

LAD CASE STUDY

New Delhi Electricity

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LAD

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The Leadership Academy for Development (LAD) trains government officials and business leaders from developing countries to help the private sector be a constructive force for economic growth and development. It teaches carefully selected participants how to be effective reform leaders, promoting sound public policies in complex and contentious settings. LAD is a project of the Center on Democracy, Development and the Rule of Law, part of Stanford University's Freeman Spogli Institute for International Studies, and is conducted in partnership with the Johns Hopkins School of Advanced International Studies.

INTRODUCTION

The generation, transmission and distribution of electricity has been a particular challenge in India's megacity capital of New Delhiⁱ – and indeed, across India. Following Indian independence, public utility companies – also known as State Electricity Boards (SEBs) – were authorized in 1948 to manage electricity in Indian states. While at first SEBs brought needed investment to electrical infrastructure and improved rural access to electricity across India, by the 1980s, most state utility companies were obvious commercial failures. Physical systems were dilapidated, record keeping was poor, transmission and distribution losses (T&D losses)ⁱⁱ increased, and revenue-cost gaps grew. During the 1990s, electrical outages in many Indian cities – particularly during peak winter and summer months – reached crisis proportions.

By the late 1990s, Delhi's public utility company, the Delhi Vidyut Board (DVB) reported financial losses due to rampant theft, under-billing, and poor collections practices. Frequent power outages in the late 1990s helped generate political momentum for dramatic power sector reform in Delhi. Public antagonism towards the DVB peaked in 1998, when violent public protests broke out in response to power outages during a particularly hot summer. With a state election only months away, these protests represented unprecedented political support for reform. Sheila Dikshit, leader of Delhi's Indian National Congress Party (herein Congress Party) was elected chief minister in November 1998 and assumed office the following month. The 52 of 70 seats awarded to her party were a ringing endorsement of power sector proposals she made on the campaign trail: that her government would oversee the unbundling and privatization (at least in part) of the DVB in the next five years.

Despite public support for reform and recognition that it would involve horizontal and vertical restructuring, privatization, competition, and regulatory reform, Mrs. Dikshit and the newly appointed chairman of the DVB, Mr. Jagdish Sagar, were worried about attracting investors and maintaining their support for the project. Those private sector partners would have to address widespread theft of electricity, a dilapidated distribution network, and a culture of rampant corruption while meeting high expectations from both consumers and the Delhi government.

Reforming Delhi's regulatory environment would be the biggest challenge. Given the need to protect consumers from exorbitant tariff increases and also guarantee a certain return on private sector investment, the success of Delhi's power sector reforms depended on a strong and independent regulatory institution to determine tariff levels.

Historically, SEBs across India (including Delhi) set electricity distribution prices in consultation with the state government. However, following the establishment of the

Leah Nosal conducted interviews and prepared this case under the supervision of Francis Fukuyama of Stanford University. This case was developed solely as a basis for class discussion. It is not intended to serve as a historical record, a source of primary data, or an illustration of effective or ineffective management.

Delhi Electricity Regulatory Commission (DERC) in 1999, the DVB submitted annual tariff proposals to the DERC, advocating for specified tariff adjustments. The DVB was legally bound to respect the regulatory commission's final verdict.

Despite its importance for attracting investors to the Delhi power sector, the DERC also represented a major obstacle to reform. Having spoken with prospective investors, Sagar had reason to believe in late 2000 that the DERC's annual tariff-setting exercise would deter interested parties. Tariffs that are fixed annually tend to fluctuate more dramatically while tariffs set across multiple years ensure fluctuation within a narrower and more predictable bandwidth, providing some measure of security and predictability to investors. As such, where annual tariff setting presented a source of uncertainty to investors, a multi-year formula would allow interested investors to build more informed financial models and therefore more accurate bidding offers.

