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Poverty Amidst Plenty: Limits of Generation Bias and State Allocation in Madhya Pradesh's Power Sector

Working Paper
Mapping Power Project

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Project Overview

This working paper was written as part of a collaborative research project, Mapping Power, which aims to provide a state-level analysis of India's electricity governance. The project is coordinated by Sunila S. Kale (University of Washington, Seattle), Navroz K. Dubash (Centre for Policy Research), and Ranjit Bharvirkar (Regulatory Assistance Project), and carried out by a team of 12 researchers. The research explores the views and perspectives of various stakeholders and organizations in each state and how they will be affected by new initiatives in India's electricity sector, as well as the forces and constraints that shape decision-making in electricity governance. Using data from qualitative interviews with key informants buttressed by quantitative data, the research team covered 15 states as part of the analysis: Andhra Pradesh, Bihar, Delhi, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal. You can learn more about Mapping Power as well as access other working papers in the series here: http://www.cprindia.org/projects/mapping-power.

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Abstract

Despite phenomenal growth in power availability, Madhya Pradesh continues with high-level energy poverty. Two decades after the state initiated distribution reforms, the power utilities are still grappling with past problems. Institutional restructuring, which unfolded over 11 years, resulted in a complex institutional architecture that provides the state government with systematic control over the sector. By prioritising availability augmentation, the state has undermined access and affordability and thus reinstated an economic divide in society. On the operational side, the utilities still face high losses and poor billing and collection, which results in high dependency on the state government for bailout.

Against this backdrop, this paper analyses the power sector reforms trajectory in the state to examine policy choices and outcomes. It also looks at the political-economic drivers for these policy choices and how they deviate from or comply with signals from the Centre. Drawing on the findings, the paper seeks to explain the limits of generation bias and state allocation, and examine how intensive institutional restructuring has resulted in consolidated state control over the sector. Finally, it analyses the implications of past experiences and the prevailing context for ongoing and future reforms.

Introduction

Madhya Pradesh (MP), located in the central part of the country, has been holding an important place in India's subnational political economy on various parameters, including geographic, demographic, economic, and political. Between the two state reorganisations, in 1956 and 2000, it remained the largest state by size in India. With 9 percent of the national geographic area, at present it is the second largest state and houses 6 percent of the total population (ranked fifth by population size). The state has an agrarian economy, with 72 percent of the population living in rural areas (Census, 2011) and primarily dependent on agriculture for livelihood.

For a long period, MP has been seen as a symbol of uneven development in economy and society (Shah, 2005). The state has historically been at the lower end of regional disparities in the country, and a part of the infamous BIMARU states.[1] Despite an acceleration in economic growth in the 1990s, following a slower than average growth rate in the 1980s (Ahluwalia, 2002),[2] MP could not attract much domestic investment, foreign investments being more difficult, during 1990s. Although it was a frontrunner, it did not get much success from economic liberalisation, at least in the first decade. The state economy further deteriorated when it lost a good part of the natural resources to Chhattisgarh in the 2000 state reorganisation. Yet, the new MP retained many mineral reserves, including manganese, iron, coal, and diamond. Until the recent decade, the state had a poor industrial development (Jalala, 2004). It continued to reel under fiscal deficits until the early 2000s. MP's poor economic performance, especially during the 1990s, is partly blamed on the state's ineffective articulation of its interest at the Centre (Shah, 2005). Beginning in 2004–2005, there have been significant improvements in the economy, with recorded revenue surplus. Over this recent decade, there has been constant growth in gross state domestic product (GSDP), often at a higher level than the national average. Industrial promotion has

[1] In the 1980s, Ashish Bose coined the acronym "BIMARU," which stands for Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh. The term has a resemblance to the Hindi word *bimar*, meaning sick, and implied economic sickness of the four states (Kumar, 2007). Several studies have pointed out how poor economic performance of the BIMARU states had been dragging down India's gross domestic product, especially during the 1980s and 1990s.

[2] Ghosh (2005) provides a comprehensive analysis of MP economy during pre- and post-liberalisation (1980s & 1990s).

been prioritised, with an emphasis on ease of doing business and attracting private capital investment.[3] Yet, the industrial contribution to net state value added (NSVA) lags behind agriculture.[4]

Politically, the state has been vibrant. It was one of the first states to express resistance to the hegemony of the Indian National Congress (INC) party in 1960s; *Samyukta Vidhayak Dal*, an anti-Congress coalition, came to power in 1967 and ran the state government for two years. There has been a stable elected government in the state except for a year during 1992–93 and two other brief stints of President's Rule. During the post-liberalisation period, the state has been run by both of the major national parties. During the first decade, from 1993 to 2003, INC was in power under the leadership of Digvijay Singh. Since 2003, the Bharatiya Janata Party (BJP) has been in power, mostly under the leadership of Shivraj Singh Chouhan. Along with the economic development issues, inclusion of marginalised groups in the power structure seems to have dominated the state politics in MP.[5,6] Without any significant social movement, however, economic and political inclusion of the weaker sections continues to dominate the political discourse in the state.

MP's power sector shares the fate of wider economic reforms in the state. Though it has been a first mover in terms of reform, it did not achieve much success in the sector until 2000. State reorganisation in 2000 further deteriorated the sector health through skewed allocation of resources between MP and Chhattisgarh. Since then, there have been significant changes in the sector. On the physical front, installed generation capacity has been increased six-fold since 2000. As of February 2017, MP has achieved an installed capacity of 19,025 megawatts (MW), accounting for 6 percent of national capacity (CEA, 2017). The electricity grid has been extended to almost all villages (CEA, 2016). Paradoxically, despite an increase in availability of power and grid extension, the state has recorded a reduction in household access to electricity, from 70 percent in 2001 to 67 percent in 2011 (Census, 2011). The de-electrification is mainly reported in the rural areas, reflecting the state failure in assimilation of the weaker regions and communities. Subsequently, per capita electricity consumption in the state was just 739 kilowatt-hours (kWh) in 2014–2015, far below the national average of 1,010 kWh (GoI, 2016) and better than only Bihar and Uttar Pradesh.

Although MP has followed the Central guidelines on power sector restructuring and management reforms, there seems to be a greater bias for adding generation capacity to bring the state out of energy poverty and fuel its industrial aspirations. The state has unbundled the MP State Electricity Board (MPSEB) in several stages, spread over 11 years (2001 to 2012), resulting in a complex set of institutions. In the process, the main motivation for restructuring seems to be undermined for a pursuit of greater electricity generation as a primary industry and driver for the economy. The result is sustained energy poverty at the household level, despite increasing abundance of electricity availability. It is worth

[3] According to Assessment of Implementation of Business Reforms, MP has significantly improved on the doing business indicators and retained its high rank at fifth position (DIPP, 2016). In the recent Global Investors Summit, held in October 2016, the state has received an expression of interest in investment to the tune of Rs 5.6 trillion (Trivedi, 2016).

[4] In 2014–2015, industrial contribution to NSVA was 22 percent, whereas the agriculture and service sectors contributed 37 percent and 40 percent, respectively. It was not only lower than the high-income states (e.g., 42 percent in Gujarat and 33 percent in Maharashtra), but also below Rajasthan (28 percent) and Uttar Pradesh (25 percent), two other BIMARU states. Within the industrial sector, manufacturing activity (accounting for the major part of the industrial energy demand) contributed only 7 percent of the NSVA (RBI, 2016).

[5] Gupta (2005) explains the limits of state initiatives for inclusion of subalterns in MP and the political and social barriers.

[6] Demography of MP includes a high share of socially marginalised populations. The state population includes 21 percent Scheduled Tribes, 16 percent Scheduled Castes, and about 51 percent from Other Backward Classes (Census, 2011). A total of 32 percent of the population, largely from these socially marginalised communities and living in rural areas, are living below the poverty line (Planning Commission, 2013).

examining how a state that failed to effectively articulate its interest at the Centre managed to adopt the Central guidelines on power sector reforms. This paper analyses the developments around power sector reforms in MP, with the objective to examine the policy choices and outcomes and to identify the winners and losers at the state level. It also analyses the political-economic drivers for these policy choices and how they deviate from or comply with signals from the Centre. Drawing on the findings, this paper also looks into how the past experiences will affect the new initiatives in the sector. The paper is organised as follows: Section I provides a snapshot of the power sector in MP. Section II provides an analysis of the reform trajectory and identifies the drivers of change and their outcomes. The Conclusions look into the implications of past experiences and current challenges for ongoing initiatives.

I. A Snapshot of the Power Sector

Keeping with the provisions of the Electricity Act, MP has reorganised the power sector. MPSEB was unbundled in multiple phases, with gradual devolution of functions to newly created agencies over a period of 11 years, resulting in six new organisations (see Table 1 for the institutional architecture of the power sector). Madhya Pradesh Power Generation Company Limited (MPPGCL) got the generation business. Madhya Pradesh Power Transmission Company Limited (MPPTCL) got the transmission business. Distribution business is looked after by three discoms serving in different zones: Madhya Pradesh Madhya Kshetra Vidyut Vitaran Company Limited (Central discom), Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company Limited (West discom), and Madhya Pradesh Purv Kshetra Vidyut Vitaran Company Limited (East discom). Madhya Pradesh Power Management Company Limited (MPPMCL) is the holding company for the three discoms and is responsible for bulk purchase and cash flow management. The Energy Department in the Government of Madhya Pradesh (GoMP) is at the top and provides policy guidelines for the sector. The Energy Department is headed by an additional chief secretary, an officer of the Indian Administrative Service (IAS), who is also the chairman of MPPGCL, MPPTCL, and MPPMCL. The Energy Department also has a principal secretary (senior IAS officer), located in Delhi (MP Bhawan), possibly to coordinate with the Centre. The managing director of the MPPMCL, an IAS officer, is the chairman of all three discoms. Each discom is headed by managing directors, who are also IAS officers.

