing the electric meters. During the field study it was observed that police officials in Korai, Jajpur used electricity through hooking. Under such circumstances it is unimaginable to get police support to counter hooking, at least in these areas. In contrast, In Andhra Pradesh 3.7 lakh consumers were added (regularised) in two weeks with the support of government (police department). Even when illegal practices of consumers are brought to notice they use political influence to counteract any move to impose

penalty. Although OERC has got a Grievance Redressal 'Practice Direction' in force and an alternate Grievance Redressal Forum, few officials of the distribution companies believe that the regulatory body sometime intervenes in day-to-day redressal of problem of influential persons.

The loss to electricity distribution system was more due to theft of physical infrastructure than that caused by cyclone. In such an environment any major improvement to the electricity sector can come only through a social movement and strong disciplinary system within the distribution companies.

Actions by distribution companies for improving service delivery system

To improve service delivery system distribution companies have taken a number of steps. The distribution companies have been restructured into a number of divisions. Each division is headed by a team leader to whom groups of technical and commercial people report.¹² Number of hierarchies has been brought down for better communication and accessibility. Customer Care Centres (CCC) has been set up in different parts of urban areas. CCCs have computerised complaint registration system and operate through their own mobile troubleshooting units with trained staff and equipment. Maintenance personnel will be provided with identity cards and walky-talkies for enhancing their operational effectiveness. For better Customer Relationship Management (CRM) the CCCs in future will have interactive voice response system, wireless communication set up and total networking facility. Similarly in rural areas help of village committees is being sought to improve service efficiency.

In Orissa, the per capita electricity consumption has come down. In 1994/95, per capita electricity consumption was 207 kWh. In 1996/97 it came down to 154 kWh.¹³ The restructured electricity sector was expected to help introduce competition, improve efficiency, add capacity, rationalise tariffs and enhance consumer welfare through lower price and enhanced services. On the contrary, it promoted monopolies, raised tariffs, deny consumer choice and constrains investment. Reform is not perceived people friendly when tariffs rise without accompanying increase in service quality.¹⁴ However, Orissa experience has shown that there has been a perceptible change in people's mind in understanding the real cost of electricity. Distribution companies are continuously reducing losses and employees have become more accountable to consumers. However, losses have not been brought down to the agreed level as per schedule. Some significant steps that require large investment and drastic management action to reduce losses are yet to be taken up. The investment in new meters and distribution network up gradation is not being done. Even in some cases where distribution companies want to install meter, they find it difficult to do so. CESCO "is having to employ goons to install meters".⁵ If reform could be taken to its logical end of linking consumer to generators with GRIDCO providing wire service, tariff is likely to come down through efficiency gain. However, it appears that it will take a long time before consumers actually gain from privatisation

One of the reasons for poor performance of electricity sector was lack of competition. After reform three distribution companies (WESCO, NESCO and SOUTHCO) are owned by same organisation (BSES).¹⁵ The other distribution company (CESCO) and a generating company (OPGC) are owned and managed by one organisation (AES).

4. Impact of Electricity Sector Reform on Rural Areas

In this section, effects of electricity sector reform in rural area are analysed considering their impact on rural electrification and lift irrigation.

Rural electrification

The status of rural electrification is presented in Table 9.¹⁶

Table 9: Status of Rural Electrification

Description	Numbers
Total number of villages in the state as per 1991 Census	46907
Villages electrified till 31 st January 2000	35220
Percent of villages electrified till 31 st January 2000	75
Pump sets energised till 31 st January 2000	74573 ¹⁷
Kutir Jyoti connections given till 31 st January 2000	103691

