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NATIONAL CONFERENCE ON

10 YEARS OF THE ELECTRICITY ACT, 2003

A Critical Review

Knowledge Partner

KNOWLEDGE PAPER

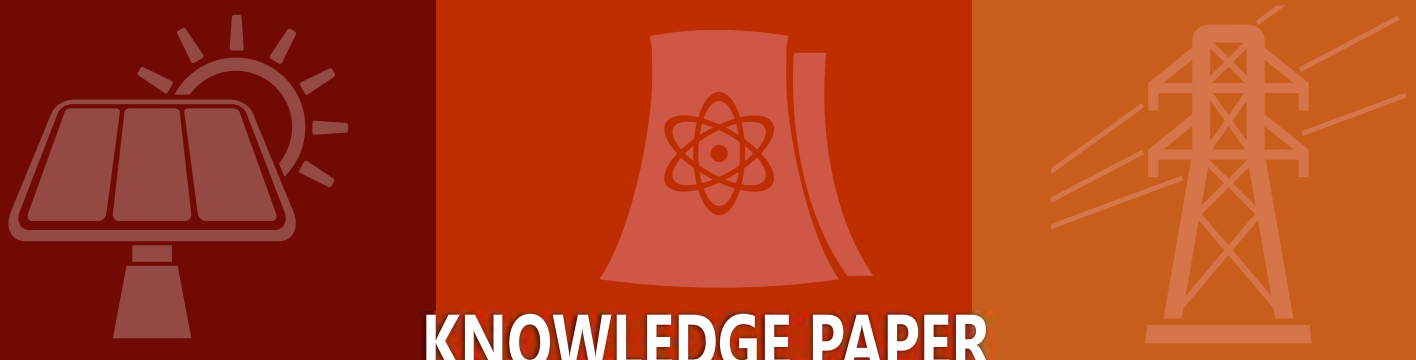
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FOREWORD

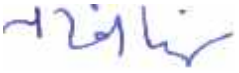


Electricity is the backbone of any economy. An affordable and reliable supply of electricity is essential for fuelling the overall economic and social growth of a country. This relationship is even more pronounced for a developing economy like India. Keeping electricity at the centre stage, the government, a decade ago, enacted the Electricity Act 2003. For over a decade the Act has been the most significant piece of economic, technical, social and political legislations that the country has seen in recent times

The Act modernized the existing legal framework by replacing three separate legislations, viz., the Indian Electricity Act 1910, Electricity (Supply) Act 1948 and Electricity Regulatory Commission Act 1998. Apart from providing guidelines for restructuring of the State Electricity Boards (SEBs), the Act brought about a qualitative transformation of the energy sector through a mixture of concrete changes and mandates for future policy formation. What is remarkable about the Act is its clear intent to create an environment conducive for the development of the power sector in the country, promoted power trading and competitive bidding, protect consumer interests, rationalize electricity tariff and subsidies and significantly reduced barriers for private entry into generation.

The Act has been in existence for about a decade. The power sector has progressed tremendously in this period, with many success stories. While the intent of policy has achieved its target, there are some lapses in its implementation. A need was felt among stakeholders, to ascertain if this legislation needs a review in context of present day realities. It was with this realization that FICCI is organizing a National Conference on "10 Years of the Electricity Act, 2003: A Critical Review".

We are pleased to have with us AF Mercados EMI as the knowledge partner for this initiative. This background paper gives an overview of the Act, its objectives, leading policy initiatives and success stories. The paper also critically examines the areas where the Act failed to achieve its milestones with the intent to list factors leading to such undesirable outcomes. I am sure that the paper will generate debate and discussion among stakeholder and will act as a stimulus for comments and suggestion for the review of the Electricity Act, 2003



Dr. A Didar Singh
Secretary General
Federation of Indian Chambers of Commerce and Industry

ABBREVIATIONS

AD	Accelerated Depreciation
APDRP	Accelerated Power Development & Reforms Programme
APL	Above Poverty Line
ARR	Aggregate Revenue Requirement
AS	Ancillary Services
AT&C	Aggregate Technical and Commercial Losses
BPL	Below Poverty Line
CAGR	Compounded Annual Growth Rate
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commissions
CESU/CESCO	Central Electricity Supply Utility of Odisha
CGRF	Consumer Grievance Redressal Forum
CIL	Coal India Limited
DERC	Delhi Electricity Regulatory Commission
FI	Financial Institution
FIT	Feed in Tariff
FOR	Forum of Regulators
GIS	Geographical Information System
GoI	Government of India
GW	Giga Watt
HVAC	High Voltage Alternate Current Lines
HVDC	High Voltage Direct Current Lines
IEX	Indian Energy Exchange
IPTC	Independent Private Transmission Company
ISTS	Inter-State Transmission System
IT	Information Technology
JNNSM	Jawaharlal Nehru National Solar Mission

JVC	Joint Venture Company
KV	Kilo Volt
kWh	Kilo Watt Hour
MNRE	Ministry of New and Renewable Energy
MU	Million Units
MW	Mega Watt
MYT	Multi Year Tariff
O&M	Operation and Maintenance
OTC	Over The Counter
PGCIL	Power Grid Corporation of India Limited
PPA	Power Purchase Agreements
PPP	Public-Private Partnerships
PXIL	Power Exchange of India Limited
R-APDRP	Restructured-Accelerated Power Development & Reforms Programme
RE	Renewable Energy
RfP	Request for Proposal
RfQ	Request for Qualification
RHH	Rural Households
RGGVY	Rajiv Gandhi Grameen Vidyutkaran Yojna
RLDC	Regional Load Dispatch Centre
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
SLDC	State Load Dispatch Centre
SOP	Standard Operating Procedure
T&D	Transmission and Distribution Losses
The Act	Electricity Act, 2003
TPC-D	Tata Power Distribution Company
UI	Unscheduled Interchange
UMPP	Ultra Mega Power Projects
UP	Uttar Pradesh

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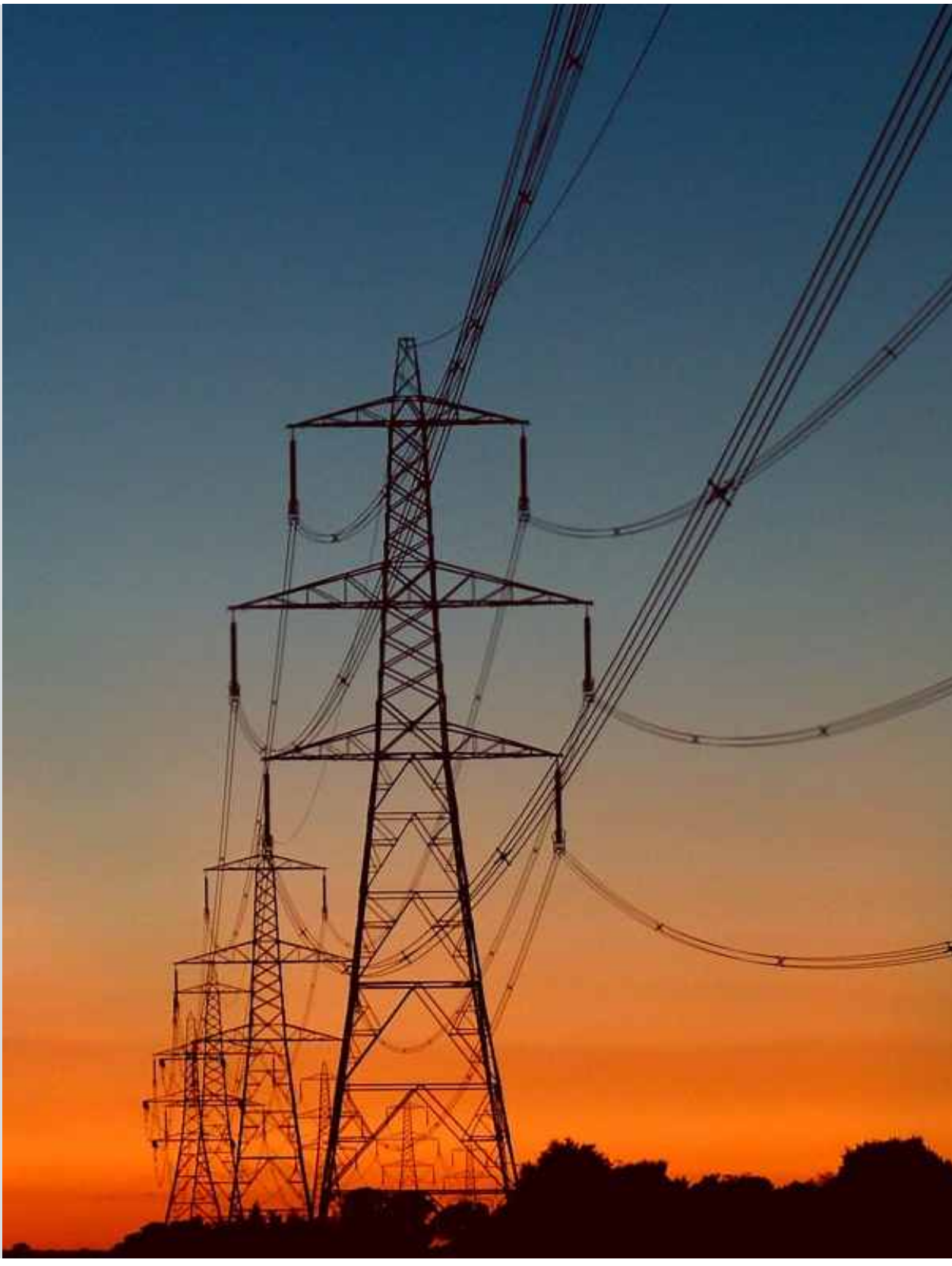
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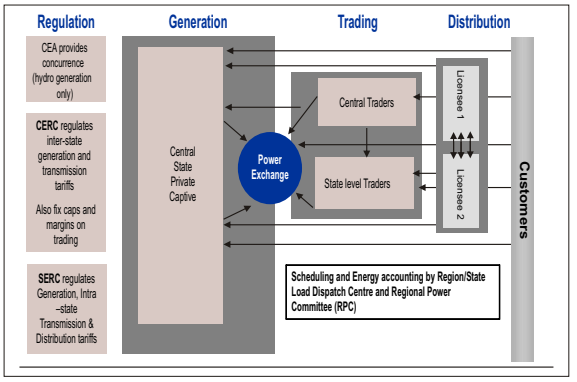
10 YEARS OF THE ELECTRICITY ACT, 2003

A Critical Review

1. CONTEXT OF THE PAPER

The Electricity Act, 2003 (the Act) was indeed a ground breaking development in the history of the Indian power sector, modernizing the legal framework by replacing three laws viz. Indian Electricity Act 1910, the Electricity (Supply) Act 1948 and the Electricity Regulatory Commission Act, 1998. The Act consolidates the erstwhile laws relating to generation, transmission, distribution, trading and use of electricity. It also includes measures conducive to development of the electricity industry, by promoting competition therein, protecting the interest of consumers, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, etc. The Act aimed to bring about a qualitative transformation of the energy sector through a new paradigm and is a mixture of concrete changes and mandates for future policy changes.