GoMP also has a separate Ministry for New and Renewable Energy (MNRE) (in the rank of state ministers, while the Ministry of Energy is part of the Cabinet). A corresponding New and Renewable Energy Department, headed by a principal secretary (an IAS officer), provides policy guidelines on renewable energy and energy conservation. The Department is also responsible for implementation of off-grid renewable energy projects. In addition, there is an *Urja Vikash Nigam* (MPUVN), which is the same as typical renewable energy development agencies in other states. MPUVN is the state designated agency for renewable energy and energy efficiency promotion in the state. Its responsibility includes promotion of grid-connected large-scale renewable energy projects following the guidelines from MNRE at the Centre and promotion of energy efficiency following the guidelines from the Bureau of Energy Efficiency (BEE). MPUVN is headed by a managing director, who is at present the principal secretary of the New and Renewable Energy Department.

The MP Electricity Regulatory Commission has been established, with the responsibility to decide retail and bulk tariff, prepare regulations for the utilities, and resolve disputes between stakeholders. As required by the Electricity Act, Consumer Grievance Redressal Forums and Ombudsman have been established to hear and resolve consumer grievances with discoms. The new and complex institutional structure in MP's power sector is led largely by senior bureaucrats (specifically IAS officers). Even the independent Regulatory Commission has traditionally been headed by a retired IAS officer.

Table 1: Institutional Structure Before and After Restructuring

Before		2001 to 2012	After	
Agencies	**Responsibilities**		**Agencies**	**Responsibilities**
Energy Department, Government of MP	• Designing broad policy guidelines for the sector • Administration and implementation of relevant central and state legislations		**Energy Department, Government of MP**	• Designing broad policy guidelines for the sector • Administration and implementation of relevant central and state legislations
New and Renewable Energy Department, Government of MP	• Promotion of the policies and programmes necessary for renewable energy deployment and energy conservation		**New and Renewable Energy Department, Government of MP**	• Promotion of the policies and programmes necessary for renewable energy deployment and energy conservation
MP State Electricity Board	• All business related to electricity generation, transmission and distribution	**UNBUNDLING**	**MP Power Generation Company Limited**	• Business related to electricity generation
MP Urja Vikash NIgam	• State designated agency for renewable energy and energy efficiency • Implementation of policies and schemes on renewable energy and energy efficiency		**MP Power Management Company Limited**	• Bulk purchase and cash flow management • Holding company for the three discoms
MP Electricity Regulatory Commission	• Review annual revenue requirement of licensees/utilities • Determination of (bulk and retail) electricity tariff • Arbitration of disputes among stakeholders		• **MP Madhya Kshetra Vidyut Vitaran Company Limited** • **MP Paschim Kshetra Vidyut Vitaran Company Limited** • **MP Purv Kshetra Vidyut Vitaran Company Limited**	• Business related to electricity distribution
			MP Power Transmission Company Limited	• Business related to electricity transmission
			MP Urja Vikash Nigam	• State designated agency for renewable energy and energy efficiency • Implementation of policies and schemes on renewable energy and energy efficiency
			MP Electricity Regulatory Commission	• Review annual revenue requirement of licensees/utilities • Determination of (bulk and retail) electricity tariff • Arbitration of disputes among stakeholders

During the 2000 state reorganisation, power sector resource allocations were skewed in favour of Chhattisgarh; MP, despite retaining three-quarters of its population, received proportionately less assets and more liabilities (see Table 2). Since then, the state has had significant achievements in physical infrastructure in the sector. Starting with a mere 3,000 MW, the current installed capacity in the state stands at 19,025 MW (as of 28 February 2017), which is the fifth highest among the states. A major part of this capacity addition has come from the private sector, accounting for 45 percent of the total installed capacity, largely based on coal and renewable energy technologies. Figure 1 provides fuel type and ownership composition of installed generation capacity in MP. Although MP was one of the first states to issue independent power producer contracts in the early 1990s, most of the private capacity has come up in the last five years, especially after MP Investment in the Power Generation Policy, 2012. Despite its early initiatives on renewable energy, again it did not achieve much success until the late 2000s. Subsequently, it did not get any prominence in national strategy for large-scale renewable energy deployment. However, it has later emerged as a promising state for both solar and wind energy, with an installed capacity of 3,312 MW. As a result, the state was able to come out of an acute power crisis prevailing until 2012–2013.

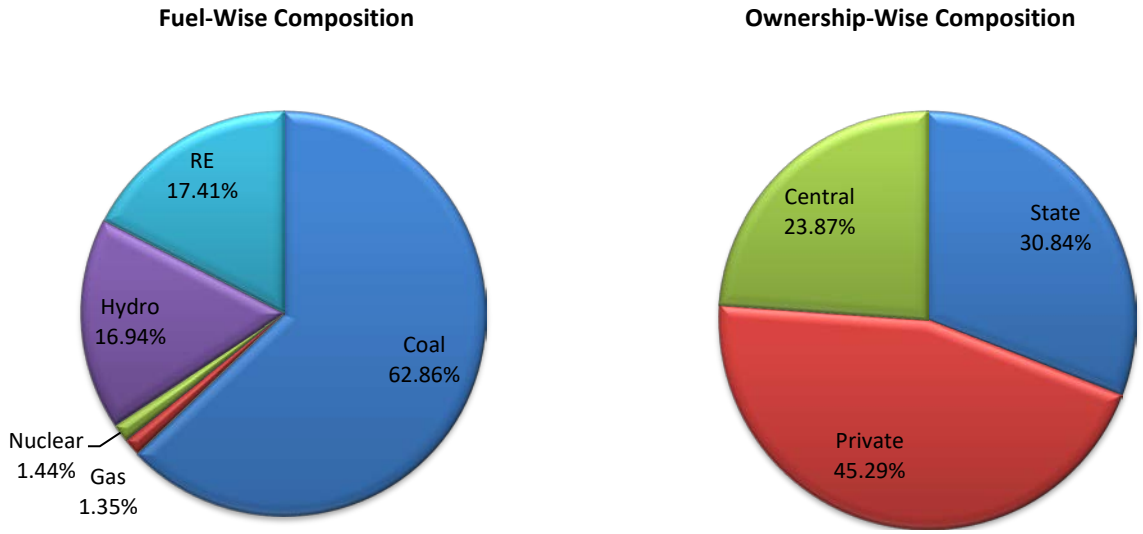
Table 2: Allocations Between MPSEB and CSEB*

Parameter	MPSEB	CSEB
Population	73 percent	27 percent
Power Consumption	79 percent	21 percent
Energy Consumption	78 percent	22 percent
Installed Capacity (MW)	3,000 (68 percent)	1,250 (32 percent)
Central Generating Station Share (MW)	1,116	498
Peak Demand (MW)	5,700	1,100
Peak Surplus/Deficit (MW)	-1,690	758
Agricultural Pumps (million)	1.18 (94 percent)	0.06 (6 percent)
Employees	78 percent	22 percent
Revenues	64 percent	36 percent
Liabilities	78 percent	22 percent
Annual Profit/Loss (Rs Cr)	-2,100	930

* CSEB = Chhattisgarh State Electricity Board

Source: Abhyankar, 2005

Figure 1. Fuel Type and Ownership of Installed Generation Capacity in MP



Source: CEA, 2017

The state claims to have extended the grid to nearly all villages; only 66 of the 51,929 villages remain to be connected, as of the end of 2016 (CEA, 2016). However, 41 percent of the rural households are yet to be electrified. Bucking the national trend, the state has shown a decline in household electrification from 70 percent in 2001 to 67 percent in 2011. The decline is mainly attributable to de-electrification in rural areas. Between 2001 and 2011, electricity access among urban households increased marginally from 92.3 percent to 92.7 percent. However, access among rural households declined from 62.3 percent to 58.3 percent (Census, 2011). As of January 2017, rural access has improved to 59 percent, yet it remains below the 2001 level.[7] Per-capita consumption in the state was 739 kWh in 2014–2015, which was far below the national average of 1,010 kWh (GoI, 2016).

