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Protecting Power: The Politics of Partial Reforms in Punjab's Electricity 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

By achieving the longstanding national aspiration of universal access and recording a per capita consumption of nearly double the national average, Punjab's power sector appears to be a successful case of electrical development. Despite good performance in loss reduction and collection efficiency, both factors that ail many electricity utilities in India, Punjab's only distribution utility is still grappling with financial loss and a high debt almost equal to one year's revenue requirement. The state has been in the news for extending free power, which increases the subsidy burden on the state economy. The state has recently joined the bandwagon of the UDAY ("Dawn") electrification plan in an effort to turn around the finances of the distribution company.

Against this backdrop, this paper aims to understand how the sector has evolved over more than a decade of reforms. It analyses the developments around power sector reforms in Punjab, with the objective to examine the policy choices and outcomes and 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 the signals from the Centre. Drawing on the findings, the paper explains the futility of unsolicited populism, the limits of the Centre's push for reforms, and how the state has managed to sustain the power dynamics in the sector through skin-deep reforms and minimal institutional restructuring. Finally, it analyses the implications of past experiences and prevailing power dynamics for ongoing and future reforms.

Introduction

Despite its small size, Punjab has an important position in India's economy and politics.[1] The state is prominent in the Indian economy for its sustained contribution to the central food pool. From being one of the least developed states at the time of state reorganisation in 1966, Punjab emerged as one of the most developed states owing to the Green Revolution and subsequent agricultural development. By 1993-94, it recorded the highest per capita income among all major Indian states. Since then, there has been a consistent slowdown in the economy and a declining growth rate. Though Punjab has more or less followed the Central guidelines on economic policy, the state did not gain from the economic liberalisation (Sawhney, 2012; Singh, 2016).[2] Rather, during 1992 to 2012, Punjab's economy grew at the rate of 5.6 percent per annum, while the average annual national growth rate was 6.9 percent during the period (Singh, 2015).[3] Consequently, from being the breadbasket for the nation and a model for agriculture-led economic development, the state seems to be shifting towards a basket-case economy.

[1] With only 1.5 percent of the national geographic area (i.e., 50,362 KM^2), Punjab is the 20th Indian state in terms of size. In terms of population, the state comes in 16th place and houses 2.3 percent of the national population (GoI, 2011).

[2] Despite being a rich state, Punjab was worst-placed to gain from industrial delicensing and deregulation. Land shortage (due to overutilisation of land for agriculture), land-locked geography, and a lack of industrial labour were major barriers for potential investors. High industrial electricity tariff and lack of supply reliability has constrained the growth of existing industries. Moreover, economic reforms eliminated the benefits of freight equalisation, and thus increased the transportation cost of raw materials and outputs.

[3] Bucking the prospects of economic convergence, over the reform period, high income states in India have shown a growth rate higher than the low income states and national average, resulting in a phenomenon of divergence and rising inequality across states (Ahluwalia, 2002; Chikte, 2011; Kumar & Subramanian, 2012; Planning Commission, 2014). Despite being a high-income state at the onset of the economic reforms, Punjab's economic growth lagged behind the national average throughout 1990s and 2000s.

Punjab's economic slowdown can largely be explained through the political churning in the state.[4] After a decade of political instability in the 1980s, the state had an elected government in 1992. Subsequently, all the parties put their major thrust on building a cadre for their party rather than on economic policy-making and institutional consolidation. Moreover, the state has consistently been facing social turmoil (terrorism in the 1990s and a drug problem in recent years) that has dominated the political and policy space. While the state adopted major policy changes initiated from the Centre (see Sawhney, 2012), there was no state-level thinking and adaptation, compromising the suitability of policy changes to local dynamics. Dysfunctionality of the public institutions further eroded the chances of these policies being implemented (Singh, 2015). The legacy of agricultural success in the state seems to have limited political decision to diversify to the secondary sector, at least until recently. As a result, the agriculture and service sectors continue to dominate the state economy; industry's contribution remained the lowest among the three sectors.[5] Recent political will and initiatives to promote industries and private investment in the state seem to be facing a bottleneck from corruption and rent-seeking at multiple layers of governance. This corruption became entrenched during the 1980s, the decade without an elected government (Singh, 2016).

Notwithstanding the low level of industrialisation, Punjab is one of India's major power producers and consumers. With a total installed capacity of 13,206 MW, the state accounts for more than four percent of national capacity and comes in at 10th position among the states (CEA, 2017). The sector, generally under the control of state government, accounts for a large share of the state public sector enterprises (SPSE). During the 1970s and 1980s, the power sector accounted for about 86 percent of state investment in SPSEs (Sawhney, 2012).[6] The demand for investment and subsidies in this sector was consistently increasing, at the same time as the commercial losses of the Punjab State Electricity Board (PSEB) were increasing each year. The PSEB's total losses had reached the level of Rs. 626 crore in 1992-93, which increased to Rs. 1,354 crore by 1998-99 (Planning Commission, 2002). In the face of this crisis, Centre's proposal to restructure the sector appeared to be a sensible choice for Punjab.

By 1999, there was high-level consensus on bringing reforms to the sector, with initial interest evident in the prompt establishment of the Punjab State Electricity Regulatory Commission (PSERC) in 1999. The state government signed a memorandum of understanding (MoU) with the central government's Ministry of Power in 2001 to expedite reforms in the sector. However, the initial fervour did not last long, and the state took a much longer time to follow the subsequent steps. While power sector reform is the major sectoral reform in Punjab as part of the larger economic reform agenda, the state has taken hesitant steps forward as it tries to maintain a balance between local interests and pressure from the

[4] Judge (2015) provides a quick overview of political stirs in Punjab. EPW (2017) discussed the political dynamics and voter behaviour during the 2017 state assembly election.

[5] The secondary sector's contribution to Net State Value Added (NSVA) [Net State Domestic Product (NSDP) in earlier estimates] in Punjab has been in constant decline. In 2014-15, the secondary sector accounted for 22 percent of NSVA, whereas primary and tertiary sectors contributed 29 percent and 49 percent respectively. Neighbouring Haryana recorded a 29 percent contribution to NSVA from industrial activities, while Gujarat and Maharashtra (two of the key high-income states) recorded a 42 percent and 33 percent industrial share in NSVA, respectively. Within the secondary sector, manufacturing activity (which accounts for a major part of the industrial energy demand) contributed just 13 percent of the NSVA, whereas the share of manufacturing in Haryana, Gujarat and Maharashtra was 18 percent, 28 percent, and 21 percent, respectively (RBI, 2016).

[6] In addition, the power sector used a larger share of the planned expenditures in the state, often higher than the outlay. During the first six plans, the spending on irrigation and power together was never below 50 percent (Kale, 2014). During the Seventh Plan (1985-1990), the power sector expenditure was Rs. 1,991 crore against an outlay of Rs. 1,638 crore, accounting for 56 percent of the total planned expenditure in all sectors. In the Eighth plan, the power sector's share was reduced to 49 percent. The expenditure was Rs. 3,347 crore against an outlay of Rs. 2,418 crore. However, the power sector outlay was significantly reduced in the Ninth Plan to 25 percent (Planning Commission, 2002).

Centre. In the process, the state has created what Hellman (1998) calls "short-term winners" who gain from the partial reforms.[7] In this case, the short-term winners are not a new group of interests; rather, the interests which gained from the old system have manoeuvred to consolidate, partly conceal, and legitimatise their rent-seeking in the system, while social costs have increased. Though power reforms are not directly affected by the political churnings in the state, the outcomes in the sector clearly reflect the power dynamics and biases in economic policy choices.

This paper analyses power sector reforms in Punjab, with the objective to examine the policy choices and outcomes and identify the winners and losers at state level. It also analyses the political-economic drivers for these policy choices and how they deviate from or comply with the signals from the Centre. Finally, drawing on these findings, the paper also considers how past experiences will affect the new initiatives in the sector. The paper is organised as follows: Section II provides a snapshot of the power sector in Punjab; Section III provides an analysis of the reform trajectory and identifies the winners and losers; Section IV looks at the lingering challenges and dichotomies in the sector that need priority attention; and Section V provides concluding thoughts and looks into the implications of past experiences and current challenges for ongoing initiatives.

I. A Snapshot of the Power Sector in Punjab

As per the provisions of the Electricity Act of 2003, Punjab has reorganised the power sector by unbundling the erstwhile PSEB. At present, the sector is managed by five agencies (See Table 1). At the top, the Government of Punjab (GoP)'s Department of Power is responsible for broad policy decisions and execution of central policies and legislation. The department is headed by a minister (currently the deputy chief minister),[8] a senior Indian Administrative Service (IAS) officer in the rank of principal secretary), and a senior technical officer as chief electrical inspector. PSERC was established in 1999, with key function to review annual revenue requirement of utilities and determination of tariff on regular intervals. The commission also acts as an independent arbitrator for conflicts of interest among the relevant stakeholders. Until 2010, PSEB operated as the single utility discharging all functions of generation, transmission, and distribution. PSEB was then unbundled to create two companies: Punjab State Power Corporation Limited (PSPCL) retained the major part of the business covering generation and distribution; Punjab State Transmission Corporation Limited (PSTCL) received the transmission business. The state also has a few independent power producers (IPPs) operating and supplying power to PSPCL as per the power purchase agreements. It also has a dedicated agency for the promotion of renewable energy, the Punjab Energy Development Agency (PEDA). As the nodal agency for renewable energy and energy efficiency, PEDA functions on guidance from the Ministry of New & Renewable Energy at Centre, the Bureau of Energy Efficiency, and state government. Interaction among these agencies is discussed in the following section.

[7] Drawing on economic reforms in post-communist transitions, Hellman (1998) argues that while short-term losers are seen as major obstacles to economic reforms, short-term winners are the most common obstacles to the progress of reforms. The latter is a small constituency of early winners who seek to stall the process in a *partial reform equilibrium* that generates concentrated rents for few, while imposing higher costs for the rest of the society (pp. 204-205).

[8] Traditionally, the power department in the state has been with the CM. In 2007, when Parkash Singh Badal was appointed as Chief Minister (CM), he kept the department with him. However, with gradual delegation of power to the Deputy CM (and CM's son), the department has gone to the Deputy CM.

