Political Economy Of Distribution Reforms In Indian Electricity

Ashwini K Swain
Centre for Energy,
Environment & Resources
August 2016

WORKING
PAPER

CENTRE FOR
POLICY
RESEARCH

WWW.CPRINDIA.ORG

ABSTRACT

Despite sustained efforts to reform the sector, electricity distribution in India remains amidst complex problems, manifested in the form of loss-making distribution utilities, poor quality of service, governance ambiguities, and absence of basic data. The current wave of reforms seeks to turnaround the sector's performance by transforming the generation mix, strengthening the network infrastructure, ensuring universal access and better consumer experience, and financial revival of discoms. While policy signals from the centre appear to be promising and ambitious, given the past records, execution of these reform plans at the state level is uncertain.

Against this backdrop, the paper analyses the distribution reform initiated from the centre and the role played by the central government in shaping ideas and stimulating change at the state level. Looking into various diagnoses of the challenges and subsequent reform initiatives, the paper seeks to explain the political economy of successive reform attempts and their outcomes. It also identifies gaps in the current wave of reforms and raises questions for further exploration.

Suggested Citation

Swain, Ashwini K (2016): 'Political Economy of Distribution Reforms in Indian Electricity', *Working Paper*, Initiative on Climate, Energy and Environment, New Delhi: Centre for Policy Research.

Acknowledgements

This paper was commissioned as a background paper for the *Mapping Power* project, which is designed to provide a state-level perspective on India's electricity governance. See *www.cprindia.org/projects/mapping-power*. Preparation of this paper was supported by the Oak Foundation, through its grant to the Centre for Policy Research. The paper is intended to inform and stimulate discussion and represents the views of the author alone, who also is responsible for accuracy of facts and interpretation and opinions expressed.

The author is grateful to Navroz K Dubash, Sunila S Kale and Ranjit Barvikar for reviewing the paper and for their comments and suggestions.

INTRODUCTION

Electricity supply industry in India has been in flux over last two and half decades. Over this period, there have been incremental reforms focused on different segments of the sector. While there is some success in the generation segment, electricity distribution in India remains amidst complex problems, manifested in the form of loss-making distribution utilities, poor quality of service, governance ambiguities and absence of basic data.

The current set of reforms, seeking to transform the sector, adopts a multipronged approach focused on transforming the generation mix with greater addition of non-fossil capacity, strengthening the network infrastructure, moving toward universal access and better consumer experience, and encouraging the financial turnaround of discoms.[1] While part of this (and past reform initiatives) is influenced by the global wave of reforms, domestic concerns like energy security and universal access remain the major drivers.[2] The targets and broad strategy set by the central government appears to be ambitious and commendable, but, given the high cost involved in the transition, the success will depend on the performance of distribution utilities at state level.

Moreover, owing to the concurrent status of electricity, the central government is in a position to send broad signals through policy mandates. Much of the implementation and distribution management are state subjects. Yet, the central government has various levers to influence and shape state action. This paper aims to map and analyse the distribution reforms initiated so far and the role played by the central government in shaping ideas, stimulating change and also placing any limits to change at the state level. As the reform initiatives leading up to the Electricity Act 2003 (E Act) have been well covered and analysed in existing literature, the paper focuses on the reform measures taken in the post-2003 period. To set the context, Section II provides a brief account of the restructuring process, distribution reforms leading up to the E Act and their underlying rationale. Section III reviews various policy and review reports to understand the diagnosis of distribution challenges and identifies a range of techno-economic inefficiencies as pointed out in these documents. The section also presents the solutions proposed by various expert groups to overcome these challenges. Section IV analyses the corresponding policy measures taken by the government, especially at central level, and their outcomes. Section V looks into the socio-political roots of the distribution inefficiencies and explains how those have acted as barriers to reform initiatives. It also raises research questions for further exploration.

HESITANT STRUCTURAL REFORMS AND GOVERNANCE SHIFT IN INDIAN ELECTRICITY

Until the early 1990s, India's electricity supply industry followed the then prevailing global model, by being vertically integrated and state owned and operated. The first step of reforming the sector was taken in 1991, by allowing private investment in electricity generation. Very soon, it became clear that despite the favourable legislative change, private investment is likely to remain limited because of the lack of an enabling environment for private sector participation, reflected in the existing institutional and regulatory framework and the financial

[1] As stated by the government, in context of the new Tariff Policy, the ongoing reforms in the sector focus on 4 Es: i) Electricity for all; ii) Efficiency to ensure affordable tariffs; iii) Environment for a sustainable future; and iv) Ease of doing business to attract investments and ensure financial viability (PIB, 2016).

[2] Power sector reforms in India were introduced as part of the liberalisation process in Indian economy. Ahluwalia (2016) explains how the broad economic policy reforms initiated in 1991 are home-grown and goes on to claim that the policy response has gone beyond what the external actors thought to be possible. Albeit slowly, continuation of the reforms by successive governments testifies internal push for reforms.

weaknesses of the State Electricity Boards (SEBs). In a joint conference organised by the World Bank and Ministry of Power in 1993, it was agreed that the "*solution to the sector's problems lies in effecting structural, institutional, and regulatory reorganization along market lines, opening the sector to competition where possible (i.e., in generation and marketing of electricity), and providing arm's-length regulation in the remaining areas, as a prelude to implementing other financial reform measures*" (GoI & World Bank, 1993: 3).

Soon after, the focus of reforms shifted toward restructuring the supply industry and distribution reforms. The emphasis was on unbundling the SEBs to separate generation, transmission and distribution utilities and their corporatisation; establish independent electricity regulatory commissions; foster competition where possible; align tariffs with costs of supply; effect bold state-level reforms to encourage commercialisation of the sector; and put in place financial and accounting improvements to manage the fiscal impacts of the reform.

Odisha became the first state to undertake the prescribed distribution reforms, supported through a World Bank loan. The power reform strategy for the state followed four key components:

- Privatisation of power distribution, either by sale or long-term lease-management contracts;
- Corporatisation of the remaining SEB utility operations;
- Electricity tariff reform that raises tariff revenues as well as introduces a new tariff structure to reduce cross subsidies and promote efficiency in electricity use; and
- Establishment of a regulatory commission, separate from the state government, "to ensure sustainability of tariff reform and viability of utilities meeting the regulatory commission's performance standards, inter alia to attract sufficient private investment and protect the interests of consumers" (World Bank, 1996: 7).