Figure 1 : Power Market Structure: India



Source: AF Mercados Analysis

- The Act significantly reduces barriers for private entry into generation. It eliminates licensing requirements for generation, except hydropower (above a certain size specified by the Government of India). Captive generation is freely permitted, as are dedicated transmission lines and is also exempted from surcharges for access to the grid.
- The Act requires that all transmission utilities provide non-discriminatory open access to their system from the outset. Open access in distribution was to be permitted in phases. Subsequent changes in the law mandated open access from January, 2009 for all customers with demand of 1 MW and above.
- In addition to encouraging private participation and planning for open access, the Act proposes a new tariff framework based on competitive bidding (Section 63) to form the basis for generation and transmission procurement.
- The Act also promotes power trading and competitive markets, and mandates policy and regulation to promote the same.

- The Act also provides guidelines for restructuring of the State Electricity Boards (SEBs), and provides the framework for division of the SEBs into separate generation, transmission, system operation and distribution companies. To ensure non-discrimination in open access and other operations, the Act bars transmission companies and system operators from trading in electricity.

- The Act mandates that all states form State Electricity Regulatory Commissions (or Joint Electricity Regulatory Commissions for smaller states and Union Territories). Regulators are provided a very wide mandate include determining of tariff, regulating procurement of energy, facilitating open access, promoting efficiency, adjudicating on disputes and in general regulating the sector in an independent, fair and transparent manner. The Act has specific provisions to ensure independence of the regulatory commissions.

- The Act promotes consumer protection by mandating that distribution licensees set up a forum for addressing consumer complaints in accordance with guidelines to be specified by the State Regulatory Commissions. The State Electricity Regulatory Commissions (SERCs) are also required to institute penalties for deviation from service standards.

- The Act also sets out a clear mechanism to ensure that adequate avenues for appeal of regulatory orders. The Appellate Tribunal, constituted per the Act provides an avenue for stakeholders to seek redressal on regulatory awards at the first instance before approaching courts of law.

- Finally, the Act provides for development of the sector through national policies for the sector on various matters including on tariffs, rural electrification, etc. The mandate for policy formulation to the Central Government is wide ranging. Although the policies are not mandatory for the states to follow, there is a strong direction that emanates from them, which provides for a framework for unified development across states.

The above are but the salient features of the law and detailed provisions of the Act make it one of the most significant pieces of economic, technical, social and political legislation that the country has seen in recent times. The impact has also been noteworthy, as discussed below:

- Due to strong policy Generation gained largely and witnessed significant participation from private players. The result being that the magnitude of capacity being added each year has increased manifold when compared with previous plan periods. The introduction of price based competitive bidding for power projects and the use of new and more advanced technologies (super critical) has indeed rejuvenated the entire generation segment. Renewable energy is slowly assuming a central role in the overall energy mix. Favorable Renewable Energy (RE) policies and incentives to developers are driving growth and private participation in the renewable sector. The last five years has witnessed capacity addition of 3000 MW per annum and going forward; the target is envisaged to be 5000-6000 MW per annum.

- With the enabling framework in place, the transmission sector has also been considerable and is now moving towards higher voltage levels up to 1200kV and a higher degree of automation. Entry of the private sector through competitive bidding has so far been a reasonable success. The introduction of Regional/National Load Dispatch Centers (RLDC/NLDC) for scheduling and dispatch of power, and the issuance of grid codes as mandated by the Act has meant better grid discipline and control. From a predominantly regional system it has quickly evolved into a national transmission system.

- The provisions of the Act rationalizing the tariff setting process, safeguarding consumer's interest and focusing on quality and reliability of supply, has made the sector more transparent and consumer centric, and has resulted increased investor interest. However, as compared to generation and transmission, developments in distribution have been slower.

- The Act has paved the way for short term trading markets, recognizing trading as a licensed activity. With the establishment of Indian Energy Exchange (IEX) and Power Exchange India Limited (PXIL), collective platform based transactions through electricity markets have also taken off. The regional variations in power demand and supply create an ideal situation for power trading, enabling better capacity utilization. Short-term markets today account for approximately 9% of all capacity traded.

- The Act has opened up the power sector to different provisions of competition and power markets. Open Access has been central to these developments. The Act has enabling features that make a wide range of trading options possible. One basic feature of the Act is competition at bulk and retail levels through direct contracting of generation capacity by distributors and customers, alternate suppliers and parallel networks.

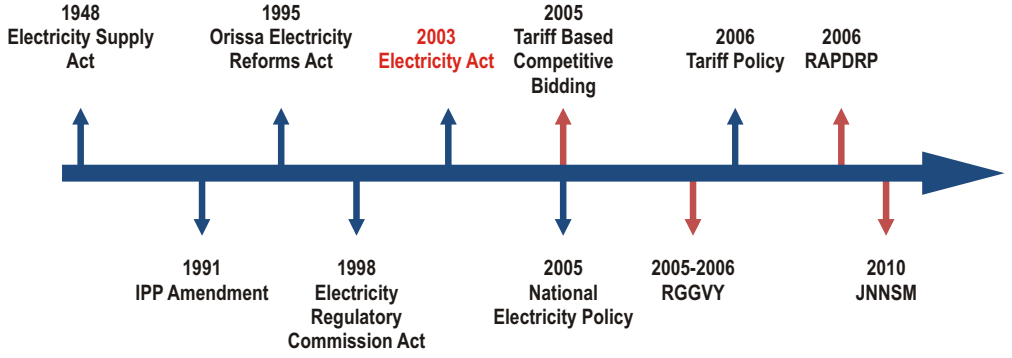
However, recent years have seen erosion of some of the early gains. Beyond these reforms the sector still demonstrates a wide variety of challenges, which need immediate attention. Utilities in the power sector still struggle on governance and transparency. Massive defaults by distribution utilities are threatening to impact banking and the financial services sector, Open Access, which is a fundamental building block of the competitive market framework, in practice is facing significant challenges. Simultaneously, crises in coal and gas supplies have stranded a very significant proportion of the capacity created.

Amid all these concerns the power sector presents a huge opportunity for private sector participation in transmission, distribution and use of evolving renewable energy generation, but only if some of the core challenges are addressed. The focus of this paper is to provide an objective assessment of 10 years of implementation of the Act and identify some of the areas that need remedial action in order to put the electricity sector on the right track and restore investor interest in this critical driver of the Indian economy.

2. GROWTH OF THE ELECTRICITY SECTOR IN THE PAST DECADE

The electricity sector in India has witnessed rapid and unprecedented growth in the last decade across the value chain. Much of this growth can be attributed to the impact of the Act, which has opened up new growth avenues and service delivery models. Backing up the law, policies, guidelines and programs of the Governments at the Central and State levels have introduced new development and operating structures in the sector that are noteworthy.

Figure 2: Milestones in the Indian Electricity Sector Policy



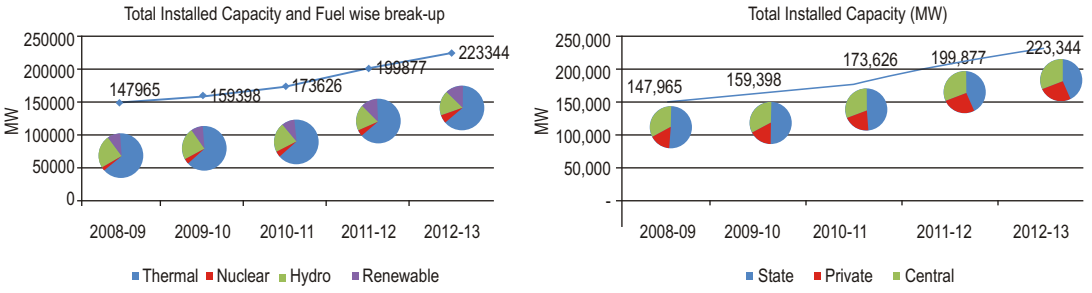
The policies of the Government of India (GoI) have a wide coverage ranging from competitive procurement, technical augmentation of the system for efficiency in operations, improved access and promotion of clean energy. The following sub-sections describe and discuss some of these developments.

2.1 Generation Capacity Addition

Generation capacity in the country is steadily increasing, largely driven by the signalling impact of the Act that has significantly improved the generation investment climate. As per Section 7 of the Act, "Any generating company may establish, operate and maintain a generating station without obtaining a license under this Act if it complies with the technical standards relating to connectivity with the grid".

The above provision makes Generation a de-licensed activity except hydro based generation, primarily to encourage investment from private sector in the generation sector. With the introduction of competitive bidding, the criteria for selection of projects have moved to a more transparent and efficient bidding process. New market opportunities have ushered a new wave of private investments with an addition of ~ 42000 MW in capacity. The share of the private sector investment has been increasing substantially. From about 17 GW in 2007, to 62 GW in 2012-13 and by 2022 it is expected to account for 45% of the total generation capacity in the country.

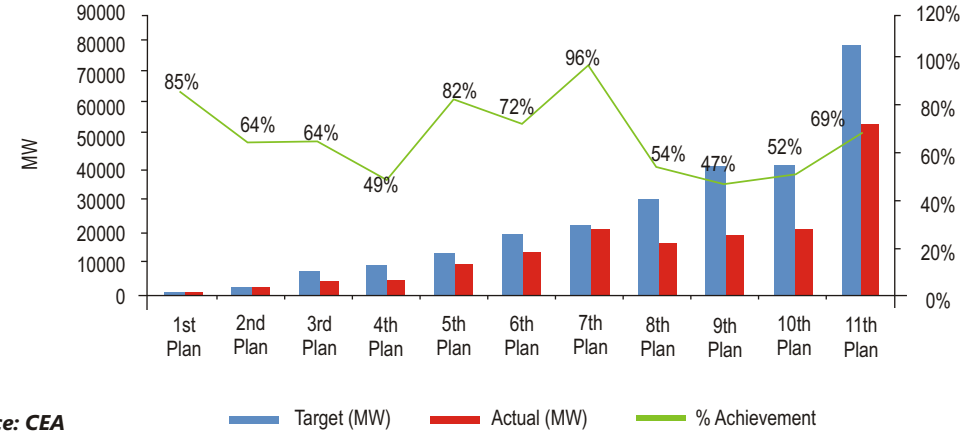
Figure 3: Technology and Ownership Mix of Installed Capacity



Source: CEA

Despite the above, the capacity addition targets for every 5 year plan have remained unachieved owing to several impediments like delays in equipment supply, inability of manufacturers to meet the committed time schedules, environmental clearances, uncertainty in fuel supply etc.