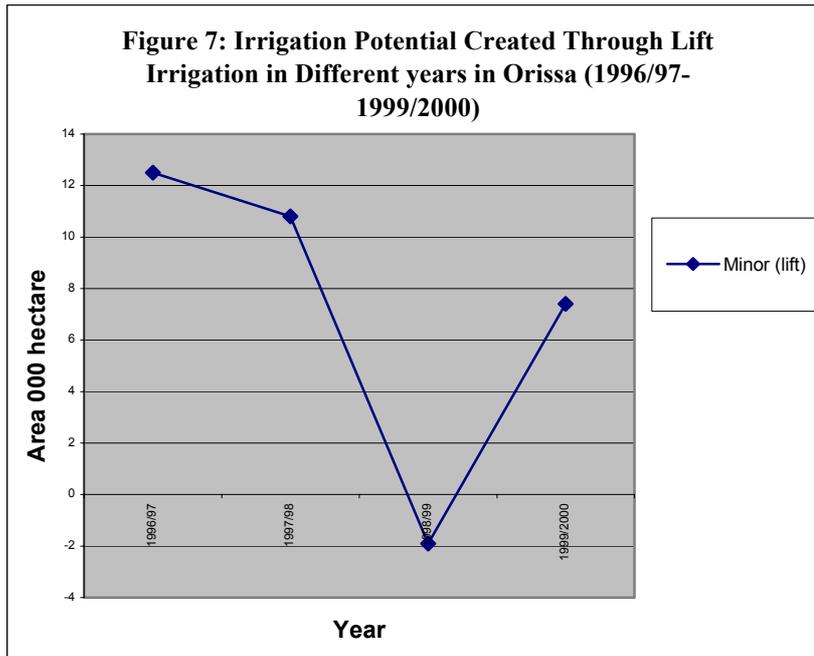
Source: GRIDCO, 2000

The rural electrification program is not a profitable proposition for the distribution companies. Thus, they expect both capital and revenue subsidy from the government. The government through GRIDCO provides the capital subsidy and the revenue subsidy is taken care of through tariff fixation by the OERC. During the year 1998/99 there was a plan to electrify 3000 villages. Actual achievement as on 31st March 2000 was 1595 villages. Material that was given for electrification of non-energised villages was used to restore the distribution system got damaged by cyclone. The same is yet to be made up by the distribution companies. Extensions of the grid to serve currently unconnected customers is unlikely on purely commercial consideration. Improvements in the quality of supply will impose additional costs on consumers. The scope of efficiency gain in substantially reducing the tariff shock is unlikely in near future.⁷

Lift irrigation

5.62% of total electricity used in the state was consumed in agriculture in 1992/93. The corresponding percentage in 1998/99 and 1999/2000 is respectively 3.5 and 2.73.¹³ thus, in proportion to other uses of electricity; share marked for agriculture has steadily declined. Some of the causes of relative decline in electricity use in agriculture are continuation of traditional agriculture and practices, high initial investment, increasing tariff, high lead time in restoring damaged electricity system, erratic power supply, low voltage supply leading to motor burning and electricity theft.

Lift irrigation contributes least in creating irrigation potential in Orissa. Irrigation potential created through lift irrigation in different years in the state does not show an encouraging trend (Figure 7). The negative potential created in 1998/99 is due to taking stock of the dysfunctional irrigation system and accruing its impact for that year.



Source: OLIC

The electricity tariff for irrigation pumping and agriculture includes demand charge, energy charge and customer charge. For low tension (LT) consumers (220V/440V Supply) the demand charge is Rs 20/kW/month for first kW plus Rs10/kW/month for each additional kW of contract demand/connected load or part thereof. Energy charge is fixed at the rate of Rs 1.10/kWh. The LT consumers do not pay customer charge.

For High Tension (HT) consumers (11 KV supply) the demand charge is Rs 30/kW/month of contract demand/connected load or part thereof. Energy charge is fixed at the rate of Rs 1.00/kWh on the units consumed. Customer charge for a consumer is Rs 250/month.

A significant number of lift irrigation systems in Orissa have defective or unmetered electricity supply. They are charged on the basis of load factor of 8% on the contract demand from June to October and 15% on the contract demand from November to May.

Lift Irrigation system in Orissa is operated both by the government and private agencies. Orissa Lift Irrigation Corporation (OLIC) is in-charge of the government controlled energised irrigation system. According to OLIC, after privatisation the electricity billing is done blindly. Even in situations where electricity is not being supplied to the LI points due to stolen conductors and/or burned transformers electricity tariff is being charged on the basis of load factor. In spite of the repeated requests from OLIC distribution companies fail to install meters in LI points. However, there are instances of OLIC not providing the requisite space and security for meters, due to which distribution companies fail to provide them. Thus, a well-coordinated action plan for metered supply of power needs to be developed. Initially Rural Electrification Corporation (REC) used to subsidise up to Rs 15000 for each LI point. After privatisation the same has become difficult to come through. Earlier GRIDCO used to provide connection to any LI point after 125% of material and labour cost is deposited. After privatisation, distribution companies demand 154% of