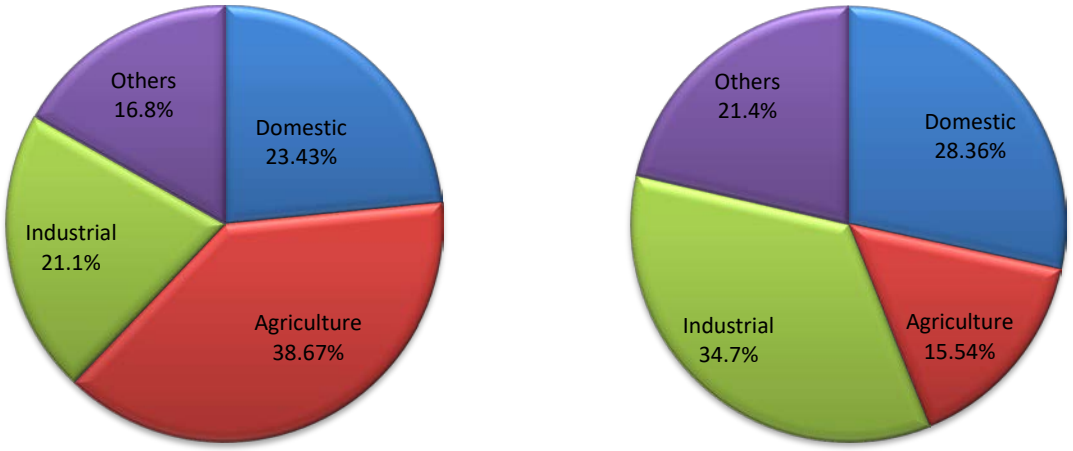
The consumer base in the sector reflects the structure of the state economy. Corresponding to agriculture's prominence in the state economy, the sector accounts for the largest share of electricity demand, followed by domestic and industry (Table 8). As of January 2017, 1.42 million irrigation pumps are energised in the state. Over the last eight years, the agricultural share in electricity sale has increased, whereas the industrial share has decreased (Table 8), reflecting the trend in both sectors' contribution to GSDP.[8] Yet the burden of revenue contribution is on the industrial consumers (see Table 9). Figure 2 provides consumer category-wise demand and revenue contribution. MP seems to have one of the higher cross-subsidy rates. Although there was some initial reduction in cross-subsidy, at present it is much higher than the prescribed 20 percent. Interestingly, domestic consumers in the state also cross-subsidise the agricultural consumers. In 2014–2015, domestic consumers contributed 28 percent

[7] Status of Rural Electrification in Madhya Pradesh, GARV Portal, retrieved from http://garv.gov.in/assets/uploads/reports/statesnaps/Madhya percent20Pradesh.pdf, accessed March 10, 2017.

[8] Industry contribution to GSDP in MP declined from 27 percent in 2004–2005 to 26 percent in 2013–2014 and 25 percent in 2014–2015 (GoMP, 2016). Although agricultural growth rate at the national level is dropping consistently, MP recorded an agricultural growth of 20 percent in 2011–2012 and 2012–2013, and 24 percent in 2013–2014, highest among the states (ToI, 2014).

of the revenue, while consuming 23 percent of total power sold. The average revenue realised (ARR) from domestic consumers was Rs 5.04, while the average cost of supply (ACS) was Rs 4.79 per kWh. The major part of the revenue gap comes from agricultural consumption, which contributed 16 percent of the revenue (at an ARR of Rs 1.67 per kWh), while accounting for 39 percent of the consumption (calculated from PFC, 2016).

Figure 2. Consumer Category-wise Sale and Revenue Contribution (2014 to 2015)

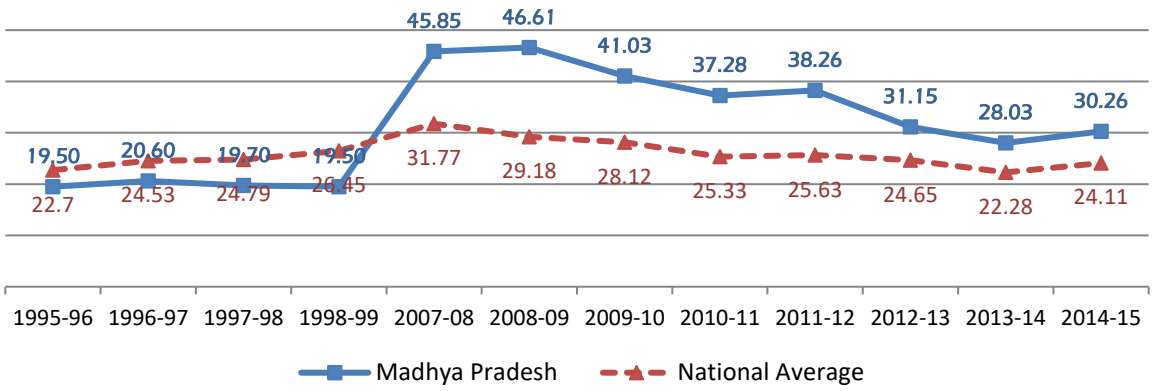


Sale **Revenue**

Source: PFC, 2016

The revenue problem is further worsened by a high level of aggregate technical and commercial (AT&C) losses (see Figure 3 for state-level loss over the reform period). In 2014–2015, the state level loss was 30 percent, which varied among the discoms (see Table 11). As a result, the discoms have recorded an increasing financial loss over years, which was Rs 5,001 crores for the three discoms in 2014–2015 (see Table 7). Although there was a reduction of 3 percent loss in 2013–2014, it has gone up by 2 percent in the following year. Despite a reduction of 876 crores in booked losses, MP remained fourth from the bottom on the basis of losses after subsidy was received (ahead of Uttar Pradesh, Rajasthan, and Tamil Nadu). The gap between average cost of supply and average revenue realised was 0.98 Rs/kWh after subsidy was received, which is significantly higher than the national average of 0.70 Rs/kWh (PFC, 2016). All three discoms have been rated B in the fourth integrated rating for state power distribution utilities (MoP, 2016).

Figure 3: State Level Loss Over the Reform Period



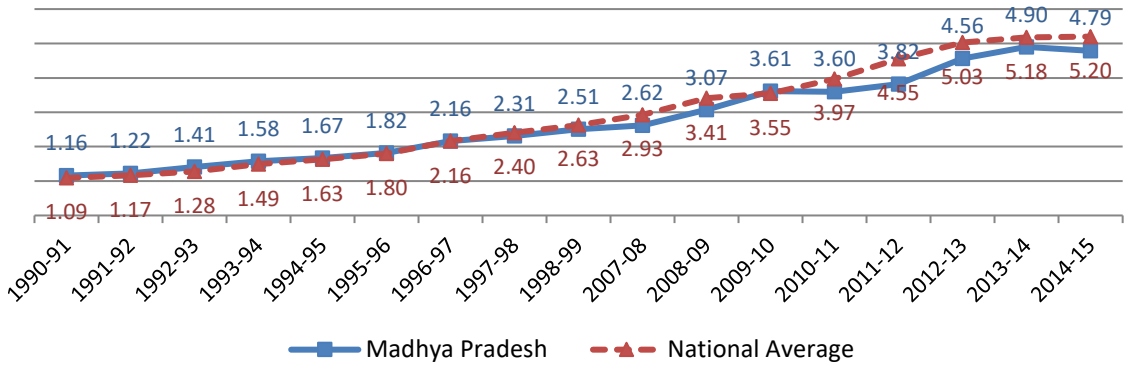
Source: (Planning Commission, 2002; PFC, 2011, 2013, 2015 & 2016)

Figure 3 shows transmission and distribution (T&D) losses during 1995–1996 to 1998–1999, and AT&C losses during 2007–2008 to 2014–2015, drawing on the available data. It is interesting to note that the state had a T&D loss lower than the national average, whereas AT&C losses have been higher than the national average. This clearly explains poor billing and collection efficiency of the discoms.

The three discoms had an accumulated debt of 33,391 crores as of March 2015.[9] Interestingly, about 81 percent of this debt (Rs 27,031 crore) has come from the state government, as the discoms lack creditworthiness to access other finances, including public agencies such as the Power Finance Corporation (PFC) and the Rural Electrification Corporation (REC). GoMP's loans to the three discoms account for 47 percent of the total loans from state governments to the electricity sector at the national level (including the gencos and transcos) (PFC, 2016). Despite the inefficiencies and high agricultural consumption, ACS is reasonably low in the state. Unlike other debt-ridden states, in 2014–2015 the ACS was Rs 4.79 per kWh against the national average of Rs 5.20 (Figure 4). This may be largely explained by cheaper thermal power and a low-interest cost component (see Table 5); the latter seems to be facilitated by low-interest state government loans.

[9] The accumulated debt of the three discoms had increased to Rs 34,739 crores by September 30, 2015 (MoP, 2016a).

Figure 4: Average Cost of Supply in MP vis-à-vis National Average (Rs/kWh)



Source: (Planning Commission, 2002; PFC, 2011, 2013, 2015 & 2016)

II. Reform Trajectory

MP Electricity Board (MPEB) was established in 1956, immediately after the first state reorganisation. From the beginning, the Board performed well in terms of electrical expansion and financial viability. With a good fortune of coal reserves, MPEB was able to set up pithead plants in strategic locations. Low cost of generation enabled the Board to supply to power at a low tariff and yet bear some level of loss. Central schemes provided financial assistance for electrical and grid expansion. These schemes also carried a "work charge" of 2 to 3 percent, which covered part of the operational expenses of the Board. During the first three decades, MPEB was profitable and was in a position to use the profit for various experiments. As a retired Chairman of MPEB would recall, the Board "was pioneer in doing things, before the others. It would do things and others would learn and follow. There were good leaders and passionate people in the Board then."[10]

The very first operational challenge faced by the Board was power shortage, in the early 1980s. At that point, the challenge was grid connectivity; areas with surplus generation were not well connected with high demand areas. At the same time, monsoon failures affected hydro generation in the state. Power shortage persisted for coming years. By early 1990s, though the Board was financially comfortable, power shortage scenario had worsened and quality of service started deteriorating. When the central government opened up electricity generation for private participation, MP was one of the first states to buy the idea. In the subsequent years, it has followed the central guidelines on power sector reforms, with some state level adaptation. For a better analysis, this paper divides the reform period into three phases, based on electrical and political developments in the state (Table 3 provides a chronology of political and electricity sector events in MP).

Early Reform Planning (1991 to 1999)

By 1991, MPEB was facing a major crisis in power availability.[11] The Board was not in a position to meet the rising power demand from the consumers. Power purchase from central generating stations started

[10] Interview with an ex-Chairman of MPEB, October 18, 2016, Indore.

