

# Electricity distribution sector in India: key challenges for service to customer & way out

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## ABSTRACT

*The power sector is facing a plethora of problems in all the three basic areas of its functioning: generation, transmission, and distribution. The amount and quality of power that is being generated has its own set of inadequacies and travails. Then there are the technical glitches during transmission of power, along with losses during transmission. However, the spotlight now is on the distribution of power. What affects ordinary citizens/ electricity customers most is enhanced service quality and customer satisfaction. Distribution is a sick giant with doddering infrastructure, mismanagement and misuse. Thus, the objective here is to study the challenges faced by electricity distribution sector in India and suggest the possible solutions. To examine all real problems a literature review methodology approach has chosen in this study. Findings show the major reasons for service quality and customer satisfaction issues in distribution sector and probable measures for all issues for distribution sector which affect electricity customers. In addition, the paper briefly discusses the recommendation.*

**Key words:** electricity distribution, power sector, customers, service.

## 1. INTRODUCTION

The most important problem in the power sector is the continued unviability of the distribution segment reflected in very high transmission and distribution (T&D) losses, including pilferage and also uneconomic tariff for some categories of consumers. As a result, the financial position of the distribution companies in the state, is severely strained and this is the cause of inadequate investment by the state sector both in generation and in distribution. It also limits the initiative of private investors to invest in generation owing to problems anticipated about the capacity of the unviable public sector distribution companies to pay for power.

## 2. NEED OF THE STUDY

The State Electricity Boards (SEBs) have, in the past, played a significant role in the generation and supply of power. However, the present financial health of the SEBs is not sound, to say the least. This is mainly due to uneconomic tariffs for agriculture, high T&D losses (which often disguise large-scale theft), and low billing and collection efficiency. The financial non-viability of the SEB is at the root of the inefficient running of the organization, and this is in turn because of unrealistically low tariffs. The financial crunch faced by the power industry, compounded by inefficiency and corruption, contributes significantly to the crisis of electricity distribution sector in India today. Thus, there is need to study electricity distribution sector in India, the challenges & way out.

## 3. METHODOLOGY

To investigate all genuine issues researcher has chosen a literature review approach methodology in this study. The secondary data was collected through many referred journals, data bases like KNIMBUS, PROQUEST, EBESCO, etc, Industrial reports, Government industrial surveys, Handbooks, Various power sector websites etc.

## 4. FINDINGS

Findings about key challenges of electricity distribution sector in India & possible solutions are presented in the form of the problems and solutions.

### 4.1 Key challenges

Following are few key challenges in Indian electricity distribution sector for service to customer.

#### 4.1.1 Poor Performance of State Electricity Boards (SEBs)

Financial difficulties of the SEBs lie at the heart of the problems of the power sector. The financial position of most state electricity utilities has deteriorated quite rapidly. Owing to inadequate revenues, all state utilities have defaulted in

payments to central PSUs, including National Thermal Power Corporation (NTPC), Power Grid Corporation, National Hydroelectric Power Corporation (NHPC) and Coal India Limited. The dismal financial situation of the states and their inability to make the required investments to meet the growing demand is becoming the bugbear of India's power scenario.

#### **4.1.2 High Transmission and distribution (T&D) losses**

T&D losses correspond to electricity produced but not paid for. T&D losses are caused by a variety of problems, including energy sold at low voltage, sparsely distributed loads over large areas, inadequate investments in the distribution system, improper billing and theft.

#### **4.1.3 Non-remunerative tariff structure**

Pricing across the country has come to such a pass that tariffs provide only about 78% of the total cost of supply [1]. It is this very non-remunerative tariff structuring that has brought the SEBs to near financial ruin, coupled of course with their inherent organizational inefficiency. The problem with remuneration is brought on by inefficient collection of money, a lack of metering, theft of power, and other basic issues that create problems in the power sector and also affect electricity pricing for customers. Adding to the problem of low tariffs is the fact that collections are also carried out in a shoddy, disorganized manner.

#### **4.1.4 Power subsidies**

It has been seen that wealthy farmers are able to hide income, engage in fictitious paper-based division of assets and use local political capital to ensure that any targeted power subsidy is most unlikely to reach its intended beneficiaries. Agricultural electricity customers resist metering of pump sets, therefore utility revenues deteriorate and less resources are available for maintenance and rehabilitation of distribution systems. This result in sub-optimal planning, low quality of works and further forces utility to consider load shedding thus finally effecting electricity customer in urban areas.

#### **4.1.5 Gap between user charges and the cost of supply**

In the ultimate analysis, the basic problem being faced by the power sector is the gap between user charges and the cost of supply. Despite reform efforts, the gap between the cost of supply and average tariff has actually worsened over recent years.

#### **4.1.6 Over-staffed institutions**

There is India's age-old problem of over-staffed institutions. Overstaffing is rampant. This is 150 times the number employed for generating a similar quantity of power in the United States [2].

#### **4.1.7 Non-implementation of new plans and projects**

Intensive studies and surveys are carried out, huge government committees are set up, and the public exchequer put to great expense to devise paper work for all kinds of new plans and projects. But implementation is India's biggest weakness. For instance, close to two decades ago, energy audit surveys by an inter-ministerial working group showed that the industrial and agricultural sectors could save 25 % of the energy they were then using to produce electric power while the transport sector could save 20%. But this saving has not been realized.