Table 1: Institutional Structure Before & After Restructuring

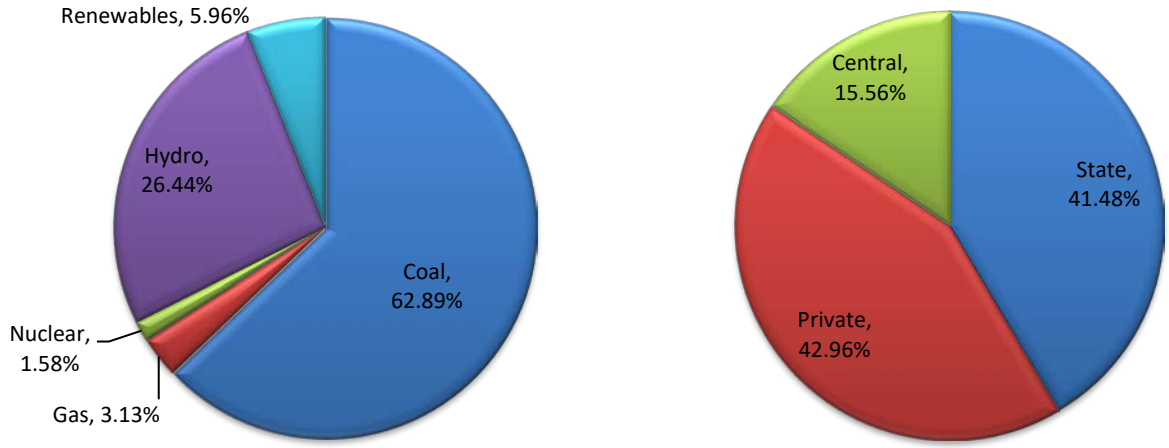
Before		2010	After	
Agencies	**Responsibilities**		**Agencies**	**Responsibilities**
Department of Power, Government of Punjab	• Designing broad policy guidelines for the sector • Administration and implementation of relevant central and state legislations	**U N B U N D L I N G**	**Department of Power, Government of Punjab**	• Designing broad policy guidelines for the sector • Administration and implementation of relevant central and state legislations
Punjab State Electricity Board	• All business related to electricity generation, transmission, & distribution		**Punjab State Power Corporation Limited**	• Business related to generation & distribution • Bulk purchase from IPPs
Punjab Energy Development Agency	• State designated agency for renewable energy and energy efficiency • Implementation of policies and schemes on RE & EE		**Punjab State Transmission Corporation Limited**	• Business related to electricity transmission
Punjab State Electricity Regulatory Commission	• Review annual revenue requirement of licensees/utilities • Determination of (bulk & retail) electricity tariff • Arbitration of disputes among stakeholders		**Punjab Energy Development Agency**	• State designated agency for renewable energy and energy efficiency • Implementation of policies and schemes on RE & EE
			Punjab State Electricity Regulatory Commission	• Review annual revenue requirement of licensees/utilities • Determination of (bulk & retail) electricity tariff • Arbitration of disputes among stakeholders

Punjab appears to be an admirable success in terms of electrical development, by achieving the longstanding national ambition for universal access. It achieved 100 percent village electrification back in 1976. The state has also ensured "urban pattern supply" to all villages and hamlets by separating the agricultural feeders from rural feeders. It is also the first state to ensure electricity connection to 100 percent of households, which was achieved during the 11th Plan period by connecting the poorest households under the Central Government-sponsored scheme, *Rajiv Gandhi Grameen Vidyutikaran Yojana* (RGGVY). Moreover, the state established a unique model of universal access to a basic service by providing 200 kWh/month free power to all Below Poverty Line (BPL), Scheduled Caste (SC), and Other Backward Class (OBC) households in the state. At present, all consumer categories receive 24×7 power supply, except the agricultural consumers who receive eight hours of supply per day on a

predefined schedule. As a result, the state has recorded the highest per capita consumption among the major states. In 2014-15, per capita consumption in the state was 1,858 kWh, which was much higher than the national average of 1,010 kWh.[9]

To achieve the objective of universal electrification and 24×7 power supply, the state has added a significant amount of generation capacity. Punjab had an installed capacity of 3,509 MW in March 1997, which was increased to 7,000 MW by 2010. About 70 percent of this capacity was under the ownership of PSEB, while the remaining capacity was allocated from central pool projects. Until this point, there was no IPP participation in the state. However, subsequent capacity additions have come solely from the IPPs, making their share about 43 percent at present (see Figure 1). Consequently, the state, which was reeling under a power crisis until recently, overcame the situation in 2015-16. Though the Central Electricity Authority (CEA) has projected a deficit scenario in 2016-17, the state utility blames it on over-projection of demand.

Figure 1: Fuel Type and Ownership of Installed Generation Capacity in Punjab (as of 28 February, 2017)



Fuel-Wise Composition **Ownership-Wise Composition**

Source: CEA, 2017

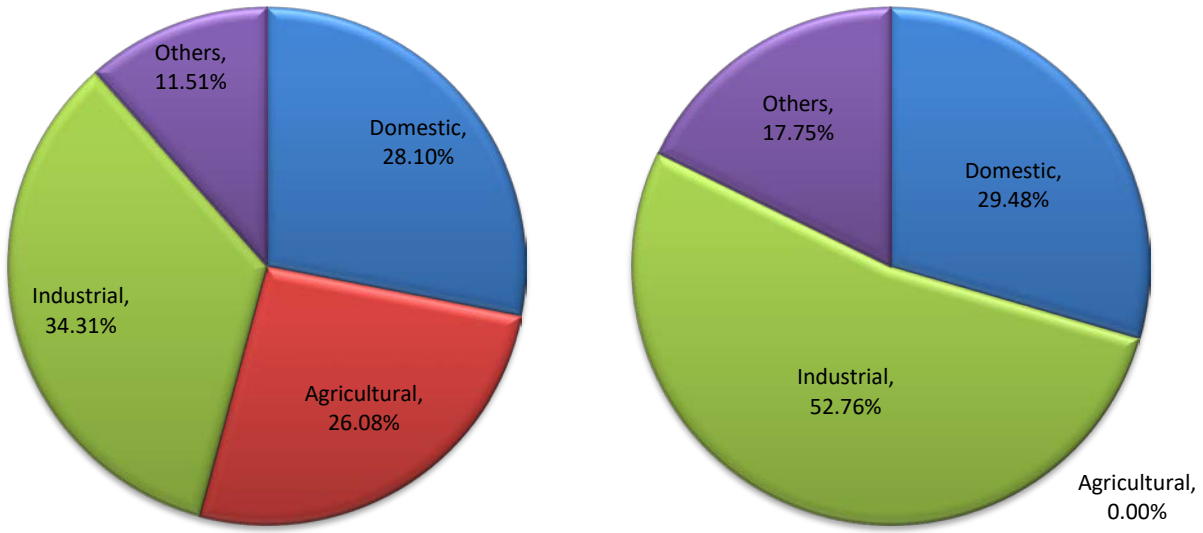
On the distribution front, PSPCL has been doing fairly well. The Third Annual Integrated Rating of Distribution Utilities ranked PSPCL fifth among 40 discoms, with an A+ grade (MoP, 2015). However, the rank went down to 10th in the following year, with a B+ grade (MoP, 2016).The deceleration was mainly

[9] Per capita consumption has been higher in the state for a long time. Until the mid-1960s, the state had a per capita consumption lower than the national average. By 1965-66, it crossed the national average; while the national average was 61 kWh, Punjab had a consumption of 98 kWh per capita (Kale, 2014). By 1990-91, the state recorded a per capita consumption of 606 kWh, while the national average was only 253 kWh. In 1999-2000, the per capita consumption increased to 921 kWh in Punjab, while the national average increased to 355 kWh (Planning Commission, 2002).

due to the recorded financial loss in FY 2014-15.[10] However, following the unbundling, the discom has recorded a reduction in financial loss.[11] In FY 2012-13 and 2013-14, PSPCL recorded net profits. In 2014-15, it suddenly recorded a loss of Rs. 1,100 crores after the subsidy was received. This loss can be attributed to the gap in subsidy disbursement from the state government. As opposed to a commitment of Rs. 5,875 crores, the state government could pay only Rs. 4,642 crores (see Table 6).

PSPCL's load is spread fairly evenly among consumer categories. In 2014-15, domestic, industrial, and agricultural consumers accounted for 28 percent, 34 percent, and 26 percent of power sales, respectively (see Table 7 and Figure 2). Interestingly, the revenue share of domestic consumers was 29 percent in the state, higher than their consumption share. However, the average revenue realised (ARR) from domestic consumers was Rs. 4.14 against average cost of supply of Rs. 4.89. Industrial consumers contributed 53 percent of all revenue, while "other" contributed 18 percent revenue against consumption of 12 percent. Owing to the free power policy, the agricultural contribution was obviously zero (see Table 8 and Figure 2).

Figure 2: Consumer Category-wise Sale and Revenue Contribution, 2014-15



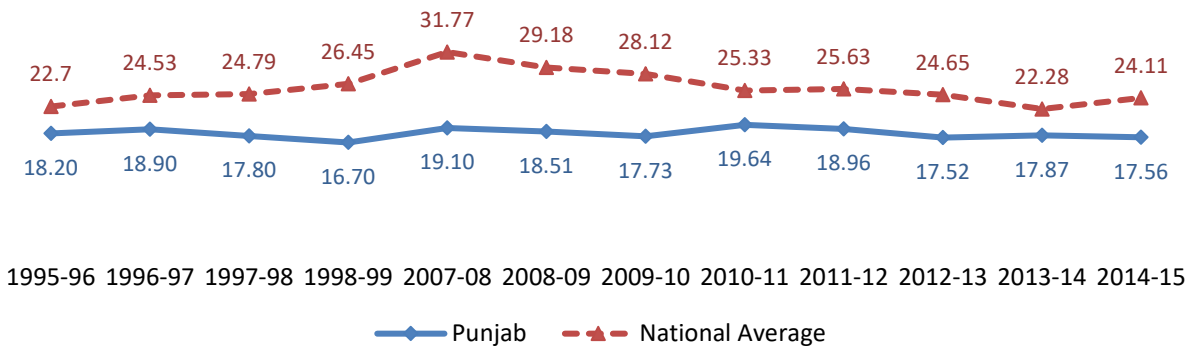
Source: PFC, 2016

[10] Discom officials are highly critical of this rating, which gives more weight to the financial performance. As a senior staff member pointed out, "They judge our efficiency from our balance sheet. This is not the right approach. Our balance sheet reflects the inefficiency of the government. Had the government paid the committed subsidy amount, PSPCL would have made a profit." (From an interview with a senior official of PSPCL, August 11, 2016, in Patiala).

[11] PSEB has a long history of financial loss (see Table 6), even after receiving a subsidy from the state government. As early as 1992-93, erstwhile PSEB recorded a financial loss of Rs. 626 crores, one of the highest among the SEBs (Planning Commission, 2002). The financial loss had been increasing year on year until 2011-12.

