

Impact Analysis of Odisha Electricity Sector before and after Reforms

Mr. Swakantik Mishra Dr. Abhinna Chandra Biswal

Department of Electrical and Electronics Engineering
Centurion University of Technology and Management

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Abstract:

Odisha electricity Sector has gone through a sea change in last couple of decades. It had been highly centralized sector with control of Government of Odisha and there had been less option in investment and operation. With change in load, demand and supply system reliability, efficiency and effectiveness became an issue. So, to bring in consistency, efficacy and usefulness the state government decided to decentralize the state power sector through reforms. By segmenting each technical and commercial center to separate business units the reforms had been realized. In this article the authors focus on the impact and issues in Odisha electricity sector after reforms and gave an after effect of reforms with comparative analysis.

Keywords: *Decentralization, deregulation, electricity regulation, market segmentation.*

Introduction:

Electricity is an essential commodity in human life; it plays an important role in global economic development. Power & Energy sector in the world has been going through reforms in line with technical as well as economic development; this happened due to various innovations, socio-political and environmental factors. In this paper we have discussed various events that are important in history of Odisha State electricity sector. In older days all three (Generation, Transmission and Distribution) activities had been controlled by one organization, named Orissa State Electricity Board (OSEB), this controlled all the services of electricity, apart from all these, this organization was responsible to decide electricity tariff in the state of Odisha (erstwhile name is Orissa), nobody could raise the voice against the electricity tariff. For any electricity market channel & party competition is essential to provide better service to the consumer. The whole set of new rules on separation of deeds under the new regulation is that a single entity cannot accomplish keeping pace with regulated activities (lets say, distribution) and competitive activities (such as generation) at the same time. The potential such

advantage is lawfully out of order. Similarly, the menace of the competitive activity cannot be conveyed to the regulated support to be endowed with the regulated activity to the competitive one is an evident advantage for the final and one, since it will certainly fall on consumers who do not have the selection to choose.

An adequate lucidity in the keeping pace activities also requires at least accounting separation among the resultant business units. Entities occupied in regulated activities are not legitimate to conduct diversified activities (i.e., activities not related to electricity) or must at least be subject to the sanction of the regulatory agency. Such authorization shall be initially based on the non-existence of unenthusiastic force on the regulated business which could ultimately be borne by consumers who do not have the preference to choose.

The new not so rigid scaffold design shall consider the various reimbursement and hassle when assigning activities to body and setting the separation levels and shall also take into account the explicit quality of the actual system, particularly, the initial business structure. Several valid alternatives are generally possible, as shown by the diverse

know-how undergone in countries that have adopted the new electricity regulatory skeleton.

I. HISTORY OF ELECTRICITY SECTOR IN ODISHA

Odisha energy sector has mainly dominated by hydroelectric power generation up to early 1990s, having six hydro generating stations under Odisha State Electricity Board (OSEB) (before restructuring); from this the state have been fulfilling major energy demand. The two thermal power stations under OSEB (IB Thermal&Talcher Thermal) have been acting as base load plants. During 1948 Department of Energy-Government of Odisha, with reference to the National Electricity act & Grid code enacted the Electricity Supply Act, which gave solid foundation toward enterprising of State Electricity Boards (SEBs) in each state and Orissa State Electricity Board (OSEB) in state of Orissa. OSEB had been comprehended in 1961 to undertake generation, transmission, and distribution of electricity in the State of Orissa. All the activities of regulation & control of all Generating Stations, Transmission, Distribution& Retailing of the state of Orissa remained under OSEB. The electricity tariff regulation remained under control of OSEB. Despite the decline in capacity, power generation increased by almost 8% in 1998-99 to 6.2 Billion units [1]. During 1991 the central government instituted policy, so that private players can participate in electrical business.