Odisha managed to follow most of these prescriptions, except the critical tariff reforms.[3] However, the outcome of these reforms has attracted criticism.[4] Even in the absence of evidence of adequate success, the reform approach spread to other states. During 1996-98, three states (Odisha, Andhra Pradesh & Haryana) enacted their electricity reform laws and adopted parts of the reform measures, while many others were mulling over it. While there was an external push to adopt the emergent global model electricity supply system, there were internal drivers like falling quality of supply, rising financial losses and resulting burden on state exchequer, and alarming level of electricity theft and losses[5] (Dubash & Rajan, 2000).

While states were juggling with various reform components as an entry point, the central government came up with the Electricity Regulatory Commission Act (1998), in line with the World Bank prescription on independent regulation as a central piece of reforms.[6] The act made provisions for establishment of a Central Electricity

[3] The size and nature of the electricity sector in Odisha made reforms politically permissible. Owing to the nominal presence of agricultural consumers and limited household electrification, there was restricted social resistance to reforms, a factor that would later play an important role in halting reforms in Andhra Pradesh. It was further facilitated by absence of political issues around agricultural tariffs and public awareness on repercussions of reforms (Kale, 2014).

[4] For a detailed analysis of Odisha experience, see Rajan (2000), Ramanathan & Hasan (2004) and Mahalingam (2001)

[5] At this point, it became clear that agricultural consumption figures have been inflated to cover up the technical and commercial losses. The realisation that losses are significantly higher than what was being projected added to the impulse towards reforms.

[6] Regulatory Commissions had already been established in some states by this point. Establishment of independent electricity regulatory commissions was also recommended by the Common Minimum National Action Plan for Power (CMNPP), which evolved out of two conferences of Chief Ministers held in 1996. The CMNPP recognised the widening gap between demand and supply of power and deteriorating financial position of the SEBs. It claimed that the sector can't be sustainable without financially viable SEBs and improvement in their operational efficiency. The Action Plan suggested independent regulation in the sector through establishment of electricity regulatory commissions at centre and states to address the challenge. Another important decision that emerged out of the conferences was to charge at least 50 paisa per kWh to the agricultural consumers and over three years, move towards charging 50% of the cost of supply. Owing to the

Regulatory Commission and State Electricity Regulatory Commissions to ensure "rationalization of electricity tariff, transparent policies regarding subsidies, promotion of efficient and environmentally benign policies and matters connected therewith or incidental thereto" (GoI, 1998).

However, state level experimentation on electricity reforms continued to varying degree and results.[7] Delhi was the only other successful attempt to privatise distribution utilities, as others stalled midway owing to social and political resistance. Consumers' resistance was largely organised against any attempt at tariff revision and privatisation of discoms, in anticipation of tariff increase. The other force of resistance came from the employees' associations of erstwhile SEBs, who feared loss of employee benefits and job security if the SEBs were dismantled, corporatized and privatised. While states tried to introduce reforms by stealth, social resistance in some cases took form of mass agitation, often driven by the political parties in opposition. Drawing on a household survey, Santhakumar (2008) points out the factors determining social opposition to electricity reforms and identifies short-term loss perception to be the key driver.

Building on the incremental reform initiatives scattered across states, the central government envisioned a comprehensive legislation for the sector in 2001. Moreover, the move was an attempt to indigenise the reforms that were considered to be an external transplant. After being stalled in Parliament for two years, the Electricity Act was enacted in 2003, with the objective "*to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity*" and for taking measures for "*promoting competition …, protecting interest of consumers and supply of electricity to all areas, rationalisation of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies*" (GoI, 2003).

By making unbundling, corporatisation of utilities, and establishment of SERCs mandatory, and providing provisions for open access, the Act marked a shift in governance of Indian electricity (Table 1 identifies the key reform areas and strategies proposed through the Act).[8] Three important changes were sought with the shift in governance: first, to bring in market competition in both generation and distribution segments of the industry, with greater private sector participation; second, to separate economic decision-making in the sector from political influences and considerations; and third, to institutionalise consumer participation and protection in the regulatory process.

Table 1: The Electricity Act 2003: Key Reform Areas, Strategies & Responsibility

Key Reform Areas	Strategies
Introduction of Competition	• Unbundle monolithic state electricity boards • Delicense generation • Move to open access • Introduce power trading
Enhance Accountability and Transparency	• Establish SERCs

political sensitivity, it never happened. By 1998, there was a shift in position, asking the state governments to pay for subsidising agricultural electricity supply.

Addressing another conference of Chief Ministers on power in December 1998, then Prime Minister Atal Bihari Vajpayee reinstated the distribution challenges and claimed that "if we take political power seriously, we must take the power sector seriously." He blamed the financial ill-health of SEBs on cross-subsidisation, poor economic efficiency, poor maintenance of network and poor collection of revenue. Appreciating all party consensus on the Electricity Regulatory Commission Act, he emphasised the importance of a regulatory framework and independent regulatory institutions for success of the structural reforms being planned the sector (PIB, 1998).

[7] Kale (2014) and Tongia (2006) provide a detail account of these early reform initiatives.

[8] For detailed analysis of the Act, its provisions and implications see Godbole (2003), Sankar (2004), Ranganathan (2004) and Kumar & Chatterjee (2012).

	• Establish a National Appellate Tribunal • Corporatize utilities
Cost Recovery and Commercial Viability	• Improve operational efficiency • Ensure competitive procurement • Move to cost recovery
Rural Electrification and Electricity Access	• Ensure universal access • Affordability and availability
Improve Customer Satisfaction	• Reduce losses • Establish service standards
Promotion of Renewable Energy	• Renewable energy framework • Incentives to promote renewable energy generation and energy efficiency

After more than a decade, the sector is far from achieving these changes. There is partial success in terms of private sector participation and market competition, limited to the generation segment. Mechanisms for consumer participation and protection have been adopted by the electricity regulatory commissions, but these are predominantly symbolical to comply with the legislation rather than substantive (Khanna et. al., 2015). Separation between the political and economic content of regulatory decision-making still remain contentious and far from attained. Looking into regulatory practice in Indian electricity, Dubash & Rao (2008) argue that such separation in regulatory decision-making is neither feasible nor desirable in a rapidly changing sector. Subsequently, the reform approach, heavily reliant on fledgling regulatory commissions, has not made much progress beyond some institutional and symbolic changes.

DIAGNOSIS OF INEFFICIENCIES IN DISTRIBUTION SEGMENT

Two and half decades since reforms were introduced in the sector and more than a decade since enactment of the sweeping and forward-looking Electricity Act of 2003, the sector still grapples with past problems. While there have been some achievements in the physical front, especially capacity addition, grid extension and electrification, large part of the expectations from power sector reforms are yet to be met. On the positive side, electricity generation capacity has doubled since 2003 and stands at 305 GW, with 41.5% share from the private sector. Subsequently, the peak deficit which used to be about 10% then has been gradually brought down to two percent. The grid has been extended to 98.1% of the villages (CEA, 2016) and thus, connected about 300 million users over the period.