[11] In 1991 and 1992, the state was facing a power deficit of 6 percent and a peak deficit of 21 percent, which increased to 12 percent and 29 percent, respectively, by 1996 and 1997 (Planning Commission, 2002).

increasing, yet it could not meet the demand. The low tariff in the state did not support power procurement from central plants. On the other hand, because of supply interruptions, consumers started defaulting on their bills. By 1992, the Board was into losses and sought subvention from the state government. Commercial loss of the Board increased from Rs 493 crore in 1992 and 1993 to Rs 2,655 crore by 1998 and 1999; correspondingly, revenue subsidy from state government increased Rs 380 crore to Rs 1,697 (from 19 percent of revenue from sales to 40 percent) over the period (Planning Commission, 2002; Abhyankar, 2005).

When the GoI enacted the Electricity (Supply) Amendment Act, 1991 and allowed private electricity generators, MP was one of the first movers. The GoMP and MPEB issued IPP contracts in 1992. However, these contracts did not mature owing to bureaucratic mishandling and lack of clarity on the process.[12] The power situation in the state worsened year by year. This also coincided with reduced funds from REC and PFC, as the Board's commercial losses were increasing and thereby reducing its creditworthiness. It led to a chronic challenge. As the Board started incurring financial losses and could not raise funds, it did not have the resources to invest in generation and transmission and distribution. The Board became dependent on the state government for subventions to meet the operational expenses.

When the debate on distribution reforms at the state level was initiated, MP joined the bandwagon. However, it chose to plan the reforms at the state level rather than following the World Bank model. In 1996, GoMP appointed an Expert Committee, headed by N Tata Rao,[13] to prepare a reform plan for the power sector in MP. The Committee submitted its report in 1997, recommending fundamental changes in institutions, policies, and procedures in the sector. Keeping with the global trend and the World Bank model, major recommendations of the Committee included functional division of the Board, private sector investment in all three functional areas, establishment of an electricity regulatory commission, reform and transparency in subsidy, single distribution network and quality for rural and urban consumers, and uniform tariffs across the discoms (ADB, 2011). Following the Committee's recommendations, GoMP approached the Asian Development Bank (ADB) for assistance on the reforms. GoMP, GoI, and the ADB agreed to start with a set of studies as groundwork, before the reforms were introduced.[14]

Despite the emergent financial crunch in the Board, MP had its advent of populism in the sector. Within three months of coming to power, the INC government led by Digvijay Singh introduced free supply of power to agricultural consumers with pumps rated below 5 horsepower. In addition, it offered free single light point connections to Below Poverty Line (BPL) households (Abhyankar, 2005). The free power policy was very much in line with the ruling party's repressive and co-optive strategy to limit the kind of political mobilisation among the peasant and subaltern classes in MP that was already being experienced in neighbouring northern states.[15] The giveaway came when there was no such organised

[12] In the early 1990s, MP signed memoranda of understanding with 22 IPPs adding up to a proposed capacity addition of 8,235 MW, about two and a half times the existing capacity at the time. However, none of these projects could reach commercial operations owing to procedural lapses and lack of power system planning. Abhyankar (2005) provides an account of failed attempts to get private investment in electricity generation in MP.

[13] Rao was instrumental in the formative stage of MPEB and had served on the Board for 16 years.

[14] As part of the groundwork, six studies were commissioned focusing on managerial and operational efficiency in the sector, reform model, post-reform institutional structure, review of electricity legislation and regulations, and private participation. Substantive issues like rural access, which continues to be a problem today, could not get on the agenda (Abhyankar, 2005).

[15] MP had seen strong peasant mobilisations during the early post-independence years. With 88 percent of its population falling into the categories of Scheduled Castes, Scheduled Tribes, or Other Backward Classes, the state had a strong potential for a political awakening among subaltern groups in the post-Mandal era (Verma, 2013). The state government tried to contain this

demand and people were willing to pay user charges. However, echoing the political undercurrents, the then-chief minister claimed, "Pricing is not just a matter of people's willingness to pay. It's also a matter of politicians' willingness to charge" (Vinayak & Saran, 2005).

MP also saw a push for RE deployment in the early 1990s, possibly to get out of the power availability crisis. In 1994, the state government facilitated and promoted a joint sector company called MP Wind Firms Limited, to facilitate and expedite wind energy deployment, the preferred renewable energy technology at the time. The company has three shareholders: Consolidated Energy Consultants Limited (CECL), a private company, has a 51-percent share; MPUVN has a 25-percent share; and the remaining 24-percent share is with the India Renewable Energy Development Agency (IREDA). However, it has not been very successful. The company started its first project in 1995 and took four years to complete.[16]

Following the enactment of the Electricity Regulatory Commission Act, MP was one of the first states to establish a State Electricity Regulatory Commission in August 1998.[17] However, the momentum in power sector reforms got somewhat slowed down for the next two years, owing to the preparation for state reorganisation. In this phase, the major drivers for change were the increasing power crisis in the state and the compounding loss of MPEB. There seems to be no political push or resistance to the reform planning. Even after the Tata Rao Committee report was submitted and made public, INC could return to power in the 1998 state assembly election. There is no evidence of resistance to the Tata Rao Committee Report.

Institutional Restructuring in the Power Sector (2000 to 2012)

In 2000, the state was reorganised to carve out Chhattisgarh. Consequently, MPEB was split into two parts to create two new Boards, viz. MPSEB and CSEB. While division of assets was based on the project locations, division of non-project liabilities was based on population share, thereby favouring Chattisgarh (see Table 2). The condition of MPSEB was much worse compared to its predecessor.

At that point, the GoI was consolidating a national-level power sector reform strategy and getting prepared for the new legislation. Soon, the Government of the new MP signed a memorandum of understanding (MoU) with the Ministry of Power at the Centre to expedite power sector reforms. The MoU mirrored the recommendations of the Tata Rao Committee. Keeping with the latter, it suggested unbundling of the Board and corporatisation of new utilities, but did not advise on privatisation of the discoms. The Centre agreed to allocate an additional 100 MW of power from Central generating stations and promised more power to commercially viable discoms, offered financial support to upgrade the sub-transmission and distribution network and rural electrification, and eased the financing norm from the Power Finance Corporation.[18] Subsequently, *MP Vidyut Sudhar Adhiniyam* was enacted in 2001. The Act was largely based on the recommendations of the Tata Rao Committee and studies conducted and commissioned by ADB. Although MP chose to have a reform strategy and process independent of the

through a social engineering based on repressive and co-optive strategies in which "supply" preceded the "demand" (Gupta, 2005; Verma, 2013).

[16] Interview with a senior official of CECL, November 9, 2016, Bhopal.

[17] Interestingly, MPEB revised its tariff in March 1999, without approval from the MP Electricity Regulatory Commission (MPERC). The new tariff was challenged in MPERC and the Commission stayed its implementation. The matter was then moved to the High Court by MPEB and the court stayed MPERC's order. Later, GoMP made a provision in the reform act to legalise the tariff change (Abhyankar, 2015).

[18] The MoU is available at http://powermin.nic.in/en/content/madhya-pradesh, accessed March 10, 2017.

World Bank guidelines and with some state-level thinking, the prevailing global model pushed its way through ADB interventions in the sector. The Act, being in line with the prevailing trend and oblivious to Odisha experience until then, emphasised restructuring, independent regulation, universal meterisation, tariff rationalisation, and budgetary allocation of subsidies. Immediately, ADB approved a $350 million loan for a power sector development programme in MP. The loan was planned to be disbursed in a phased manner, based on achievement of restructuring and reform milestones.

MPERC came out with its first tariff order in 2001. As opposed to MPSEB's request for a 53-percent tariff hike to cover the revenue gap, MPERC allowed an average hike of 31 percent to cover 75 percent of the ACS. The free power supply to farmers was revoked, except for SC and ST farmers, and a flat tariff was restored.[19] The order also allowed a time-of-day tariff for industrial high-tension (HT) consumers. The Commission also questioned the Board's projection of agricultural consumption. The Commission asked the Board to conduct sample studies for estimating agricultural consumption and highlighted the need for proper metering (MPERC, 2001).[20] However, the Commission never followed up on these issues. As a first step to the reforms, MPSEB went through a functional division by creating five companies under the Board in 2002. These companies include MPPGCL, MPPTCL, and three discoms. However, these companies were not independent yet and operated as agents of the Board. In its second tariff order issued on November 30, 2002, MPERC again raised the retail tariff, at a larger rate for the domestic and agricultural consumers. Interestingly, the tariff order came just two days after voting was done for the 2003 state assembly elections and the result was yet to be announced, possibly strategically.

But INC lost power and BJP formed the state government. Clearly, the INC government supported the tariff hikes, as evident in its support for the 1999 hike by MPEB and a major revision in 2001 by MPERC. However, the support was less out of political will for reforms, and more out of compulsion to meet the ADB loan conditionality, which required regular tariff revision for disbursement of loan installments. Interestingly, these major tariff hikes did not lead to any mass resistance and public unrest like it did in other states. *Jan Sangharsh Morcha*, an NGO, called for a statewide protest.[21] Some farmer leaders gave statements in the media opposing the tariff hike. But it was never converted into a mass agitation like in Andhra Pradesh.

Even though electricity played a role in INC's election failure in 2003, it was not so much about the tariff hikes. Drawing on media assessments, Manor (2004) claims that roads and electricity were important in BJP's election campaign and emerged as effective influences on voters' behaviour. But, the discontent was more about power shortage. After several years of drought, MP had a good monsoon in 2003; water was finally available for irrigation, but there was no power to pump it to the fields. Other consumers, especially commercial and industrial, were hard hit by frequent load shedding affecting their operations.[22] Although there was some resentment against the hike in electricity charges, Manor (2004) claims, "Charges had less impact than the problem of supply, but they sharpened discontent over

[19] As a result, many farmers could not pay their bills and faced disconnections. Within a year, about 0.75 million of 1.2 million agricultural consumers were disconnected. However, the government later brought in a reconnection scheme (*Samadhan Yojana*) to settle the bills at a discounted rate and to restore connections (Abhyankar, 2005).