Mindful of the need to attract and maintain investor interest in the DVB, Sagar submitted an ambitious proposal to the DERC in January 2001, proposing (among other requests) that future retail tariffs be calculated with a multi-year formula that took certain variables – including efficiency improvements - into account. When the DERC rejected this request, in May 2001, Sagar and his colleagues at the DVB needed to quickly decide how to respond. Sheila Dikshit's tenure as Delhi's chief minister would end in two years, so the political will required to implement new initiatives was already declining. While a handful of companies had already expressed interest in the project, they were unlikely to submit final bids until Delhi's future regulatory environment – including the manner of tariff setting – was finalized. As such, the DERC's verdict stood in the way of Delhi's power sector reforms. Looking forward, Sagar identified three possible courses of action:

1. The DVB could accept the DERC's decision, which would mean accepting annual tariff setting exercises with the accompanying risk to investors but allowing the reform process to move forward.
2. The DVB could resubmit its proposal for multi-year tariff principles after incorporating some of the DERC's feedback, trying again to establish multi-year tariff setting but sacrificing precious time in the process.
3. The DVB could leave its proposal unchanged and instead ask the state government to integrate multi-year tariff setting principles into government-issued policy directives. However, even if the government issued these directives, the DERC was not obligated to follow them. Taking the case to India's Appellate Tribunal of Electricity, a last-ditch option, would potentially waste precious time.

With limited time left, the chairman needed to act quickly in response to the DERC's ruling. How could he balance the legitimate concerns of the regulatory commission, state government, and private investors to ensure the ongoing momentum of Delhi's power sector reforms?

STATE ELECTRICITY BOARDS IN INDIA

At the time of Indian independence in 1947, private companies or local authorities produced and delivered more than 80 percent of the country's electricity.ⁱⁱⁱ However, India's 1948 Electricity Supply Act empowered Indian states to take up power generation, transmission, and distribution, in addition to taking over existing utilities once their licenses expired. In the following years, almost every Indian state and territory established a state electricity board within their respective energy ministries.

Under the terms of the 1948 Act, SEBs were politically autonomous and managed by small professional boards of three to seven members. In principle, all decisions (including tariff fixation) were within the board's purview, subject only to policy directives from the state government. The SEBs were intended to be commercially independent as well -- the 1948 Act anticipated that SEBs would achieve a minimum of 3 percent return on capital.^{iv} While at first SEBs succeeded in extending power supply and improving rural access to electricity across India, it eventually became clear that SEBs were not as politically or commercially independent as the 1948 Act intended.

First and foremost, these boards lacked a strong commercial orientation in light of the importance of electricity to secure a basic standard of living. There was significant tension between the SEBs' perceived welfare or development function and their commitment to profit maximization and over time commercial viability became of secondary importance. Given their development function, state governments supported indebted SEBs to the extent that they could, introducing significant moral hazard in the management of the boards. Because senior managers in most SEBs were not held accountable for the commercial success of the enterprise, their decisions did not facilitate efficient operation. For example, there was a notable absence of data and management information systems in most SEBs that could also have helped managers evaluate development schemes or tariff proposals, and hold employees accountable.

The absence of accountability for the SEBs' commercial performance permitted widespread political interference. Although the board was politically independent in theory, state government leaders exercised influence over its decisions, including tariff setting. For example, state governments had the power to replace the board chairman and other board members at will, which in Delhi they did with increasing frequency. Delhi's SEB saw 5 different general managers between 1958 and 1970, 5 more during the 1970s, 7 in the 1980s, and 10 different managers in the 1990s. As SEBs became increasingly indebted, state governments could also exercise more influence over the board through the terms and conditions of bailout packages.

This general lack of accountability and opportunities for political influence benefited some customers more than others. Leaders in state governments were sensitive to the wishes of legislators in their party, who in turn lobbied on behalf of their constituents. Through this chain of influence, politicians could pressure SEBs to keep tariffs low and therefore win or maintain political support in their districts. Retail customers and the poor in particular thus enjoyed lower tariffs than commercial or industrial customers. As a

result, the commercial viability of most SEBs increasingly depended on robust revenue collection and particularly on cross-subsidization from more profitable customers.

In most Indian states, industrial consumers were the most promising revenue stream. Agricultural customers could not subsidize low retail tariffs because state governments, committed to food security, heavily subsidized electricity to agricultural users, often providing power for free. By inflating industrial tariffs, SEBs could subsidize electricity to retail and agricultural customers. However, the success of this pricing scheme depended on effective oversight to ensure that all customers paid the appropriate tariff, large or small.

Unfortunately, poor management and the lack of accountability in most SEBs at the time incentivized corrupt and collusive practices among SEB officials, customers, and local politicians. The nature of electrical distribution in India provided significant opportunities for petty corruption since most SEB metering systems were not automated, and metering and billing was decentralized and managed by field agents. Also, electricity distribution required minor maintenance work that had to be performed quickly and on short notice, and here again, field officers had great discretion. Without automation and accurate information systems, each of these individual transactions presented an opportunity for collusion between those who stole power and SEB officials who could be persuaded to facilitate the theft. While collusion existed between SEB officials and all kinds of customers, in Delhi it was most common among industrial customers.