Yet, lack of reliable power remains a growth barrier in India. Annual per capita consumption remains significantly low in global terms at 957 KWh, and another 300 million population are yet to be connected. That shows India is still far behind the required level of electrical development. What explains the slow (or not at desired level) growth in the sector? Since the launch of reforms multiple reviews (discussed below) have been conducted to look at the progress of reform in the sector, and there here seems to be a consensus that the problem lies in the distribution segment, its continued financial losses and operational inefficiencies. Therefore, the distribution utilities, still largely under government ownership, will require more and sustained attention to improve overall sector performance and to meet India's energy needs.

Given the importance of electricity distribution, this section looks into different diagnoses of distribution inefficiencies in Indian electricity supply industry. It aims to identify the key challenges in the segment, as pointed out by various studies/reviews over a period of time. With the advent of economic liberalisation, the debilitating condition of the power sector gained major policy attention. While the financial condition of SEBs had been a

longstanding concern and discussed time and again in the past[9], a fresh self-introspection at the national level started in early 1990s. The National Development Council formed a Committee on Power in June 1993, which diagnosed and articulated the deficiencies in the then system and advocated a new policy framework. Speaking in the joint conference of the Government of India and the World Bank, the Chairman of the Committee highlighted managerial weaknesses affecting technological achievements, high level of T&D losses, inadequate annual financial outlays, tariff based on political expediency, unsound commercial principles and lack of energy conservation measures as the major challenges in the sector (GoI & World Bank, 1993). The diagnosis became the basis of subsequent policy debates and formation of CMNPP in the conference of Chief Ministers in 1996, which charted out an action plan and strategy of reforms in the power sector.

As the country was shifting towards consolidation of electricity reforms at national level, the Standing Committee on Energy, in its report on the Electricity Bill 2001, reemphasised the challenges: i) tariff not linked to cost of operations; ii) high level of T&D losses and electricity theft; iii) lack of commercial outlook; iv) political intervention in decision-making by SEBs; v) lack of organisational purpose and frequent change in leadership; and vi) poor financial health of SEBs (MoP, 2002). The new institutional and governance structure, mandated in the Electricity Act, sought to address these challenges.

However, the Working Group on Power for the 11th Five Year Plan, reviewing the progress of reforms, found that losses remained high and finances of utilities continued to worsen. In their report, the Working Group blamed the poor performance on uncertain commitment of state governments to the reforms, incomplete corporatisation of utilities, and weak regulatory process. Inadequate metering and data collection system and weak human resources in the utilities further added to the challenges (Planning Commission, 2007). The Plan Document claimed that "the greatest weakness is on distribution front which is entirely the domain of States" and concluded that an efficient distribution system is necessary to financially viable expansion of electricity supply industry (Planning Commission, 2008).

After five years, the 12th Five Year Plan found the utilities in larger financial strain, with increasing cash loss. The Working Group on Power for the 12th Plan pointed out persistent high level of AT&C loss and increasing revenue loss made by the distribution utilities. The gap between average cost of supply and average revenue realised has consistently been widening, contributing to mounting debt on the utilities. While rationalisation of tariff has been delayed, tariff revision petitions were not filed on time by the utilities. Further, the state governments were found to be delaying payment of subsidies and outstanding dues (Planning Commission, 2012).

Despite repeated warnings and suggested measures over two decades, the alarming level of loss and poor financial performance emerge as the major inefficiencies in electricity distribution (See Table 2). A study conducted by the Comptroller and Auditor General of India on financial performance of distribution utilities, covering 24 utilities, found that cross subsidies and tariff are irrational. Though some discoms have brought down the distribution losses to 15%, commercial losses remain too high. It claimed that "*unless the tariffs are made rational and losses are contained, discoms will reach at break down level due to financial imprudence.*" The report suggested that a tariff increase of 19.43% is required to ensure breakeven for the discoms (CAG, 2010). Analysing the gap between tariff and cost of supply, FoR (2010) found that, except in few states, tariff was not increasing at the rate of increase in cost of supply and estimated that tariff increase to the tune of 1% to 39% (varying across states) would be required to recover the cost of supply. Subsequently, in 2010, the erstwhile Planning Commission appointed a High Level Panel on Financial Position of Distribution Utilities to look into the financial health of power distribution committees and to suggest

[9] During 1960s & 1970s, there have been analogous studies identifying deep financial problems faced by SEBs. Notably, the Venkataraman Committee on Power Tariff Policy (1964) pointed out the inability of many SEBs to repay even the interest charges on government loans, as early as 1961-62. In addition to the high cost of rural electrification, the problem then was also manifested in the tariff discrepancies, i.e. continuation of subsidised rates for HT industrial consumers (for a detailed discussion on early reviews of SEB finance see Kale, 2014).

ways to improve the financial condition. The Panel in its report claimed that "*the problems faced by distribution utilities are, sometimes, laid at the door of regulators*" (p. 2). In the absence of periodic tariff revisions to cover the ever increasing costs, it has been difficult for the discoms to cover their costs through tariffs. On the other hand, it is inappropriate for tariffs to cover the costs of losses made by discoms (which stood at more than 30% at that time) owing to high operational inefficiencies. The Panel observed that "*inadequacies and distortions in tariffs have been caused by actions and inactions of regulators, utilities and indeed the state governments*" (Planning Commissions, 2011: 59).

While the Panel found regulatory process for tariff determination 'theoretically correct', in practice it did not allow valid expenses of the discoms. Failure to revise and fix tariff regularly has further aggravated the problem. On the other hand, the discoms often delayed their submission of tariff proposals or submitted incomplete proposals.[10] This tendency was largely observed in the case of state-owned discoms, who would also try to bypass the regulatory process. The primary reason for this attitude of the discoms, the Panel suggested, is the state governments' political sensitivity to any proposed increase in tariffs. Most of the states have paid lip service to prevention of electricity theft and T&D loss reduction, which could have benefitted both the utilities and consumers. The Panel suggested that tariffs should be determined on the basis of best available data rather than waiting for audited reports from discoms. It advocated a built-in formula for loss retail tariff that would pass on the rise in fuel costs to the consumers. It also suggested adoption of the distribution franchisee model for improving operational efficiencies of discoms (Planning Commission, 2011).