Unlike the other discoms catering to a large agricultural consumer base, PSPCL has a lower level of aggregate technical and commercial (AT&C) loss. In 2014-15, the utility had an AT&C loss of 18 percent, a rate that had been stable for the past few years (see Figure 3). Erstwhile PSEB was one of the low-loss SEBs; in 1995-96, the board had achieved 18 percent transmission and distribution (T&D) loss, which had been brought down to 13 percent in 2015-16.[12] However, performance varies significantly across the divisions; while the most efficient division has a T&D loss below five percent, the least efficient division has a loss of 26 percent (PSPCL, 2016). In terms of collection efficiency, PSPCL has recorded 98 percent and 97 percent efficiency, respectively, in 2014-15 and 2015-16 (PSPCL, 2016) (see Table 9).[13] As a result, there is a decline in the gap between ACS and ARR (See Table 5). However, the ACS has been increasing unceasingly. Between 2007-08 and 2014-15, the ACS has increased by 60 percent (see Figure 4). This rise in the ACS has largely been driven by the rise in power purchase cost, employee cost, and interest cost (see Table 3).

Figure 3: State Level Loss Over the Reform Period (%)



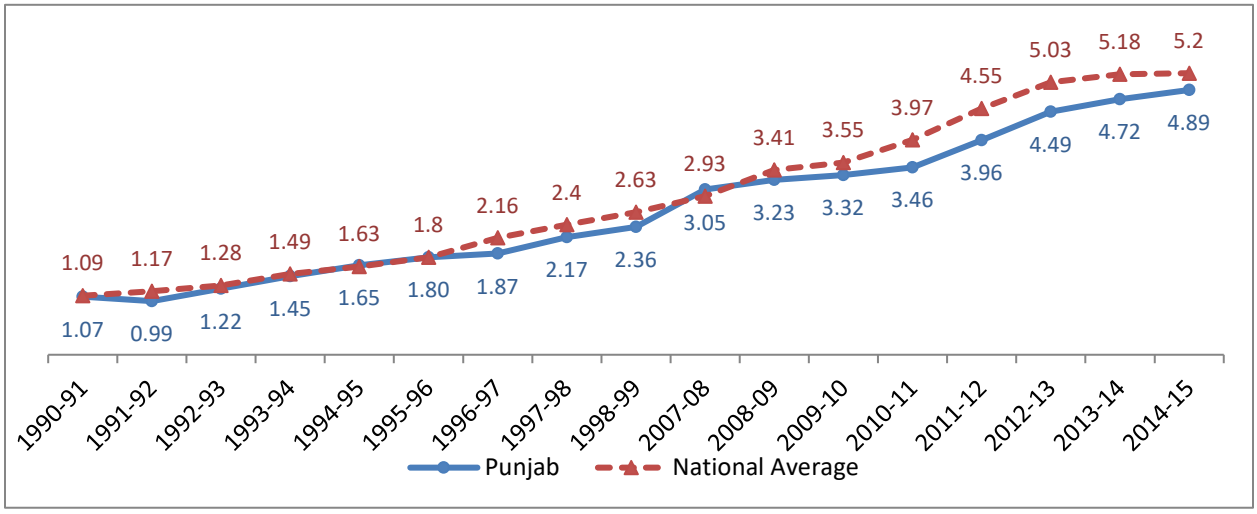
Source: Planning Commission, 2002; PFC, 2011, 2013, 2015 & 2016)

The figure shows T&D losses during 1995-96 to 1998-99 and AT&C losses during 2007-08 to 2014-15, drawing on the available data.

[12] The target for 2016-17, as set by the PSERC, is 12.43 percent (PSERC, 2016).

[13] Many respondents pointed out that a major part of the non-payment is from government offices and departments. The accumulated outstanding amount due from government consumers is roughly around Rs. 600 crore.

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



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

Despite the efficiencies, PSPCL had an accumulated debt of Rs. 20,838 crores, as of September 2015 (MoP, 2016a). A major part of this debt was inherited from its predecessor PSEB. In 2014-15, interest paid on debt accounted for little more than 10 percent of the total expenditure (see Table 4). However, given the current tariff and efficiency levels, PSPCL seems to have the potential for immediate profitability when the debt is mitigated and dues from the government and its agencies are paid on time. The following section analyses the chronology of events that has led to the current state of the electricity sector in Punjab.

II. Hesitant Reforms

Punjab remained averse to economic reforms until the late 1990s. While many states had already initiated sectoral reforms, Punjab was still grappling with terrorism, political instability, and vote-bank politics. However, on the face of a rising fiscal deficit, the GoP signed an MoU with the Government of India (GoI) in 1999 to promote fiscal reforms in the state. Possibly, this was facilitated by good political alignment between the governments at the state and the Centre.[14] This was followed by the setting up of various committees and commissions to look into the problems of revenue mobilisation, expenditure management, and state-public enterprises. As the power sector is a major part of the SPSEs, it received a greater share of the attention. However, amid populist pressure, the sector reforms took more than a decade to unfold. This section looks into the reform trajectory in Punjab's power sector. For better clarity and to analyse the drivers and barriers to reforms, the period of economic reforms is split into four phases, based on power sector developments. (See Table 2 for a chronology of power sector events.)

[14] In 1999, the ruling party at the state, Siromani Akali Dal (SAD), was a member of the ruling coalition, National Democratic Alliance (NDA), at the Centre.

A. Political Consolidation and State Populism (1992-98)

Between February 1980 and February 1992, the state was mostly under President's Rule, except for two short-term governments accounting for a total of five years. In 1992, the state received an elected government that could complete the full five-year term. Though the Indian National Congress (INC) party secured 87 out of 117 seats in the state assembly and formed the government, many political analysts called it a "minority government." While INC secured 44 percent of vote share, due to poor voter turnout (24 percent) it only accounted for 10 percent of the total voters in the state. Among other leading political parties, the Bharatiya Janata Party (BJP) secured 16 percent, the Bahujan Samaj Party (BSP) 16 percent, and the Shiromani Akali Dal (SAD) five percent of the vote share (ECI, 1992). The weak support base was a major concern for all of the leading political parties.

Subsequently, the focus for all of the political parties was to build a cadre of voters. While SAD tried to mobilise the Sikh population on religious grounds, INC tried to mobilise the peasantry. At the same time, the state was trying to combat terrorism and restore an effective police system, which became a common ground for all the competing parties. As a result, there was limited attention to economic policy making. The state did not open up to the idea of economic reforms till end of 1990s.[15]

The power sector continued with business as usual. Though PSEB projected relatively low T&D losses (in the range of 17-18 percent), total cost recovery was between 65-80 percent. The Board was already facing a high financial shortfall—as high as Rs. 943 crores in 1997-98. Like in most states, domestic consumers were charged a below-cost tariff and agricultural consumers were charged a flat rate based on the pump capacity. The cost of the agricultural subsidy in 1997-98 was estimated to be Rs. 1,314 crores (Planning Commission, 2002).

Keeping with the political scenario, political parties tried to lure voters on promises of freebies around the 1997 state assembly election. Given the proven success of the electricity subsidy as an electoral freebie, free power to farmers topped the list. The election had a good voter turnout, i.e., 69 percent; SAD won 75 and its alliance BJP won 18 seats in the 117 seat assembly. Immediately after becoming the Chief Minister, SAD leader Parkash Singh Badal kept his promise and announced a free power supply to agricultural connections.[16] This move may have benefited about 40 percent of the families in the state who owned land and agricultural pumps. In addition, the government also announced 50 kWh of free power per month to all SC households in the state. The beneficiaries of this policy included more than 30 percent of households in the state. As the landownership among SC households is low in Punjab, both free power policies must have benefited about two-third households and voters. This marked the beginning of the free power era in Punjab.[17]

[15] Interview with two academics, on August 24. 2016 and 18 November 18, 2016, Chandigarh.

[16] During 1992-95, SAD mobilised the voters around religion (Sikhism), while INC focused on peasantry. Both were gaining grounds in their respective constituencies. Post-1997 election, SAD seems to have used free power as a tool to attract part of INC constituency.

[17] At this point, the cost of these subsidies did not put any direct burden on the state finances, though it affected PSEB revenue. The government did not pay for the subsidy during the initial period; between 1992-93 and 1998-99, the government has not paid any subsidy to the board (see Table 6). Moreover, the number of pumps energised then was significantly low; in March 1999, the state had 7.4 lakh pumps energised, which increased to 12.68 lakh by December 2016. Finally, the existing flat-rate tariff for agriculture was already highly subsidised and did not contribute much to PSEB income. In the year preceding free power (1996-97), while accounting for 36 percent of consumption, the agriculture sector contributed only seven percent of

B. High-Level Political Interest and Reform Planning (1999-2003)

Though the SAD government started with populism, keeping with its election promises, it soon picked up interest in reform guidelines from the Centre. By the late 1990s, the GoP had reached a consensus with the GoI on the need to bring in overall fiscal reforms in the state, with the objective of increasing revenue and reducing expenditures. This consensus between the state and the Centre was facilitated by two drivers. By 1999, state finance in Punjab was in bad shape, when overdrafts with RBI reached its peak, and the GoP was in dire need for the Centre's assistance (Sawhney, 2013). At the same time, SAD's participation in the ruling coalition at the Centre further fostered the alignment between the Centre and the state on reform matters.

The electricity sector, accounting for a major share of the SPSE, received priority in reform planning. The first tangible step was the establishment of the PSERC in March 1999, within a few months of the enactment of the Electricity Regulatory Commission Act. However, there was no progress for the next two years. Even the PSERC did not perform its core functions during the period. In March 2001, the GoP agreed to an MoU with the Ministry of Power at the Centre to expedite reforms in the power sector. The MoU set a target of breakeven for the PSEB by the end of March 2003. To achieve this target, it emphasised the elimination of theft within two years, metering the grid and feeders, computerised bills, development of an effective distribution management information system, effective functionality of the PSERC, timely filling of ARR by PSEB, subsidy reimbursement, and demand-side management (DSM) measures. In addition, it also highlighted the need to clear the dues to CPSUs.[18] Many observers saw the pressure and persuasion from SAD's ally at the Centre as a key driver for these developments, while others saw competition with the neighbouring state of Haryana as an important driver.[19]

For the next year, no progress was made on the central guidelines and the targets set in the MoU. The state held the 12th state assembly election in February 2002. Despite its populist steps, SAD lost the election. INC came to power and Amrinder Singh became the Chief Minister. The new government sustained the reform agenda and took it forward. As a first measure, PSEB filed its first ARR in April 2002. PSERC reviewed the ARR and came out with its first tariff order in September. After a long period, the retail tariff was increased marginally. The new government decided to discontinue free power for agricultural consumers and returned to the previous arrangement of a flat rate. Unmetered agricultural connections were charged Rs. 60/BHP/month, while metered connections were charged a nominal fee of Rs. 0.57/kWh. However, 50 kWh of free power to SC households continued (PSERC, 2002).