Corruption also occurred in the upper echelons of SEB management and the state government. Politicians in particular took money directly from SEB board employees in exchange for securing more lucrative positions for board members, or as payment to maintain their current role. Politicians also received financial and political support from SEB customers in exchange for defending their interests in SEB decision-making.

Altogether, collusion of this kind between SEB officials, customers, and state governments led to rampant theft and financial losses for most SEBs. As the boards continued to hemorrhage funds, even less money was available to maintain and expand the electrical grid. As service worsened, fewer customers were willing to pay their electricity bills, thereby exacerbating T&D losses. High and rising tariffs for unreliable electricity caused industrial customers in particular to purchase private generators to supplement or replace grid supply. As industrial consumption decreased as a share of total sales, cross-subsidies from industrial consumers were insufficient to compensate for revenue shortfalls from retail clients and SEB financial health went into steep decline.

DELHI POWER SECTOR

During the 1990s, consensus emerged in several Indian states that the ailing power sector needed major reform. There were peaking shortages in many parts of the country, state governments experienced severe financial burdens because SEB costs exceeded revenues, and consumers of all types were experiencing poor supply quality from the public grid. The commercial viability of Delhi's SEB (the Delhi Vidyut Board, DVB), like that of its

counterparts across India, declined over time. In 1976, the DVB had the second-lowest rates of T&D losses among Indian SEBs (second to Bombay), but increased to average levels in the 1980s.

New challenges unique to India's capital region brought further instability and more dramatic fiscal imbalances to the DVB in the 1990s. Delhi had previously been governed by the Central Government as a Union Territory, but in 1993 the national capital region was again granted its own legislative assembly and elected government (though not the full status of statehood). Management of Delhi's electrical utility company (the DVB's institutional predecessor), the Delhi Electrical Supply Undertaking (DESU), was transferred to the new Delhi government. Over the next four years, DESU had seven different chief executives; the lack of stable leadership contributed to the utility's decline.

Relative to other states in India, Delhi also faced higher rates of informal development as its population grew. Because Delhi's 1959 Electricity Control Order banned the SEB from supplying power to informal colonies and unauthorized squatter settlements, the legislation incentivized those excluded from lawful access to electricity to steal it instead. As rural migration caused these peripheral settlements to grow during the 1990s, so too did rates of electricity theft.

These challenges were evident on DVB balance sheets throughout the 1990s (Appendix 1, Table 1). Where DVB T&D losses were approximately 23 percent in Fiscal Year (FY) 1991-92, they reached 43 percent by 1998. In absolute terms, commercial losses grew from 109 million USD in FY 1994-95 to 191 million USD in FY 1997-98 (Appendix 1, Table 2). Overall, the DVB's operating deficit grew from 89 million USD in FY 1992-93 to 209 million USD in FY 1997-98 (Appendix 1, Table 3).

POWER SECTOR REFORMS: INDIA

The Indian power sector did not meaningfully pursue private investment until the 1990s, following India's 1991 macroeconomic crisis. For most of the 1980s, the Indian economy was characterized by chronic fiscal and current account deficits, external borrowing to finance these deficits, rising debt service obligations, inflation, and inadequate exchange rate adjustment. Increasing oil imports and rising oil prices, extensive agricultural subsidies, and a consumption-driven growth strategy (including higher public sector wages) all contributed to sequential fiscal deficits. Excessive bureaucracy and market controls also hampered Indian economic growth at the time. As India became more dependent on commercial borrowing to balance its payments, servicing its external debts became more and more expensive.

By the end of 1990, India's national reserves could finance only 3 percent of annual imports. India drew 660 million USD from its IMF reserve tranche, and then negotiated a 1.8 billion USD loan. While this emergency measure imposed little conditionality, the government took harsh steps to suppress imports and also approached the IMF to underwrite necessary economic reforms. Starting in 1991, Indian finance minister Manmohan Singh devalued the rupee, abolished most of the quotas and licenses that

dictated who could produce what in India, and also opened some industries to foreign capital, with the goal of making India more market-oriented and expanding the role of private and foreign investment. As part of this national liberalization effort, private sector investment was also solicited for state electricity boards.