All these diagnoses and subsequent actions taken have resulted in some improvements. Yet, the outcomes are far from solving the problem. While average AT&C losses have come down from 38% in 2003 to 22.7% in 2014, it still remains significantly high compared to global standards. The gap between average costs of supply and average revenue realisation has been increasing. In 2013-14, the gap was Rs 0.73 per KWh after subsidy payments from the government. Subsequently, the aggregate loss was as high as Rs. 62,462 crores in 2013-14, after subsidy received from the state governments, contributing to the debt burden of power utilities. The accumulated losses of discoms were more than Rs 3,000 billion as of March 31, 2014 and these were largely funded by borrowings (PFC, 2015). The accumulated debt amount in 2014 was more than four times (in real terms) that in 2003. What explains this slow progress on distribution reforms? What policy action has been taken by the governments? The following section looks into various initiatives taken to curtail the losses and improves discom financial conditions.

Table 2: Key Challenges in Electricity Distribution in India (As identified at different points)

NDC Committee on Power (GoI & World Bank, 1993)	Standing Committee on Energy (MoP, 2002)	Working Group on Power,11th FYP (Planning Commission, 2007)	Working Group on Power, 12th FYP (Planning Commission, 2012)
• Managerial weakness leading to low technical achievements in SEBs • High T &D losses • Inadequate annual financial outlays • Tariffs based on political expediency • Unsound commercial principles • Lack of energy efficiency	• Tariff not linked to costs of operation • High T&D losses and theft • Lack of commercial outlook • Political interventions in decision-making by SEBs • Lack of organisational purpose and frequent change in leadership	• Uncertain commitment to reforms from state governments • Weak regulatory process • Incomplete corporatisation of utilities • High AT&C losses • Inadequate metering and data collection system • Inadequate human resources	• High AT&C losses • Widening gap between average cost of supply and average revenue realised • Mounting debt on utilities • Delay in payment of subsidies by state governments • Delay in rationalisation of

[10] Even before the Shunglu Committee report was submitted, the Ministry of Power had expressed concern over the issue. In a letter to the APTEL (dated 21.01.2011), MoP raised concern over the failure of disoms to file ARR, which has resulted in failure to revise tariff for several years.

& conservation	• Poor financial health of SEBs	tariff and irregular filling of tariff revision petition

FOCUSED REFORM RECOMMENDATIONS AND IMPLEMENTATION EXPERIENCES

While the central government brought in legislative changes to promote power sector reforms at the state level, it also introduced several schemes to facilitate those reforms. During the past one and half decades, several such schemes have focused on different aspects of the distribution business and have offered incentives to utilities and state governments to improve their performance. These schemes mainly focused on three reforms areas: i) Strengthening distribution network and loss reduction; ii) Tariff rationalisation and consolidation of discom finances; and iii) Electricity access and consumer experience.

Strengthening distribution network and loss reduction

As the reform approach was getting consolidated at the national level, the Ministry of Power at the centre came up with a six level intervention strategy in 2001, focused on national, state, SEB, distribution circle, feeder and consumer levels (Table 3 points out the key issues and initiatives proposed at different levels). As part of this, the Government of India introduced the Accelerated Power Development Programme (APDP), with the objective of initiating a financial turnaround in the performance of state-owned electricity boards. APDP was formulated to finance specific projects for upgradation of sub-transmission and distribution network and renovation and modernisation of thermal and hydro power projects, through central budgetary allocations. In 2002-03, the programme was rechristened the Accelerated Power Development and Reform Programme (APDRP), with a more clear focus on reform areas. Initially, APDRP covered 63 distribution circles out of a total of 400 circles in India. Later the focus shifted to densely electrified urban and industrial areas. The programme aimed at strengthening and upgrading the sub-transmission and distribution system in the country with the objective of reducing AT&C losses, improving quality of supply of power, increasing revenue collection and improving consumer satisfaction. The Programme is claimed to have had some success in AT&C loss reduction, metering, theft reduction, sub-transmission and distribution network expansion and capacity building, though the achievements were far below than the set targets.[11] A Task Force constituted by the Ministry of Power recommended continuation of the programme in the 11th plan period. While the Taskforce noted slow progress on all fronts as compared to the set target, it commended the achievement early on.

Subsequently, the Restructured Accelerated Power Development & Reforms Programme (R-APDRP) was approved as a Central Scheme in 2008 with total outlay of Rs 51,577 Crore. The focus of the programme was on actual, demonstrable performance in terms of sustained loss reduction. The establishment of reliable and automated systems for sustained collection of accurate base line data, and the adoption of IT in the areas of energy accounting were required prior to taking up regular distribution strengthening projects. The scheme focused on high-density urban areas with population more than 30,000 and provided performance based incentives.

All the three stages of the Programme claimed to have incremental achievements, but those were still below the expected outcome. AT&C losses, the thrust of the scheme, have come down from 36.81% at beginning of the scheme to 22.7% in 2014, which is a commendable achievement. But further reducing it to acceptable level (or global standards) would require greater effort. Given presence of other schemes with similar objectives, it is hard to pin down the success to any specific scheme. There are multiple reasons for slow performance of the programme.

[11] At the national level, AT&C loss was brought down from 36.81% in 2001-02 to 33.82% by 2004-05,. Out of 520 towns covered under the scheme, 212 towns contained the losses below 20% and only 169 of them brought down it below 15%, as targetted. Overall commercial loss of the utilities (without subsidy) reduced to Rs 19,722 crores in 2003-04 from Rs 29,331 in 2001-02. However, it increased again to Rs 22,126 crores in 2004-05. Feeder metering improved from 81% to 96% and consumer metering increased from 78% to 92% (Planning Commission, 2007).

First, the targets set under the programme were too ambitious and the timeline for those targets were constrained. Second, lack of experience at state and utility level to design projects focused on specific targets and linked to funding delayed the process of tendering and implementation.[12] Third, there was an observed delay in transfer of funds to the utilities as they were routed through the state governments. Fourth, in most cases, there was a communication gap between discoms' head office and field offices; time bound targets were not well communicated to the field offices, allowing them to pursue implementation at a slow pace. Finally, in some cases unavailability of contractors and equipment was a barrier to timely execution. Pargal & Banerjee (2014) claim that multiple versions of the scheme failed, as discoms "*were not informed of the extensive change management needed for implementation; this was made worse by limited resources, a lack of appropriate capacity, and the absence of a supportive IT ecosystem in the broader economy*" (p. 11). Multiple institutions and schemes with diffused accountability, and in absence of proper coordination, were responsible for partial implementation at state level.[13]

In the budget 2014-15, the current government continued the programme with a new name, i.e. Integrated Power Development Scheme (IPDS). IPDS aims to strengthen sub-transmission network, metering, IT application, customer care services and completion of the ongoing works of RAPDRP. The scheme was expected to help with reduction in AT&C losses, establishment of IT enabled energy accounting/auditing system, improvement in billing based on metered consumption and improvement in collection efficiency. The scheme covered all the discoms, including the private discoms, which were earlier excluded. Though the new scheme has a broad focus and approach, not any different from its predecessors, it has not set any specific targets as yet.