Interestingly, removal of free power to farmers did not face much resistance, like it did in other states. While many farmer leaders claim to have opposed the change, the opposition was limited to statements and opinions, not taking the shape of mass agitation as happened in states like Andhra Pradesh. A possible explanation could be the low cost of electricity as part of the total cost of inputs for farming. Agriculture in Punjab is well developed and resource consumption is high; thus, input costs are also high. The electric bill, at the extremely subsidised flat rate tariff, was a small fraction of the input costs.

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revenue, i.e., Rs. 202 crores (Planning Commission, 2002)—the approximate revenue the PSEB would have forfeited for the next few years.

[18] MoU between GoP and MoP, available at http://powermin.nic.in/en/content/Punjab, accessed on December 2, 2016.

[19] Haryana and Punjab are often compared on their economic policy choices and performances. In a competitive spirit, both the states have tried to emulate each other's policy options on many occasions. In the case of power reforms, Haryana moved first by enacting the Haryana Electricity Reforms Act and establishing the Haryana Electricity Regulatory Commission in 1998. The government of Haryana also signed an MoU with the MoP in February 2001.

Moreover, by this time, farmers in the state were more worried about the low Minimum Support Price (MSP) offered by government that did not meet the high input costs. The rhetoric was already shifting towards demand for a higher MSP, which reflects the increasing input costs and provides adequate return, and away from demand for input subsidies.[20] Often consumers hold the state government accountable for electricity tariff and subsidy, and opposition parties capitalise on that sentiment by mobilising the voters against the ruling party. As the free power was revoked by the first tariff order from PSERC, which also included a tariff raise for other consumer categories, there seemed to be confusion about whom to hold accountable. There was neither an official position from the government about the tariff hike and free power removal, nor did the opposition party mobilise voters around the issue.

In 2002, the government appointed an Expert Group, headed by Gajendra Haldea, to prepare a power sector reform plan for the state. The Committee submitted its report in March 2003. Replicating much of what was proposed in the Electricity Bill of 2001, the group suggested that unbundling of PSEB and the corporatisation and privatisation of the utilities is necessary, but not enough. In addition, there is a need to promote open access for real competition, which will attract private investment into the sector. It also recommended the phasing out of cross-subsidies in a timely manner, and emphasised targeted subsidies for social objectives and rationalisation of tariff. It estimated an investment requirement of Rs. 16,000 crores over the next five years. The group suggested that the state government should allocate Rs. 2,000 crores and advised it to seek resource support from the World Bank and ADB (NCAER, 2003).

The report was presented by the Expert Group to the state assembly. Until this point, there seemed to be a high level of interest and consensus across the party lines on power sector reforms. However, there was no mass awareness of the government's reform plans.

C. Social Opposition and Return of Populism (2003-09)

The Expert Group report was shared with the senior officers of the PSEB to inform them, and it also received good media coverage. Apparently, it was perceived to be the GoP's intended plan of action for the power sector. As a result, there was a sudden mass awareness and some degree of misperception about the government's intent to make power sector reforms. Among the domestic consumers, there was an apprehension that reforms involving privatisation would result in a tariff increase. Given the tariff revision in 2002, this apprehension was somewhat substantiated. Even so, it did not translate into a mass agitation in the state, and the farmers also did not come forward to oppose it.

The first opposition came from Punjab State Electricity Board Engineers Association (PSEBEA). Their reasoning was that all of the efficiency gains and targets can be achieved without the structural reforms and privatisation. Drawing on the Odisha experience, they also claimed that simply transferring ownership does not help to address the issues in the sector. However, they were also worried that privatisation would degrade the service conditions and benefits they receive under state ownership. PSEBEA is the sole body of engineers above the rank of Junior Engineer. Other employees have multiple associations, and are fragmented along political party lines. But the PSEBEA, as it is not affiliated with any political party, has strong clout with the state government. During early 2000s, PSEB had a staff capacity of about 80,000; the PSEBEA membership included a quarter of this staff.

[20] Interviews with three farmer leaders, on 11 August 2016, 15 September 2016 and 03 January 2017, respectively in Patiala, Chandigarh, and Ludhiana.

The PSEBEA received immediate support from the left-leaning employee associations and farmer associations, who were ideologically opposed to any sort of privatisation in public service. They also managed to mobilise some other farmer groups to join their opposition to the reform plan. By this time, the Electricity Act had been enacted, which sanctioned many of the recommendations from the expert group, including mandatory unbundling of the SEBs. However, given the experience of the other states, the idea of privatisation had lost its fervour. The PSEBEA was still opposed to the unbundling of the Board, as it would result in the fragmentation of the association and their strong position. The state government tried to discuss this and negotiate with the PSEBEA on multiple occasions, but without any success.[21]

On the face of this opposition and consumers' apprehension about tariff increase, PSERC reduced the tariff for all categories of consumers in its 2004 order. The following tariff order, issued in June 2005, included a marginal increase in the tariff for all metered consumers but kept the flat rate tariff for agriculture unchanged. In the run-up to the Assembly elections, scheduled for early 2007, the government proposed an "Energy Bonus" scheme for small farmers in August, with the objective of restoring their vote bank among the peasantry. The proposed scheme would have benefited only 30 percent of the farmers with less than five acres of land and using pumps with less than five BHP capacity (Pandhar, 2005). Realising the limits of the proposal and the possibility of dissatisfaction among larger farmers, the government scrapped the proposal within two weeks. With the objective of gaining widespread appeal among the peasant farmers, it reintroduced free power for all agricultural consumers, a giveaway that the previous government had pioneered. Unlike during the previous regime in which the PSEB was burdened with the costs, the government agreed to make a budgetary provision to cover the cost of free power, as per the requirements of the Electricity Act. Owing to the election in the next year, there was no change in the tariff in 2006. Rather, free power allocation to SC households was increased from 50 kWh to 200 kWh per month (PSERC, 2006).

Despite the desperate populist moves, INC lost the 2007 election; SAD came into power under the leadership of Parkash Singh Badal. Seeking to pursue institutional restructuring, the new government tried to negotiate with the PSEBEA, but without much success. In the meantime, the Centre had started sending notices to unbundle the Board, which the state government deferred by seeking time extensions. While the reform plan did not make any progress, the PSEB was working swiftly on infrastructure upgrades with the Central Assistance under the Accelerated Power Development and Reforms Programme (APDRP) and its revised successor programme, known as RAPDRP. During this period, the Board managed to separate the feeders for agricultural and non-agricultural supply and construct facilities for computerised billing. Another important step was moving the meters from private premises to electricity poles. Although there is no exact accounting of the benefits, it is claimed that meter replacement has reduced thefts.[22] Feeder separation has enabled '"urban quality supply in rural areas." In addition, utilising the RGGVY support, the Board also provided electricity connection to the remaining 92,988 BPL households, and thus achieved 100 percent household electrification.

[21] Interviews with three office bearers of PSBEA, August 10, 2016, Patiala.

[22] Like in most other states, electricity theft across all consumer categories was a common practice in Punjab. While pilferage took place in many forms, meter tampering was a common practice among legal consumers and often happened in collusion with the utility staff. Taking out the meter from the consumers' premise and putting it on not-so-easily-accessible electricity poles helped Punjab to reduce pilferage significantly. Kumar (2004) provides a comprehensive account of pilferage practices, public perception, and the resistance to correction in Punjab.

D. Unbundling and Consolidation of Political Control Over the Sector (2010-16)

After seeking 13 extensions from the Centre, the GoP unbundled the PSEB through a notification in April 2010. At this point, the Centre sent clear signals that Punjab would not receive any budgetary assistance for the electricity sector unless the Board was unbundled. Central assistance under APDRP, RAPDRP, and RGGVY has benefited the sector, which the state could not take the chance of missing out on. Two corporations were carved out of the Board: PSPCL retained the major part of the business involving generation and distribution, while PSTCL received the transmission business. All of the generation and distribution assets, liabilities, and staff of the PSEB were retained by the PSPCL. The PSTCL received the ownership of the transmission infrastructure. As PSPCL retained all of the PSEB staff, the PSTCL has no field staff except the top management. In practice, PSPCL staffs are sent on deputation to PSTCL.[23]

Though the unbundling was a compromise of the organisational restructuring as required by the Electricity Act, it catered to many interests. It protected the PSEBEA interests by keeping all of the staff under one corporation and retaining the service conditions of the PSEB. On the other hand, it has allowed the state government to have better control over the sector. Both the corporations are now managed by a separate Board of Directors which are appointed by the government. The government has been appointing the Directors without a proper process and tenure. To further exercise their control, Directors are appointed "till further order" from the government (Rambani, 2016). According to a retired senior official of erstwhile PSEB, "the Directors are puppets of the government. Either you follow what the government says, or you leave the position and benefits."[24] With this partial unbundling, the state managed to maintain a balance between local interests and national government.

The period also saw a rise in IPP participation in the state. Without a single IPP at the time of the unbundling, the state now has private sector installed capacity of 5,674 MW, accounting for 43 percent of total installed capacity in the state. A major part of the private sector capacity (i.e., 5,014 MW) is coal-fired, accounting for 60 percent of coal-based capacity of the state. The rest of the private sector capacity is from various renewable energy sources, accounting for 84 percent of total renewable energy capacity in the state (CEA, 2017). However, there is no correlation between unbundling and the rise of IPPs; the reasons are much broader.