[20] By that time, it was known that agricultural load is being overestimated in many cases and there was some thinking to recalculate it.

[21] The call for protest is available at http://www.narmada.org/nba-press-releases/december-2002/tariff.html, accessed March 10, 2017.

[22] The power crisis at this point was aggravated by Chhattisgarh government's refusal to supply power to MP, as agreed to under the state reorganisation arrangement, owing to the longstanding feud between Chhattisgarh Chief Minister Ajit Jogi and Digvijay Singh. While GoMP's attempt to divert scarce funds to purchase from other states was not sufficient, the crash programme to develop a hydro project could not materialise before the elections (Manor, 2004).

shortages because voters now got less power and also had to pay." Defaulter consumers were disconnected as part of a drive launched under a reform programme in 2001 and implemented with some degree of seriousness. Although Digvijay Singh wished to waive the pending bills of farmers and the urban poor in the weeks before polling, the Election Commission prevented the move (Manor, 2004).

The new government carried forward the reforms. In the subsequent years, MPERC came out with important regulations for electricity utilities and significant tariff revisions (see Table 3). Following the guidelines of the Electricity Act, in 2005 GoMP issued an order to make the five utilities independent companies. MPSEB remained as the holding company for three discoms and had the additional responsibilities of bulk purchase and cash flow management. In 2006, MPPTCL (Tradeco) was set up with the responsibility of bulk purchase and cash flow management, thus reducing the role of MPSEB significantly. After six years, in 2012, the tradeco was rechristened as MPPMCL, was made the holding company for three discoms, and absorbed the MPSEB. This marked the end of institutional reorganisation in the MP power sector.

Despite the institutional and procedural reforms, the sector did not have adequate development on the physical front. Installed capacity had increased to 7,000 MW by 2011, but it was not enough to meet the growing demand. As a result, the quality of the power supply kept deteriorating. The 2011 census recorded a dip in electricity access in the state. Commercial entities (like shops) were asked to shut down early in the evening to reduce the peak load. Industrial consumers were charged a peak surcharge for power consumption from 6:00 PM to 10:00 PM. Yet the discoms recorded a high expenditure on short-term power purchases. These short-term purchases costed as much as Rs 10 to 12 per kWh in 2007. MPERC pushed the discoms to go for long-term power purchase agreements to reduce power purchase costs.[23] In 2004, MPERC issued its first tariff order for wind power, with attractive feed-in-tariff (MPERC, 2004). It gave a boost to wind power and attracted some private developers to the state.

The initial years of reform saw major revisions in tariffs. The first three tariff orders issued by MPERC in 2001, 2002, and 2004 had average tariff hikes of 31 percent, 15 percent, and 14 percent, respectively. All these hikes were highly skewed: although the domestic and agricultural tariff increased by three times, the industrial tariff increased by just 1.2 times (Abhyankar, 2005). Despite the deteriorating quality of supply and consistently increasing tariff, it did not have much effect on the political scenario. BJP came back into power in the 2008 state assembly election.

Industrial Focus and Generation Bias (2012 to 2016)

By the time the institutional restructuring was completed, the sector was still grappling with the past problems, viz. power shortage and deteriorating discom finances. The state government decided to focus on electricity generation. Between 2011 and 2013, the GoMP came out with multiple policies to promote private sector participation in electricity generation. The MP Investment in Power Generation Projects Policy was established in 2012 to promote IPPs in conventional power generation. On the renewable energy front, there were five separate policies focused on small hydro, wind power, solar power, solar park, and biomass. Although power shortage was the immediate driver for generation prioritisation, the state's failure to promote industries was also a key factor.

[23] Interview with ex-chairperson of MPERC, November 5, 2016, Noida.

GoMP had come out with a new Industrial Policy in 2010, which did not materialise well despite the availability of natural resources, land, and labour. One of the barriers to industrial promotion was low availability of power. By then, the existing industries were forced to either go for captive generation or reduce their operations in the state. Although open access was allowed as early as 2005, it was not a preferred choice for industries in MP. Industries in MP preferred captive generation over open access, as the transmission network was in a weak state and grid failures were frequent.[24] Discom finance was further worsened by losing limited high-paying consumers. In that context, the state government considered generation promotion a suitable policy option.

Although policy documents do not claim so, the state gradually considered electricity generation as a primary industry. Considering the power shortage in neighbouring states like UP and the growing demand in Delhi, the state government put high hopes on interstate power trade. As the REC market was being promoted, renewable energy generation also became an area of aspiration. In fact, the Industrial Promotion Policy of 2014 lists renewable energy as one of the ten thrust areas in MP (GoMP, 2014).[25] With this focus on generation, MP has more than doubled its installed capacity within a period of four years.

A positive outcome is overcoming the power shortage. The state had moved out of shortage by 2014, and 24×7 power supply was ensured to all consumers and eight hours of supply to agricultural consumers. The recent tariff order has removed the peak hour surcharge charged to industrial consumers and increased the rebate on off-peak consumption. But capacity addition has led to a surplus power scenario. The expectations on interstate trade did not materialise and the power exchange price has crashed.[26]

However, the affluence in electricity has come as a bane for the sector and at a very high cost. In 2015–2016, the three discoms were contracted for 14,785 MW out of the total available capacity of 18,756 MW in the state. MPPGCL reported a loss of 3,332 MkWh in the year, owing to discoms' back down. For 2016 to 2017, MPERC has projected a surplus of 23,122 MkWh, which is about 28 percent of total available generation from total contracted capacity of the three discoms (PEG, 2017). PEG (2017) estimates the cost of backing down (or fixed costs paid to un-utilised capacity) to be Rs 2,177 crores, which is about 28 percent of the total fixed costs paid and about 9 percent of total revenue requirement of three discoms in 2015–2016. According to a senior officer of MPERC, in 2016–2017, the cost of surplus power will go up to Rs 2,800 crore, accounting for 10 percent of the approved revenue requirement.[27]

This period also saw what many critics refer to as bureaucratisation of the sector. With completion of the institutional restructuring in 2012, all the new institutions are headed by IAS officers. Even the MPERC has been headed by a retired IAS officer. There is a clear divide between the bureaucratic heads and technical manpower in the sector; both blame each other for failure of the sector. Top management

[24] Interviews with four industry representatives, two on October 18, 2016 (Indore), and two on October 20, 2016 (Bhopal).
[25] The recent development around the Rewa ultra mega solar power project boosts MP's industrial aspirations in the renewable energy sector. Although the project has been in the news for its lowest tariff, its major success lies in the arrangement to sell power outside the state. The 750 MW project has signed an MoU with Delhi Metro Rail Corporation to sell 363 MkWh/year power (60 percent of the latter's daytime demand) for 25 years (Bhaskar, 2017).
[26] While speaking to officials from utilities and the energy department, the author observed the sentiment to be still high on selling surplus power to neighbouring states and thus generating revenue for the state. As the national grid is consolidated allowing power trade to southern states, it is anticipated that power exchange prices will be restored and will be profitable for generators.
[27] Interview with a senior official of PSERC, October 20, 2016, Bhopal.

blames it on lack of will to change and old mind-sets of technical and field staff. Technical staff blames it on bureaucrats' lack of technical knowledge and wishful thinking. It is also claimed that bureaucrats are often dependent on and driven by the consultants who tend to promote a one-size-fits-all western model of reform and planning, which has already failed across states.[28] However, with the bureaucratic heads and interlinked hierarchy, the state government has managed a greater control over the new institutions.

The state of MPERC is more appalling. As in other states, while the initial set of regulators was proactive, the later appointments have been made in such a way as to ensure compliance with the government. The Commission's capacity is further limited by lack of inhouse staff. Most of the staff is drawn from the regulated utilities on deputation. According to one of the seating members, for long periods of time the government did not wish to spend additional money in recruiting staff. Once the government was convinced, it was hard to find skilled manpower willing to work at government pay scales.[29] The presence of discom officials seems to have affected the social legitimacy of the Commission. Referring to a specific case around charges of temporary agricultural connections, a farmer leader pointed out that "engaging with the Commission has become humiliating. We rather prefer to engage with the government."[30] Subsequently, there has been a decline in public participation in regulatory proceedings.

During this period, the state has taken several protective measures for the sectors. Although the discoms suffer from commercial loss and lack of creditworthiness to raise capital investment, the state has consistently provided assistance in the form of subsidies, low-interest loans, and equity investments to mitigate the revenue gap. However, keeping with the provisions of the National Tariff Policy, a major part of the subsidy provided to the discoms is recovered from consumers in the form of electricity duty.[31] On the other hand, as seen in the Rewa solar project case, the GoMP has extended state guarantee for the interstate sale of power for private developers. Although the latter is aligned with the government's industrial aspirations in the sector, the former seem to have reduced the discoms' incentives to improve their operational and commercial efficiencies. After one and a half decades of initiating the reforms, discoms in the state have high AT&C losses and low billing and collection efficiency.

Against this backdrop, and after some contemplation, GoMP joined *Ujwal Discom Assurance Yojana* (UDAY)[32] in August 2016. As most of the discoms' debt in the state is from state government, they are

[28] Interview with a senior administrative staffer of a discom, October 18, 2016, Indore; interview with two senior technical staffers of a discom, October 18, 2016, Indore; interview with a senior administrative staffer of a discom, November 8, 2016, Bhopal; interview with a senior technical staffer of a discom, November 8, 2016, Bhopal.