Table 3: Six Level Intervention Strategy to Accelerate Distribution Reforms

Level of Intervention	Key Issues to be Addressed	Initiatives Proposed
National Level	• Legal Framework • Policy Consolidation • Standardisation • Accounting	• The Electricity Act 2003 • National Power Tariff Policy • Committee for Standardisation • Setting up accounting standards • Availability-based tariff for generation
State Level	• Unbundling of SEBs • Tariff rationalisation • Subsidies by budgetary support	• Restructuring of SEBs • Establishment of ERCs • Removal of cross-subsidy in a phased manner
SEB Level	• Commercial and operational efficiency of utilities • Accounting • Maintaining desired frequency level	• Corporatisation of gencos, transcos and discoms • Introduction of MIS • Introduction of Grid code • Time of the day metering
Distribution Circle Level	• Outage reduction • Loss reduction • Reliability of supply • Voltage regulation • Accountability	• 100% static meters • Energy accounting • Responsibility and accountability for billing and collection • Schemes for reward and punishment

[12] At the second stage of APDRP, the central agencies responsible to guide the states and utilities, NTPC and PGCIL, did not have adequate understanding and experience on the distribution business. However, realising the gaps, Power Finance Corporation was made the nodal agency during RAPDRP.

[13] Pargal & Banerjee (2014) and Kumar & Chatterjee (2012) provide further details on the schemes and their implementation.

Feeder Level	• Reliability of supply • Maintaining desired voltage • Metering, billing and collection • Improving HT/LT ration	• Capacity building • Introduction of profit centre concept • District-wise planning • Project management • Technical and managerial upgradation
Consumer Level	• Metering • Compliance of billing • Consumer satisfaction	• Road shows for public awareness • Penal provision for thefts • Demand side management • Energy conservation act 2001 compliance

Tariff rationalisation and consolidation of discom finances

Apart from AT&C losses, as discussed in the previous section, the other major contributor to discoms' debacle has been the irrational tariff levels. The E Act has institutionalised a process for setting retail tariffs to reflect the costs of power. The SERCs fix the tariffs through tariff orders in accordance with the National Tariff Policy and as per the provisions of the E Act. The tariff is set based on the estimated Annual Revenue Requirement of the discoms in a financial year. However, this arrangement has not been effective in addressing the financial loss of discoms, as discussed in the previous section. The gap between average cost of power and average revenue realisation has been widening year on year, contributing to regulatory assets and accumulated debt of discoms.

In response, the Planning Commission set up a sub-committee, headed by B K Chaturvedi, to formulate a plan to restore the financial health of the discoms. The committee proposed a plan where state governments will absorb 50% of the debt of the discoms and convert them into state government bonds. The other 50% will have to be restructured by commercial banks by extending the tenure for repayment and possible moratorium on interest. Subsequently, building on the proposal, the central government notified the scheme for Financial Restructuring of State Distribution Companies in 2012.[14]

The scheme envisaged financial turnaround of the sector within three years and covered eight states[15] that together accounted for 80% of accumulated distribution losses. The scheme required the respective state governments to take over 50% of short-term loans (including payables for power purchase) of discoms, as on 31 March 2012, for 2-5 years, and provide support for interest and principal repayment for taken over liability. Taken over loans could be converted into bonds backed by government guarantee, with moratorium of 3-5 years and repayment schedule over 10 years. The remaining 50% of the debt would be restructured into long term loans by lenders with moratorium on principal repayments up to 3 years, lenient repayment terms and waiver of penal interest. The central government would provide additional support through a transitional finance mechanism, which included: i) matching grant on accelerated reduction in AT&C loss targets, and in case the gap between average costs of supply and average revenue realised is reduced by more than 25% within first three years; ii) reimbursement support of 25% of principal repayment in case a state government takes over the entire 50% share of the short-term loans. Lenders can finance operational losses and interest for first three years on a diminishing scale, and remaining is to be financed by the state government (MoP, 2012). However, the bailout plan remained a non-starter. All the eight

[14] The 2012 scheme was the second bailout for power sector, since reforms were initiated. The first bailout came in 2001, following the Ahluwalia Committee report on Settlement of SEB dues. Under the bailout, 50% of the interest payable by SEBs to various public sector undertakings in the power sector was waived. Remaining dues were converted into long-term loans to be repaid by the corresponding state governments over next 15 years (Chitnis, Dixit & Josey, 2012).

[15] Tamil Nadu, Uttar Pradesh, Rajasthan, Haryana, Jharkhand, Bihar, Andhra Pradesh and Telangana.

states had failed to meet the requisite performance criteria, leaving the discoms on the brink of financial collapse. The scheme had attracted criticism for being a stop-gap arrangement to address a chronic problem (Bhaskar, 2014). Soon after the failed attempt on financial restructuring, the MoP unveiled a model State Electricity Distribution Management Responsibility Bill, 2013 to be adopted by the states. The Bill aimed to "provide for responsibilities of the State Government to ensure financial and operational turnaround and long-term sustainability of the State-owned Distribution Licensee to enable adequate supply of electricity to consumers through financial restructuring" (MoP, 2013). This was to enable adequate electricity supply to consumers through financial restructuring. The key features of the bill included:

i) The State government shall submit in each financial year before the State Legislature an electricity distribution management statement on the slew of measures taken with regard to electricity distribution. The measures will concern long-term planning, consumer protection, regulatory compliance, corporate governance, and financial restructuring of the discoms, so as to bring about the operational and financial viability of the discoms.

ii) The statement shall define a set of key performance indicators (KPIs) related to each of the aforesaid aspects, giving stress to payment of dues by government departments and institutions, distribution loss cut trajectory, provisioning of subsidy, energy accounting and auditing, improvement in collection efficiency, and recovery of past receivables. The statement shall also mention the policies and strategies the State government plans to undertake to realise the KPIs.

iii) The long-term planning shall require the discoms to estimate demand, AT&C loss, and availability of electricity on long-term basis and, contracts. Also, it shall have a time-bound roadmap to reduce AT&C loss.

iv) With regard to compliance issues, the Bill requires the State government to bi-annually evaluate the status of compliance by the discoms with the E Act and Rules and Regulations, Policies, and Directives.

v) The State government and the discoms shall enter into a memorandum of understanding for setting targets for KPIs and performance evaluation of the discoms for each financial year. vi) Non-compliance of 'duties' by the State government may attract appropriate action by the Central government that may render the State ineligible for power from unallocated quota, etc. (MoP, 2013).