Punjab's economic policy and developmental preferences have been heavily focused around agriculture and have neglected industrialisation. Given the initial success in agriculture and the older generation leadership rooted in agricultural families, the government had higher expectations from agriculture. But clearly agricultural development in the state had reached a saturation point and failed to grow further. The change in development approach came in 2009, when Sukhbir Singh Badal was inducted into state politics with an active role.[25] In January 2009, the junior Badal joined the state government as Deputy Chief Minister and took charge of several important departments, including home, governance reforms, investment promotion, and power—most of these were with the CM. He has been instrumental in developing a vision and strategies for industrial promotion and agricultural diversification, which were

[23] Due to reduced field staff because of the arrangement with the PSPCL, the PSTCL started recruiting its own field staff in 2016.
[24] Interview with a retired PSEB Chairman, August 10, 2016, Patiala.
[25] Sukhbir Singh Badal was already appointed as SAD President in January 2008, had been elected three times to the Lok Sabha (11th, 12th and 14th), and had been nominated once to Rajya Sabha (2001-04). When he joined state government in 2009, he was a sitting member of the 14th Lok Sabha and was later elected into the state Assembly in August 2009.

long overdue and have been demanded. The government also recognised that power availability and reliability is a key factor in industrial promotion.[26] This claim was further validated when the government slashed the industrial tariff in 2016 to use cheap power as an incentive to attract industrial investment in the state. As per the 2016-17 tariff order, new industries in the state will be charged Rs. 4.99/kWh against an estimated ACS of Rs. 5.98/kWh. Existing industries will get the benefits of the reduced rate for any additional consumption up to and above their existing load (PSERC, 2016).

The state historically had a power shortage during the peak summer season (often referred to as paddy season) when the agricultural demand increases. As a practice, the government has been emphasising and prioritising the supply to farmers over industry during these three months. However, the state has tried to contain the paddy-driven electricity demand through the Punjab Preservation of Subsoil Water Act, 2009. As per the provisions of the Act, the state government determines a date every year for the sowing of paddy, depending on the expected arrival of the monsoons, with the objective to limit dependence of groundwater and electricity demand. Farmers trying to sow earlier are penalised. However, the industrial power supply was disrupted to cater to the agricultural demand until the last two to three years, and industrial consumers were made to pay a Peak Load Exemption Charge (PLEC); this charge was removed in 2016.

The addition of privately owned generation capacity as a way out of the power availability crisis received support from both the older and younger generations of the leaders in the ruling party. While the former supported it for catering to peak agricultural demand, the latter saw it as a prerequisite for industrial promotion. Subsequently, the state government promoted IPPs on long-term power purchase agreements (PPAs) with PSPCL. Critics point to the possibilities of corruption in IPP promotion. The ruling party, especially the Badal family and their associates, has been accused of being involved in high-level corruption. As per media reports, the family has shifted from the traditional form of cash corruption to a share in investments. This has partly been established in sectors like transportation, real estate, hospitality and even drugs (Kripal, 2015; Yadav, 2015; EPW, 2017). In the case of IPPs, there is suspicion that the ruling family must have taken a share to allow private investors. The fact that IPP capacities are being fully utilised even at their higher cost, while the PSPCL capacities are sitting idle (Sood, 2015), further substantiates this claim. Along with other factors, alleged corruption in IPP contracts is also blamed for the slow progress in renewable energy deployment.[27]

However, capacity addition over the last four to five years has led to the new challenge of surplus power. The state experiences dramatic shifts in power demand seasonally; demand increases to 11,000 MW during the summer months, but the winter demand goes down to as low as 3,000 MW. The new capacity caters to the peak load, while a large part of the capacity sits idle at a high fixed cost during the low-demand months. The state is now looking for a solution to this surplus power scenario.

[26] Speaking at in a public event, the Principal Secretary of Investment Promotion and CEO of *Invest Punjab* emphasised that power availability is a key prerequisite for industrial development. "That is why Punjab has prioritised on capacity addition and now has achieved surplus power. Now the focus is to get buyers for this power and make it affordable" (Jaipur, November 18, 2016). *Invest Punjab* website (http://investpunjab.gov.in) also lists "abundant quality power" as first among five top facilities offered by the state to investors.

[27] According to a senior journalist, competition among other factors has brought down the renewable energy tariff, and therefore the return on investment has also been reduced for the developers. The situation makes it difficult for the developers to share this reduced return. As a result, private developers are not interested any longer. (Interviewed on August 11, 2016, Patiala).

During this period, PSERC made important regulations for the sector (see Table 2), including open access regulation, multiple regulations on renewable energy, and DSM. However, the purpose of all these regulations has been defied by the surplus power problem. Open access is being discouraged through additional surcharges,[28] as the discom is struggling to sell the contracted power. Renewable energy promotion has also been stalled as the discom does not have an appetite for additional power. DSM has lost all incentives and interest from the discom, as power availability at present is higher than the demand. The future of open access, renewable energy, and DSM in the state will depend on utilisation of the available surplus power.

On the other hand, populism was sustained and flourished through all the reforms. There was a consensus among the three leading contenders for the 2017 election (AAP, INC, and SAD) on free power to farmers, while some sought to extend the duration of supply.[29] On free power to selected households, APP had promised 400 kWh per month for dalit households (APP, 2016), and INC had promised 300 kWh for SC and BC households. Since SAD came to power in 2007, there was a tariff raise every year until 2014. But in 2015, the tariff was reduced for all consumers, and there was no change in the tariff in 2016. Instead, the government decided to extend the 200 kWh free power to OBC households, i.e., remaining population who did not receive any free power (HT, 2016).

PSPCL has not just taken over the debt from the PSEB, but has also added to it in the last five years, though at a lower rate. As of September 2015, PSPCL had an accumulated debt of Rs. 20,838 crores. After two years of nominal profit, the utility made a loss of Rs. 1,100 crore. Seeking a way out, the state joined the UDAY plan in May 2016. Sceptics have doubts about the outcome of this scheme as well as the intent of the state government in joining UDAY.[30] In 2012, Punjab had declined to join the Financial Restructuring Plan as it was offering central incentives based on actual performance. However, the advance incentive under UDAY may have been a driver for joining the scheme. The state has already received Rs. 800 crores under the *Deen Dayal Upadhyaya Gram Jyoti Yojana* (DDUGJY) rural power programme as an incentive to join UDAY (IE, 2015).

[28] In 2016, acting on PSPCL's petition to increase the additional surcharge on power purchased from outside Punjab through open access, PSERC revised the charge from Rs. 1.13 per kWh to Rs. 1.25 per kWh (PSERC, 2016). This charge in Punjab is significantly higher than other power surplus states like Gujarat, Himachal Pradesh, Rajasthan, and Haryana, where it is 0.49, 0.78, 0.80, and 0.92 rupees, respectively.

[29] In its manifesto, INC has made it clear that free power will continue if INC comes to power (INC, 2017). Its CM candidate, Amarinder Singh, earlier slammed the allegations of Parkash Singh Badal that INC will again revoke free power (ToI, 2016). SAD has listed its continued support for "free power" as a major achievement under agriculture segment. The party has promised to continue free power, extend the duration of supply to 10 hours per day, and sanction at least one pump connection to every farmer, irrespective of the landholding size (SAD, 2017). AAP has promised a 12 hour-per-day supply of free power in its dedicated manifesto for farmers and farm labourers (AAP, 2016).

[30] While state government is trying to issue bonds to take over PSPCL debts, it is not yet clear who will pay for the bonds at maturity, top government officials do not have any answers to this question. Given the precedents, the utility officials suspect that the government may adjust the taken-over loan amount against subsidy dues. Two retired senior officials of erstwhile PSEB pointed that Rs. 900 crore provided by the state government under the 2001 bailout (based on Ahluwalia Committee Report on Settlement of SEB Dues) was later adjusted against the subsidies booked by the board (Interview with ex-Chairman and ex-Chief-Engineer of PSEB, August 10, 2016, Patiala). However, no evidence could be found to verify the claim.

Table 2: Chronology of Political and Power Sector Events			
National	**Year**	**Punjab**	
Politics & Policies		**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 1992; Rajinder Kaur Bhattal became Chief Minister in January 1996	
	1997	• SAD won the election and Parkash Singh Badal became the Chief Minister	• Launch of free power for agriculture • 50 kWh/month free power for SC households
• ***12th General Election: NDA Government*** • Electricity Regulatory Commission Act • Third Conference of Chief Ministers on Power reforms	**1998**		
• ***13th General Election: NDA Government***	**1999**		• Punjab State Electricity Regulatory Commission Established
• MoUs with State Governments to expedite power reforms	**2000**		
• Report of the Expert Group on Settlement of SEB Dues • Accelerated Power Development Programme • The Electricity Bill • The Energy Conservation Act	**2001**		• GoP signs MoU with GoI to expedite power reforms
• Establishment of Bureau of Energy Efficiency • Accelerated Power Development & Reform Programme	**2002**	• INC won the election and Amarinder Singh became Chief Minister	• PSERC issued first retail tariff order • Free power for agriculture removed; metered supply charged at Rs. 0.57/kWh and

		• *GoP established the Directorate of Disinvestment under the Department of Finance* • *Punjab Infrastructure Development Act* • *Establishment of Punjab Infrastructure Regulatory Act*	unmetered supply charged at Rs. 60/BHP/month • 50 kWh free power for SC households continues
• The Electricity Act	**2003**		• Report of the Expert Group on Power Sector Reforms in Punjab
• ***14th General Election: UPA I Government***	**2004**		
• Rajiv Gandhi Grameen Vidyutikaran Yojana	**2005**		• Punjab Electricity (Duty) Act, 2005 • PSERC (Conduct of Business) Regulations • PSERC (Forum and Ombudsman) Regulations • "Energy Bonus" scheme for small farmers proposed and scrapped before coming into force • Free power for agriculture restored
	2006		• Free power to SC households increased to 200 kWh
	2007	• SAD won the election and Parkash Singh Badal became Chief Minister	• PSEB failed to file ARR; PSERC issued a Suo Motu tariff order • Free power of 200 kWh to non-SC BPL households
• Restructured Accelerated Power Development & Reform Programme	**2008**		
• ***15th General Election: UPA II Government***	**2009**	• Sukhbir Singh Badal appointed as Deputy Chief Minister	• PSERC (Harnessing of Captive Power Generation) Regulations
• Jawaharlal Nehru National Solar Mission • National Mission for Enhanced Energy Efficiency	**2010**		• Unbundling of PSEB into PSTCL & PSPCL • PSPCL filed first ARR Petition for 2011-12

	2011		• PSERC (RPO & its Compliance) Regulation • PSERC (Terms & Conditions of Intra-State Open Access) Regulation
• Financial Restructuring of State Distribution Companies	**2012**	• SAD won the election and Parkash Singh Badal continued as Chief Minister	• PSERC (DSM) Regulation • New and Renewable Sources of Energy Policy
• Model State Electricity Distribution Management Responsibility Bill	**2013**		
• ***16th General Election: NDA Government*** • Integrated Power Development Scheme • The Electricity (Amendment) Bill	**2014**		• Policy on net metering for Grid Interactive Roof-Top Solar Photo Voltaic Power Plants • PSERC (Electricity Supply Code and Related Matters) Regulations
• 24×7 Power for All • Deen Dayal Upadhyaya Gram Jyoti Yojana • Ujwal DISCOM Assurance Yojana	**2015**		• Farmers Solar Power Scheme • PSERC (Grid Interactive Rooftop Solar Photo Voltaic Systems based on Net Metering) Regulations
	2016		• Punjab joins UDAY • Reduction in industrial tariff, elimination of PLEC, but open access surcharge increased • Free power of 200 kWh to OBC households

III. Chronic Distribution Challenges

Although the PSPCL inherited the PSEB's accumulated debt, it achieved good performance efficiency. By the time the Board was unbundled, the losses were at a manageable level. Modest improvements could have resulted in a profit in 2012-13 and 2013-14. The loss incurred in 2014-15 was due to the gap in subsidy disbursement. The utility has the potential for a quick turnaround, but it is plagued with a range of challenges that need to be addressed to turn the utility profitable. This section discusses four of these key challenges that need priority action.