Figure 4: Capacity Addition Target, Actual and % Achievement in Different Plan Periods

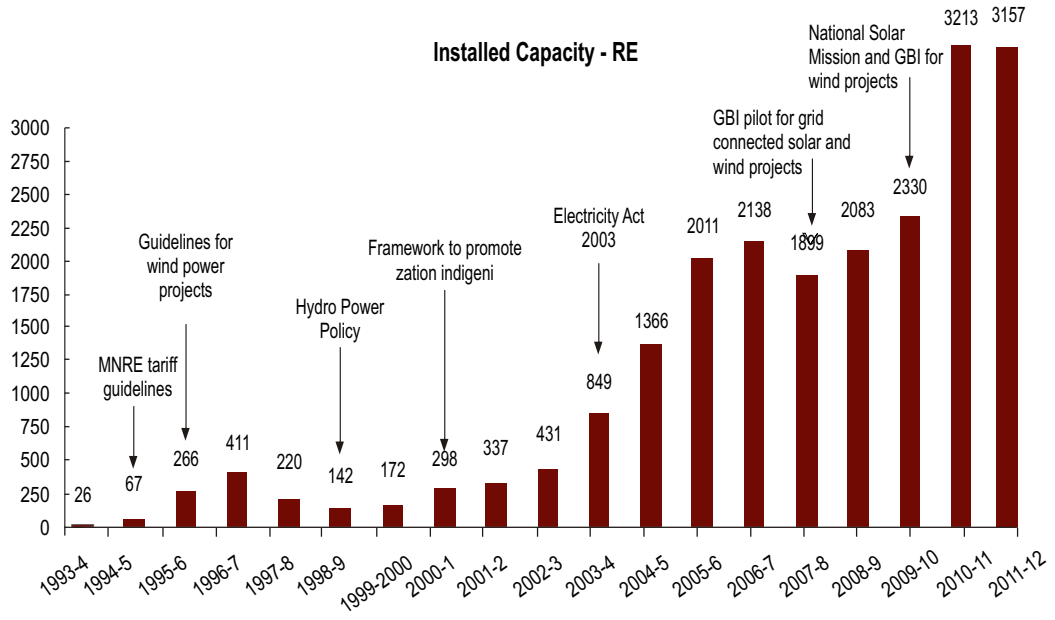


Source: CEA

The current fuel shortage (both coal and gas), in the country, has resulted in capacity being stranded, Figure 4 shows the performance of capacity addition in various plan periods.

As mandated by the Act, RE is slowly assuming a central role in the overall energy mix. Conducive RE policies and incentives to developers are driving the growth and private participation in renewable sector.

Figure 5: RE Capacity Addition

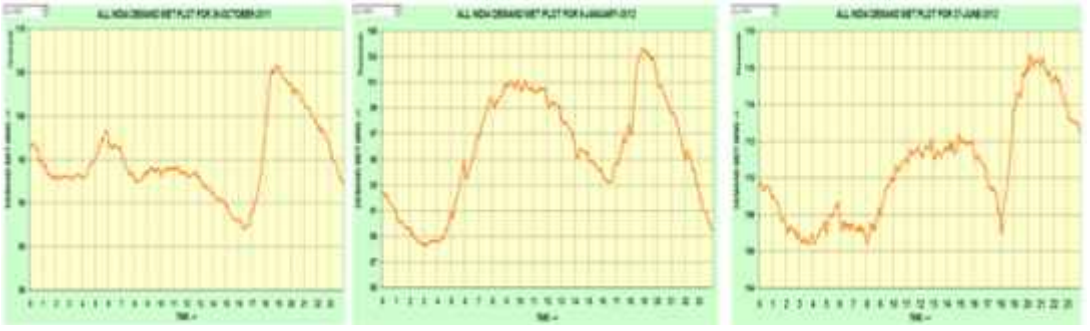


Source: AF - Mercados EMI Analysis

The National Solar Mission has envisaged 22GW of installed capacity by 2022. Incentives such as Renewable Energy Certificates (RECs), Generation Based Incentives and Feed in Tariff (FiT) are supporting generation capacity addition at central and state levels. Accelerated Depreciation (AD) and tax holidays for 10 years within the first 15 years of operation have been the most fundamental driver for investments, particularly for wind and more recently for solar. At this time there is some degree of lack of clarity on these promotional policies. If restored, there is a likelihood of continued growth of the renewable energy sector.

Capacity addition in the XIth Plan period has been considerably higher than past Plans and the capacity mix was dominated by either base load generation or intermittent sources like wind and solar. One of the key challenges for India however, continues to be how to meet ever-growing peak demand. As the graphs below shows, in-spite of load shifting in the agriculture and suppression of demand through load shedding/rationing, there are still significant peaks load requirements.

Figure 6: Illustrative Load Profiles in the Indian Power System



Source: Task Force on Peaking and Reserve Power

Due to their flexible operations and quick start and stop functions Gas and Hydro are the best sources to manage peak load. However, erratic gas supplies and long gestation periods of hydro power plants have led to slow growth rates in capacity addition. There is no conscious effort to plan for managing peak power requirements and unless this is addressed, the country will continue to face peak deficits.

As mentioned previously the generation sector has also been severely affected by coal and gas shortages. The coal demand in India is increasing at a CAGR of 8.3% and coal production is growing at CAGR of 3.8%. Due to inability of Coal India Limited (CIL) to augment domestic coal production and the high cost of imported coal, capacity is being stranded for want of fuel. Delays in commissioning coal blocks on account of issues related to land acquisition and environmental clearance has further hindered growth. The situation for gas is no different to that of coal. Where the coal sector suffers from low production, gas is almost in its final stages of depletion. There is already a shortage of gas for existing power plants (gas based generation plants are currently running at capacity utilization of around 55%) with limited availability for future capacities. More than 20,000 MW of capacity is presently stranded and this statistic is only expected to increase as and when new plants are commissioned.

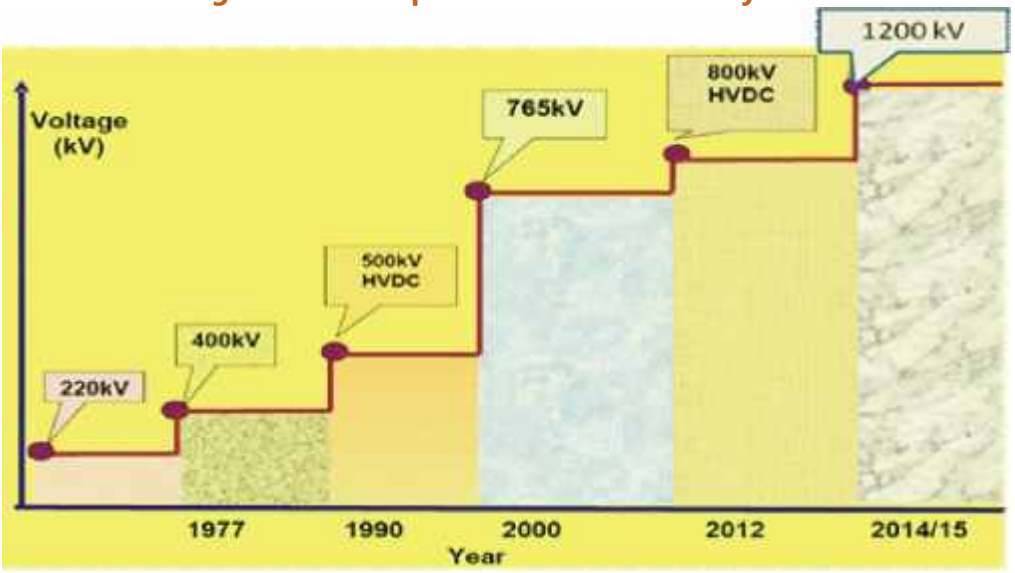
2.2 Transmission

As per Section 25 of the Act, "the Central Government may, make region wise demarcation of the country, and, from time to time, make such modifications therein as it may consider necessary for the efficient, economical and integrated transmission and supply of electricity, and in particular to facilitate voluntary interconnections and co-ordination of facilities for the inter-State, regional and interregional generation and transmission of electricity."

The various provisions of the Act including the above provide the necessary policy framework for establishment of an inter-state transmission system (ISTS), interconnection of these to form Regional Grids and going forward to form an interconnected National Grid. The Act also provides for establishment of an institutional framework for monitoring, scheduling and dispatch of power in the form of Load Dispatch Centres, as well as setting up standards for grid operations in the form of the Grid code. The various provisions of the Act have thus resulted in a robust transmission network.

From 132 kV inter-regional links operating in radial mode, the Indian power system has come a long way through the adoption of HVAC and HVDC transmission systems. The development is represented in the figure 7.

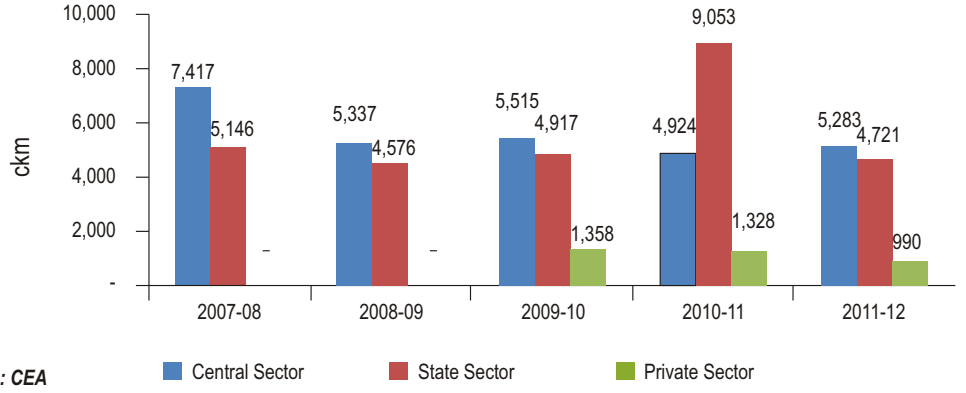
Figure 7: Development of transmission system



Source: PGCIL

After the success of the public-private partnerships (PPPs) in power generation, the GoI replicated the competitive bidding model in the transmission sector. The model involves two routes, the IPTC (Independent Private Transmission Company) and the JVC (Joint Venture Company) route. The figure 8 shows the sector wise share in the development of the transmission network.

Figure 8 : Transmission line commissioned- Annual (2007-08 to 2011-12)



Source: CEA

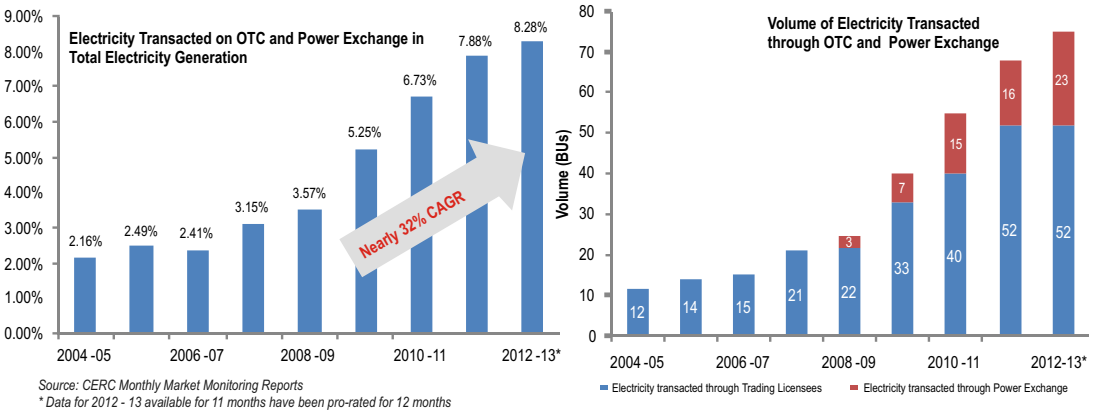
The rapidly increasing inter-regional transfer capacity has resulted in a change in the nature of the ISTS within a very short time which is the intent of policy which emphasises the need for evolving a national transmission system to harness the natural resources optimally, evolve deep competitive markets and add robustness to the power system to ensure adequacy and reliability. However, in the grid disturbances of July 2012, failure of defence mechanisms such as load shedding schemes through under frequency relays, rate of change of frequency relays and islanding schemes in the Northern and Eastern Region were observed.

