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Major Reforms of Power Sector in India: A Review

Namrata Bhardwaj
Research Scholar, Malaviya National Institute of Technology, Jaipur (Rajasthan)

Abstract

*Energy is a crucial input for a country's economic development. Increasing population creates pressure on the power sector to meet the demand of present generation keeping in mind the needs of the future generation. Power sector in India is characterized by consistent losses and poor performances. Reforms like electricity for all (24*7), controlling electricity theft, systematic planning, etc. have been initiated by the government for the enhancement of the sector. A considerable improvement can be seen after the implementation of these reforms but still the power sector suffers from huge transmission & distribution (T&D) losses, shortages in the supply of electricity during peak season, electricity theft, high power purchase cost etc. The Government of India is striving hard towards uplifting the power sector and is introducing various policies and schemes which aim towards the betterment of the sector. This paper attempts to review the policies initiated towards the development of power sector and the path that lead to the unfolding of these reforms and their relevance in the present scenario. Further the paper analyses the outcomes of these strategies and their success in the attainment of the specified targets and concluding the initiatives that can be taken in the near future for the growth of power sector in India.*

Keywords: Power sector reforms, transmission & distribution (T&D) losses, electricity theft, power purchase cost.

Introduction

Power sector is the backbone of any economy's infrastructure. Without achieving self-sufficiency in power sector, an economy cannot achieve long run development. If to consider India in this aspect, it is in its developing state. The government has to implement policies, for achieving the set targets to develop the infrastructure to achieve growth. Infrastructure consists of power, roads, railways, dams etc. Policies/reforms has to be implemented in such a way that it can play an important role in pushing up the pace of multidimensional development of any economy.

From the very beginning India is making efforts to achieve growth in the power sector. Many acts and policies have been formulated time to time. For a long time, the Indian Electricity sector was guided by the Indian Electricity Act, 1910 and the Electricity (Supply) Act, 1948. The generation, distribution and transmission were carried out mainly by the State Electricity Boards in various states. For the purpose of distancing state governments from tariff determination, the Electricity Regulatory

Commissions Act was enacted in 1998. To reform electricity sector further by participation of private sector and to bring in competition, Electricity Act was enacted in 2003.

Union Power Ministry launched the Ujwal DISCOM Assurance Yojana (UDAY) Scheme for the financial turnaround and revival package of state electricity distribution companies (DISCOMs). It aimed to help to make DISCOMs financially and operationally healthy so they can supply adequate power at affordable rates.

The scheme focuses on four major initiatives which are;

- Reduction in interest cost of DISCOMs
- Improvement in operational efficiency
- Reduction in cost of power purchase
- Reinforcing financial discipline.

As per UDAY, with the objective of reducing the interest costs and deleveraging the DISCOMs, the states opting for UDAY shall take over 75% of total debt outstanding in the books of their respective DISCOMs as on September 30, 2015, over a period of two years gradually, i.e., 50% in first year and the remaining 25% in second year. The state governments were required to issue bonds to pay off the debt taken over. The balance 25% of DISCOM's total outstanding debt shall be converted by banks into longer dated loans or bond with interest rate not more than bank's base rate plus 10 bps or alternatively this debt (fully or partly) may be issued by DISCOMs as State guaranteed bonds at prevailing market rates. Recently, the government has extended the timelines for joining UDAY by one year from earlier stipulated date of March 31, 2016; in order to facilitate the joining of the remaining states which could not join the scheme earlier**.** Jharkhand was the first state to join UDAY Scheme. Later 32 states/UTs have joined this scheme. The state of Odisha and West Bengal are the only two states left who hasn't joined it yet.

The paper focuses on extensive study of literature to acquire knowledge about all the reforms, strategies and acts that were initiated and mainly focuses on the important reforms that were enacted to reduce the financial burden of distribution companies. Further through reviewing literature the study identifies the loopholes that are still increasing losses for the sector and states that all the strategies adopted for boosting the growth of power sector is a total failure and there is a long way in front of our government to reduce the losses of the Indian power sector which can only be achieved if stringent measures are adopted to reduce the losses and when the target of competition is achieved in its true sense.