the material and labour cost to provide a connection. Because of high electricity installation charge, poor maintenance, and irregular and poor quality electricity supply, there is a move to switchover to diesel generator (DG) sets for energising LI points. Number of energised pump-sets added since 90/91 is given in Table 10. At the beginning of 1990/91 OLIC had 4647 tube-wells and 6574 river lift points (total 11,221 energised pump-sets) for a design irrigation area of 2,50,317 hectare. By 1998/99 OLIC abandoned 269 tube-wells and 191 river lift points (total 460 energised pump-sets) that were designed for 8912 hectares because of dried source and operational problems. The total annual addition (private and OLIC) of energised pump sets has come down over the years. The number of energised pump sets added in 1995/96, 1996/97, 1997/98, 1998/99 and 1999/2000 are respectively 4039, 960, 1903, 1312 and 1121.¹

Table 10: Number of Energised Pump-sets Added Since 1990/91

Year	Tube-well added	River lift added	Total energised points	Design area (hectare)
1990/91	127	582	709	14030
1991/92	80	432	512	10170
1992/93	105	198	303	5603
1993/94	88	286	374	7385
1994/95	91	272	363	7000
1995/96	134	233	367	7155
1996/97	199	370	569	12584
1997/98	232	282	514	10794
1998/99	107	200	307	7038
1999/00	93	229	322	7378

Source: OLIC

After privatisation people's expectation for electricity services has gone up. Agricultural water users are not ready to accept poor service from OLIC because of electricity supply quality. For example, recently the consumers filed a case with OERC and Consumer Grievances Redressal Forum against OLIC for non-supply of water as per contract. OLIC could not supply the contracted water because transformer was burned and Distribution Company did not reinstall a new transformer since their demand for advance payment was not forthcoming from OLIC. The result was crop damage due to lack of water. With huge outstanding dues with OLIC (CESCO has outstanding dues up to RS 100 crore with government), distribution companies are not willing to provide electricity or restore damaged network without getting advanced payment.

The charges for water use in Orissa has remained the same for a very long time. The rates were changed for the first time in 1986 and the next only during 1997. Before 1997, the water rates were Rs 17.43 per acre-inch and Rs 11.12 per acre-inch respectively for German assisted and normal lift irrigation projects. After revision in 1997, the water rates became Rs 22.44 per acre-inch and Rs 17.43 per acre-inch respectively for German assisted and normal lift irrigation projects. From the preliminary economic analysis it appears that if the lift irrigation system is managed properly, given the present water tariff and electricity tariff, the simple payback period is five years. Private operators find it profitable to sell water under such a

scenario. However, OLIC's large overhead and fixed and operating cost of LI Points far outweigh the revenue collection. The government is reluctant to compensate the losses through subsidy. Additionally, whatever subsidy government is willing to pay also does not come timely. As a consequence, for the last six months employees of OLIC have not got their salary. With huge financial burden and poor employee morale, OLIC is presently not in a position to run the projects. There are sporadic reports of malpractices by the OLIC employees for their sustenance

In Orissa, approximately 77% of energised pump sets are in the private hand.⁸ There are many illegal operators who do not pay electricity services. There is a general perception among some private LI operators that those who pay the bill face the serious threat of disconnection in the event of delayed payment.

Electricity sector reform without concurrent reform in other related sectors (for example irrigation sector) has put additional pressure on the working of OLIC, which was already stretched to its limit because of large workforce and poor discipline. There is a different level of inertia for each sector and when there is reform in one sector, others do not respond in a desired manner. For example, OLIC officials still act the way they used to when electricity distribution was under OSEB.

LI points damaged during the cyclone in October 99 are yet to be energised with electricity. Poor financial condition of distribution companies and the weak position of consumers are the causal factors for this sorry state.

Average lead-time between application/deposit for LI connection and actual charging is 6 months to 1 year for KFW projects and 1 year to 3 years for OLIC projects. According to the officials of OLIC, this lead-time has not changed after privatisation.