[29] A recent advertisement for director-level positions attracted few applications, 1 being the lowest and 17 being the highest. (Interview with a member of MPERC, October 20, 2016, Bhopal.)

[30] Earlier the farmers were charged a three-months' flat rate for temporary agricultural connection. As farmers need supply for only two months, they demanded the temporary charge be at par with two months' flat-rate tariff, which the Commission declined. But later the government agreed. Phone interview with Farmer Leader, November 25, 2016.

[31] The Tariff Policy suggests that, "As a substitute of cross subsidies, the State Government has the option of raising resources through mechanism of electricity duty and giving direct subsidies to only needy consumers" (GoI, 2016a). However, most states use both cross-subsidisation and electricity duty to provide subventions to discoms. MP has one of the higher electricity duties. Domestic consumers with consumption less than 100 kWh/month, commercial consumers with consumption less than 50 kWh/month, and industrial low-tension (LT) consumers are charged the lowest duty of 9 percent; domestic consumers with higher consumption are charged 12 percent; commercial consumers with higher consumption and industrial HT consumers are charged 15 percent. Agricultural consumers and railways are charged no electricity duty (CEA, 2016a). On a rough estimation, in 2014–2015, electricity duties collected would have contributed to 62 to 65 percent of subsidies disbursed to the discoms.

[32] UDAY is the latest distribution reform initiative undertaken by the Central Government. Launched on November 5, 2015, the scheme seeks to achieve financial turnaround for discoms in a timebound manner. In addition, the scheme envisages operation improvements in discoms, reduction in generation cost, renewable energy development, and promotion of energy efficiency

going to be the real beneficiaries unlike in other states. GoMP has agreed to convert 75 percent of the outstanding debt into equity over a period of five years. As a result, the interest burden of discoms will go down. However, it will not lead to the desired financial turnaround, as interest has been a small fraction (less than 4 percent) of the costs.[33] The state government and MPERC have shown commitment to tariff rationalisation as evident in the past and in the 2016 tariff order, which had some increase across the consumer categories, including agriculture. However, expectations on discoms' performance efficiency are considered ambitious for the time frame. Moreover, technocrats in the sector seem to have some mistrust in the Centre's intent around the scheme. Although the UDAY scheme is seen as a strategy to liquidate the discoms' payables to central banks and financial institutions, such debts constitute less than 20 percent of the accumulated debts. Debt takeover will have some positive impacts, yet financial turnaround of the discoms in MP will depend more on their performance on loss reduction.

and conservation. Swain (2016) provides a detailed account of distribution reform initiatives taken by the Central Government, leading up to UDAY.

[33] A press release on MP's UDAY MoU claims an annual saving of interest costs to the tune of Rs 2,215 crore for all three discoms (PIB, 2016). However, the actual interest cost incurred by the discoms is much lower (see Table 5); for 2016–2017, the Commission has approved an interest cost of Rs 701 crore (MPERC, 2016).

Table 3. Chronology of Political and Power Sector Events			
National Politics and Policies	Year	Madhya Pradesh State Politics	Power Sector Events
• ***11th General Election: United Front Government*** • **Two conferences of Chief Ministers on power reforms** • **Common Minimum National Action Plan for Power**	**1996**	• INC in power since 1993; Digvijay Singh is the Chief Minister	• Appointment of an expert committee, headed by N Tata Rao, to prepare a reform plan for power sector in MP
	1997		• Tata Rao Committee submitted the report
• ***12th General Election: NDA Government*** • **Electricity Regulatory Commission Act** • **Third Conference of Chief Ministers on Power reforms**	**1998**	• INC returns to power; Digvijay Singh continues as Chief Minister	• Establishment of MP Electricity Regulatory Commission
• ***13th General Election: NDA Government***	**1999**		
• **MoUs with State Governments to expedite power reforms**	**2000**	• State reorganisation; Separation of Chhattisgarh	• MPEB was split into MPSEB and CSEB • GoMP signs MoU with MoP, GoI to expedite power reforms
• **Report of the Expert Group on Settlement of SEB Dues** • **Accelerated Power Development Programme** • **The Electricity Bill** • **The Energy Conservation Act**	**2001**		• Madhya Pradesh Vidyut Sudhar Adhiniyam (Madhya Pradesh Electricity Reform Act) • ADB approved $350 million loan for power sector development programme • MPERC issued first retail tariff order (with 31-percent tariff hike, with the objective to recover 75 percent of ACS!) • Free power to farmers revoked
• **Establishment of Bureau of Energy Efficiency** • **Accelerated Power Development & Reform Programme**	**2002**		• Functional division within MPSEB: five companies created under MPSEB (one genco, one transco, and three discoms)
• **The Electricity Act**	**2003**	• BJP won state assembly election; Uma Bharati becomes Chief Minister	
• ***14th General Election: UPAIGovernment***	**2004**	• Babulal Gaur replaces Uma Bharati as Chief Minister	• MPERC issued first wind tariff order (with feed-in tariff) • MPERC (establishment of Forum and Electricity Ombudsman for Redressal of Grievances of the Consumers) Regulation • MPERC (Conduct of Business) Regulation

• **Rajiv Gandhi Grameen Vidyutikaran Yojana**	**2005**	• Shivraj Singh Chouhan replaces Babulal Gaur as Chief Minister	• As per E Act guidelines, five power companies were made independent through an order • MPERC (Terms and Conditions for Intra-state Open Access in MP) Regulation
	2006		• Establishment of MP Power Trading Company Limited (Tradeco)
	2007		
• **Restructured Accelerated Power Development and Reform Programme**	**2008**	• BJP won state assembly election; Shivraj Singh Chouhan continues as Chief Minister	• MPERC (Cogeneration and Generation of Electricity from Renewable Sources of Energy) Regulation
• ***15th General Election: UPA II Government***	**2009**		
• **Jawaharlal Nehru National Solar Mission** • **National Mission for Enhanced Energy Efficiency**	**2010**		
	2011		• MP Small Hydel Policy
• **Financial Restructuring of State Distribution Companies**	**2012**		• MP Wind Power Project Policy • Tradeco rechristened as MP Power Management Company Limited and absorbed MPSEB • MP Investment in Power Generation Projects Policy • MP Solar Power Policy
• **Model State Electricity Distribution Management Responsibility Bill**	**2013**	• BJP won state assembly election; Shivraj Singh Chouhan continues as Chief Minister	• MP Solar Park Policy • MP Biomass Based Power Policy
• ***16th General Election: NDA Government*** • **Integrated Power Development Scheme** • **The Electricity (Amendment) Bill**	**2014**		
• **24/7 Power for All** • **Deen Dayal Upadhyaya Gram Jyoti Yojana** • **Ujwal DISCOM Assurance Yojana**	**2015**		• MPERC (Demand Side Management) Regulations (Draft)
	2016		• MPERC issued latest wind tariff order, with a major cut in tariff (from Rs 5.92 to Rs 4.78/kWh) • MP initiated UJALA (LED lights) Scheme • MP joined UDAY

Conclusions

MP's experience with power sector reform is unique in its own way. Although the state opened up in 1992 for IPPs, it achieved success in the last five years, after two decades. Similarly, it started institutional reforms as early as 2001, which continued until 2012, and the institutions evolved over multiple stages. The results are more complex, where the boons are outweighed by the banes. On the institutional front, a monolithic Board has been unbundled to result in a complex network of highly bureaucratic institutions, prone to political capture and manoeuvring. The focus on improving availability to come out of the scarcity has undermined access and affordability. On the operational side, the old challenges persist. The discoms are still reeling under high losses (including theft), poor billing, and collection efficiency. Direct subsidy from the state government still accounts for an important part of the discoms' revenue (18 percent in 2014–2015). However, the experience of MP offers important insights.

Although an early taker of the reform idea, MP chose to plan it locally over adopting a trending global model propagated by the World Bank to many other Indian states. This may be partly because of the World Bank's unwillingness to lend to MP, given its poor economic performance. Although there were many internal pushes for reform, including acute power shortage, increasing financial loss, and stress on the state exchequer, external pull was limited by lack of funding channels. However, the global model of electricity reforms found its way to the state through multiple routes, including the Tata Rao Committee Report, MoU with the Centre, and ADB technical assistance, which reflected global trends.

Although MP pushed strong reform measures, including major tariff hikes, public resistance has been contained through creative politics. During the first three tariff orders, domestic tariff has been raised by 200 percent, while free power to farmers was discontinued with the objective to recover the cost of supply. However, it did not result in any significant public outrage, as experienced in other states during the same period. This may be partly explained by the political history of the state, where the leading parties have successfully managed to subdue mass mobilisation through social engineering involving political co-option and proactive allocation. However, this social engineering backfired in the 2003 state assembly election, when a wider discontent was experienced around failure of the political structures. Acute power shortage was faced during that period, and the way BJP propagated it as a failure of the INC government crystallised voters' discontent (Manor, 2004).[34]

The MP experience also suggests how the state uses allocation and protection as tools to exercise political control. By appointing IAS officers as heads of the newly created institutions, the state has consolidated its control over the sector. This has been further facilitated by the state's continued financial support to the sector, in the form of subsidies, soft loans, and equity investments. On the other hand, by extending allocations before they were demanded (free/subsidised power and protection against disconnection), social mobilisation has been creatively restricted before it could surface. Although the influx of bureaucrats has helped the state government, it seems to have resulted in a clash between them and the technocrats, resulting in delays and lack of coordination. Although technocrats

[34] During a decade of his rule, Digvijay Singh considered alternatives to penetrate his influence into society and obtain information from below. After rejecting civil society organisations and his party's (INC's) organisation, he settled for formal state machinery, including bureaucratic channels and administrative instruments. In the arrangement, the CM dominated policy design, with a core group of bureaucrats and advisors; the rest of the executive and legislators had little or no role. Subsequently, this resulted in poor government performance, filtered information flow, and emergence of discontent (see Manor, 2004 for detailed discussion).

constitute permanent staff of utilities, bureaucrats at the top position are on a fixed tenure, which limits the institutional memory as well as creates trust gaps within the organisation. This may have negative repercussions in the future, in the process, as both the parties wish to fail the other.