II. ODISHA POWER SECTOR REFORMS

In excess of the passing years, OSEB’s financial health deteriorated due to various factors such as considerable amount caters to T&D loss, power theft, unable to pay electricity tariff on time due to poverty etc. It live to tell the tale due to subvention from the State Government; in 1995-96, the State subvention owed touched into arrears totaling Rs. 369 crores [2]. The space between climax demand and supply had reached almost 45% by 1993-94 [3]. Despite the fact that, the number of consumer in electricity connection increased to more than ten lakhs, the overall financial performance depreciated.

During June 1995 National Thermal Power Corporation (NTPC) took over Talcher Thermal Power Station from Govt. of Odisha.

Because of wretched performance by OSEB, the Government of Orissa, decided to restructure and decentralize Odisha power sector. The pivot of reforms has been deliberate at civilizing the eminence of electricity supply and kindle economic growth in state.

Extensive goals of the reform program are as tagged on:

- Giving each entity autonomy with less Government Intervention in each issue.
- Attracting small and large private players in the power sector.
- To establish competitive market in power & energy quarter.

To pull off the above goals, the Orissa Power Sector Reform Project has been designed to embark on the following:

- Create a different act as per national aligned (The Orissa Electricity Reform Act).
- Enroot towards decentralizing and restructuring state electricity board.
- Establishment of an Independent power & energy exchanging, regulatory body.
- Leasing out generation and distribution businesses.

Restructuring from centralized control to decentralize structure is shown below:

During March 2004, the technical aspect of transmission business has been established with separate State

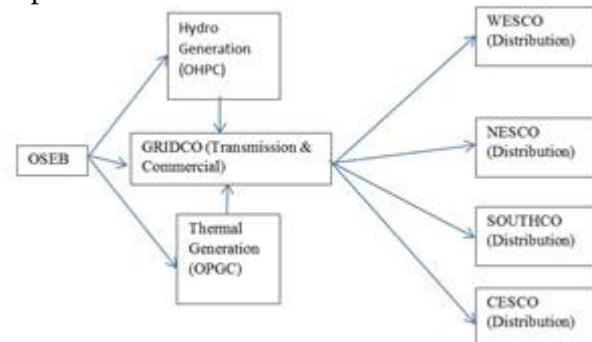


Fig. 1. Restructuring the Orissa State Electricity Board

(OSEB)

Transmission Utility named Odisha Power Transmission Corporation Limited (OPTCL). GRIDCO has been formed whose responsibility to oversee smooth operation for commercial and financial aspect of electricity business and OPTCL handled exchange of Transmission and Technical Activities. The new model of energy sector is as shown in Fig.

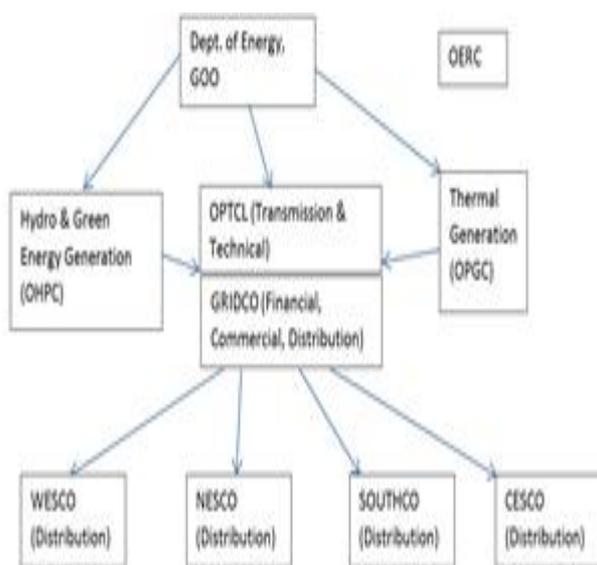


Fig. 2. Restructuring of Energy Sector of Odisha

III. DECENTRALIZATION OF ENERGY SECTOR

Orissa is the first state in the country to go ahead with the power sector reforms. The reforms process had supported by World Bank and DFID: The Department for International Development, UK. The entire energy sector had been divided into three core parts: Generation, Transmission and Distribution. In Generation side all hydro power generation business got transferred to Odisha Hydel-Power Corporation (OHPC) Ltd. and the thermal power generation business handed over to Odisha Power Generation Corporation (OPGC) Ltd. Latter different joint venture companies established with Odisha Mining Corporation Ltd. (OMC) to allot coal blocks to thermal power stations. During course of time OHPC established a sister concern organization Green Energy Development Corporation Ltd.