5. Decentralised Electricity Retailing

Huge amount of transmission and distribution loss has been a cause of concern for the electricity sector. During the pre-reform period the T&D loss was artificially shown a low value to hide the inefficiency of technical and management system. For example in Orissa it was shown to be around 23% of electricity supplied although the actual loss was 50.5%. OERC has pegged the loss figures at 35% for the last three years (1998/99-2000/2001) in price determination. It has been a challenge for the distribution companies to minimise T&D loss (both technical and commercial) and increase billing efficiency (ratio of amount collected to the amount billed). Distribution companies have developed innovative systems for collection of electricity charges from the consumers.

Before privatisation, the agents used to generate electricity bills and deliver the same to households. The OSEB staff used to collect money from the households in rural areas. In urban areas the consumers used to pay their bills in selected counters in the city. After privatisation although the same system is being followed in most of the places, there have been innovations in some areas.

As an experimental basis NESCO and WESCO have tried micro-privatisation system for bill collection. "Bidyut Sanghas" (Electricity Committees) in the electrified villages of NESCO and WESCO are being tried. Bidyut Sanghas act as the catalytic agents in ensuring stable power supply to the villages. Their activities include meter

reading, bill distribution, regularisation of illegal connections, recommendation for new connections, advising for disconnections and credit control (including recovery of arrears). They are not being paid any service charge for the time being; nonetheless, in future they will be paid certain fees. The service charge is expected to be the same as being paid to the third party presently.¹⁸ Thus, there will be no incremental cost burden from these activities.

Using the technique of Rapid Rural Appraisal (RRA) electricity related problems in the village are discussed with the residents. It helps in villagers taking ownership of the problem and implementation of the solution, which may have significant component of local specificity. Once the problems and likely solutions are identified a Bidyut Sangha consisting of 5 to 6 members from the electricity users are formed. The electricity users themselves select these members. The lineman of Distribution Company also becomes a member of the Committee. The Committee undertakes three primary functions - activities of revenue cycle, liaison with distribution companies to ensure that the electricity needs of the village is satisfactorily met with and operating as a nodal agency for customer complaint redressal.

Formation of the village committee in some villages has resulted in stability of power supply to the villages, regularisation of unauthorised consumers and a good system of complaint redressal. Revenue cycle activities are undertaken by an unemployed youth from the village, who is expected to be financially compensated once the system of intervention in revenue cycle is formalised. With the new system coming in the payment to contractor (village contact person for meter reading and bill distribution) is done only after a certificate to this effect is given by the VBS President and the concerned junior engineer (head of a Section).

The above micro-privatisation program initiated with the support of Xavier Institute of Management, Bhubaneswar (XIMB) has four important steps such as improving customer relation and revenue collection, skill transfer to VBS and distribution companies, enabling the target villages to be franchised, and franchising.

To cite an example, in a few villages where micro-privatisation program is being implemented, the increase in electricity revenue in one year has gone up by 19% in Anandpur electrical division and 46.6% in Jajpur Road electrical division. The increase in revenue is due to proper accounting of electricity consumption of legal users, regularisation of illegal connections and addition of new connections. In few villages there has been a decline in revenue collection because of conversion from fixed to metered charges with the installation of meters.

Village Bidyut Sangh has played a key role in collecting the revenue and paying the squad (a group of persons from the distribution company who come for collection of revenue and redressing the complaint, if any, of electricity users) on a fixed day in a month. In few villages it was observed that the VBS collects money from the consumers and withholds the payment to Distribution Company till the later rectifies the problems in the rural electrification system. Some of the key problems often brought to the notice of these companies include low voltage, power interruption, wrong billing, faulty meter and hooking by some villagers. Earlier, the officials of the distribution company were not visible in the rural area. With the new system they come door to door to address the problems. Additionally, villagers have been empowered to an extent that they could discuss their problems openly with the

concerned officials of electrical department. There is a two-way communication and consumers understand the relationship between the service quality and the corresponding price. Villagers ensure that the company officials act promptly and responsibly. As an example, in one village, VBS brought to the notice of the visiting squad about the illegal connection by few households in the village and default in timely payment of electricity bills by few users. Since it was getting late the officials suggested that they would take action by disconnecting the electricity supply next day. It did not satisfy the VBS members and they gave the ultimatum: either to take the action immediately or face the dissolution of VBS. Officials understood the situation and electricity supply to defaulters and illegal users were disconnected immediately. Next day all the disconnected services were powered after the payment of appropriate charges. Thus, from all the villages visited in the area it is observed that use of VBS as an intermediary has helped in improving revenue collection and providing better service.