2.3 Power Trading and Markets

Market reforms have been undertaken though the introduction of power trading and open access. The ultimate aim of introducing competitive markets was to bring about efficiency, optimal utilization of resources, reduced costs and greater value for customers.

The Act recognizes trading as a distinct business activity. Trading as per the Act is the purchase of electricity for resale thereof. Power trading in India accounts approximately 9% of the total net generation.

Figure 9: Trends in Volume of Short-term Transactions of Electricity- Annual (2004-05 to 2012-13*)



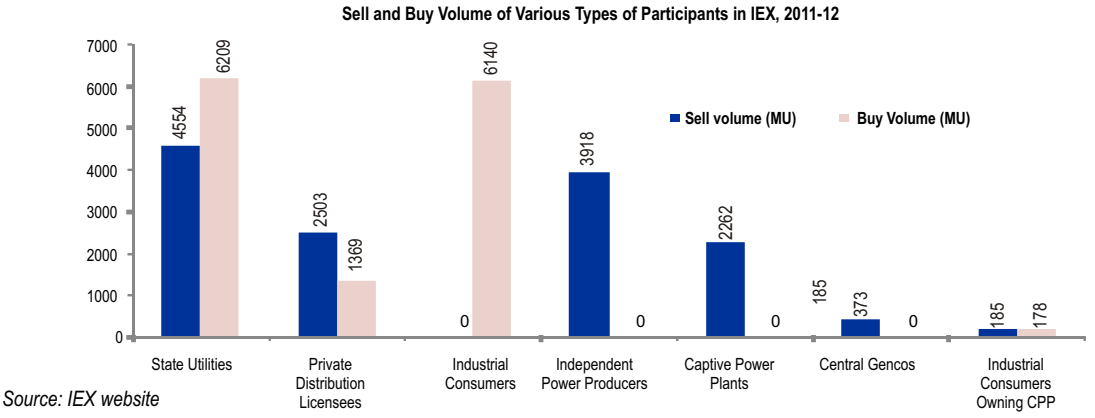
Source: CERC Monthly Market Monitoring Reports
** Data for 2012 - 13 available for 11 months have been pro-rated for 12 months*

Rationale for competitive markets is primarily based on the following expected benefits:

- Optimum utilization of the network and efficiency gains through increased system strengthening investments.
- Unlocking of the unused/economic capacities in the sector.
- Sale of surplus captive capacity to third parties to improve the availability and reliability of supply and reduce unmet demand as well as maximize capacity utilization.
- Provide licensees the freedom to source power from alternative sources in a competitive manner and for generating entities to choose buyers with requisite credit ratings.
- Better supply quality for customers

It is noteworthy that the power markets have attracted a wide variety of players including generators, DisComs and end users as the transaction profile on the IEX demonstrates.

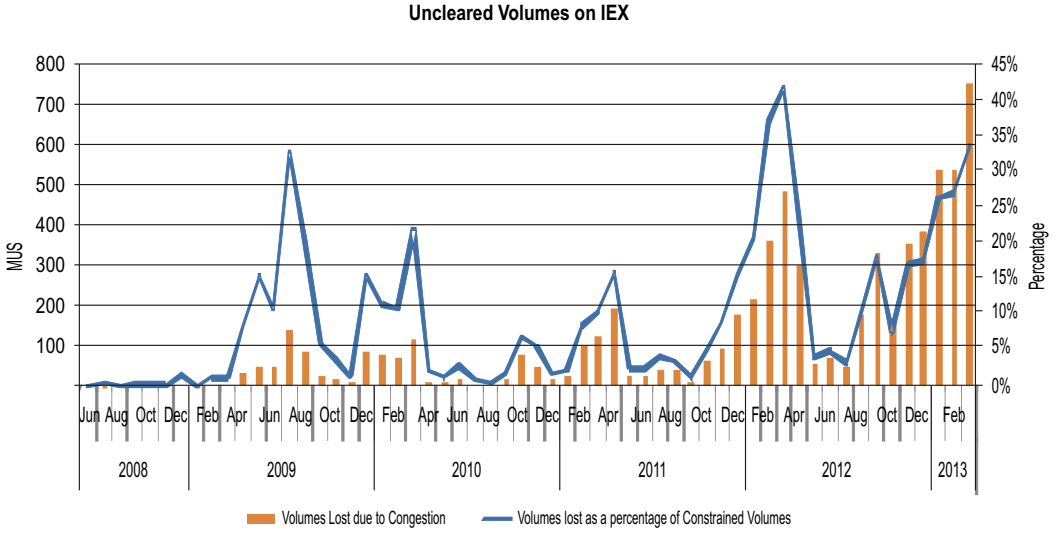
Figure 10: Transactions of various types of Participants in IEX, 2011-12



Source: IEX website

The growth of the market has however been constrained by the lack of transmission. In recent months significant volumes on the power exchanges have remained uncleared on account of lack of transmission capacity.

Figure 11: Uncleared volume at IEX, 2011-12- Monthly (Jun 2008 - Feb 2013)



Source: IEX

Similarly in the bilateral market there has been significant volume loss reported due to congestion. Therefore in order to further develop power markets there is an urgent need to develop infrastructure and in this context it is also important to evaluate the performance of key players, particularly the state utilities and regulatory authorities who have a role to play in promoting the objectives of the Act.

Even as the Act promotes markets, it also has some important points to ensure that states interests are safeguarded. Section 11 of the Act, which states that "Appropriate Government may specify that a generating company shall, in extraordinary circumstances operate and maintain any generating station in accordance with the directions of that Government." The explanation to this section goes on to state that "For the purposes of this section, the expression "extraordinary circumstances" means circumstances arising out of threat to security of the State, public order or a natural calamity or such other circumstances arising in the public interest".

There have been several examples of misuse of section 11 by the State Governments by restricting open access to generating companies for sale to outside States. (e.g. cases in Karnataka, Tamil Nadu, Andhra Pradesh and Orissa). This denudes market confidence and seriously affects investor interest. Extraordinary circumstances should not cover normal problems faced by the State such as regular deficits due to improper planning and / or delay in implementation of projects in the State etc. It is important to eliminate open ended language as underlined in the paragraph above.

2.4 Distribution

The root causes of the ills of the power sector in India where concerns refuse to go away in spite of sustained efforts, can be traced to the distribution sector. As per Section 12 of the Act "No person shall distribute electricity unless he is authorized to do so by a license issued". Even as there are provisions in the law for multiple licensing in the same area, this in practice is not feasible on a large scale without serious loss of efficiency. Thus the distribution companies have monopoly or quasi-monopoly status. Further, a basic deficit in the Act is on non-recognition of retail supply as a distinct function from distribution. This has perpetuated a structure in distribution that most of the reforming and market driven countries have moved away from.

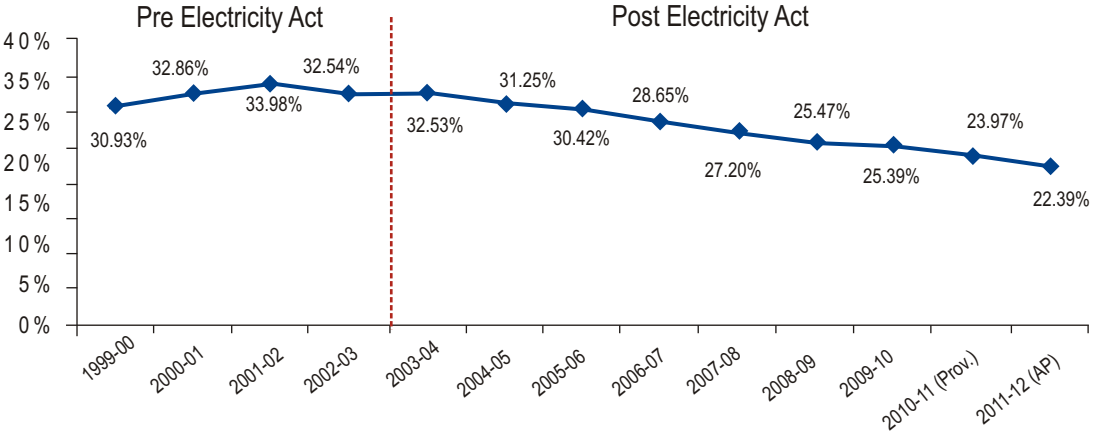
The other provisions of the Act including the above resulted in various distribution models being tested and policy reforms in distribution sector. Some of the successful distribution models and policy reforms include the introduction of Franchisee model in the distribution sector. The model is being implemented in both urban and rural areas, with varying levels of interest and success.

The Government of India introduced the Restructured-Accelerated Power Development & Reforms Programme (R-APDRP) which is an incentive based policy reform in providing incentives to distribution licensee that improves its overall operational efficiency.

The Act promotes rationalization of consumer tariffs. As mandated by the Act, the Tariff Policy recognizes the importance of providing fair and appropriate return on investment to attract investments in the sector and to ensure reasonability of user charges for the consumers. The policy in line with Act emphasised on a transition from a Cost Plus based tariff approach to Multi Year Tariffs (MYT) regime.

Further, the Act also provides provisions for consumer protection with the formation Consumer Grievance Redressal Forum and appointment of Ombudsman. The states in recent years have also tried a new distribution models; Viability Gap funding, although this model is in testing phase in Assam and Uttar Pradesh, the model could prove a future solution to the age-old problems prevailing in the distribution sector.

Figure 12: Trend in T&D losses



Source: CEA

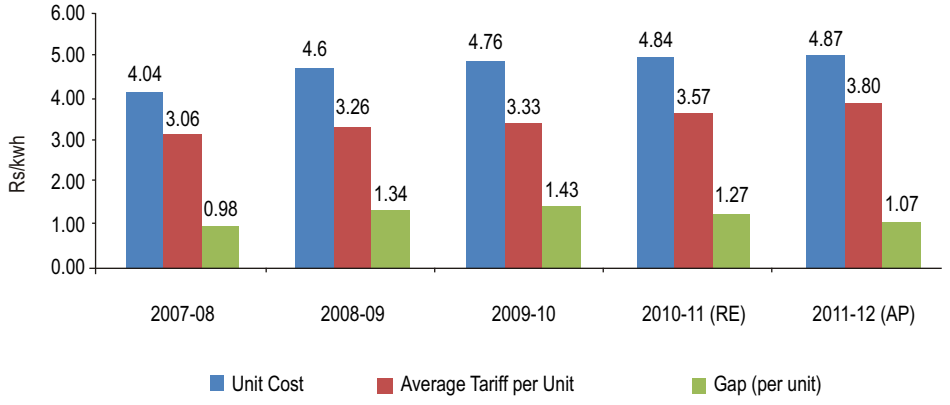
Despite the above, distribution is the weakest link in the chain of power supply in India. Even as there have been some improvements in the distribution sector on key aspects, key parameters like T&D losses remain unacceptably high. The R - APDRP and similar system strengthening initiatives has had a significant impact on reducing the overall T&D losses in the sector. However the need for intervention to accelerate the pace of improvement, without which sector turnaround would prove difficult.

Distribution finances have also been constrained by inadequate and erratic tariff revisions, which have left the sector starved for cash, as exemplified in the gap between cost and revenue recovery per unit.