Although the Model Bill addressed many critical aspects and provided a detail strategy, it did not have an impact until recently. Rajasthan became the first state to adopt the bill and has enacted the Rajasthan Electricity Distribution Management Responsibility Act, 2016.[16]

As both the successive attempts to address the distribution sector's financial crisis failed to take off, discoms plunged into a deeper crisis. By 2015, accumulated debt of distribution utilities reached Rs. 430 billion. The current government came up with a new scheme called the Ujwal DISCOM Assurance Yojana (UDAY), with the same objective as before of turning around electricity distribution. The scheme (see Box 1 below for key features of UDAY) builds on the preceding two attempts, drawing more from the Financial Restructuring Scheme of 2012 and some parts from the Distribution Management Responsibility Bill of 2013. On the face of it, UDAY appears an improved scheme, combining the incentives and targets of other ongoing programmes on power sector reforms. As opposed to the 2012 scheme, UDAY puts greater responsibility on the state governments by asking them to take over a larger share of the accumulated debt. The scheme also recognises unsustainable borrowing by discoms and tries to cap it by permitting finance of future losses through discom bonds guaranteed by the state governments. At the same

[16] The notified Act is available at http://energy.rajasthan.gov.in/content/dam/raj/energy/dept_of_energy/pdf/misc/RajStateElecDistMangAct2016.pdf

time, it places a limit on working capital loans at 25% of the previous year's revenue. With the ambitious target of making all discoms profitable by 2018-19, the scheme is not a onetime settlement as in case of 2001; rather it seeks to be an ongoing effort to sustain the distribution activity.

To complement the scheme, the proposed amendments to the E Act include provisions to rationalise the tariff structure on sound financial principles for the viability of the distribution sector and recovery of revenue requirement of licensees without any gap -- the provisions of National Tariff Policy are proposed to be made mandatory for the determination of tariff. Further, the bill envisages timely filing of tariff petitions by utilities, disposal of the same by the appropriate Commission within a specified time period, and powers to appropriate Commissions to initiate *suo-moto* proceedings for determination of tariffs in case the utilities do not file their petitions in time. Simultaneously, the new tariff policy requires the regulators to 'necessarily' follow the provisions while determining tariff levels, reinstates the need to initiate *suo-moto* proceedings for determination of tariff if the utilities fail to file ARR on time, and allows more frequent tariff revisions.[17]

To hold the state governments accountable, participation in the UDAY scheme requires a tripartite agreement between the discoms, state government and the MoP. So far 15 states have signed MoUs and six others have expressed their interest. On the downside, the scheme lacks a specific performance-monitoring and compliance mechanism. Past experiences suggest that lack of a publicly accessible monitoring mechanism has led to delay or non-compliance with performance targets. The scheme will have to face its real challenge when elimination of revenue gap for discoms would require tariff increases. How will the state governments cope with tariff increases? What would be the strategy of states where tariff has not been revised for a long time? Many stakeholders suspect that states (governments as well as SERCs) will not be able to pass on the true cost of electricity supply to consumers, thus reducing the scheme to a bailout for the lenders, not the discoms. Loans taken over by the state governments will provide some respite to the ailing discoms, but as long as delay in subsidy disbursement and defaults by government departments[18] are not addressed, the discoms will continue to have commercial losses even in the face of efficiency improvements.

Box 1: Key Features of UDAY

- State governments will take over 75% of respective discoms' debt as on 30 September 2015 over two years; 50% in 2015-16 and remaining 25% in 2016-17. Government of India will not include the debt taken over by the States as per the above scheme in the calculation of fiscal deficit of respective States in the financial years 2015-16 and 2016-17.
- States will issue non-SLR including SDL bonds in the market or directly to the respective banks or financial institutions holding the discom debt to the appropriate extent.
- Discom debt not taken over by the State shall be converted by the banks into loans or bonds with interest rate not more than the bank's base rate plus 0.1%. Alternately, this debt may be fully or partly issued by the

[17] Non-filing of ARR by discoms resulting in no revision of the tariffs over long period has been a long standing issue, pointed out by many assessments. Before the new tariff policy, this issue was taken up by APTEL in 2011 through a *suo-moto* order, responding to a letter from MoP. The Tribunal directed that "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 Regulations." In case of delay of one month in filing of ARR by the utilities, the Tribunal directed the SERCs to initiate *suo-moto* proceeding for tariff determination. It also directed that, in determination of tariff, the revenue gaps ought not be left and regulatory asset should not be created as a matter of course, except where it is justifiable. Where regulatory assets are unavoidable, the recovery must be done within a three year period (APTEL, 2011). However, these directions have barely been followed in the states. The Tariff Policy of 2016 reinstates these directives, making them mandatory for the SERCs.

[18] In many cases, where the state governments have committed to provide subventions to subsidize certain segments of consumers, disbursement of subsidy amount has often been delayed and partly defaulted. Moreover, in many cases, various government departments continue to default payment of dues to discoms.

discom as State guaranteed discom bonds at the prevailing market rates which shall be equal to or less than bank base rate plus 0.1%.

- States shall take over the future losses of DISCOMs in a graded manner: 5% of previous year's losses in 2017-18, 10% in 2018-19, 25% in 2019-20, and 50% in 2020-21.
- State discoms will comply with the Renewable Purchase Obligation outstanding since 1st April, 2012, within a period to be decided in consultation with Ministry of Power.
- States accepting UDAY and performing as per operational milestones will be given additional/priority funding through Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Integrated Power Development Scheme (IPDS), Power Sector Development Fund (PSDF) or other such schemes of Ministry of Power and Ministry of New and Renewable Energy.
- Such States shall also be supported with additional coal at notified prices and, in case of availability through higher capacity utilisation, low cost power from NTPC and other Central Public Sector Undertakings.
- States not meeting operational milestones will be liable to forfeit their claim on IPDS and DDUGJY grants.

Electricity access and consumer experience

Besides the initiatives on loss reduction and financial turnaround of distribution utilities to improve electricity service, the past decade has seen greater emphasis on improving electricity access and consumer experiences with electricity service. Complementing APDRP, Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was launched in 2005 to set up a rural electricity distribution backbone and provide electricity access to rural and poor household. Despite the delays, the scheme has contributed to expansion of rural electrification to cover 98.1% villages and provided access to about 300 million citizens.

The current government introduced a new scheme called Deen Dayal Upadhyaya Gram Jyoti Yojana in 2015, subsuming RGGVY, to take the initiative forward. By focusing on rural feeder separation (for agricultural and non-agricultural usage), strengthening of sub-transmission and distribution infrastructure and metering in rural areas, the scheme intends to improve rural electricity delivery.