***Electricity Subsidy—Unsolicited Populism*:** Any discussion of the performance of Punjab electricity utility draws attention to the quantity of agricultural consumption and free power, which are often blamed for the financial downfall of the utility. Punjab has a long history of subsidised power supply to agriculture. It was the first state to introduce a flat-rate tariff for agricultural pumps back in 1968. Even then, it was considered regressive and punitive as it would benefit the rich farmers more (Kale, 2014). Since then, agricultural demand has ballooned, but the flat rate did not reflect the rise in the cost of electricity supply. The state further introduced free power for agriculture in 1997, which has continued until now, with a brief hiatus during 2002-2005. Though INC has gained a clear majority in the state assembly in the 2017 election, it seems to lack the will to reform electricity subsidies, as evident in its manifesto. The cost of free power to farmers has been stressing the state budget and is becoming increasingly unbearable, as is evident in the recent gaps in subsidy disbursement. During 2002-03 and 2015-16, PSERC has approved Rs. 44,699 crore as a subsidy requirement of the discom and the state government has paid Rs. 40,539 crore (ToI, 2016a), which is about double the amount of PSPCL's outstanding debt and more than one-and-a-half times PSPCL's ARR for 2016-17. These subsidy payments are often made through an adjustment in the financial books against the interest on state government loans and electricity duties; the remaining balance is paid in cash. PSPCL has been complaining that the disbursement is not paid on time, even after the PSERC recommendation for monthly advance payment. Subsequently, the discom is forced to take short-term loans for working capital often at a higher interest rate.[31] PSERC does not allow the interest on short-term loans in ARR review.[32,33] Punjab has 1.27 million irrigation pumps for 1.15 million land holdings. Even in the face of this crisis, the state government allowed 1.56 lakh pump connections in 2016-17.

While the free power to agriculture benefits about 40 percent of the households in the state who own landholdings, the remaining population is not left out. The government started with 50 kWh free power per month for SC households in 1997, which was increased 200 kWh in 2006. This benefit was extended to BPL households in 2007 and OBC households in 2016. Given that most households in Punjab fall into any of the four categories,[34] everyone gets the benefit of free power in the state. Who pays for the subsidy? On paper, the state government pays for the cross-subsidised tariff. It has been observed that as the subsidy quantum has increased, there has been an increase in electricity duty.

[31] Interview with discom official, August 11, 2016, Patiala.
[32] Interview with PSERC official, August 3, 2016, Chandigarh.
[33] However, PSERC has not asked the GoP to pay any interest on the delayed subsidy payment. Rather, the arears in subsidy disbursement during 2015-16 has been carried forward to the next year and asked to pay in 12 equal installments, along with the subsidy for 2016-17 (PSERC, 2016).
[34] Punjab has the highest share of the SC population (32 percent of total population in the state) among the Indian states, about double the national average. However, the OBC and BPL population is far below national average, at 22 percent and eight percent, respectively.

At present, the state levies an electricity duty of 13 percent on all consumer categories (CEA, 2016). At this rate, in 2014-15, the GoP would have collected Rs. 2,312 crore as electricity duty, which covers 39 percent of the subsidy booked and 50 percent of the subsidy received by the discom. In addition, consumers are charged an additional five percent as infrastructure development cess (tax), which amounts to 15 percent of the subsidy booked and 19 percent of the subsidy disbursed. Given that both of the amounts are never credited to government accounts and are always adjusted against the subsidy booked,[35] it is fair to claim that about 70 percent of the electricity subsidy paid by the state government is recovered from the paying consumers as electricity duty and cess. Moreover, electricity bills in the state include extraneous charges like cow cess, a water charge, and the local entry tax on consumption, known as octroi (Rajshekhar, 2016). While the revenue collection mechanism in the state is generally in shambles, PSPCL has a good record of collection efficiency. Subsequently, the GoP has used electricity bills for generating revenue for the government.[36] The National Tariff Policy allows the state governments to use electricity duty to provide subsidy to needy consumers, but as a substitute to the cross-subsidies (GoI, 2016). While cross-subsidisation continues, adding these additional charges to the electricity bill has increased the landed price of electricity service, which may have serious consequences. But there hasn't been an organised demand from either the farmers or from the targeted communities for a domestic subsidy.

Despite pioneering the free power policy immediately after coming to power, SAD was voted out of power in the 2002 assembly elections. The INC government revoked free power in 2002, but restored it in 2005. But INC still lost the assembly elections in 2007. During 2012 state assembly elections, INC highlighted the power crisis in the state, the failure of the SAD government to augment the generation capacity, the corruption in IPP contract awarding, and the rising cost of power. Without making its support for free power explicit, INC promised the "existing policy on power to agriculture will continue" and pledged to extend the supply hours to 12 hours per day (INC, 2012), while SAD continued its support for free power. SAD regained power in the election. In the 2017 state assembly election, all three parties running consensually supported the free power policy. INC won the election, despite tinkering with free power in 2002 and giving hesitant support to it in 2012.

On all occasions, tariff orders preceding the election years did not include a tariff increase. However, the removal of free power in 2002 and the somewhat sustained tariff revision did not result in any organised agitation in the state. This clearly shows that electricity pricing does not have many political implications. As evident in a few recent state assembly elections, electricity service and pricing seems to be losing its electoral edge and is no longer a major factor driving voter behaviour in the state.[37]

***Improved efficiency, but no financial gain*:** Although the PSPCL has improved efficiency on several fronts, and PSERC has frequently revised the tariff since 2002-03, the discom continues to lose money. A large part of this loss could be attributed to non-payment and delayed payment of subsidies by the state government. A small part of it is due to non-payment of bills by government departments and agencies; discom officials claim that the accumulated arrears of government departments is around Rs. 600 crore.

[35] Confirmed with multiple officials of PSPCL and PSERC in various interviews.

[36] Beginning in 2016, electricity bills carry a cow-protection cess of 2 paisa/kWh (Nibber, 2016). While the state abolished the octroi tax in 2006, electricity bills continue to include the tax at 10 paisa/kWh, applicable only to industrial consumers and consumers residing/operating within the jurisdiction of a municipal corporation (Gera, 2011). There was a proposal to include water and sewerage charges on electricity bills, as the urban local bodies find it expensive and inefficient to collect the charges directly (Rajshekhar, 2016).

[37] EPW (2017) analyses the factors that affected voter behaviour in the 2017 state assembly election.

Some of the legitimate expenses incurred by the discom, like interest on short-term working capital loans, are not allowed by PSERC. On the other hand, a closer scrutiny of the cost components (see Table 3 and Table 4) reveals that three components have increased disproportionately. Power purchase cost increased significantly after the capacity additions and payment of fixed charges since 2012-13. While the utility has reduced its staff by almost half, the employee cost has increased consistently–largely due to the skewed staff composition of more senior level and highly paid employees. The interest component has also more than doubled during this period.

***Surplus Power—Reliability at a High Cost*:** Though the GoP takes the position that surplus generation capacity is necessary to ensure the reliability of supply, that reliability has come at a high cost. After PPAs with IPPs, the power purchase cost has increased disproportionately, adding to the cost of supply. Between 2011-12 and 2012-13, the expenditure made by the PSPCL for power purchase increased from Rs. 5,890 crore to Rs. 8,049 crore, an increase of 37 percent (see Table 4), while the total sale of power increased marginally from 35,042 MkWh to 36,241 MkWh, an increase of merely three percent (see Table 7). From April to September 2015, including the peak paddy months, PSPCL backed down on 3,457 MW of generation capacity, costing Rs. 3,006 crores as a fixed charge (PEG, 2017). The fixed charge for the unutilised capacity accounted for 12 percent of the revenue requirement of PSPCL in 2015-16. Among the power surplus states, Punjab has backed down on the second highest amount of capacity (27 percent of contracted capacity), after Gujarat. The newest operational plant in Goindwal Sahib remained completely idle in 2016-17, the first year of its operation (PEG, 2017).

While adding to the ACS, the surplus power situation has made way for corruption in plant selection for procurement. As discussed earlier, allegedly, PSPCL plants are kept idle while procurement is made from more expensive private plants. On the other hand, it has constrained mechanisms like open access and also limited the uptake of renewable energy. With a peculiar peak load that last for only three months and amounts to three times of the base load, intelligent procurement planning could have been a better solution than long-term PPAs.

***Institutional Weakening*:** The purpose of organisational restructuring was to create autonomy for the new institutions and reduce government interference in sector functioning. However, that purpose seems to have been defeated by consolidated political control over the newly created institutions. With the power to appoint officials, the government has been able to reinstate their control over the institutions. As mentioned earlier, the Directors of both the utilities are appointed by the government without following proper procedure and service conditions. While a selection process is followed for appointment of the chairperson and members of PSERC, as defined in the Electricity Act, it is alleged that the state government, particularly the chief minister, manages to steer through the process and get their own people, often identified prior to the selection process. [38] This has enabled the government to get their people on board and exercise command over the institutions. Subsequently, the government has been able to control and manipulate the tariff. A review of the last 15 tariff orders issued by the PSERC shows that the years preceding elections saw either no revision in the tariff or a reduction in the tariff.

[38] Interview with a senior journalist, 11 August 2016, Patiala; Interview with an academic, 25 August 2016, Chandigarh.

Conclusion

In many senses, Punjab had a unique experience with power sector reforms. While the state has complied with the Centre's checklist on reforms, the changes are skin deep only. The power dynamics in the sector, however, continue as usual. Defying the key objective of reform, institutional restructuring in the sector has allowed for more political clout in sectoral decision making and functioning. This concluding section draws some lessons from Punjab's experience and discusses the potential of future reforms.