Power sector reforms in India remained focused on privatizing electricity generation rather than transmission or distribution. In October 1991, India's Ministry of Power (MOP) began to publish a series of notifications seeking to encourage the entry of privately owned generating companies into the electricity sector. Later, the Electricity Laws (Amendment) Act of 1991 invited private entities to establish, operate, and maintain generating power plants of virtually any size and to enter into long-term power-purchase agreements (PPAs) with nearby SEBs. Notably, SEBs remained in charge of distributing this power to end-users.

Domestic and international investors responded enthusiastically to the independent power producer (IPP) policy. Within four years, 189 offers had been made that would increase India's power supply by more than 75 gigawatts (75,000 megawatts, MW) -- almost double the target of 40,000 MW in the Government of India's 8th Five-Year Plan period (1992-1997).^v From these 189 offers, 95 projects totaling 48,137 MW reached a memorandum of understanding (MOU) or letter of intent (LOI) with their respective state governments. Unfortunately, by 1997, fewer than 17,000 MW had been added.

Investors reported difficulties cooperating with various government agencies in the power sectors where they operated. In spite of national-level liberalization efforts, too many bureaucratic hurdles remained, particularly in regards to fuel supply, import policies, and environmental protection.^{vi} In addition to this complicated regulatory environment, investors lacked confidence in state electricity boards to deliver a stable revenue stream, recognizing that the long-term viability of new generation projects depended on reforms downstream in distribution. In other words, increasing the supply of power available to the public grid was of little use if the distribution network itself was not in better condition.

The problem with focusing on privatizing power generation is that it is the distribution network of any power sector collects revenue for the entire supply chain. In India, when state electricity boards were unable to cover the cost of generation, transmission, and distribution, they received subsidies from state governments but those were unsustainable in the long term. Dependence on subsidies also deterred private investment because it made investors nervous about collecting a return on their investment. This was particularly true of investments in electricity distribution. Unlike private participation in generation or transmission, which are typically "greenfield" ventures, private participation in distribution involved taking over existing networks, employees, and customers ("brownfield"), which is a vastly more complex and sensitive undertaking.

PRIVATE SECTOR PARTICIPATION IN POWER DISTRIBUTION: LESSONS FROM ORISSA

India's first attempt at private sector participation in electricity distribution was in the state of Orissa in 1996. At the time, Orissa was the worst performing SEB in any major state: blackouts and brownouts were common, and only 20 percent of households in the state were connected to the public electricity grid.^{vii} Systemic inefficiencies and widespread corruption led to consistent technical, commercial, and financial losses. Following macroeconomic reforms in the early 1990s, there was a clear opportunity and political incentive for power sector reforms.

It is important to note that the privatization of a public utility does not imply removing government from the sector but rather altering the role that it plays. There are clear risks in delegating the provision of electricity to a profit-seeking entity given the importance of electricity to day-to-day life and the monopolistic character of the sector. As such, the first step in the Orissa privatization process was creation of the Orissa Electricity Regulatory Commission (OERC) in 1996, responsible for regulating and determining tariffs on an annual basis. In principle, the OERC was an autonomous agency, independent from both the utility company and the government itself. Its job was to guarantee an agreed upon return to private bidders while protecting consumers from unnecessarily high tariffs.

Three years later, the Orissa government established a privatization program and simultaneously divested 51 percent ownership in its four distribution utilities. Management of these new distribution companies was transferred to the highest bidder, resulting in substantial monetary inflows for the government. Because Orissa concluded that the sector as a whole would be more efficient under private ownership, the state pledged not to offer subsidies or other financial support for these new companies.

Unfortunately, reforms implemented at Orissa did not meet expectations for cutting T&D losses across the state. To begin with, consultants involved in designing the Orissa reform package vastly underestimated the extent of T&D losses. Due to the poor record keeping for assets and customers in most SEBs, the Orissa consultants estimated T&D losses to be approximately 40 percent when they were closer to 50 percent. However, this discrepancy was not intrinsically damaging to the success of privatization measures. Rather, the OERC (Orissa's regulatory commission) and the Orissa government hampered progress towards more efficient electricity distribution.

The OERC commission continued to set tariffs using the original (and underestimated) T&D loss figures. By failing to correct its calculations, it imposed financial penalties on the utility company to spare consumers from higher tariffs. The Orissa government refused to provide any subsidies following privatization. Even if it had, short-term government financing would not have been a sustainable solution: the success of reforms at Orissa depended on a tariff structure that enabled the utility to pay for itself. Unfortunately, neither the tariff nor the way in which it was calculated changed in Orissa,

causing the new distribution companies to become heavily indebted and miss T&D loss reduction targets.