(GEDCOL) to develop green energy in state. The transmission related activity is handled by OPTCL and Retailing, and Distribution activities are further segmented to different parts. GRIDCO became responsible for trading and commercial aspect of electricity business.

IV. ESTABLISHMENT OF REGULATORY COMMISSION

An independent regulatory body Orissa Electricity Regulatory Commission (OERC) has been established in August 1996, which appeared first in India. It is an autonomous body which oversees entire business of electricity in the state. Earlier the control and regulation had done by Department of Energy (DoE), Government of Odisha, after establishment of OERC, DoE is mainly responsible for administration related activity of different corporate in energy sector.

Pivot task of Regulatory are as follows:

- To standardize Power: generation, transmission, distribution and supply of electricity in Orissa;
- Endorse effectiveness, financial system and safety in the transmission, distribution, and use of electricity in the State;

Sponsor competitiveness and increasingly engage the participation of the private sector, while ensuring a fair deal for trade.

V. DECENTRALIZATION OF GENERATION BUSINESS

After transfer of Talcher Thermal Power Station from State utility to Central utility NTPC, the generation business is further decentralized by inviting private players to participate in the business. Year 1998 saw a huge change; Government of Orissa part from 49 per cent of its wager in OPGC. Eight eligible professionals bidders (including four international companies) had been short-listed. American Electricity Supplier (AES) Corporation of the USA gain in bin for a concern of INR 603 Crore[4].

VI. DECENTRALIZATION OF DISTRIBUTION BUSINESS

The major loss of electricity happens in distribution sector, so make the entire distribution system efficient GRIDCO divided the state to four distribution zones. GRIDCO pierce into a management agreement with BSES, of Reliance Industries, Under the contract, which has been known as DOS (Distribution Operations Agreement), The contract holder given account of controlling distribution of four zones of odisha, but due to deliberate loss it was cancelled during May 1997[5].

So, to make further amendments the distribution zones were corporatized by forming four companies: Western Electricity Supply Company of Odisha (WESCO), North Eastern Electricity Supply Company of Odisha Limited(NESCO) (SOUTHCO), Central Electricity Supply Company of Odisha, (CESCO). BSES took over three companies: WESCO, NESCO and SOUTHCO; CESCO has been dispensed over to AES and Jyothi Structures limited, through a competitive bidding process.

VII. AFTER EFFECTS OF REFORMS

Government of Odisha gained large amount of revenue by this process. By establishment of corporate entities like OHPC, OPGC, OPTCL and divesting 49% of its stake to market. The large consumer benefited from the process due to cross-subsidization. The tariff rates have been revised to suit EHT, HT and LT consumers. OHPC continued as major supplier of power to GRIDCO with lowest fare 49/- Paise per unit (in 1999). GRIDCO Loses increased from 50 Crores to 300 Crores in due course of time, this happens due to transfer of large amount of loan from OSEB to GRIDCO. There was no significant increase in bulk-supply tariff cost to utilities, but the Cost of power purchased increased, since regulatory authorities permitted only 4 per cent transmission-loss for 1999-2000 financial-years, against the anticipated 5.51 per cent. Rate of bill

collection increases but the total amount against T&D losses has been high. After reforms there is a rising trend in consumption of electricity by BPL (Below Poverty Line) families as state govt. decided to provide electricity in a subsidised rate. It is also seen that there is a rise in Repair & Maintenance (R&M) expense in distribution licensees The tabulated data in Table 1, show R&M expenses from the period of reforms.

Table 1: R&M Expense of four DICOMS.