Review of Literature

Barnett (1993) reviewed the literature related to aid donors for improving the power sector performance in developing countries in the paper "aid donor policies and power sector performance in developing countries". The community that are assisting in providing financial assistance to the poor performing

power sector across the world is currently reassessing its policies in light of shifting priorities and the difficulties of ensuring the sustainability of individual power sector investments within a difficult macroeconomic environment. The focus is primarily laid on the policies of the world bank. It studies the continuous decline in the performances of the power sector and the reasons behind it. Also, the present scenario is influenced by improving the efficiency and the need to respond to capital shortages with concern on environmental issues as well.The author concludes the paper by presenting focus on aid providing policies that completely acknowledges the importance of power sector in the diverse economy with proper emphasis on developing human resources instead of focusing on short-term expansion of the project cycle and use of migrant staff.

Purkayastha (2001) discusses the aims mentioned in the draft of electricity bill 2000 and its far-reaching impacts on curtailing the role of the state in the electricity sector in the paper "power sector policies and new electricity bill: from crisis to disaster". The author argues that deregulation has failed in many countries where small consumers are bearing the burden. The objective that were laid before the reform period still holds importance in present and should form the basis of setting reforms further. Free market in electricity is a dream in India where there are shortages. The focus should be laid on strengthening the grid system so that best possible use can be made of installed capacities.

Singh (2006) presents a study on current issues and prospects of power sector reform in India. Power sector reforms were implemented in the country when the sector was disturbed by financial losses and increasing subsidy burden. Though there were increasing investment in the sector that wasn't able to keep pace with the increasing demand for electricity. The paper discusses the major policy changes that took place in the early 1990s. The study evaluates the major reforms that took place in respect of the regulatory changes. At last, the paper discusses the hurdles that are involved in introducing competition in the power sector basically through the development of a market for bulk power.

Majumdar *et al* (2016) attempts to discuss the importance of PEER (Performance Excellence in Electricity Renewal), a tool for utilities and system operators for a comprehensive performance assessment of their system and for making subsequent improvements to achieve upper levels of performance. India stands at third position when it comes to production of electricity with an installed capacity of 306 GW. Despite the low electricity tariffs the per capita consumption of electricity continues to decrease. The power sector still suffers from major issues like demand supply shortages on a regular basis, the poor financial condition of distribution companies, etc. With an energy mix dominated by fossil fuel-based generation, the

power sector in India has a major role in affecting the environment, therefore for achieving the goal of sustainability, a framework that includes measurement, monitoring and improving the performance of the power sector is very necessary.For identifying the performance gaps, the comparison between projects of India and United States of America is presented in the study.

Verma (2017) discusses the history of development that took place in the power sector focusing on the unit sizes of thermal turbo-generators which gradually increased from about 30 MW in 1947 to 660 and 800 MW at present. Previously the focus was on capacity addition to meet the increase in demand but in the last two decades the emphasis has been laid on the efficiency improvement to reduce the fuel consumption and CO2 reduction. Recommendations have been made towards the best practices for operation of the supercritical units in most optimal manner. Suggestions are also made to improve the situation. The action plan for climate change is referred to in connection with the strategy to adopt the supercritical technology in the overall improvement of the sector.

Chakraborty et al. (2018) in their paper “will UDAY brighten up the Rajasthan’s finances" discusses the policy implications of the scheme. Though this one-time intervention made both debt and deficit measures more comprehensive, it has raised many challenges that include comparability of deficit across states and long-term fiscal implications of the power sector debt on state finances.

Sharma *et al*. (2018) authored the report "Electricity sector reform in Uttar Pradesh" in which they presented an approach of tariff adjustments and the Ujjwal DISCOM assurance yojana plan. Among households, surveys were conducted with 1,917 households, split equally between urban and rural areas. For surveys in rural areas, agricultural landholders were selected, from these landholders, 413 farmers were included in the survey, out of that 284 were aming those who held diesel pumps for irrigation and 129 were having electric pumps for irrigation purpose, interviews were conducted with the remaining 67. Interviews with 34 commercial and 31 industrial consumers involved in industry and commerce were conducted. Findings from the survey show significant statistical estimates for rural households and agricultural landholders, on the other hand the estimates for urban households, industry and business were only indicative. A temporary assessment of UDAY was conducted to check the Uttar Pradesh’s achievements against the targets set in the scheme and interviews of twelve officials of distribution companies and the state government.