Punjab demonstrates the futility of unsolicited populism, which still continues to be at the centre of politics in this state and many others. Though agriculture benefited immensely from subsidised electricity during the early decades of the Green Revolution, it seems to have lost its significance amidst the rising agricultural input costs (Swain & Charnoz, 2012). Despite pioneering free power for farmers and SC households in 1997, SAD lost the elections in 2002. Similarly, restoration of free power after a brief pause and extension of subsidy for SC households did not help INC in winning the 2007 elections. Yet, the unsolicited populism continues, even without any organised demand for it. During the 2017 Assembly elections, all of the parties promised to not only continue the subsidies, but to extend the quantum. When farmers are demanding quality power,[39] quality remains only in rhetoric.

The paradox of unsolicited populism can partly be explained by the limits of state capacity and the options that state governments have to help farmers. The farmer demand is organised around better MSP, improved procurement conditions, better access to institutional credits, and input subsidies. Most of these items—including MSP, a large part of food procurement, fertiliser subsidies (a major part of agricultural inputs) and conditions for institutional credit—are under the jurisdiction of the Central government, where the state government has a very limited role. States, including Punjab, have offered loan waivers for farmers and attempted to improve market linkage, but without much success. The electricity subsidy, in this context, appears to be most tangible giveaway. Moreover, the burden of this subsidy on state government is not as big as it has been perceived. As discussed earlier, a major part of the subsidy amount is collected from all paying consumers in form of an electricity duty and cess.

Punjab's experience also explains the limits of the Centre's influence at the state level. Though the Centre has devised rational policy approaches to address power sector challenges,[40] implementation at the state level has been sluggish and often abandoned after the initial bombast. Better political alignment, as when the same party or coalition has been in power at the state and the Centre, has produced some broad-level consensus, as evident in the 2001 MoU until the recent UDAY MoU. Yet, actual implementation has been driven by local political considerations and to preserve the power dynamics, often in conflict with the Centre's position.[41] What have worked are the policy guidelines with

[39] From the perspective of Punjab farmers, quality includes daytime supply and unrationed supply.

[40] Swain (2016) provides a detailed account of the Central Government's initiatives for distribution reforms in India.

[41] Despite the NDA government's recommendation to state governments to pay for agricultural electricity subsidies, the SAD government in Punjab launched free power in 1997 and did not pay for the costs for five years. Similarly, in 2005, the INC government reintroduced free power in the state, just few days after the PM from UPA government highlighted the burdens of the electricity subsidy and the need to pay for it. Addressing the nation on the 59th Independence day, Manmohan Singh said, "We need to get used to paying a reasonable price for electricity just as we do for petroleum products." Speech available at: http://mea.gov.in/Speeches-Statements.htm?dtl/2657/Independence+Day+Address+by+Prime+Minister+Dr+Manmohan+Singh+Red+Fort+New+Delhi, accessed January 23, 2017.

significant upfront budgetary allocation—or the threat of discontinuing it. As discussed earlier, Punjab deferred unbundling on 13 occasions until the Centre threatened to stop the budgetary allocations to the sector. It is further validated by the fact that Punjab declined to participate in the Financial Restructuring Plan of 2012 which had achievement-linked incentives, but joined a similar scheme, UDAY, which provides upfront incentives. On the positive side, allocations under APDRP, RAPDRP, and RGGVY have been well-utilised to achieve the objectives of the respective scheme.

Finally, Punjab also shows how well-intended institutional restructuring can be utilised in favour of a small group of vested interests. While appearing to be populist, the state government and ruling political parties have used power sector reforms to cater to elite interests. Through multiple channels, including appointment in newly established and carved out institutions, manipulation of tariff process, awarding of IPP contracts, PPAs and subsidies, the state has managed to protect the power dynamics between the government, utility, regulator, and consumers. The existing *partial reform equilibrium* seems to be favourable to a small group with vested interest in each category of stakeholder.

However, the state of current affairs will have serious implications for ongoing and future reforms in the sector. On the face of it, UDAY should result in an immediate turnaround for PSPCL. In 2014-15, the utility paid total interest of Rs. 2,425 crore when it incurred a financial loss of Rs. 1,100 crore (due to non-payment of the Rs. 1,233 subsidy by the government). When 50 percent of the debt of PSPCL is taken over by the state government in year one of UDAY (and, thus, the interest component is reduced by 50 percent), the utility should record a net profit. However, given the precedents, it's doubtful this will happen. There is suspicion that the debt takeover will happen temporarily, to comply with Central guidelines, and that the government may later adjust the amount against subsidy booked. Unplanned power procurement and long-term PPAs have landed PSPCL in a locked-in situation, which will in turn hamper open access and renewable energy deployment. The effects are already evident: open access is discouraged through exorbitant surcharges, and the Farmer Solar Scheme launched in 2015 was scrapped before it could be implemented.[42] Surplus availability of power seems to have killed the incentive for demand-side initiatives; rather, the focus is on increasing demand. Though the state has adopted all major Central schemes for energy efficiency, there is no state-level initiative on DSM. Given the fair rate of recovery from paying consumers, the vested interest, with alleged stakes in IPPs, will benefit from increased demand. Finally, though the state does not have an official position on retail competition,[43] the sentiment is generally against it, as it would imply reducing the size, business, and clout of the single utility in the state. Given the current dynamics, Punjab's power sector does not appear to be ready for any substantive change.

[42] The Scheme would have allowed land-owning farmers to install solar projects of 1 MW to 2.5 MW, with guaranteed purchase by PSPCL at a generic tariff determined by the PSERC. Many farmers were ready to go for the scheme and kept their agricultural land vacant. But later the government decided to withdraw the scheme without any official notification. Details on the allegedly scrapped scheme are still available on the PEDA website: http://peda.gov.in/main/pdf/FARMERS%20SOLAR%20POWER%20SCHEME%20(ENGLISH).pdf, accessed January 23, 2017.

[43] Though Punjab participated in the consultation of states conducted by the Parliamentary Standing Committee on Energy, its views were not mentioned in the report which recorded the views of 18 states.

References

AAP. *Farmers and Farm Labourers Manifesto*. Chandigarh: Punjab Dialogue Committee, Aam Admi Party.

Ahluwalia, M. S. 2002. "State Level Performance under Economic Reforms in India." In A. O. Krueger (ed.) *Economic Policy, Reforms and the Indian Economy*. New Delhi: Oxford University Press.

CEA. 2016. *Electricity tariff & Duty and Average Rate of Electricity Supply in India*. New Delhi: Central Electricity Authority.

CEA. 2017. *All India Installed Capacity (in MW) f Power Stations*. February, New Delhi: Central Electricity Authority.

Chikte, R. P. 2011. "Income Convergence and Regional Growth in India: Before and After the Economic Liberalization." *South Asia Economic Journal* 12(2): 239-269.

ECI. 1992. *Statistical Report on General Election, 1992 to the Legislative Assembly of Punjab*. New Delhi: Election Commission of India.

EPW. 2017. "Punjab's Voters Settle for Change of the Familiar Kind," *Economic and Political Weekly* 52(12): 19-22.

Gera, K. A. 2011. "Punjab Units Hit by High Power Costs." *Business Standard*, July 12, New Delhi.

GoI. 2011. *General Census of India*. New Delhi: Government of India.

GoI. 2016. *National Tariff Policy.* New Delhi: Ministry of Power, Government of India.

Hellman, J. 1998. "Winners Take All: The Politics of Partial Reform in Post-Communist Transitions." *World Politics* 50 (02): 203-234.

HT. 2016. "Power Sop: OBCs to get 200 Units Free in Punjab." *Hindustan Times*, August 11, Chandigarh.

IE. 2015. "Punjab Gets Rs 800 Crore to Upgrade Rural Power Sector." *Indian Express*, August 11, Chandigarh.

INC. 2012. *Manifesto for 2012 State Assembly Elections, Punjab*. Chandigarh: Punjab Pradesh Congress Committee.

INC. 2017. *Manifesto 2017-2022*. Chandigarh: Punjab Pradesh Congress Committee.

Judge, P. S. 2015. "Punjab at the Crossroads." *Economic and Political Weekly* 50 (42): 17-19.

Kale, S. 2014. *Electrifying India: Regional Political Economies of Development*. Stanford: Stanford University Press.

Kirpal, R. 2015. "Badal Inc: Punjab CM's Family Wealth Knows No Limits." *Firstpost*, May 5.

Kumar, S. 2004. *Electricity Theft: Empowering People and Reforming Power Sector*. New Delhi: Manohar.

Kumar, U. and A. Subramanian. 2012. "Growth in India's States in the First Decade of the 21st Century: Four Facts." *Economic & Political Weekly* 47(3): 48-57.

MoP. 2015. *Third Annual Integrated Ratings of State Power Distribution Utilities*. New Delhi: Ministry of Power.

MoP. 2016. *Fourth Annual Integrated Ratings of State Power Distribution Utilities*. New Delhi: Ministry of Power.

MoP. 2016a. *Tripartite Memorandum of Understanding Amongst Ministry of Power, Government of India and Government of Punjab and Punjab State Power Corporation Limited (UDAY)*. March 4, Ministry of Power.

NCAER. 2003. *Report of the Expert Group on Power Sector Reforms (Headed by Gajendra Haldea), Executive Summary*. New Delhi: National Council of Applied Economic Research.

Nibber, G. S. 2016. "Get Ready for Cow Cess Shocker in Power Bills." *Hindustan Times*, January 20, Chandigarh.

Pandher, S. 2005. "Energy Bonus, A Test for Amarinder Singh." *The Hindu*, August 25. Accessed February 23, 2017, www.thehindu.com/2005/08/25/stories/2005082505370300.htm.

PEG. 2017. *The Price of Plenty: Insights from "Surplus" Power in Indian States*. Pune: Prayas Energy Group.

PFC. 2011. Report on Performance of State Power Utilities for the Years 2007-08 to 2009-10. New Delhi: Power Finance Corporation Limited.

PFC. 2013. Report on Performance of State Power Utilities for the Years 2009-10 to 2011-12. New Delhi: Power Finance Corporation Limited.

PFC. 2015. Report on Performance of State Power Utilities for the Years 2011-12 to 2013-14. New Delhi: Power Finance Corporation Limited.

PFC. 2016. Report on Performance of State Power Utilities for the Years 2012-13 to 2014-15. New Delhi: Power Finance Corporation Limited.

Planning Commission. 2002. *Annual Report on the Working of State Electricity Boards & Electricity Departments*. New Delhi: Planning Commission, Government of India.