The state of Orissa was the first to experiment with electricity privatization. However, it failed to set tariffs properly, leading its distribution company to become heavily indebted and unable to meet T&D loss targets. Delhi's Chief Minister Sheila Dikshit and DVB Chairman Jagdish Sagar took careful note of the following lessons from Orissa's experience:^{viii}

- The expectations, commitments, and risk-sharing arrangements for different public stakeholders involved in privatizing electricity distribution must be well aligned, and also communicated clearly to prospective and final investors. In Orissa, risk sharing between the state government, regulatory commission, and private investors was not clearly articulated, and expectations were therefore mismatched.
- The years immediately following privatization would be most important in determining the success of Delhi's new distribution companies. Given the complexity of electricity distribution, the public entities involved in the privatization process – namely, the state government and the regulator – would have to commit to supporting the private entity in its early years as challenges arose. This support would have to include a financial safety net from the state government, and flexibility from the regulator in recognizing realities on the ground when determining tariff levels.
- Privatization plans would need to determine as many parameters as possible in advance, rather than leave details of the bidding process, transaction, or early years to the discretion of the regulator or the state government.

POWER SECTOR REFORMS IN DELHI: THE CHALLENGE

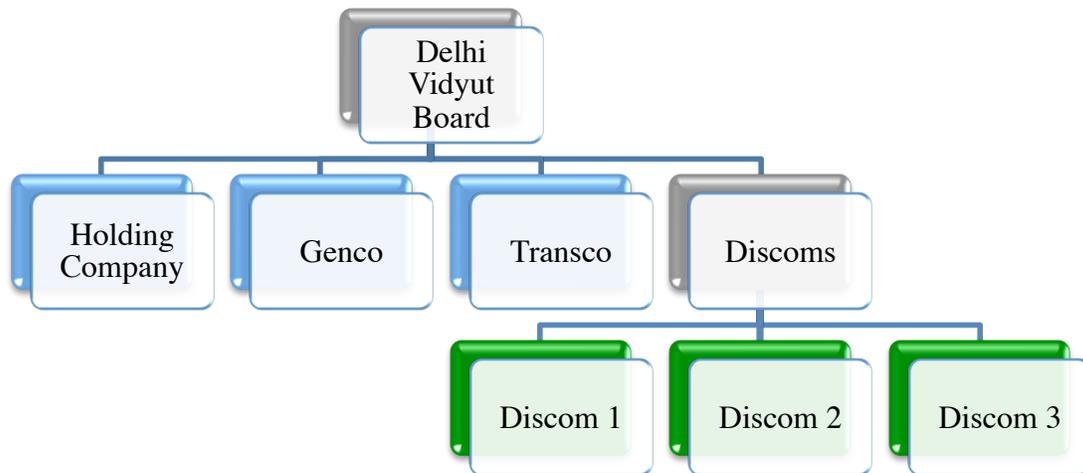
With a mandate of only five years until the next state election (scheduled for December 2003), Chief Minister Sheila Dikshit, and DVB Chairman Jagdish Sagar needed to move quickly to deliver on power sector reforms. Only three months into her tenure, in February 1999, the Chief Minister released a strategy paper proposing to unbundle the vertically integrated DVB into several different companies: one for power generation, one for transmission, and multiple distribution companies, each with its own geographic zone in Delhi. This strategy paper envisioned some kind of joint venture or public private partnership for the new distribution companies but provided few details.

Building on Orissa's experience, the Delhi government moved quickly to establish a regulatory commission that would calculate future tariffs in the local power sector. The Delhi Electricity Regulatory Commission (DERC) was established in March 1999, and assumed the DVB's responsibility for licensing and tariff setting in Delhi's power sector. In principle, the DERC was also independent from government influence. The strongest channel for government influence over the new regulatory commission was through government-issued policy directives, which could be used to describe the government's priorities in the power sector. For example, policy directives might state a preference for low agricultural tariffs or the expansion of power supply to a certain district, all of which the regulator could take into consideration when setting tariff levels. However, the

regulator was not legally mandated to oblige this channel of influence. As stated previously, utility companies could take the case to India's Appellate court, whose verdict both parties were required to respect.