Taking note of the situation, the Appellate had notified all the SERCs to revise the tariffs. Consequently, a number of SERCs have revised tariffs in the last 24 months; although many are not sufficient to cover the costs. In this backdrop of inadequate efficiency improvement and tariff revisions most utilities have been in a state of perpetual crisis. The utility finances have worsened considerably to the level that has been characterized at times as "India's sub-prime" crisis. As a result, distribution continues to be under-invested, resulting in severe constraints in last mile connectivity and poor network performance. .

As a consequence the financial losses, the borrowings of the utilities have piled up (as shown in table 1). The prospect of massive defaults by distribution utilities is threatening to impact the banking and financial sector in India.

Figure 13: Average Tariff and Gap (Rs./kWh)



Source: Annual Report 2011-12, Planning Commission report on Working of State Power Utilities

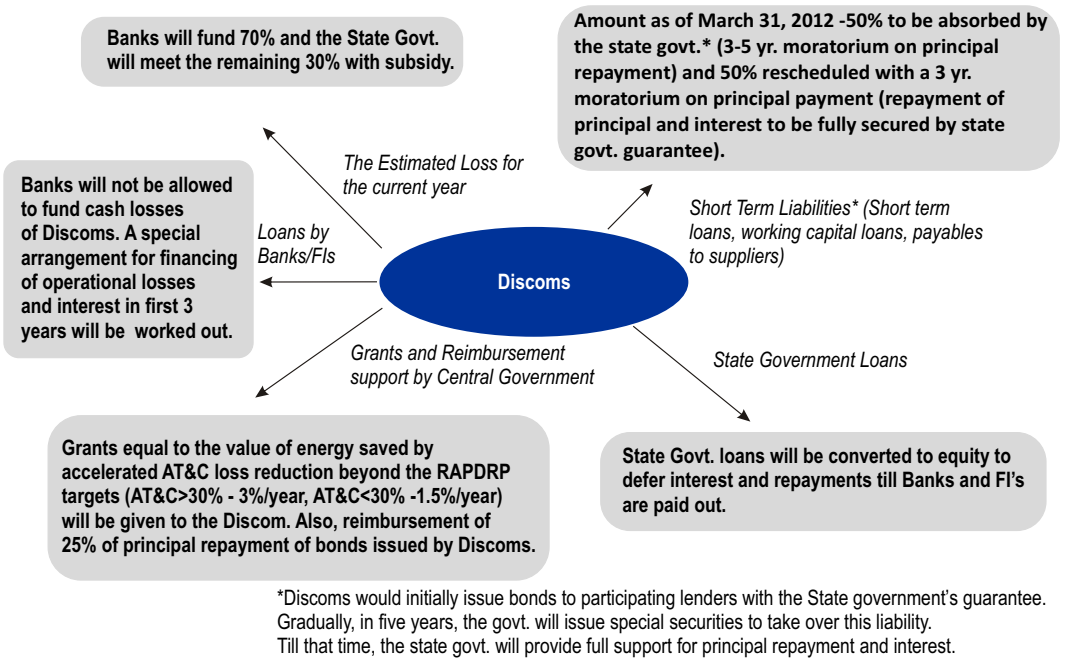
Table 1: Cumulative Borrowings by States in order of Decreasing CAGR (Rs. Mn.)

States	2006-07	2007-08	2008-09	2009-10	CAGR*
Tamil Nadu	116003	146111	215023	320390	40%
Rajasthan	173784	237965	335386	472358	40%
Maharashtra	91542	120563	160160	235733	37%
Andhra Pradesh	123417	143241	203145	260130	28%
Haryana	103051	124516	148817	214703	28%
Goa	660	620	490	1280	25%
Madhya Pradesh	73878	85365	98898	130898	21%
Karnataka	93422	107006	145997	164424	21%
Punjab	112823	132432	158127	173338	15%
Uttar Pradesh	188340	175649	208969	279282	14%
Chhattisgarh	25106	29878	28632	35280	12%
Meghalaya	9831	11101	14536	13803	12%
Bihar	92556	103978	112455	126064	11%
Jharkhand	54338	61846	70114	70156	9%
Himachal Pradesh	31940	33380	30860	39580	7%
Gujarat	115509	135483	140496	142072	7%
Uttarakhand	28720	32890	31990	31810	3%
Assam	12929	14331	15447	13315	1%
Jammu & Kashmir	46450	42290	45190	45720	-1%
Delhi	84593	54309	57465	82870	-1%
Orissa	86955	76706	74293	83965	-1%
West Bengal	173171	123150	132045	136642	-8%
Kerala	25114	19158	13378	15700	-14%

**States sorted in decreasing order of CAGR, Sources: Utility Accounts & PFC Reports.*

In order to alleviate the poor state of finances of the utilities while simultaneously providing incentives to improve efficiency, the GoI announced a financial restructuring plan that is under implementation in some of the poorly performing states. The schematic of the plan is provided in figure 14:

Figure 14: Financial Restructuring Plan



*Discoms would initially issue bonds to participating lenders with the State government's guarantee. Gradually, in five years, the govt. will issue special securities to take over this liability. Till that time, the state govt. will provide full support for principal repayment and interest.

Source: AF - Mercados EMI Analysis

Given the poor shape of finances in some of the utilities, it had almost become imperative that they undergo financial restructuring and have some support for recovery. However some of the states availing the scheme are habitual culprits and must be forced to deliver their part of the bargain. Else this would essentially amount to pouring good money after bad and setting the stage for another round of financial support/bailout, sooner than later.

3. STATE LEVEL REFORMS AND UNBUNDLING OF UTILITIES

3.1 How real has been the Unbundling?

The process of unbundling began post 1995, with Orissa State Electricity Board being the first utility to unbundle its operation. Further, the Act paved the way for the unbundling of generation, transmission, and distribution functions of utilities in other states. With the recent unbundling of Bihar SEB, only Jharkhand and Kerala SEBs are yet to unbundle their operations along with the power departments.

Post unbundling, the state utilities' operations have shown some improvements. In most utilities transparency and accountability has improved with regular audits and ability to benchmark performance. Unbundling has encouraged private investors in the power sector especially in the generation, which has become a de-licensed activity under the Act. On the whole there has been significant efficiency improvement in generation and transmission due to the increased focus. The results of unbundling in distribution have been mixed.

In distribution unbundling was expected to improve the accountability and make utilities' operation more efficient, but on the contrary most efficient and inefficient state utilities are unbundled. So, it is important to analyze the issues that still persist post unbundling:

- **Complicated Utility Operations**. Following utility unbundling, not only are transaction costs higher and coordination more complicated, but state utilities also face the constraint of limited managerial talent that needs to be spread across many entities. The recent Gujarat and Assam horizontal distribution re-bundling is seen as an alternative to the communication and coordination issues created due to unbundling. Further, in several States a holding company or the transmission company is still in effective control of the whole sector and delegation to the unbundled distribution companies is very low thus defeating the purpose of unbundling.

- **Operations in many un-bundled utilities still remain in-efficient:** Utilities like Rajasthan, Uttar Pradesh and Andhra Pradesh, which got unbundled very soon, face the same archaic issues persistent in pre-unbundling era; whereas Kerala SEB is one of the most efficient state utilities.
- **Age-old bureaucracy still exists within the state utilities:** Unbundling was undertaken to usher better governance in state owned utilities. In practice, the gains in the utilities have been limited, and bureaucratic and archaic practices have persisted. Restructuring has not been accompanied by internal reforms.

It is noteworthy that even as the corporatized utilities follow the 1956 Companies Act, they are exempt from some key requirements as state-owned companies. Most do not have independent directors, audit committees, board meeting norms, etc that a typical corporate should follow for basic corporate governance. The utilities have failed to change their way of operation in spite of the corporatization, which is at times perceived by utilities and governments to have added costs rather than resulted in benefits.In summary, some of the core purposes of utility unbundling have been defeated due to poor focus on the processes that needed to accompany unbundling and corporatization.

3.2 Obligation to Supply - Does it Exist?

Enhanced access to electricity has been an abiding policy goal for successive governments. The goal was reinforced in the National Electricity Policy specified the following goals with respect to access and supply:

- Access to Electricity - Available for all households in next five years
- Availability of Power - Demand to be fully met by 2012
- Supply of Reliable and Quality Power of specified standards in an efficient manner and at reasonable rates.
- Minimum lifeline consumption of 1 unit/household/day as a merit good by year 2012

Towards the above policy goals the distribution sector has witnessed a large number of initiatives covering access (Kutir Jyoti, RGGVY) and efficiency (APDRP, R-APDRP) across the years aimed at enhancing access and service quality. More recently wider set Smart Grids related initiatives are under active consideration. However the state of the distribution system continues to be a concern.

At the core of the issue is the definition of the obligation of utilities to serve its customers. Section 43 (1) of the Act specifies that "Every distribution licensee, shall, on an application by the owner or occupier of any premises, give supply of electricity to such premises, within one month after receipt of the application requiring such supply".

The section provides appropriate safeguards for utilities by stating that, "Provided that where such supply requires extension of distribution mains, or commissioning of new sub-stations, the distribution licensee shall supply the electricity to such premises immediately after such extension or commissioning or within such period as may be specified by the Appropriate Commission". In case of default on supply there are penal provisions on the Utilities.

The obligation to supply has been interpreted by utilities as an obligation to connect alone, and the quality of supply has completely been ignored. As a consequence utilities wilfully cut off supply even when electricity is available, and do not feel liable for network reliability. The Act requires that utilities be subject to penalties for default on customer service standards as per provisions of Section 57 (and even suspension of licence under Section 24 1 (a) for (a) has persistently failing to maintain uninterrupted supply of electricity conforming to standards regarding quality of electricity to the consumers). The actual incidences of such penalties remain few and far between. Providing citizens with power on demand must be more than merely connecting the consumer to the electricity grid. As a first step utilities must abstain from the practice of cutting electricity supplies to consumers even when generation capacity is available at reasonable costs, ostensibly for poor tariff recovery. If the law or the policies required to be strengthened for achieving this, the same must be pursued.

3.3 Rural Electrification - Flawed Framework

Rural electrification has been a consistent policy priority that has almost equally consistently failed to deliver tangible and meaningful results. Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) is India's ambitious flagship program for rural electrification. It is being implemented in nearly all districts of the country and covers approximately half of the villages. The program commenced in April 2005. At that time 0.125 million villages (a quarter of the total) and 78 million rural households (56% of the total) did not have electricity access. The objective of RGGVY was to electrify all the un-electrified villages and provide electricity connections to 23.4 million un-electrified Below Poverty Line (BPL) households by 2009 at a cost of Rs. 160000 crores.