#### **4.1.8 Deficiencies in revenue collection of utilities**

The main source of revenue of utilities is from sale of electricity to consumers which require prompt and correct billing and realization. This is particularly important since in power sector, consumers pay after availing the service. Apart from energy losses, deficiencies in proper billing and revenue collection for the energy used seriously affect the financial health of utilities. It is all along recognized that the performance in this segment is much below the desired level and the situation is often aggravated by political interference. The revenue raising segment of the utilities suffers from basic deficiencies in terms of high energy losses and poor billing, revenue collection and financial management.

#### **4.1.9 Scope for Commercialization of Power Sector**

Among all infrastructure facilities, power possesses some inherent advantages from the viewpoint of commercialization, principally the marketability of the products and services and the availability of basic organizational structures for their marketing. In addition, the power sector is characterized by a predictable and stable pattern of demand and high level of private investors' interest, both Indian and foreign. Despite such advantages, the task of commercialization of power projects in the current state of the sector is extremely complex .

#### **4.2 Solutions/ way out**

Following are few solutions and way out for better performing distribution sector.

#### **4.2.1 Strict independent regulation**

The basic mandate of the CERC should be to strictly regulate Electricity Distribution and tariffs. Private investment can be sanctioned by the central regulator too. The central government and some state governments can plan bills and ordinances to make power theft a cognizable offence. Delinquent boards should also be charged with penalties. In fact, the CERC has to come up with more grid code and penalties in reality.

#### **4.2.2 Reduce investment shortfalls**

The power sector is a capital intensive industry that requires heavy fixed costs. Right now, there are huge investment shortfalls. Privatizing blindly may not be the solution, for after all the independent regulator also cannot be expected to perform miracles against half a century of losses and inefficiency.

#### **4.2.3 Privatization**

The Ministry of Power need to now keenly follow the process of privatization of the electricity distribution sector in the states. A special committee has to be set up to help states go ahead with privatization. Policy-based problems, cash hurdles and other such obstacles in the path to privatization can be ironed out by this committee. The government should introduce the concept of competition in the supply of electricity by utilities. It hopes to initiate this to entrust the states with sufficient freedom and flexibility permitting them to set their own pace and priorities.

#### **4.2.4 Acceleration of power reform**

The core of sector reforms lies with distributing generated electricity. Of the total energy generated, only 55% is billed and 41% is realized. This need to be changed. The government needs to accelerate power reform by privatizing electricity supply. Inviting open competitive bids may work because number of bidders will come forward.

#### **4.2.5 Periodical revision of Power Sector Reforms**

The power reform roadmap is required to be revised periodically to reduce distribution segment issues which will aid develop India and grow its economy. There is a need to establish a special task force for distribution segment, with known experts and industry hand. The focus of reforms should be on improving governance and incentive mechanisms in the sector [3] and meeting energy service needs rather than on merely attracting investments for centralized capacity addition.

### **5. DISCUSSIONS**

In India, peak shortages are close to 14% and there have been occasional surpluses of electricity to the tune of 200 MW that can go unused because of constraints on transmission and distribution. These include technological glitches, which hinder efficient transmission and distribution, power theft and misuse. Across India, theft of power between generation and supply run as high as 20%-40%. The Ministry of Power assesses that outright theft alone causes losses of 200 billion rupees annually. According to experts, even the often-quoted national average of 21% T&D losses is an underestimate of what is actually lost between the generation and final supply of electricity. Studies at the state level have shown that the actual figures might even be double the official figure. In Singapore, such losses amount to 9.1 %, and in the Republic of Korea, 10.2%.

### **6. RECOMMENDATIONS**

There are physical inefficiencies of the system to distribute power and the prospect looks bleak. But if the changes on the anvil are anything to go by, relief may be imminent. All the state regulatory commissions must work on approach to make the whole system healthier and more efficient. Planning Commission need to recommend a one-time settlement of dues payable by SEBs to Central Public sector Undertakings (CPSUs) and dues from the CPSUs to the state power utilities. There must be schemes to facilitated the settlement of outstanding dues.. The government has to bring down T&D losses. The latest models show that by the end of the decade, T&D losses can easily be cut down to as low as 10% in most states The states also need to seriously work on regular energy auditing and 100% metering. Reduced losses are easily achievable by a revamp in infrastructure, movement of transmission lines to higher voltages and increased accountability of the utilities. Government can introduce what policy-makers optimistically call the new order — competition in supply, deregulation of electricity distribution, a restructuring of industry, the incorporation of consumer choice, and applications of the latest developments in IT. Policymakers, investors etc. often grapple with a variety of energy sector management issues including energy access for the poor, investment, energy efficiency, environment, renewable energy and regulation. Adequate attention of government would help solve management issues [4]. The perpetual poor condition of the sector calls for a proactive result oriented system to address the issues and not resort to committees, policies and aimless bureaucratic deliberations [5]. Price reform is moreover needed for economic pricing of the transaction at each level.

## 7. CONCLUSION

It would do India good to simply try and implement what is all there on paper. Concerted efforts are needed to channelize adequate investment to ensure the completion of the national grid. This would enhance the inter-regional transfer of power and facilitate the optimum utilization of existing assets. But any scale of reform would be useless if it cannot be sustained and improved over time. For a major electric distribution, removal of the deficiencies can translate utilities into a level of financial performance that can be considered self-sustaining. However, the industry, political and entrenched government establishments aren't in synchronizations on these workings. With the country witnessing economic expansion and the industrial sector growing by leaps and bounds, the pressure on the distribution segment to deliver regular and cheap power would be unavoidable. Revised policies, procedures and work practices and high levels of investment in utility infrastructure could become drivers for a successful transition of power sector for accelerating economic development and higher standards of living.

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