In urban areas Consumer Care Centres (CCC) have come up as interface between distribution companies and consumers. These centres have complaint management system to address the difficulties faced by the consumers. The engineering and commercial wings have been bifurcated.

In some rural areas experiment is going on with LT-less distribution system. In such a system from a medium voltage source (say 11 kV), using small and compact transformer, low voltage electricity is supplied to household. Each household gets one connection directly from the outlet of transformer. Besides high quality electricity supply, it reduces distribution loss and brings down the chance of hooking. However, in some places with the connivance of lineman some households take illegal supply.

Insulated conductor, although 2.5 times costlier than ordinary conductor, were tried in few situations to take care of hooking problem. Consumers found innovative ways of burning a section of the conductor and than established illegal electricity supply through hooking.

6. Future Direction of Electricity Reform and Concluding Remarks

This section is divided into two parts, i.e. future direction of electricity sector reform in Orissa and concluding remarks.

Future direction

Considering the fact that OERC has already issued four tariff orders and there is acceptance from all the consumer groups, it appears that the reform process is in the path of no return.

Survival of distribution companies depends on massive reduction in technical and non-technical losses, disciplined behaviour of work force and substantial financial input for both short-term and long-term. Unless government provides its administrative, political and moral support towards this end, the progress of reform in its present shape and form is in doubt.

The key task of distribution companies at present is to improve their collection system. Considering huge losses they are incurring, capital investment in new

distribution network and upgrading the existing distribution system for higher reliability and availability is their lowest priority and not in the immediate agenda.

New private investment in generation is not likely in near future unless the distribution companies become regular in their payment obligations to transmitting companies and the latter to generating companies. Thus, the demand-supply gap is likely to increase in future.

The expected benefits in the form of reliable service at an appropriate price are not likely to materialise in near future. Up to 100 unit/month of electricity consumption, consumers get about 50% subsidy. Agriculture sector is supplied at 40% of generation cost. In contrast industry is supplied at 115% generation cost. OERC's objective is to bring down subsidy and cross subsidy. It means in future the price of electricity for domestic and agricultural use will increase till it reaches the level of long run marginal cost, which is presently 280 paise/kWh in Orissa. The real price of electricity for commercial and industrial consumption is not likely to go up further significantly.

Effectiveness of OERC is questionable when it is dependent on Government approval for its financial and human resources.¹⁹

The OERC's view on rural electrification and its decision that any expansion of the grid, which is not commercially viable, would not be taken into account in consulting the capital base of the company. It means OERC has absolved its role for the development of power sector.¹⁰ In future unless government gives grants for rural electrification, the projects will not be taken up through tariff route.

Presently GRIDCO undertakes wire business (construction, operation and maintenance of transmission system), trading of bulk power, and load despatch and functions of State Transmission Utility (STU). As envisaged, further reform would bring in separate subsidiary companies to take care of the above functions by breaking of GRIDCO. For efficiency improvement in the electricity sector generators and the end users should be brought in to a competitive market. Since bulk consumers in Orissa have their own captive generation units, above proposition will not be materialised in near future, especially when there is physical restriction in interstate transfer of power.

Reform has led to improved billing. Commercial losses have come down. Experiments in microprivatisation in rural areas have shown encouraging results in reducing commercial losses. Illegal consumers have been regularised. Villagers have been empowered to demand better service from the distribution companies. They have forced officials to behave more responsibly. Experimental positioning of VBS as an interface between rural consumers and distribution companies has resulted in higher billing efficiency. The innovations in electricity retailing will be aggressively taken up in future.

Fourth tariff order issued by OERC has allowed 31.46% T&D loss (including 15% HT loss).²⁰ It is much less than the actual occurrence. The international experience with reform shows that a significant share of efficiency gains comes from technology

up gradation, fuel choice and increase in labour productivity.⁷ These are not likely to happen in Orissa in near future.