The scope of RGGVY includes:

a. Rural Electricity Distribution Backbone: Construction of substations and lines in blocks where deficient

b. Village Electricity Infrastructure: Electrification of un-electrified villages and habitations (with population more than 100 and which can be electrified by grid power), augmentation of distribution transformers in electrified villages/habitations

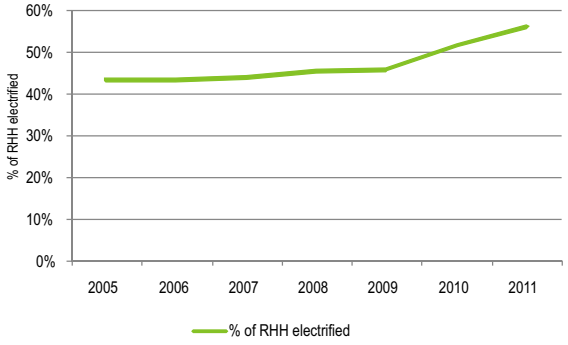
c. Decentralised Distributed Generation: Setting up small generators and distribution network in villages where grid extension is not cost effective and which are not covered by the Remote Village Electrification program of MNRE

d. Household electrification: Free connection to BPL households, which covers poles, service wire, meter, fuse, internal wiring and a bulb. APL households to approach distribution companies for connection

For items a) to c), the central Government was to provide 90% capital subsidy and soft loans for the remaining portion. A 100% capital subsidy provision for item d), connecting BPL households, was envisaged. The total expense was estimated to be Rs. 160 Billion in which the subsidy amount was to be Rs.147.5 billion. The program has a provision of 1% of the total amount (i.e. Rs.1.60 billion) for research, technology development, capacity building, information system development, awareness building, pilot studies and complimentary projects. The program also provided for a

The achievement of electrification against targets has been impressive, as is shown in the figure 15.

Figure 15: Progress of electrification under RGGVY



Source: Rajiv Gandhi Rural Electrification Program Urgent Need for Mid-course Correction, Prayas Energy Group, June 2011

However the program has been under severe criticism for several reasons, as enumerated below :

1. The initial cost estimates far exceeded in the end with an estimated Rs. 520 billion to be spent at the outturn for the whole program[1]. This represents a 225% escalation as compared the initial estimates (some of it justified by scope changes). This represents a very large amount of public spending;
2. Important provisions of relating to franchising which were to ensure wider participation have been diluted. This has left the system deprived of checks and balances. Arguably the franchising system was not robust enough for such large scale deployment in areas where technical human capacity is not readily available. However, in the absence of alternate checks and balances the whole investments stand at risk;
3. Even as utilities have been enthusiastic about the electrification investments, on account of the high cost of service delivery on rural networks, they are reluctant to provide reliable electricity supply on these networks. As a consequence the whole purpose of the program stands in question;
4. The new connections have been primarily to BPL households, which were fully subsidised in terms of connection costs. In contrast, new connections to non-BPL households have been very low as compared to the levels originally envisaged;

[1]*Prepared by the MoP in 2009, quoted in the Parliamentary Committee report [Loksabha 2009]*

5. Independent reports have indicated that the quality monitoring framework, both in terms of planning and implementation has been very weak and inadequate[2].

6. Quality of construction has been reported to be very poor in several areas of the country.

On the whole the costs, experiences and outcomes have been very different from what was originally envisaged or foreseen. The negative (and expensive) experience on RGGVY calls into question the way the program has been conceived and implemented. In spite of the large component of subsidies, the program is very expensive for utilities on account of high recurring costs, and is likely to have a sustained negative impact on the utility and state finances. There is also a serious risk of de-electrification of the segments of the networks on account of inadequate supply on them and poor maintenance, leading to theft of conductors and installations.

3.4 Privatization and PPP - Tepid Attempts

One of the basic objects of the Act is on promoting investments and efficiency, typically through private sector participation. The need is greatest in the distribution sector, where the problems are the most severe. Yet, the attempts in this area have been tepid, as recounted in this section.

3.4.1 Privatization of Discoms

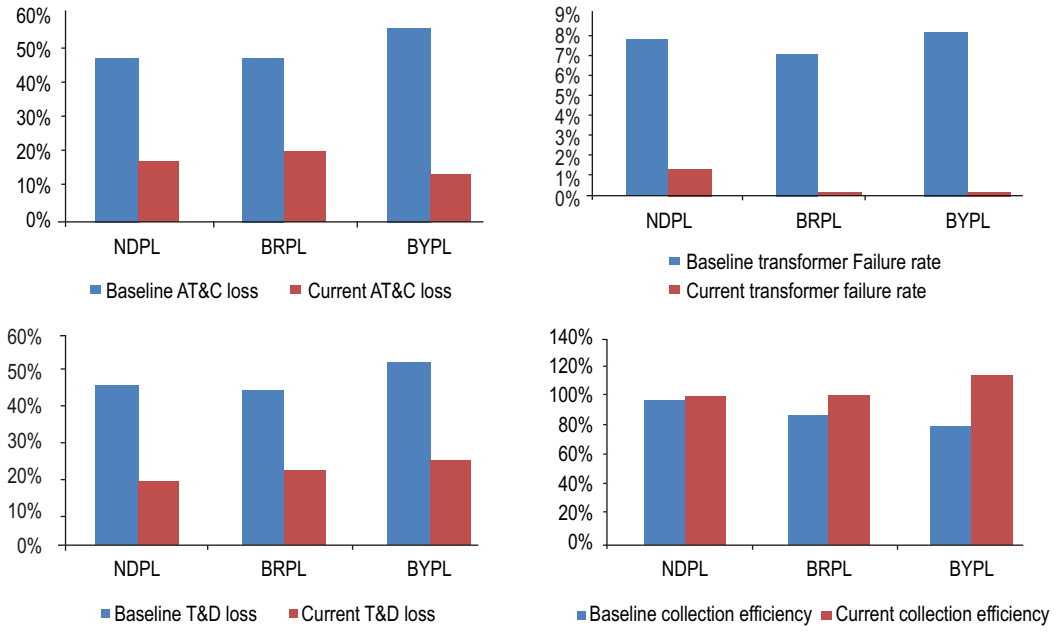
Privatization implies the transfer of the licensed undertaking to private ownership and management. Within India itself, we can find two such cases of privatization, one which was a success i.e. Delhi and the other which faced many challenges, Orissa. An evaluation of these two cases clearly highlights the critical success factors which are necessary to make the process sustainable.

3.4.1.1 Delhi

In 2002, a year prior to the notification of the Act, the Delhi Vidyut Board was unbundled and distribution was privatized under a competitive bid process. BSES Rajdhani, BSES Yamuna and Tata power one the bids for three separate areas in the city.

[2] *Rajiv Gandhi Rural Electrification Program Urgent Need for Mid-course Correction, Prayas Energy Group, June 2011*

Figure 16: Comparison of efficiency pre and post privatization: Delhi- 2008-09



Source: PFC Report on Performance State Utilities, NDPL & BSES Presentations

In terms of performance the three privately held discoms have improved on the baseline parameters such as the loss reduction, improvement in collection efficiency and reduction in failure rate which can be understood from the figure 16.

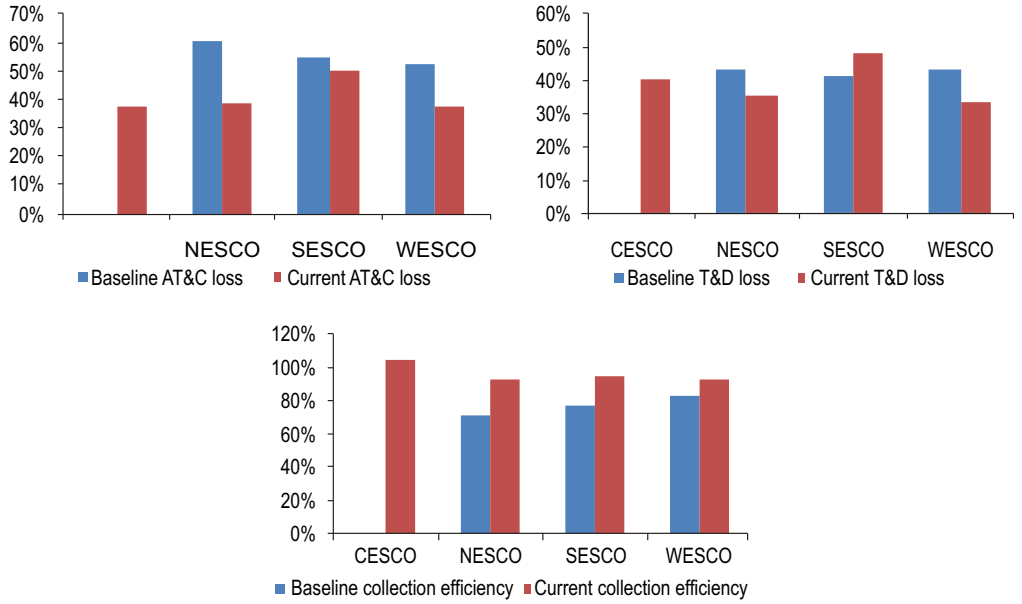
In spite of the apparent success of Delhi privatization, there are still very significant amount of challenges arising of deficits in regulation that have now built up a "regulatory asset" of Rs. 19,000 crores which, in terms of the advice from Delhi Electricity Regulatory Commission DERC, the sector regulator, to the Delhi Government cannot be recovered through tariffs. The privatization, in-spite of having made a sea change to efficiency levels and service standards, has received an exceptional amount of bad press. This has led to trepidation on future privatization in other states in spite of the stand-out performance of Delhi utilities.

3.4.1.2 Orissa

In Orissa, which privatized even before Delhi in 1999, while structural reforms were affected, the same was not accompanied by a multi-pronged strategy to reinforce all

the pillars on which a successful distribution sector can be created. Additionally, due to lack of accurate baseline data, right from the beginning the Discoms incurred huge losses. As the shown in the figure Orissa was unable to implement reforms successfully, and the gains have been modest.

Figure 17: Comparison of efficiency pre and post privatization: Orissa- 2008-09



Note: Baseline data for CESCO was not available
Source: PFC Report on Performance of State Power Utilities, BSES Presentations, Privatization of electricity distribution: the Orissa experience

The Orissa example was one of classic sell-off by the Government without any commitments to the future reforms process and transition support, and has been at the receiving end of criticism by several expert committees. One of the privatized utilities, CESCO, has devolved back to management by an administrator appointed by the regulator since the private utility that took over the operations surrendered its license due to inability to manage the operations in a complex and often hostile environment. Orissa, in many ways, provides a very important example on how not to design and manage a privatization process. In recent months, a part of the erstwhile area of CESCO is under the management of a franchisee (FEDCO).

3.4.2 DISTRIBUTION FRANCHISING

As per Section 14 of the Act, a distribution licensee can outsource part of its activities to a third party to attain better operational efficiency in that region. This provision gave rise to third party distribution franchisee model.

The most popular model followed in urban area is the Input-based franchisee model, with its responsibilities classified as metering, billing, collection, O&M of network, to capital investment. The franchisees have the right to use revenue realized from the customers for its sustainable operations. Four such franchisees are in the state of Maharashtra (Bhiwandi, Nagpur, Aurangabad and Jalgaon) and two in the state of UP (Agra and Kanpur). In the last few years some other states have also tried the franchisee model; however the progress has been slow. As mentioned, a franchisee has also been appointed in Orissa. Franchising is also being contemplated in Madhya Pradesh. The performance in cities like Agra, Nagpur and Aurangabad has been below expectation, although these are still early days to make a conclusive assessment.