Based on the literature survey following problems can be seen:

Performance of DISCOMs

Over the past few years, market transformations have been made in India's power sector. Efforts are made to create self-sufficient energy market infrastructure; vertically integrated utilities have been unbundled and new joint-stock companies have been established in various areas of business; a whole cluster of private market-oriented professionals has emerged. No doubt, the changes in the power sector industry has made significant impact on financial health of DISCOMs, allowing them to utilize the funds in other infrastructure activities, and avoid unreasonable tariff hikes.

High AT&C Losses

AT&C losses comprises of technical losses which may occur due to overloading of existing lines, poor repair and maintenance of equipment, etc., and commercial losses which happens due to low metering/billing/collection efficiency, loss by theft, etc. AT&C losses in India have been persistently high over the years. It can be seen through the following table:

Power Supply Position

The above chart makes it clear, that there is consistently fall in deficits faced by Power sector. But the gap between average revenue realized and average costs incurred is not coming to zero.

Table 1: The power supply position in the country during 2009-10 to 2018-19:

Year	Energy				Peak			
	Requirement	Availability	Surplus (+)/deficits (-)		Peak Demand	Peak Met	Surplus (+) / Deficits (-)	
	(MU)	(MU)	(MU)	(%)	(MW)	(MW)	(MW)	(%)
2009-10	8,30,594	7,46,644	-83,950	-10.1	1,19,166	1,04,009	-15,157	-12.7
2010-11	8,61,591	7,88,355	-73,236	-8.5	1,22,287	1,10,256	-12,031	-9.8
2011-12	9,37,199	8,57,886	-79,313	-8.5	1,30,006	1,16,191	-13,815	-10.6
2012-13	9,95,557	9,08,652	-86,905	-8.7	1,35,453	1,23,294	-12,159	-9.0
2013-14	10,02,257	9,59,829	-42,428	-4.2	1,35,918	1,29,815	-6,103	-4.5
2014-15	10,68,923	10,30,785	-38,138	-3.6	1,48,166	1,41,160	-7,006	-4.7
2015-16	11,14,408	10,90,850	-23,558	-2.1	1,53,366	1,48,463	-4,903	-3.2
2016-17	11,42,929	11,35,334	-7,595	-0.7	1,59,542	1,56,934	-2,608	-1.6
2017-18	12,12,134	12,03,567	-8,567	-0.7	1,64,066	1,60,752	-3,314	-2.0
2018-19*	3,25,428	3,23,418	-2,009	-0.6	1,71,973	1,70,765	-1,208	-0.7

* Upto June 2018 (Provisional), Source : CEA

Discussion

To make UDAY scheme successful is a tedious task for government's vision of supplying affordable and accessible '24×7 power to all' and achieving economic growth. Efforts are continuously put towards, affordable power supply. But it cannot be achieved without turnaround in the operational and financial performance of DISCOMs. In addition to it, burden on bank loans might make DISCOMs financially stressed and DISCOMs has the potential to seriously impact the banking sector and the economy at large. The states have to forgo their claims on the IPDS and DDUGJY grants if the operational milestones under the UDAY are not achieved and also, the states have to bear a part of future losses of DISCOMs, if any, in a graded manner. To ensure performance of DISCOMs under UDAY, monthly monitoring mechanism has been formulated under the tripartite Memorandum of Understanding (MoU) signed between the DISCOMs, states and the MoP. CMD/MD of the respective DISCOMs shall monitor the performance of DISCOM on monthly basis based on financial, operational and managerial parameters.

As on the basis of performance of DISCOMs, prediction can be made, that DISCOMs will be profitable by FY19. But achieving this target for UDAY, may not be an easy affair, especially the reduction of AT&C loss by FY19. Achievement of other target likes reducing power theft, installation of smart meters, improvement in collection of dues, and upgradation of power supply infrastructure will require strict and aggressive measures by states. As a whole, the success of UDAY scheme would remain dependent upon the active participation, effective implementation and monitoring by all stakeholders, in the absence of which, it may end up becoming a financial revival scheme instead of a comprehensive reform measure.

Conclusion

From the above discussion we can conclude that in order to reduce the financial burden of power sector, DISCOMs must operate efficiently. Difference between average cost of supply and average revenue realized should be reduced by enhancing cost recovery. AT&C losses should be reduced by a considerable amount by establishing smart meters in every state and by reducing the gap between billing and collection efficiency. Implementing the above-mentioned solutions can help the power sector to reduce it losses and to move toward the path of financial sustainability.

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