Concluding remarks

The reform has led to improvement on generation through improvement in power plant availability and plant load factor. The transmission and distribution losses, mostly non-technical ones are coming down, though less than the desired pace. There has been increased transparency and accountability in the electricity sector. Consumers' awareness about the real cost of electricity has gone up. There has been better understanding among masses about the linkage between quality of service and price of electricity.

Before restructuring, generation, a profit making venture, was compensating for the losses in the T&D segment. However, after separate agencies came into picture, T&D companies are facing a severe cash crunch. Factors such as withdrawal of subsidy from the government since privatisation, stepped up valuation of assets of the transmitting company (GRIDCO) and with a provision of 16% after-tax return on the asset base of the distribution companies, the electricity tariff is on an upward trend. Thus, the people's expectation that with privatisation, tariff would come down and service would improve through efficiency gain is not realised. On the other hand, electricity tariff is going up every year. It is likely to stabilise only at high marginal cost level (approximately Rs 2.80/kWh for Orissa presently). It is the long-term policy of OERC to eliminate subsidies and cross-subsidies from the electricity sector altogether. In such a situation the distribution companies are facing the wrath of consumers while the Government puts a blind eye.

The reform started on a wrong footing. In the absence of an accurate database relating to the privatised companies' asset base, income and expenditure and forecast of state economy in immediate future, an indicative tariff was of no use. The license condition did not include the initial, ongoing and future investments (with associated risk) in the electricity sector.

It would have been prudent for the Government if it had made the distribution sector financially viable first. Without it, private investment in generation becomes extremely risky.²¹ Entire sector is becoming sick because of the defaulting distribution companies on their payment terms. Unless timely financial assistances are provided, survival of transmission and distribution companies will be in question. Being 39% shareholder in distribution companies and owning GRIDCO wholly, it would be appropriate on Government's part to act in a more responsible manner. Government needs to provide active administrative, political and moral support to distribution companies, who have taken the onerous task of bringing down the losses and mismanagement in the system. Government may consider providing some amount of subsidy in time as transitional support for the recovery and healthy growth of the sector. The transitional support should be tied to the planned implementation of measures to bring down technical and commercial losses and management capacity enhancement.

During the brief period of transition to privatisation, data build up, accounts updating, improvement of static efficiency should be closely and purposefully monitored.

During massive electrification people got the idea that electricity is a free commodity and their temperament has changed. Thus, what is required is strong political backing in the form of financial and administrative support and precise planning, monitoring and organising from the privatised companies.²² High expectation of benefits from the reform in the short-term is unrealistic.

Innovation in electricity retailing with third party/consumers' participation should be carried forward. Necessary administrative and legal provisions may be brought in to strengthen the process.

For the reform to be effective it must be introduced in a coherent manner. For example, electricity sector reform brought in higher tariff to agricultural sector. On the other hand, OLC's financial position does not allow it to bear such a high electricity tariff. It is felt that Government should think proactively about increasing subsidy to OLC and/or increasing water tariff. In general Government should think of providing subsidy as a transitional support. During the period of transition, the distribution companies could concentrate on improving the quality of electricity service to customers without significantly increasing its price. After a reasonable time period, once the consumers are satisfied with the performance of private companies, they could be charged a higher price and the subsidy component could be brought down to its logical end.

Agriculture in Orissa consumes very little electricity. Thus, electricity sector reform and the consequent price hike have not significantly affected the sector. However, there have been some negative effects in the form of increased initial deposit for a new connection, service disconnection in the event of delayed payment and over billing through load factor charging. After the withdrawal of government subsidy to electricity sector, rural electrification has also suffered. The cause of declining electricity use in agriculture is attributed to the higher fixed cost of electricity infrastructure and associated operation and maintenance expenses borne by the farmers, and not electricity tariff.

OERC is presently dependent on government for manpower and finance. To be more effective they should be given complete independence by providing adequate manpower and financial support.

Although the reform had envisaged breaking down the monopoly of generation and distribution, one company continues to hold a part of generation and distribution simultaneously. Similarly three distribution companies are in the hands of one corporate entity.

It can be concluded by saying that reform was necessary to bring in fresh air to the highly mismanaged electricity sector. However, the question remains, was the privatisation route most appropriate?