R & M Expenses Years	WESCO		NESCO		SOUTHCO		CESU	
	Approved	Audited	Approved	Audited	Approved	Audited	Approved	Audited
99-00	14.43	15.90	14.22	16.19	12.63	13.39	19.05	24.01
00-01	14.43	10.25	14.22	11.02	12.63	7.31	19.57	19.92
01-02	13.62	10.12	16.32	7.02	15.57	9.29	23.43	15.6
02-03	15.33	8.04	14.62	5.65	16.82	6.43	22.11	25.04
03-04	16.89	16.27	17.59	8.84	16.38	9.93	24.12	21.22
04-05	17.28	12.85	17.66	11.13	13.25	8.43	31.95	20.27
05-06	21.30	9.61	22.63	11.21	18.55	6.07	33.67	12.26
06-07	24.25	12.44	24.48	12.88	17.35	5.54	41.31	22.09
07-08	23.82	12.37	24.43	13.00	18.38	5.50	43.64	25.11
08-09	25.66	17.90	25.87	20.86	19.08	7.79	41.87	34.79
09-10	27.01	18.01	27.88	22.79	20.73	11.59	40.46	28.45
10-11	34.77	16.56	37.22	19.26	26.11	13.09	51.19	29.38
11-12	36.81	18.04	47.46	16.39	28.47	8.28	56.77	28.92
12-13	40.06	14.71	51.17	17.52	28.28	8.97	57.78	27.12
13-14	51.30	19.73	56.73	16.16	43.53	15.02	81.87	52.55
14-15	64.28	17.74	84.92	19.90	39.19	12.02	116.78	33.14
15-16	44.24	17.71	61.05	27.70	31.93	16.82	79.64	33.85
16-17	55.55	19.37	70.54	18.62	33.18	9.74	92.43	45.52
17-18	68.48	18.40	87.97	13.77	34.91	6.74	110.85	26.52

Calculation of R&M expense and trend analysis is presented in section IX.

VIII. CALCULATION AND ANALYSIS

Repair & Maintenance Cost of DISCOM

$$RM \text{ Cost} = \frac{FC - Y_r}{ED \times \text{Operating Hour}} + MCF \times VC$$