The overall impact of franchisee model in Bhiwandi circle has been positive with reduction in AT&C losses, load shedding, distribution transformer rate and a significant increase in collection efficiency as shown in the table below:

Table 1: Key Improvement in Bhiwandi Circle

Parameter	At the time of takeover	2010-11
Distribution Transformer Failure Rate	40%	2.80%
Load Shedding (Hours)	10-12	<3
Accurate Metering	23%	99%
AT&C losses	58%	18.80%
Collection Efficiency	58%	99%

Source: Torrent Power Presentation

The success of Bhiwandi franchisee model could not replicated in other places. However, in spite of mixed success of franchising, it is apparently the preferred model for governments since eventual ownership is retained by the licensees and hence politically it is more acceptable. The challenge to franchising would arise from the lack of scale economies and also limitations in control of the investor/operator, which could compromise efficiency gains.

3.5 Multiple Licensing

In a multiple licensee regime more than one distribution licensee can operate in a region. This provision has been a significant bone of contention, particularly in the city of Mumbai. On 08.07.2008 Supreme Court passed a judgment that allowed Tata Power Distribution Company (TPC-D) to distribute power in entire Mumbai[3]. Hence both Reliance Infra Distribution Company and TPC-D could operate in the same region. Similar judgments were passed for Noida and Jharkhand.

The multiple licensing has faced opposition from the existing distribution licensee raising many concerns such as:

- Deviation from the standard tariff determination strategy to a more complicated demand generation methodology.
- The new licensee would use the existing distribution network, which could be a cause of dispute as the new licensee hasn't built the infrastructure.
- The constant switching of customers can have negative financial implications on the licensees, which cross subsidize the agricultural users.

Although, currently the multiple licensing framework faces objections from the existing licensee, the provision itself is unique as it being one of the few provisions that makes the end customer the decision maker and the policies and service standards of the licensees revolving around the needs of its customers. However, this needs to be ushered in a manner where there is no undue duplication of networks.

[3] *Except Mira-Bhayander area, which will be served by RInfra-D and excluding all the areas served by MSEDCL*

4. SECTOR REGULATION

Independent regulation is one of the cornerstones of the policy initiatives in the electricity sector in India. In order to de-politicize the tariff setting process and induce efficiency, the Act included independent regulation as a very fundamental feature. Regulators were given substantial independence and a wide range of powers. Following India's federal structure, regulation of inter-state transactions and national/regional markets is undertaken by the CERC while State Electricity Regulatory Commissions (SERC) regulate state level entities, transactions and markets. By virtue of electricity flows not being confined by political boundaries, there are inevitable issues between the regulatory arrangements at the inter-state and intra-state levels. These have generally been managed well by CERC and also through the institutional mechanism of the Forum of Regulators (FOR) provided for in the Act.

While the regulatory framework is of international standards and provides a great deal of independence and flexibility to regulators, the state level regulators have typically struggled to balance the needs of the customers and the utilities, and force through operational, financial and pricing efficiencies. The institutions have tended to be weak at the state level, leading to partial subversion of the regulatory objectives. The mechanism is however well entrenched in the Indian power system, and needs to be equipped with the tools and capabilities to execute the mandate more effectively than at present.

4.1. Role of regulation as per the Act and Assessment of Outcomes

The principal roles of the central and state regulators are summarized in the table below:

Table 3 Principal roles of ERCs and Assessment of Performance

Aspect	Act section	CERC Role and status	SERC Role and status
Regulate the tariff of generating companies and licensees	79, 86	Well set regulations following Multi-year tariff (MYT) structure as prescribed in the Act	Relatively weak regulations (typically annual tariff review structures, although MYT is now more prevalent)
Introduce distribution open access in such phases	42	Not relevant	Regulators in several states have actively blocked open access in many states
Regulate electricity procurement by distribution licensees	86	Not relevant	In most states the utilities actual cost has been poorly estimated due to weak regulatory processes. Cost pass through mechanisms
Determine wheeling charges, cross-subsidy surcharge and additional charges	42, 79, 86	Not relevant	Regulators in several states have actively blocked open access in many states through use of exorbitantly high charges
Facilitate transmission and wheeling of electricity	79,86	Has structured open access regulations that facilitate transactions	As above
Specify Grid Code	79,86	IEGC developed an revised regularly depending on emergent conditions	Weak state grid codes - major hindrance to open access and renewables

Aspect	Act section	CERC Role and status	SERC Role and status
Specify and enforce the standards with respect to quality of supply	86		Even where established the standards are rarely enforced
Fix the trading margin	79, 86	Has actively managed the market to prevent abuse	Not a major role
Develop power markets	66	Has actively promoted markets through trading and Px. Has also promoted renewable energy markets	Not a major role
Prevent market domination	60	Formulated regulations that are presently under finalisation	Not a major role
Promote co-generation and generation of electricity from renewable sources. Fix Renewable Purchase Obligation	86	Not relevant	Poorly executed. In most states with resource limitations the RPO standards[4] are below desired levels and/or enforcement is poor.

Note: Green indicates that the roles have been carried out well; amber indicates partial achievement while red signifies poor performance.

While the above table inevitably makes certain generalizations (due to the range of data from the various states), it presents an overall picture that is commonly acknowledged. It also presents a study of contrasts. It is apparent from the table that the CERC's breadth of activities is relatively lower since it does not regulate distribution related issues. However, within its scope, it has been proactive and a guidance to SERCs (directly and through FOR). SERCs on the other hand have wider range of roles

[4] *Relative to NAPCC/FOR prescribed levels*

and powers (as is apparent from the table above), but have been beset with problems that they have found intractable. The SERCs are also often burdened with the impact of their decisions on consumer tariffs and in most states have been preoccupied with ratemaking issues. As a consequence the wide range of responsibilities cast upon them by the law remains inadequately addressed. The focus on retail tariffs have also taken away attention from essential obligation to serve and quality of service issues, resulting in the utilities having very little focus on such matters. Inadequate staffing levels, competence gaps and poor training on fundamental economic and technical regulation issues are endemic problems. As a consequence they remain weak and ineffective organizations. Exceptions to this are few and far between.

The key cause of the paralysis, obstructionism and ineffectiveness at the state level is the condition of the distribution companies. The poor financial state of the distribution utilities provide very limited latitude to the regulators to act on the issues of significance, whether those relate to the utilities' internal operations (efficiency, tariffs, supply standards, etc) or external aspects (market development, promotion of renewables, etc). Utilities fear of all measures to be inimical to their financial health except for tariffs. Regulators are wary of tariff revisions without commensurate improvements in efficiency and service standards, even when such revisions are for causes external to the utility. The stalemate has led to abnormal situations where regulators are now forced to raise tariffs by external agencies (Appellate Tribunal, RBI).

Box 1: Summary of Appellate Tribunal for Energy Judgement on OP1 of 2011

The Ministry of Power through its Secretary sent a letter to the Chairperson of the Appellate Tribunal dated 21.1.2011 complaining that most of the State distribution utilities have failed to file annual tariff revision petitions in time and as a result in a number of States, tariff revision has not taken place for a number of years and that State Commissions constituted all over India have also failed to make periodical tariff revisions suo-moto resulting in the poor financial health of the State distribution utilities. Due to this fact situation, the Power Ministry requested the Tribunal to take appropriate action by issuing necessary directions to all the State Commissions to revise the tariff periodically, if required by suo moto action, in the interest of improving the financial health and long term viability of the electricity sector in general and distribution utilities in particular.

The full bench of the Tribunal, after necessary proceedings directed State Commissions that:

1. Every State Commission has to ensure that Annual Performance Review, true-up of past expenses and Annual Revenue Requirement and tariff determination is conducted year to year basis as per the time schedule specified in the Regulations.

2. It should be the endeavour of every State Commission to ensure that the tariff for the financial year is decided before 1st April of the tariff year. For example, the ARR & tariff for the financial year 2011-12 should be decided before 1st April, 2011. The State Commission could consider making the tariff applicable only till the end of the financial year so that the licensees remain vigilant to follow the time schedule for filing of the application for determination of ARR/tariff.

3. In the event of delay in filing of the ARR, truing-up and Annual Performance Review, one month beyond the scheduled date of submission of the petition, the State Commission must initiate suo-moto proceedings for tariff determination in accordance with Section 64 of the Act read with clause 8.1 (7) of the Tariff Policy.

4. In determination of ARR/tariff, the revenue gaps ought not to be left and Regulatory Asset should not be created as a matter of course except where it is justifiable, in accordance with the Tariff Policy and the Regulations. The recovery of the Regulatory Asset should be time bound and within a period not exceeding three years at the most and preferably within Control Period. Carrying cost of the Regulatory Asset should be allowed to the utilities in the ARR of the year in which the Regulatory Assets are created to avoid problem of cash flow to the distribution licensee.

5. Truing up should be carried out regularly and preferably every year. For example, truing up for the financial year 2009-10 should be carried out along with the ARR and tariff determination for the financial year 2011-12.

6. Fuel and Power Purchase cost is a major expense of the distribution company which is uncontrollable. Every State Commission must have in place a mechanism for Fuel and Power Purchase cost in terms of Section 62 (4) of the Act. The Fuel and Power Purchase cost adjustment should preferably be on monthly basis on the lines of the Central Commission's Regulations for the generating companies but in no case exceeding a quarter. Any State Commission which does not already have such formula/mechanism in place must within 6 months of the date of this order must put in place such formula/ mechanism.

The Tribunal directed all the State Commissions to follow these directions scrupulously, and send the periodical reports by 1st June of the relevant financial year about the compliance of these directions to the Secretary, Forum of Regulators, who in turn will send the status report to this Tribunal and also place it on its website.

The Tribunal directive is a poignant commentary on and points to severe erosion of regulatory authority in the electricity sector. It also indicates that unless the fundamental factors related to utility operations and finances are addressed, the entire framework of the law and its institutions can come undone.

4.2. Quality of Service & Supply

Along with price, quality forms the basic cornerstone of service delivery to consumers. As per sub-section 1 (i) of Section 79 "The Central Commission shall discharge the following functions, namely:- (i) to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees."

A similar mirror clause exists in 86 1 (i) insofar as SERCs are concerned, which is perhaps of even greater importance, given that end use customers are served by the distribution licensees.

In several cases the state regulations advocate measures for quality enhancement including.

- 24X7 helpline with interactive voice response which allows a customer to seek information or make requests through automated systems or register complaints;
- Web based solutions such as bill payment, submission of complaints, application for new connections, customer account information, etc;
- Attention to customers at commercial offices;
- Establishing a network of care centre for quick resolution of complaints;

Utilities are required to maintain the monthly customer level reliability indices in order to determine the quality of supply and service to the consumer. Some of the indices proposed in the Act are SAIFI (System Average Interruption Frequency Index), CAIFI (Customer Average Interruption Frequency Index), CAIDI (Customer Average Interruption Duration Index), SAIDI (System Average Interruption Duration Index).

The regulations lay out penalties for deviation from service standards. However, in practice most utilities do not maintain the requisite data for measurement of quality of service, rendering the provisions of regulations worthless. This is an area that needs urgent attention.

4.3. Consumer Protection

As per Section 110 of the Act, "The Central Government shall, by notification, establish an Appellate Tribunal to be known as the Appellate Tribunal for Electricity to hear appeals against the orders of the adjudicating officer or the Appropriate Commission under this Act."