Apparently, the success of power reforms in MP lies in generation capacity addition, which has increased six-fold. However, the success has come at a high cost. Power availability has resulted in improved quality and supply to existing consumers. But it has not improved the access scenario. It has added cost to the ailing discoms. With the recent development around interstate solar power sale, there seems to be hope for MP's industrial aspirations in the sector. But this may have serious implications for inclusion of the subalterns, who may be left without electricity access or with limited access.

On the other hand, surplus power and lack of its marketability have been limiting other reform measures in the state. A major victim is renewable energy. More recently, discoms have avoided any power purchase agreements with renewable energy producers, allegedly disrupting connectivity during peak production hours.[35] Subsequently, MPERC reduced wind tariff in 2016, which in turn has reduced investors' interest in the state. Although the Rewa solar project model brings new hopes, scalability is yet to be tested. The other victim of surplus power is open access, which is discouraged through high cess and surcharges.

Finally, after the long, drawn-out experience, reforms are largely seen as a foreign (to the state) concept that benefits the Centre. At least at the utility level, there is a perception that Central government has gained by separating the profit units from loss units (unbundling). While the Centre gets tax from the profit units, the state government pays for the loss units. In the absence of effective communications and assimilation of national and subnational interests and rhetoric, this emerging perception may obstruct future Centre-led reform initiatives.

[35] Interview with a wind power producer, November 9, 2016, Bhopal.

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Annexes

Table 4. Utility-Wise ACS and Cost Components (Rs/kWh)									
Year	**Power Purchase**	**Fuel**	**Employee Cost**	**O&M Cost**	**Interest Cost**	**Depreciation**	**Admin and General Expenses**	**Other Expenses**	**ACS**
MPEB									
1997-98	0.76	0.49	-	0.10	0.34	0.17	0.39	0.06	2.31
1998-99	0.84	0.46	-	0.09	0.50	0.16	0.50	0.06	2.51
MP Madhya Kshetra Vidyut Vitaran Company Limited									
2007-08	1.91	-	0.27	0.03	0.04	0.05	0.05	0.11	2.45
2008-09	2.14	-	0.33	0.03	0.06	0.08	0.05	0.17	2.86
2009-10	2.21	-	0.38	0.02	0.09	0.08	0.05	0.27	3.10
2010-11	2.49	-	0.42	0.02	0.29	0.09	0.06	0.04	3.41
2011-12	2.82	-	0.36	0.02	0.11	0.09	0.06	0.39	3.84
2012-13	3.28	-	0.33	0.02	0.20	0.10	0.05	0.56	4.55
2013-14	3.44	-	0.38	0.03	0.25	0.13	0.04	0.62	4.89
2014-15	3.73	-	0.44	0.02	0.14	0.11	0.05	0.54	5.03
MP Paschim Kshetra Vidyut Vitaran Company Limited									
2007-08	2.14	-	0.23	0.02	0.07	0.06	0.04	0.09	2.66
2008-09	2.41	-	0.29	0.03	0.10	0.07	0.04	0.08	3.01
2009-10	2.67	-	0.59	0.03	0.14	0.07	0.05	0.31	3.86
2010-11	2.59	-	0.34	0.03	0.31	0.06	0.06	0.21	3.60
2011-12	2.76	-	0.30	0.04	0.10	0.07	0.05	0.14	3.45
2012-13	3.83	-	0.32	0.05	0.15	0.07	0.07	0.10	4.58
2013-14	4.17	-	0.40	0.06	0.15	0.08	0.06	-0.03	4.89
2014-15	3.74	-	0.35	0.05	0.09	0.08	0.06	-0.03	4.34
MP Purv Kshetra Vidyut Vitaran Company Limited									
2007-08	2.11	-	0.34	0.03	0.09	0.10	0.06	0.03	2.76
2008-09	2.65	-	0.40	0.03	0.08	0.08	0.07	0.09	3.40
2009-10	2.67	-	0.45	0.02	0.13	0.10	0.07	0.45	3.90
2010-11	2.52	-	0.50	0.03	0.30	0.08	0.07	0.33	3.82
2011-12	3.37	-	0.53	0.04	0.11	0.10	0.11	0.11	4.36
2012-13	3.48	-	0.45	0.04	0.17	0.07	0.09	0.23	4.53
2013-14	3.72	-	0.48	0.06	0.20	0.10	0.08	0.31	4.94
2014-15	4.12	-	0.51	0.04	0.16	0.22	0.09	-0.02	5.13

Source: Planning Commission, 2002; PFC, 2011, 2013, 2015, 2016

Table 5. Utility-Wise Total Expenditure and Break-Up (Rs Crore)								
Year	**Power Purchase**	**Employee Cost**	**O&M Cost**	**Interest Cost**	**Depreciation**	**Admin & General Expenses**	**Other Expenses**	**Total Expenses**
MP Madhya Kshetra Vidyut Vitaran Company Limited								
2007-08	2,260	316	30	48	61	56	135	2,907
2008-09	2,479	382	40	65	87	59	200	3,312
2009-10	2,763	480	27	112	98	56	341	3,877
2010-11	3,064	510	23	356	109	78	44	4,184
2011-12	4,027	508	27	155	124	85	554	5,481
2012-13	4,960	497	35	298	158	75	850	6,872
2013-14	5,893	644	49	429	224	66	1,061	8,367
2014-15	6,874	809	34	260	196	90	1,003	9,264
MP Paschim Kshetra Vidyut Vitaran Company Limited								
2007-08	2,917	318	30	101	76	53	123	3,618
2008-09	3,230	383	35	129	96	56	108	4,038
2009-10	3,635	808	36	197	95	72	422	5,264
2010-11	3,789	491	47	453	86	87	307	5,261
2011-12	4,930	534	64	183	117	90	248	6,165
2012-13	6,820	562	85	268	124	117	187	8,164
2013-14	7,556	720	109	276	149	106	-58	8,858
2014-15	8,093	753	99	202	177	124	-61	9,388
MP Purv Kshetra Vidyut Vitaran Company Limited								
2007-08	2,204	357	30	90	102	64	36	2,884
2008-09	2,728	410	31	87	85	72	88	3,501
2009-10	2,778	466	23	134	109	77	472	4,060
2010-11	2,858	569	29	341	95	74	371	4,338
2011-12	3,965	623	45	127	117	125	126	5,127
2012-13	5,141	672	53	256	110	128	340	6,700
2013-14	5,817	751	87	309	157	131	481	7,732
2014-15	6,638	824	66	251	359	152	-29	8,261

Source: PFC, 2011, 2013, 2015, 2016

Table 7. Average Revenue Realisation vis-à-vis Average Cost of Supply (Rs/kWh)				
Year	**ACS**	**ARR (Without Subsidy)**	**Gap (Subsidy Received)**	**ARR (Subsidy Received)**
MP Madhya Kshetra Vidyut Vitaran Company Limited				
2007-08	2.45	1.84	0.42	2.03
2008-09	2.86	2.05	0.49	2.37
2009-10	3.10	2.17	0.62	2.48
2010-11	3.41	2.53	0.49	2.92
2011-12	3.84	2.67	0.79	3.05
2012-13	4.55	3.02	1.06	3.49
2013-14	4.89	2.87	1.56	3.33
2014-15	5.03	2.92	1.50	3.53
MP Paschim Kshetra Vidyut Vitaran Company Limited				
2007-08	2.66	1.99	0.50	2.16
2008-09	3.01	2.10	0.62	2.39
2009-10	3.86	2.43	1.05	2.81
2010-11	3.60	2.79	0.40	3.20
2011-12	3.45	2.71	0.35	3.10
2012-13	4.58	3.33	0.80	3.78
2013-14	4.89	3.38	1.00	3.89
2014-15	4.34	3.21	0.49	3.85
MP Purv Kshetra Vidyut Vitaran Company Limited				
2007-08	2.76	2.08	0.59	2.17
2008-09	3.40	2.17	1.05	2.35
2009-10	3.90	2.63	1.09	2.81
2010-11	3.82	2.70	0.86	2.96
2011-12	4.36	3.11	0.99	3.37
2012-13	4.53	3.24	0.97	3.56
2013-14	4.94	3.42	1.21	3.73
2014-15	5.13	3.87	0.73	4.40