Planning Commission. 2014. *Data-Book Compiled for Use of Planning Commission*. New Delhi: Planning Commission, Government of India.

PSERC. 2002. *Tariff Order for PSPCL FY 2002-03*. Chandigarh: Punjab State Electricity Regulatory Commission.

PSERC. 2006. *Tariff Order for PSPCL FY 2006-07*. Chandigarh: Punjab State Electricity Regulatory Commission.

PSERC. 2016. *Tariff Order for PSPCL FY 2016-17*. Chandigarh: Punjab State Electricity Regulatory Commission.

PSPCL. 2016. *Management Information Report (Quarter Ending March 2016)*. Patiala: Punjab State Power Corporation Limited.

Rajshekhar, M. 2016. "Why Punjab's Power Bills Include a Cow Cess and Water Charges." *Scroll.in,* January 13, accessed February 23, 2017, *http://scroll.in/article/802014/why-punjabs-power-bills-include-a-cow-cess-and-water-charges*.

Rambani, V. 2016. "Punjab Power Sector's 'Powerless' Bosses." *Hindustan Times,* August 4, Chandigarh, accessed February 23, 2017,www.hindustantimes.com/punjab/punjab-power-sector-s-powerless-bosses/story-hjgWKRVFxQP5eGBEtMC6vL.html.

RBI. 2016. *Handbook of Statistics on Indian Economy*, Reserve Bank of India.

SAD. 2017. *Shiromani Akali Dal Manifesto: Vidhan Sabha Elections*. Chandigarh: Shiromani Akali Dal.

Sawhney, U. 2013. "Fiscal Reforms at the Sub-National Level: The Case of Punjab." *NIPFP Working Paper 05*, New Delhi: National Institute of Public Finance and Policy.

Sawhney,U. 2012. "Subnational Reforms and Public Policy issues in Punjab. *International Journal of Punjab Studies* 19 (01): 49.66.

Singh, L. 2015. "Resurrecting Punjab's Economy', *Hindustan Times*, April 6, Chandigarh.

Singh, N. 2016. "Punjab's Economy: What Went Wrong?" *The Tribune*, August 12, Chandigarh.

Sood, A. 2015. "Generation Down, Power Set to Cost More." *The Tribune*, February 7, Chandigarh.

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

Swain, A. K., and O. Charnoz. 2012. "In Pursuit of Energy Efficiency in India's Agriculture: Fighting 'Free Power' or Working with it?" *AFD Working Paper 126*, Paris: Agence Française de Développement.

ToI. 2016. "Amarinder Singh Accuses Punjab CM Parkash Singh Badal of 'Spreading' Lies." *Times of India*, August 13, Chandigarh.

ToI. 2016a. "Punjab's Free Power Bill is Rs 40,538 Crore in 13 Years." *Times of India*, March 13, Chandigarh.

Yadav, A. 2015. "Punjab's Biggest Challenge: Not Khalistan but Political Corruption, Static Agriculture and Drugs." *Scroll.in*, August 1, accessed March 30, 2017,

https://scroll.in/article/745297/punjabs-biggest-challenges-not-khalistan-but-political-corruption-static-agriculture-and-drugs.

Annexes

Table 3: Average Cost of Supply & Cost Components (Rs/kWh)									
Year	**Power Purchase**	**Fuel Cost**	**Employee Cost**	**O & M Cost**	**Interest Cost**	**Depreciation**	**Admn. & Gen Expenses**	**Other Costs**	**ACS**
1997-98	0.50	0.68	-	0.07	0.40	0.16	0.36	0.00	2.17
1998-99	0.44	0.69	-	0.07	0.46	0.15	0.52	0.02	2.36
2007-08	1.47	0.65	0.50	0.07	0.21	0.16	0.02	-0.03	3.05
2008-09	1.29	0.79	0.55	0.08	0.30	0.17	0.02	0.03	3.23
2009-10	1.14	0.89	0.61	0.09	0.33	0.20	0.02	0.04	3.32
2010-11	1.35	0.77	0.70	0.08	0.37	0.16	0.02	0.01	3.46
2011-12	1.40	0.86	0.88	0.07	0.47	0.17	0.02	0.08	3.96
2012-13	1.85	0.89	0.89	0.08	0.56	0.18	0.03	0.01	4.49
2013-14	2.12	0.87	0.88	0.09	0.52	0.19	0.04	0.01	4.72
2014-15	2.58	0.68	0.84	0.08	0.50	0.19	0.03	-0.01	4.89

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

Table 4: Total Expenditure & Break-up (Rs Crore)									
Year	**Power Purchase**	**Generation Cost**	**Employees Cost**	**O&M Cost**	**Interest Cost**	**Depreciation**	**Admin & Gen. Exp**	**Other Exp.**	**Total Exp.**
2007-08	6,020	2,646	2,035	274	864	665	70	-106	12,468
2008-09	5,184	3,171	2,202	317	1,195	694	75	113	12,951
2009-10	4,653	3,643	2,497	360	1,330	797	75	156	13,511
2010-11	5,734	3,278	2,997	343	1,595	683	80	25	14,735
2011-12	5,890	3,610	3,701	302	1,970	716	97	337	16,623
2012-13	8,049	3,883	3,868	342	2,430	796	113	62	19,543
2013-14	9,649	3,945	4,010	392	2,382	877	159	30	21,445
2014-15	12,397	3,272	4,040	381	2,425	913	156	-59	23,525

Source: PFC, 2011, 2013, 2015, 2016

Table 5: Average Revenue Realisation vis-à-vis Average Cost of Supply (Rs/kWh)				
Year	**ACS**	**ARR (w/o subsidy)**	**Gap (subsidy received)**	**ARR (subsidy received)**
2007-08	3.05	2.01	0.34	2.71
2008-09	3.23	2.33	0.26	2.97
2009-10	3.32	2.23	0.32	3.00
2010-11	3.46	2.32	0.38	3.08
2011-12	3.96	2.85	0.11	3.85
2012-13	4.49	3.35	-0.02	4.51
2013-14	4.72	3.73	-0.06	4.78
2014-15	4.89	3.70	0.23	4.66

Source: PFC, 2011, 2013, 2015, 2016

Table 6: Income, Subsidy Received and Profit (Rs Crore)					
Year	**Total Income (w/o subsidy)**	**Profit (w/o subsidy)**	**Profit (subsidy Received)**	**Subsidy Booked**	**Subsidy Received**
1992-93	NA	-626	-626	NA	0
1993-94	NA	-693	-693	NA	0
1994-95	NA	-681	-681	NA	0
1995-96	NA	-644	-644	NA	0
1996-97	2,725	-603	-603	NA	0
1997-98	3,142	-943	-943	NA	0
1998-99	3,607	-1,354	-1,354	NA	0
2007-08	8,234	-4,238	-1,390	2,848	2,848
2008-09	9,313	-3,643	-1,041	2,602	2,602
2009-10	9,066	-4,446	-1,302	3,144	3,144
2010-11	9,878	-4,857	-1,640	3,217	3,217
2011-12	11,982	-4,641	-459	4,104	4,182
2012-13	14,578	-4,965	94	5,226	5,059
2013-14	16,998	-4,446	249	4,696	4,696
2014-15	17,783	-5,742	-1,100	5,875	4,642

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

Table 7: Consumer Category-wise Sale of Power									
Year	**Domestic**		**Agricultural**		**Industrial**		**Others**		**Total**
	MkWh	**% of Total Sale**	**MkWh**	**% of Total Sale**	**MkWh**	**% of Total Sale**	**MkWh**	**% of Total Sale**	**MkWh**
1996-97	3,094	17.41	6,348	35.73	6,872	38.68	1,453	8.18	17,767
1997-98	3,368	17.91	6,050	32.17	7,209	38.33	2,181	11.60	18,808
1998-99	3,596	17.12	7,532	35.86	7,187	34.22	2,689	12.80	21,004
1999-00	3,811	17.45	8,233	37.70	7,759	35.53	2,034	9.31	21,837
2007-08	6,423	20.00	10,030	31.23	10,936	34.05	4,732	14.73	32,122
2008-09	6,566	20.12	9,349	28.65	10,833	33.20	5,881	18.02	32,627
2009-10	7,187	21.98	10,505	32.13	10,996	33.63	4,011	12.26	32,698
2010-11	7,915	22.32	10,117	28.53	10,672	30.09	6,758	19.05	35,463
2011-12	8,636	24.64	10,249	29.25	11,128	31.76	5,029	14.35	35,042
2012-13	9,503	26.22	10,794	29.78	12,299	33.94	3,645	10.05	36,241
2013-14	10,559	27.92	10,232	27.05	12,622	33.37	4,410	11.65	37,823
2014-15	11,483	28.10	10,658	26.08	14,020	34.31	4,705	11.51	40,866

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

Table 8: Consumer Category-wise Revenue									
Year	**Domestic**		**Agricultural**		**Industrial**		**Others**		**Total**
	Rs Crore	**% of Total Revenue**	**Rs Crore**	**% of Total Revenue**	**Rs Crore**	**% of Total Revenue**	**Rs Crore**	**% of Total Revenue**	**Rs Crore**
2007-08	1,628	21.24	18	0.24	4,023	52.47	1,996	26.03	7,667
2008-09	1,758	20.17	0	0.00	4,268	48.96	2,691	30.86	8,718
2009-10	2,108	25.28	0	0.00	4,729	56.70	1,502	18.01	8,339
2010-11	2,533	27.71	414	4.52	4,415	48.30	1,779	19.46	9,141
2011-12	3,328	30.12	2	0.01	5,520	49.97	5,528	19.90	11,038
2012-13	3,977	29.96	12	0.09	6,858	51.65	2,431	18.30	13,278
2013-14	4,463	29.08	2	0.01	8,011	52.20	2,871	18.70	15,347
2014-15	4,757	29.48	0	0.00	8,513	52.77	2,864	17.75	16,133

Source: PFC, 2011, 2013, 2015, 2016

Table 9: Energy Input, Sold, Realised and AT&C Loss				
Year	**Net Input Energy (MkWh)**	**Net Energy Sold (MkWh)**	**Energy Realised (MkWh)**	**AT&C Loss (%)**
2007-08	37,922	30,545	30,680	19.10
2008-09	36,078	30,112	29,399	18.51
2009-10	38,806	32,237	31,925	17.73
2010-11	39,909	32,740	32,070	19.64
2011-12	41,530	34,600	33,655	18.96
2012-13	43,548	36,242	35,918	17.52
2013-14	45,238	37,650	37,154	17.87
2014-15	47,650	40,402	39,282	17.56

Source: PFC, 2011, 2013, 2015, 2016