- The Act 2003 under Section 42(5) provides that the distribution licensee shall, within six months from the appointed date have to establish forum for redressal of grievances of the consumers. These are called Consumer Grievance Redressal Forum (CGRF). Further, SERCs have also appointed Ombudsman, which can be approached in case a consumer is not satisfied with the order of CGRF.
- In addition, Section 57 (Standards of performance of licensee) stipulates that all licensees should abide by the standards of performance which are aimed at providing consumer interests. In case licensee does not comply with the standards they are required to compensate the consumer.
- As per the Forum of Regulators report on "Protection of consumers' interest" September 2008, 23 states have notified the CGR regulations. In most of these states the Ombudsman has been appointed and in CGRF has been set up.

In general, the appellate process, particularly at the level of the Appellate Tribunal has worked well, and has inspired stakeholder confidence. The only exception has been in the case where regulators have in certain instances tended to frame regulations (which can only be challenged in courts and not at the Appellate Tribunal) instead of orders (which can be challenged in the Appellate Tribunal), which has tended to delay resolution. There is a need to revisit and lay out clearer guidelines in this regard.

5. COMPETITION IN ELECTRICTY SECTOR

The strategic intent of the Act is to promote competition by freeing all possible avenues of procurement and sale of power. The provisions of the Act relating to de-licensing of generation, introduction of open and non-discriminatory access to transmission and distribution systems ("Open Access"), elimination of cross-subsidy, provisions for wheeling electricity from captive generating station, were designed to allow the freedom to purchase and sell electricity.

5.1. Standard Bidding Document and Tariff Based Competitive Bidding

The Act mandates the regulatory commissions to adopt tariff discovered through competitive bidding, conducted in accordance with guidelines issued by the central government. As per Section 63 of the Act, "the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government."

The National Tariff Policy also encourages distribution companies (discoms) to undertake all new capacity addition through competitive bidding route. The tariff based competitive bidding guidelines issued by GoI in 2005 categorized bidding under following three types.

- **Case I bidding:** Location, technology or fuel is not specified by the procurer.
- **Case II bidding:** Location, technology or fuel is specified by the procurer.
- **UMPP:** Special case of Case II type, The UMPPs are 4,000 MW large-scale coal fired super critical power plants, with an investment of about Rs 20,000 crore per project.

Ever since the introduction of the Competitive Bidding Framework in India, power projects with aggregate capacity ~42000 MW have been awarded successfully. The framework has not only resulted in providing a strong platform for private sector participation in the power generation segment but has also resulted in considerably low tariff discoveries particularly in comparison to the traditional cost plus regime that ultimately benefits the consumers.

Competitive Bidding Guidelines and the Standard Bidding Documents developed by the Union Ministry of Power have provided a robust bidding framework that emphasizes on complete transparency at each stage. Accordingly, the guidelines have been framed for medium (1-7 years) and long term (>7 years) procurement of base, peak and seasonal-load. The Act also mandates Standard Bidding Documents such as the Request for Qualification (RfQ), Request for Proposal (RfP) and Power Purchase Agreements (PPA) for both Case I and Case II bidding processes.

The recent changes in the bidding guidelines, which had revamped the existing bidding documents with the BOO/BOOT structure, and addresses certain key risks. However there are a range of other changes that are likely to be considered as intrusive and impractical, and may raise the cost of power supply from new projects. Hence there could be valid reasons to make incremental improvements to the existing framework to address various stakeholder concerns, rather than changing the basic structure that has resulted in cost effective capacity addition in the past decade.

5.2. Open Access

Open access is the primary means available to the Indian customer for choosing an alternate supplier. The Act defines Open Access as "non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulation specified by the Appropriate Commission".

Conceptually, Open Access in infrastructure services is characterized by separation of 'carriage' from 'content'. Upon separation, carriage is typically subjected to non-discriminatory Open Access for enabling competition in the content segment. This freedom to content segment (flow of energy in this case) cutting down monopolistic practices, increasing competition and thereby giving users greater opportunity to

improve efficiency forms the basis of the very concept of Open Access. Being the fundamental building block of the competitive market framework ushered through the Act, Open Access operates at two levels - at the wholesale market level where all generators (including existing generators operating through long term contracts) are accorded Open Access that varies by the term of the access and at the retail level where eligible customers are permitted to source their supply from suppliers of choice through Open Access.

Despite significant emphasis on the subject, Open Access still remains poorly implemented - particularly at the distribution level. State Regulatory Commissions are not following the relevant provisions of the Act, Guidelines issued by the Ministry of Power in the right spirit. There are many impediments in the path of successful implementation of Open Access and the discom continues to be a single point supplier handling both the service (wire) and product (energy). Some of the key impediments of Open Access are:

- **Resistance of licensee**- The distribution licensee normally hesitates to implement the Open Access for fear of losing high paying industrial consumers who cross subsidise the agriculture and domestic consumers
- **Biased role of SLDC-** SLDC usually act as a barrier to Open Access sitting on applications, denying generators the right to sell power to a third party.
- **Regulatory gaps-** The current regulations are silent about billing and monitoring of any Open Access transaction at the state level. Further, there is no mechanism for computation of stand-by charges and additional charges
- **Unpredictability of charges-** There exists irrationality with respect to Open Access charges. Some states like West Bengal, Tamil Nadu and Punjab have cross subsidy surcharges that are too high making consumers reluctant to avail this service. The Act calls for gradual reduction of cross subsidy surcharge, but no such reduction trajectory is found in most of the states
- **Infrastructural bottlenecks-** Lack of adequate transmission facility especially in the southern region is a bottleneck for Open Access for both located within the Region and outside.

5.3. Retail Choice & Competition

The Act very clearly envisages choice in the supply of electricity to the consumers. In fact, a consumer may procure power directly from any of the three sellers of power - the generator, the discom and the trader. Enabling this statutorily granted choice and access for the consumer is critical for creation of a retail market for electricity.

However, the Act does not recognize retail supply of electricity as a separate licensee function and subsumes it within the distribution licensee obligations. The only exception to this is through Open Access; when a generator or a customer can use the provisions of wheeling services by the distribution licensee to transport electricity procured or supply to a captive or a third party user.

As the sector learns from past experiences there are perhaps valid grounds to consider separation of the distribution function from retail supply and treat retail supply as a competitive activity. Evidence from across the world demonstrate there can be tremendous efficiency, cost and service related gains with such separation.

6. CONCLUSION

6.1 Action Plan for Short, Medium and Long Term

The Act provides a comprehensive structural framework that, in the past ten years, has modernized the Indian power sector enormously. However, deficits exist, particularly in the state ownership dominated distribution segment, which tend to spread across the whole power sector and eventually to the economy. These need urgent attention, failing which the investment climate in the sector can be further impaired. Some of the key initiatives, which can help strengthen the power sector are listed below:

6.1.1 Strengthening of Governance

- **Rationalization of Subsidies:** Subsides, while a socio-political issue cannot be eliminated through a hard line approach. However, inefficiencies associated with it cannot be overlooked. Alternative models, viz. direct payment to beneficiary, could be looked at for effectiveness.
- **Regulatory Independence:** Regulatory Commissions need to play a more proactive role in implementing change in provisions relating to Open Access, MYTs and SOPs. This needs to be backed by strong political will which allows regulators independence in the decision making.
- **Assessment of regulatory performance:** Regulatory independence must be accompanied by greater accountability. In this regard GoI should set up a mechanism that makes a transparent and objective assessment of how individual regulators have been living up to their mandate.

6.1.2 Utility Reforms

- Loss Related Measures: Aim to sharply reduce technical and non technical losses by upgrading networks, establishing GIS, bifurcating feeders, complete metering and stringent action against power theft and meter tampering.
- Load Related Measures: Demand Side Management and Demand Response provide significant scope for bringing about considerable energy savings by

modifying the load curve. Utilities can be incentivized to implement these measures by the concerted directives of the SERCs.

- Tariff Revisions: Tariffs should not mask inefficiencies of power distribution. At the same time utilities cannot be deprived of legitimate tariff dues. MYT (implemented in true spirit) is imperative as determination of tariff in advance lends an element of certainty to all stakeholders. An approach that provides consumers reliable supplies over subsidized and unreliable supplies should be adopted through better tariff setting and more efficient targeting of subsidies.

6.1.3 Market Reforms

- Open Access: Measures need to be adopted including rationalization of charges and cross subsidy, augmentation of infrastructure, creation of awareness to allay fears of adverse consequences for incumbents.
- Preventing misuse of legal safeguards: The use of Section 11 of the Act by State Governments needs to be limited by drawing out tight boundaries around application of the provision of the law.
- Competition in Retail Supply: It is important to start deliberations as implementing the measures could require legislative changes. An itemized bill should be introduced which identifies cost of service separately. A deep bulk market that both utilities and customers can access needs to be created.
- Creating deeper competitive markets: As the Indian power system becomes more diverse and deeper, there is a need to tighten the management of the system. This has already been done by narrowing the Unscheduled Interchange (UI) band. However development of more flexible power markets is also required. To start with, a well developed Ancillary Services (AS) market, followed eventually by capacity markets would be of importance.

6.1.4 Strengthening Systems & Processes

- Customer Service Orientation: Discoms need to incorporate a "state of art" corporate customer management system, allowing for proper execution and monitoring of all activities related to commercial cycle, customer grievance reddressal. There should be a linkage of operating norms with quality of supply

- Procurement: Creation of purchase cell for timely and cost-effective material procurement, inventory planning and power procurement. Creation of facility for forecasting power demand with reasonable amount of accuracy, which would prevent short term exigencies and help manage procurement costs better
- Information Technology: IT tools and applications have valuable use in aspects such as customer service, procurement, reduction of losses, etc. apart from contributing to better network data generation, management and control systems through applications like smart grids, remote metering etc;
- Monitoring & Evaluation: The system should encompass regular audits by third party agencies, internal auditing and reviews. GoI should urgently take up an exercise to review the investment program in R-APDRP to study whether investments were made effectively measure the efficiency improvements achieved. State level monitoring is also imperative to track the productivity of additional finances made available to them.

6.1.5 Building Human Capital

- The expanse and complexity of the sector requires deep skills on a large scale, perhaps like no other sector. This is true for regulatory agencies, policy makers, utilities and also investors. In a regime where direct procurement by consumers is becoming increasingly prevalent and standards (and corresponding adherence) are becoming critical for sector development large scale consumer awareness is also a requisite for holistic sector development. A concrete plan to achieve these ends assumes great importance in this context.

6.2 In conclusion

As this paper mentions at the outset, the Electricity Act, 2003 was a path-breaking piece of legislation. It has served the country very well over the past decade and has created a very strong and enabling framework for sector development. In most cases it is the stakeholders' community that has not fully adhered to the mandate of the law. After ten years of operation the few areas that are open to such inconsistent and inappropriate adoption have become apparent. It is indeed desirable that these areas are acted upon through legislation, policy and regulation to bring about rapid and efficient development of the electricity sector in India.

On the 10th anniversary of the Act it is important to evaluate whether there is a need to make competition and choice for the end consumer more universal and reduce the influence that the distribution utilities have on the fortunes of the sector and the economy. This would require amendments to the Act, and cannot be decided upon hastily. However, a vibrant debate must take place on this subject. It may well be possible that a framework that permits all consumers greater choice will also simultaneously enhance efficiency and productivity improvements in the sector.

Finally, for all its merits, the track record of the country with independent regulation in its current form is very mixed. While regulation has performed admirably at the central level, the deficits at the state level are stark. A review of the system and incorporation of measures that make regulators more independent and competent, and simultaneously more accountable for their actions needs to be ushered in.

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