Source: PFC, 2011, 2013, 2015, 2016

Table 8. Utility-Wise Income, Subsidy Received, and Profit (Rs Crore)					
	Total Income (Without Subsidy)	Profit (Without Subsidy)	Profit (Subsidy Received)	Subsidy Booked	Subsidy Received
MPEB					
1992-93	NA	-493	-113	NA	380
1993-94	NA	-377	38	NA	415
1994-95	NA	-594	-80	NA	515
1995-96	NA	-602	-8	NA	594
1996-97	4,952	-464	-163	NA	300
1997-98	4,885	-1,058	-812	NA	245
1998-99	4,161	-2,655	-2,534	NA	121
MP Madhya Kshetra Vidyut Vitaran Company Limited					
2007-08	2,176	-731	-494	236	236
2008-09	2,378	-934	-574	360	360
2009-10	2,719	-1,158	-779	379	379
2010-11	3,113	-1,071	-605	466	466
2011-12	3,809	-1,672	-1,129	543	543
2012-13	4,570	-2,303	-1,595	710	708
2013-14	4,914	-3,453	-2,672	781	781
2014-15	5,383	-3,882	-2,765	1,154	1,116
MP Paschim Kshetra Vidyut Vitaran Company Limited					
2007-08	2,703	-915	-680	235	235
2008-09	2,811	-1,228	-833	395	395
2009-10	3,309	-1,955	-1,433	522	522
2010-11	4,077	-1,184	-578	606	606
2011-12	4,851	-1,313	-624	689	689
2012-13	5,931	-2,233	-1,425	808	808
2013-14	6,125	-2,732	-1,811	922	922
2014-15	6,947	-2,441	-1,061	1,380	1,380
MP Purv Kshetra Vidyut Vitaran Company Limited					
2007-08	2,174	-711	-614	97	97
2008-09	2,236	-1,266	-1,077	189	189
2009-10	2,739	-1,321	-1,131	191	191
2010-11	3,067	-1,271	-974	297	297
2011-12	3,654	-1,473	-1,167	306	306
2012-13	4,789	-1,911	-1,432	479	479
2013-14	5,347	-2,385	-1,893	498	492
2014-15	6,229	-2,032	-1,175	870	857

Source: Planning Commission, 2002; PFC, 2011, 2013, 2015, 2016

Table 9. Consumer Category-Wise Sale of Power									
	Domestic		Agriculture		Industrial		Others		Total
	MkWh	Percent of Total Sale	MkWh	Percent of Total Sale	MkWh	Percent of Total Sale	MkWh	Percent of Total Sale	MkWh
MPEB									
1996-97	3,740	15.80	8,572	36.22	7,503	31.71	3,849	16.27	23,664
1997-98	4,045	16.43	9,660	39.25	6,754	27.44	4,153	16.87	24,612
1998-99	4,352	16.33	11,693	43.86	6,129	22.99	4,486	16.83	26,660
1999-00	3,552	15.13	9,619	40.98	5,631	23.99	4,672	19.90	23,474
MP Madhya Kshetra Vidyut Vitaran Company Limited									
2007-08	1,552	24.45	2,167	34.13	1,305	20.56	1,325	20.86	6,349
2008-09	1,499	22.75	2,209	33.53	1,517	23.02	1,364	20.70	6,589
2009-10	1,599	23.04	2,403	34.62	1,559	22.44	1,382	19.90	6,943
2010-11	1,893	24.20	2,537	32.43	1,482	18.94	1,912	24.43	7,824
2011-12	2,064	24.05	2,790	32.52	1,632	19.02	2,094	24.41	8,580
2012-13	2,339	23.54	3,466	34.88	2,139	21.53	1,994	20.05	9,938
2013-14	2,683	23.22	4,425	38.29	703	6.09	3,746	32.40	11,557
2014-15	3,192	23.91	5,393	40.40	2,160	16.18	2,605	19.51	13,350
MP Paschim Kshetra Vidyut Vitaran Company Limited									
2007-08	1,601	18.96	3,113	36.86	2,488	29.45	1,244	14.73	8,446
2008-09	1,666	20.00	2,793	33.53	2,511	30.14	1,361	16.33	8,331
2009-10	1,845	20.01	3,070	33.30	3,106	33.69	1,198	13.00	9,219
2010-11	2,093	19.82	3,665	34.71	3,552	33.64	1,248	11.83	10,558
2011-12	2,544	20.81	4,494	36.76	3,892	31.83	1,295	10.60	12,225
2012-13	2,778	21.16	4,893	37.28	3,803	28.97	1,653	12.59	13,127
2013-14	3,166	22.65	5,426	38.82	3,221	23.05	2,165	15.48	13,978
2014-15	3,457	22.13	6,529	41.80	3,238	20.73	2,396	15.34	15,620
MP Purv Kshetra Vidyut Vitaran Company Limited									
2007-08	1,286	21.12	1,558	25.60	1,647	27.07	1,596	26.21	6,087
2008-09	1,364	22.67	1,252	20.82	1,775	29.51	1,625	27.00	6,016
2009-10	1,458	22.75	1,367	21.32	2,228	34.75	1,357	21.18	6,410
2010-11	1,633	22.59	1,794	24.81	1,434	19.83	2,370	32.77	7,231
2011-12	1,869	22.85	2,167	26.50	1,838	22.46	2,304	28.19	8,178
2012-13	2,462	24.88	2,818	28.49	2,052	20.74	2,560	25.89	9,892
2013-14	2,901	26.17	2,787	25.13	3,002	27.08	2,397	21.62	11,087
2014-15	3,095	24.53	4,158	32.96	3,377	26.77	1,983	15.74	12,613

Source: Planning Commission, 2002; PFC, 2011, 2013, 2015, 2016

Table 10. Consumer Category-Wise Total Revenue Realised									
	Domestic		Agricultural		Industrial		Others		Total
	Rs Crore	Percent of Total Revenue	Rs Crore	Percent of Total Revenue	Rs Crore	Percent of Total Revenue	Rs Crore	Percent of Total Revenue	Rs Crore
MP Madhya Kshetra Vidyut Vitaran Company Limited									
2007-08	456	23.00	339	17.07	658	33.20	531	26.73	1,984
2008-09	495	22.54	383	17.44	718	32.69	600	27.33	2,196
2009-10	549	22.05	181	7.27	760	30.50	1,001	40.18	2,491
2010-11	730	26.18	235	8.43	981	35.15	844	30.24	2,790
2011-12	687	21.03	460	14.10	1,131	34.63	986	30.24	3,264
2012-13	1,088	26.87	387	9.55	1,397	34.50	1,178	29.08	4,050
2013-14	1,306	29.97	319	7.33	1,552	35.62	1,180	27.08	4,357
2014-15	1,618	32.70	402	8.13	1,648	33.31	1,280	25.86	4,948
MP Paschim Kshetra Vidyut Vitaran Company Limited									
2007-08	466	18.87	421	17.04	1,043	42.26	538	21.83	2,468
2008-09	552	21.40	286	11.09	1,161	45.00	581	22.51	2,580
2009-10	653	21.44	492	16.15	1,370	44.98	531	17.43	3,046
2010-11	853	22.91	543	14.59	1,649	44.30	678	18.20	3,723
2011-12	1,068	23.84	714	15.94	1,925	42.97	773	17.25	4,480
2012-13	1,369	25.59	869	16.25	2,220	41.51	891	16.65	5,349
2013-14	1,513	26.18	959	16.59	2,191	37.90	1,117	19.33	5,780
2014-15	1,733	26.17	1,402	21.17	2,212	33.41	1,275	19.25	6,622
MP Purv Kshetra Vidyut Vitaran Company Limited									
2007-08	368	18.42	201	10.05	963	48.15	468	23.38	2,000
2008-09	314	15.36	240	11.74	920	44.97	573	27.93	2,047
2009-10	483	19.68	313	12.74	974	39.72	683	27.86	2,453
2010-11	452	16.32	404	14.58	1,215	43.88	699	25.22	2,770
2011-12	762	22.55	383	11.32	1,500	44.38	735	21.75	3,380
2012-13	1,056	23.50	672	14.96	1,894	42.18	869	19.36	4,491
2013-14	1,215	23.86	652	12.80	2,031	39.91	1,192	23.43	5,090
2014-15	1,561	27.15	887	15.43	2,150	37.40	1,152	20.02	5,750

Source: Planning Commission, 2002; PFC, 2011, 2013, 2015, 2016

Table 11. Utility-Wise Energy Input, Sold, Realised, and AT&C Loss				
Year	**Net Input Energy (MkWh)**	**Net Energy Sold (MkWh)**	**Energy Realised (MkWh)**	**AT&C Loss (Percent)**
MP Madhya Kshetra Vidyut Vitaran Company Limited				
2007-08	11,381	6,349	5,186	54.43
2008-09	10,819	6,589	5,384	50.24
2009-10	10,563	6,943	6,099	42.26
2010-11	11,467	7,824	6,427	43.95
2011-12	13,803	8,577	7,474	45.85
2012-13	14,374	9,937	10,066	29.97
2013-14	16,440	11,557	11,573	29.6
2014-15	17,868	13,350	12,067	32.47
MP Paschim Kshetra Vidyut Vitaran Company Limited				
2007-08	12,808	8,446	7,592	40.72
2008-09	12,510	8,331	7,959	36.38
2009-10	12,705	9,219	8,111	36.16
2010-11	13,615	10,558	9,378	31.12
2011-12	17,226	12,226	11,295	34.43
2012-13	17,824	13,127	12,805	28.16
2013-14	18,122	13,978	14,288	21.15
2014-15	21,626	15,620	14,967	30.79
MP Purv Kshetra Vidyut Vitaran Company Limited				
2007-08	9,829	6,087	5,644	42.58
2008-09	9,604	6,016	4,241	55.84
2009-10	9,632	6,410	5,191	46.11
2010-11	10,563	7,231	6,550	37.99
2011-12	11,669	8,178	7,591	34.94
2012-13	13,371	9,892	8,504	36.4
2013-14	14,526	11,087	9,466	34.83
2014-15	16,106	12,613	11,742	27.09

Source: PFC, 2011, 2013, 2015, 2016