Given the freedom of tariff increase and clear performance guide lines along with a non-interfering state (to decrease transmission and distribution losses, improve reliability and availability of generating plants, improve employee discipline and productivity and earn an appropriate return on asset base) to wholly government owned entities, probably their performance would not have been different from the

privatised distribution companies. In spite of being a monopoly, the French utility, Electricite De France (EDF) is able to continuously improve its services while simultaneously decreasing the tariff. Certainly one cannot argue that privatisation on its own will bring in higher efficiency and better service to price ratio. Prerequisite for success is an enabling environment for ethical business practice and clearly articulated performance contract. If government's objective were to concentrate on its core activities (law and order, administration, etc.) it would have been prudent to bring the unbundled entities (generating, transmitting and distributing companies) into a healthy shape before privatising. However, having moved thus far it would be unwise to leave the reform process in the mid-water. A comprehensive review of the progress of reform is essential for charting out the next move.

References and Notes

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4. OHPC has about 1919 MW installed capacity: Hirakud 331.5 MW, Balimela 360 MW, Rengali 250 MW, Upper Kolab 320 MW, Indravati 600 MW and Machhkund 57 MW (Orissa share). NTPC's TTPS unit has installed capacity of 460 MW. OPGC has 420 MW and captive generating units have 1379.5 MW of installed capacity. Principal CPPs include National Aluminium Company (NALCO) 720 MW, Rourkela Steel Plant (RSP) 248 MW, Indian Cooking Coal Limited (ICCL) 108 MW, Indian Aluminium (INDAL) 67.5 MW, Ferro Alloys Corporation (FACOR) 21 MW, ISPAT Alloys 40.5 MW and other CPPs 174.5 MW. Prior to sale of TTPS to NTPC power was sold to SEB at Rs 0.80/kWh. However, after its sale, Power Purchase Agreement (PPA) was signed between OSEB and NTPC for Rs 1.60/kWh with Rs 11 Crore/month as fixed charge if power is not purchased beyond a certain PLF.
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9. SAR (1996) assumed an average increase in tariff of 16% in 1996/97 and 18% in 1997/98, which could not be materialised.
10. Sankar, T. L. and Ramchandra, U. (2000), "*Electricity Tariff Regulators: The Orissa Experience*", Economic and Political weekly, May 27, pp. 1825-1834.
11. Distribution companies had only project specific liabilities without up-valuation and without accumulated losses. OERC fixed the tariff on the basis of revised depreciation value (additional liability due poor liquidity position was not considered).
12. Entire area under the distribution company is divided into a number of Circles. Each Circle is divided into a number of Divisions. Division is further divided into a number of Subdivisions and each Subdivision into a number of Sections. For example CESCO has 4 Circles and each Circle has 3-5 Divisions. Each Division has 3-5 Subdivisions and each Subdivision has 3-5 Sections. Each Section has about 3000 domestic customers. Superintending engineer, Executive engineer, Assistant engineer and junior engineer head the Circle, Division, Subdivision and Section respectively. Each Section is an accounting unit and it has about 25-30 linesman/clerk for maintenance of distribution system and collection of revenue.
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15. BSES is managing company for GRIDCO. They have acquired three distribution companies.
16. A village was considered to be electrified if electricity was "used within its revenue area for any purpose whatsoever". This definition was changed in 1997. Accordingly, "a village is deemed to be electrified if electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsoever".
17. Out of these about 23% (16873) belong to Orissa Lift Irrigation Corporation (OLIC) and balance 77% (57700) owned by private.
18. Presently third party contractors are used for Meter reading and Bill distribution. Before February 2001, Contractors were paid Rs 0.75 per Meter reading and Rs 0.50 per Bill distribution. From February 2001 these service charges have been revised. Existing charges for urban area are Rs 1.00 per Meter reading and Rs 0.80 per Bill distribution. The charges in rural areas are Rs 0.85 and Rs 0.65 for Meter reading and Bill distribution respectively.
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20. Extra High Tension (EHT) \geq 66kV, High Tension (HT) 11 kV and 33 kV, Low Tension (LT) 230 V and 440 V
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22. Organisation structure of GRIDCO is yet to be finalised. There is no clear job description for employees.
23. *Economic Survey (2000-2001)*, Government of Orissa, Directorate of Economics and Statistics, Planning and Coordination Department
24. *The Samaj*, 25th January 2001, Tariff Notification.

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