Where,

FC = Fixed Cost in Rs/kW, ED = Energy Delivered

MCF = Maintenance Cost Factor

VC = Variable Cost in Rs/kWh

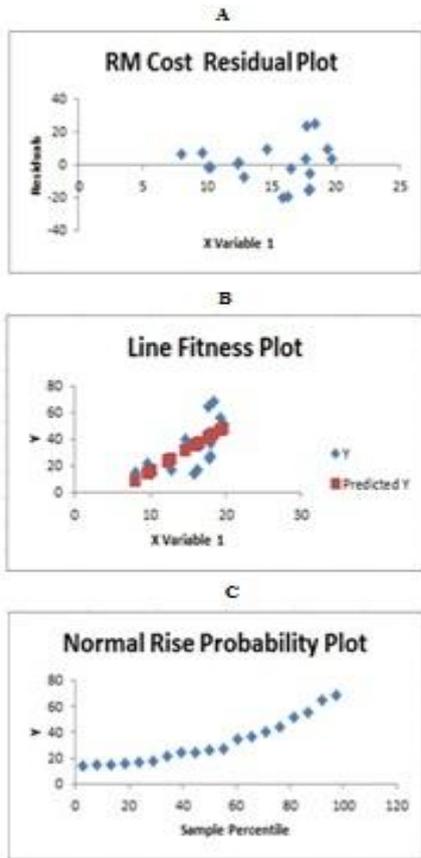


Fig. 4. Regression Model Output of WESCO

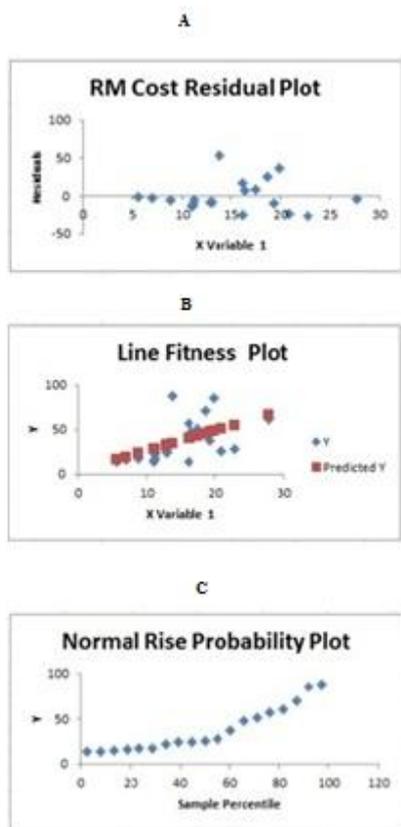


Fig. 5. Regression Model Output of NESCO

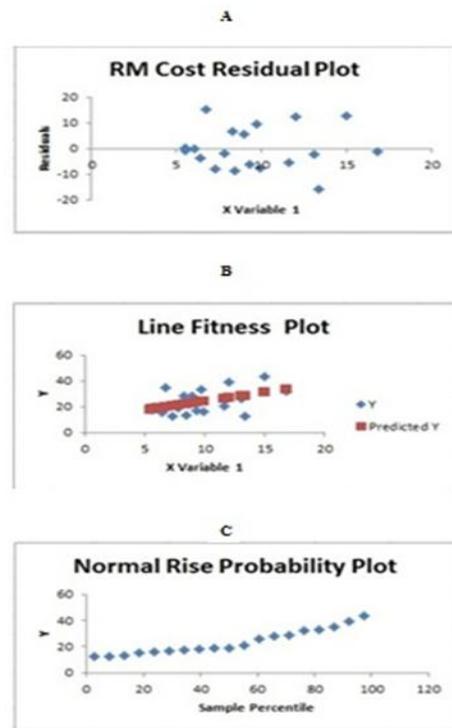


Fig. 6. Regression Model Output of SOUTHCO

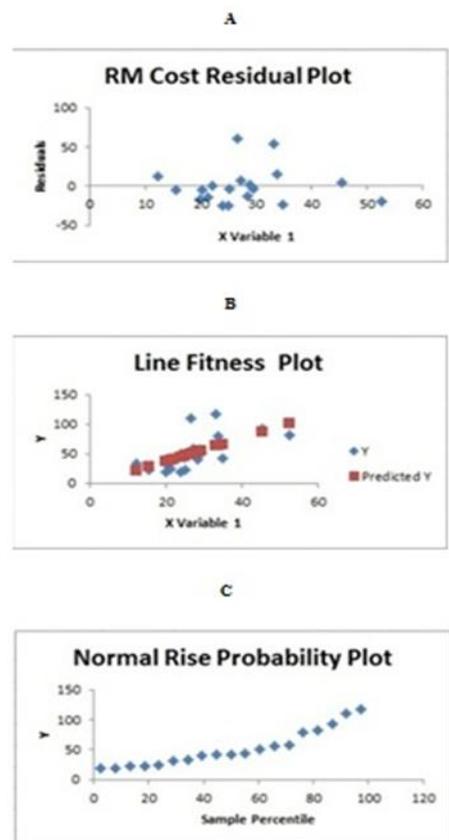


Fig. 7. Regression Model Output of CESU

IX. RESULT AND DISCUSSION

From the above regression model analysis of four DISCOMs it can be forecasted that; the RM expense is within limit, but it is in rising trend from last decade. Due to climatic outage the expense in certain year is recorded high, which has impact on electricity price rise. It also can be forecasted that electricity use is increasing 2.1% in state and RM expense is increasing by 1.2% YOY. Further it can be suggested that RM expense can be reduced if it is handed over to third party with a fixed price value.

CONCLUSION

The more decentralized electricity sector leads to more satisfied customer, but in back drop it should be noted that just decartelizing without any robust model would give more power to private player to control over management issue, which could lead to destabilization of system. Streamline and strengthening of tariff is must, as in case of Odisha consumers are diversified into different category.

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