Simultaneously, the MoP has launched an initiative to secure 24x7 power for all by 2019. As part of the initiative, MoP and each state government have issued a joint statement and plan for state level electrical development. The initiative, already joined by 22 states, seeks "to further enhance the satisfaction levels of the consumers and improve the quality of life of people through 24x7 power supply. This would lead to rapid economic development of the State in primary, secondary & tertiary sectors resulting in inclusive development of the State."[19]

The Electricity (Amendment) Bill 2014, when enacted, is aimed at bringing a major change for consumer choice by separating content and carriage, and allowing multiple distribution licensees in one area. Although the proposal has been criticised at large, and is suspected to benefit the private player by allowing them to cherry-pick the high paying consumers (Mehta & Swain, 2015), some see merit in the proposed arrangement and expect it will offer consumers better bargaining power and hold the distribution utilities accountable to improve their operational efficiency.

The success of schemes on electrification and improving access have commendable success in recent past, but ensuring 24x7 power to all, and with a choice of service provider, would require greater effort. It will largely depend on the success of other initiatives to turn around discoms performance and finances. The pledges and plans from

[19] As stated in the foreword from Minister of Power. The joint statements and state specific action plans can be found at http://powermin.nic.in/content/power-all

state governments hold promise. Given the tight timeline, however, how far the states will be able to deliver on these promises remains a question.

Table 4: Central Initiatives to Reform Electricity Distribution

Strengthening Distribution Network & AT&C Loss Reduction	Tariff Rationalisation & Consolidation of Discom Finances	Electricity Access and Consumer Experience with Service Delivery
Accelerated Power Development Programme (2001) • Financial turnaround in the performance of state-owned power sector • Finance projects for upgradation of sub-transmission & distribution network • Finance renovation & modernisation of thermal & hydro power projects	**Settlement of SEB Dues (2001)** • Waiver of 50% of the interest payable by SEBs to various public sector undertakings • Remaining dues were converted into long-term loans to be repaid by the corresponding state governments	**Rajiv Gandhi Grameen Vidyutikaran Yojana (2005)** • Set up a rural electricity distribution backbone • Provide electricity access to rural and poor household
Accelerated Power Development & Reforms Programme (2002) • Strengthening and upgradation of the sub-transmission and distribution system • Reducing AT&C losses, improving quality of supply of power, increasing revenue collection • Improving consumer satisfaction	**Financial Restructuring of State Distribution Companies (2012)** • State governments to take over 50% of short-term loans • Balance 50% of the debt would be restructured into long term loans by lenders • Additional support from the Central Government through transitional finance mechanism	**The Electricity (Amendment) Bill (2014)** • Multiple supply licensee: Consumer choice of service provider
Restructured Accelerated Power Development & Reforms Programme (2008) • Establishment of reliable and automated systems for sustained collection of accurate base line data • Adoption of IT in the areas of energy accounting • Actual, demonstrable performance in terms of sustained loss reduction	**Model State Electricity Distribution Management Responsibility Bill (2013)** • Provide for responsibilities of the State Government to ensure financial and operational turnaround and long-term sustainability of the State-owned Distribution Licensee • Enable adequate supply of electricity to consumers through financial restructuring	**Deen Dayal Upadhyaya Gram Jyoti Yojana (2015)** • Rural feeder separation • Strengthening of sub-transmission and distribution infrastructure • Metering in rural areas • Improving rural electrification & access
Integrated Power Development Scheme (2014) • Strengthen sub-transmission network • Metering at multiple levels	**Ujwal DISCOM Assurance Yojana (2015)** • State governments will take over 75% over two years • States shall take over the future losses of discoms in a graded manner	**24x7 Power for All (2015)** • State specific power development plan • Round-the-clock access to quality power to all citizens,

• IT application in energy accounting • Customer care services • Completion of the ongoing works of RAPDRP	• States performing as per operational milestones will be given additional/priority funding	at affordable cost, by 2019 • Enhance the satisfaction levels of the consumers

CONCLUSION

Building on past experiences, current reform initiatives (as highlighted in Table 5) seek to complement each other and seem to address the key challenges in the distribution sector. If the set targets are met on time, the desired 'turnaround' would be a reality for the sector. While the target is within an achievable horizon, it requires more coordinated and consolidated efforts at different levels and many challenges to be overcome.

Over the past one and half decades, AT&C loss has been reduced to a significant level. Yet, getting it further down, as desired, below 15% would require more effort and stronger commitment from the state governments, regulators and discoms. The current set of policies seems to recognise this need. As the central government seeks to make the discoms profitable by 2018-19, losses must be curtailed by then. Given the variation in state dynamics and degree of losses at state level, success will require a state specific action plan. It is important to understand how the states are planning for this target, what levers are being used, and which actors and agencies will play a critical role. The MoUs signed under UDAY provides a future trajectory for loss reduction specific to the states. While some appear to be achievable, others may remain unfulfilled owing to poor distribution infrastructure and short-term horizon. Critics suspect that in absence of an effective monitoring mechanism, discoms may end up covering parts of losses under agricultural consumptions to meet the targets, as has happened in the past.

While loss reduction has been on track, though at a slow pace, increasing revenue loss of the discoms has been chronic and a more important policy concern. There is a consensus that sector turnaround is not possible as long as revenue loss is not addressed. The current policies do recognise the challenges and have made provision to address this problem. Given the variation in revenue gap (between average cost of supply and average revenue realised) across the states, states will have to follow different approach. Past experiences suggest that even after expressed political will and commitment from the state governments on multiple occasions, the same governments have stalled tariff rationalisation. How is that attitude going to change in the current context? While it may be easier for the states with the least revenue gap, how will the states with the worst revenue gap perform? What strategies can be adopted to reduce social resistance to any rational tariff revisions? Which agencies and actors would play a critical role and in what form?

Moreover, interest burden on the discoms continue to be a large part of the average revenue required. UDAY provides some respite, by asking the state governments to take over the loans in a phased manner. But, despite SERCs' recommendations for advance payment, delay and default in subsidy disbursement by the state governments and default of dues by government departments compel the discoms to go for short-term loans to meet operational expenses. In most cases, SERCs do not allow interest on such loan in annual revenue requirements. While the scheme puts a cap on working capital loans (at 25% of previous years revenue), it does not provide a solution for the discoms.

Though the argument on irrational or low retail tariff is strong in the policy domain, there is a counter opinion that discoms' financial mess is more because of their operational inefficiencies and high wholesale price of power in India. Such opinion sees the solution in rationalisation of wholesale tariff (Sethi, 2016) and better management of power procurement to improve distribution finances. In many cases, discoms have got into long-term power purchase agreements based on peak demand and projected increase in demand. While the projected demand has

not picked up and open access has reduced the peak demand, many discoms end up paying high fixed cost for ideal generation facilities, adding to power procurement costs. While the current policy initiatives seek to bring down the power procurement costs through various measures (especially efficient coal exploration and pricing), there is a need to further investigate generation efficiency, power procurement costs, and effective utilisation of contracted generation capacities.

Finally, the current initiatives tend to ignore the role to be played by electricity regulatory commissions. The broad framework of reform measures seek changes that would require a proactive commitment and engagement from the electricity regulators, especially in the case of targeted loss reduction and regular tariff revisions. However, there has not been enough effort at the national level to consolidate the regulatory structure for the sector. In that context, it is critical to examine how the states manoeuvre to establish coordination and collaboration between the three set of actors -- discoms, regulators and state governments -- and ensure public accountability.

REFERENCES

Ahluwalia, MS (2016): 'The 1991 Reforms: How Home-grown Were They?', *Economic and Political Weekly*, 51(29): 39-46.

APTEL (2011): OP No. 1 of 2011: Tariff Revision (Suo-Motu action on the letter received from Ministry of Power), New Delhi: Appellate Tribunal for Electricity.

Bhaskar, U (2014): 'Bailout Plan for Discoms Fizzles Out', *Mint*, September 09, New Delhi.

CAG (2010): *Issues Impacting Financial Performance of Power Distribution Utilities in India*, New Delhi: Comptroller and Auditor General of India.

CEA (2016): *Executive Summary of the Power Sector*, April-June, New Delhi: Central Electricity Authority.

CHitnis, A, Dixit, S & Josey, A (2012): 'Bailing Out Unaccountability', *Economic & Political Weekly*, 47(51): 22-25.

Dubash, NK & Rajan, SC (2000) 'Power politics: process of India's power sector reform', *Economic and Political Weekly*, 36 (35): 3367-3390.

Dubash, NK & Rao, DN (2008): 'Regulatory practice and politics: Lessons from independent regulation in Indian electricity', *Utilities Policy*, 16: 321-331.

FoR (2010): *Tariff Revision Assessment for Financial Viability of DISCOM and Comparison of Approaches*, (Prepared by CRISIL Infrastructure Advisory), New Delhi: Forum of Regulators.

Godbole, M (2003): 'Electricity Act, 2003: questionable wisdom', *Economic and Political Weekly*, 38 (39): 4104-4110.

GoI & World Bank (1993): *Proceedings of Conference on Power Sector Reforms in India*, October, 29-31, Jaipur, Government of India & World Bank.

GoI (1998): *The Electricity Regulatory Commission Act of 1998*, New Delhi: Government of India.

GoI (2003): *The Electricity Act of 2003*, New Delhi: Government of India.

Kale, SS (2014): *Electrifying India: Regional Political Economies of Developm*ent, Stanford: Stanford University Press.

Khanna, A, Singh, D, Swain, AK & Narain, M (2015): 'Transforming Electricity Governance in India: Has India's Power Sector Regulation Enabled Consumers' Power?', *World Bank Policy Research Working Paper 7275*, Washington DC: The World Bank.

Kumar, A & Chatterjee, SK (2012): *Electricity Sector in India: Policy and Regulation*, New Delhi: Oxford University Press.

Mahalingam, S (2001): 'The Unravelling of the Reform Experiment in Orissa: A Case of Facile Assumptions, Glaring Fallacies, and Unrealistic Targets', available at http://prayaspune.org/peg/publications/item/download/183_f86ffeefccb5f6e8b54ea7c8b25b4dd9.html

Mehta, PS & Swain, AK (2015): 'Power Haves, Power Have-Nots', *Indian Express*, 8th April, New Delhi.
MoP (2002): 'The Electricity Bill 2001', Report of the Standing Committee on Energy, Ministry of Power.

MoP (2012): OM on Financial Restructuring of State Distribution Companies, Ministry of Power.

MoP (2013): *Model Electricity Distribution Management Responsibility Bill, 2013*, Ministry of Power.

Pargal, S & Banerjee, SG (2014): *More Power to India: The challenge of electricity distribution*, Washington DC: The World Bank.

PFC (2015): *Report on the Performance of State Power Utilities 2011-12 to 2013-14*, New Delhi: Power Finance Corporation.

PIB (1998): 'Prime Minister Calls for Collective Power Reform Initiatives Speech at the CM's Conference on Power', Press Information Bureau, available at http://pib.nic.in/focus/foyr98/fo1298/fo2112984.html

PIB (2016): 'Cabinet Approves Amendments in Power Tariff Policy to Ensure 24X7 Affordable Power for All', January 20, Press Information Bureau, available at http://pib.nic.in/newsite/PrintRelease.aspx?relid=134630

Planning Commission (2007): *Report of the Working Group on Power, 11th Five Year Plan*, New Delhi: Planning Commission of India.

Planning Commission (2008): *Eleventh Five Year Plan 2007–12, Volume III: Agriculture, Rural Development, Industry, Services, and Physical Infrastructure*, New Delhi: Oxford University Press.

Planning Commission (2011): *Report of High Level Panel on Financial Position of Distribution Utilities* (Shunglu Committee), New Delhi: Planning Commission of India.

Planning Commission (2012): *Report of the Working Group on Power, 12th Five Year Plan*, New Delhi: Planning Commission of India.

Rajan, AT (2000): 'Power Sector Reform in Orissa: An Ex-post Analysis of the Causal Factors', *Energy Policy*, 28(10).
Ramanathan, K & Hasan, S (2004): *Electricity Distribution - The Orissa Experience*, New Delhi: The Energy Resources Institute.

Ranganathan, V (2004): 'Electricity Act 2003', *Economic and Political Weekly*, 34 (20): 2001-2005.

Sankar, TL (2004): 'Electricity Act 2003: dark shadows over a bright vision', *Economic and Political Weekly*, 39: 839-844.

Santhakumar, V (2008): *Analysing Social Opposition to Reforms: The Electricity Sector in India*, New Delhi: Sage Publications.

Sethi, SP (2016): 'We Simply Deserve Better: Challenges in Coal and Power Sectors', *Economic & Political Weekly*, 51(25): 12-16.

Tongia, R (2006): 'The political economy of Indian power sector reforms', In: Victor, DG & Heller, TC (Eds.), *The Political Economy of Power Sector Reform*. Cambridge: Cambridge University Press.

World Bank (1996): *Staff Appraisal Report- Orissa Power Sector Restructuring Project*, Washington DC: The World Bank.