The Delhi government's power sector reforms advanced with the involvement of SBI Capital Markets, a consulting firm hired by the DVB to help design and implement the terms and conditions of the final reform package. The privatization effort in Orissa had involved international advisors and foreign consultants from institutions such as the World Bank, SBI Capital Markets was a subsidiary of the state Bank of India. By contrast, the chief minister and DVB Chairman felt that employing foreign or multilateral advisors would slow the pace of reforms at a time when momentum was of utmost importance. With help from SBI Capital Markets, the reform took shape (Figure 1):

Figure 1. Planned Unbundling and Privatization of the Delhi Vidyut Board



The DVB would be unbundled into six companies: one for generation (Genco), one for transmission (Transco), three companies for distribution (Discoms) and one holding company for DVB assets.^{ix} While only one distribution company would be too large and too risky to attract Indian investors, having several distribution companies would mean carving Delhi into smaller and less lucrative geographic zones, given potential gains from economies of scale. Fortunately, the six zones managed by the DVB across the capital region could be grouped conveniently into three distribution companies such that each new company had one more and one less profitable zone (See Appendix 2, Figure 1): One distribution company would take over the North and North-West zone, one would take over the Central and East zones, and one would take over the West and South zones. The Delhi government would divest 51 percent of their ownership in each new distribution company, and would hold a minority of seats on each board of directors.

STAKEHOLDERS

The success of the proposed reform package was dependent on the Chief Minister and DVB Chairman's ability to mobilize allies and neutralize threats to the reform process. Fortunately, as evidenced by Delhi's November 1998 election, there was a remarkable degree of public support for power sector reforms in Delhi. According to a pre-election opinion poll conducted by the Centre for the Study of Developing Societies (CSDS) for *The Hindustan Times*, 64% of respondents considered rising prices as the biggest electoral issue.^x The second most important issue reported by respondents was power supply, with 58% of respondents stating they were unhappy with power supply in Delhi.

The broad-based support for privatization transcended socioeconomic lines, and spoke to a collective frustration with the quality of electricity supply from the public grid among poor and middle-class consumers. Wealthy consumers in addition to commercial and industrial users – many of whom had purchased expensive private generators to substitute for the public grid -- also shared this frustration. Though privatizing electricity distribution would likely lead to some tariff increases in Delhi, over the course of her campaign Dikshit warmed customers to the idea of paying more in exchange for better service.

Reform efforts also enjoyed a remarkable degree of support from various levels of government in Delhi. At the state level, the current level of financial support provided to the DVB was unsustainable and the projected cash outflow from the state to the DVB was projected to grow from around 380 million USD in fiscal year 2000-01 to 473 million USD in fiscal year 2006-07 (Appendix 1, Table 4). Approximately 70% of this cash outflow came from designated development funds, earmarked for capital investments such as the augmentation of the DVB distribution network. However, the remaining 30% of this cash outflow would be lent to the DVB so that it could make interest payments on prior loans from the state government.

In contrast, with reforms, the state's cash outflow was expected to fall to 140 million USD by fiscal year 2005-06 and produce a cash inflow of 28 million USD by 2006-07. These financial gains would make new resources available to other development efforts planned by the state government, and therefore helped to mobilize state legislators behind for power sector reforms.

That said, given the anticipated tariff hikes, there were certainly incentives to oppose power sector reforms following the election for legislators, particularly those in the opposition Bharatiya Janata Party (BJP). Some Congress Party legislators might have lobbied against reforms for political gains among their constituents. Sheila Dikshit countered these populist tendencies in two ways. First, recall that during her campaign, Dikshit had warmed voters to the idea of paying more for electricity in exchange for better service. While voters may not have wanted tariff increases, the electoral results suggest that many were willing to accept them if they led to a substantive improvement in the supply of electricity. As such, many BJP voters could thus gain politically from

supporting reforms if they did indeed result in better power supply. Beyond potential political gains, Dikshit also reminded legislators that as Delhi residents, they would personally benefit from improved electricity distribution.

Reforms also enjoyed the support of the Government of India (GOI). In 1991, the central government issued a policy statement declaring that it planned to bridge the gap in Indian power supply using greater investment from the private sector.^{xi} Under the Indian constitution, electricity was a “concurrent” subject, regulated by both the central and state levels of government. Given that the Delhi power sector reforms would supersede some central government laws, the state government needed assent from the central government for their plans. Though the Government of India (GOI) rejected an early draft of the reform package in December 1999, a more detailed proposal (prepared with the help of SBI Capital Markets) was approved less than one year later in October 2000. Given that Delhi was not just any metropolitan region, but India’s capital region, frequent power outages had been a source of increasing embarrassment to the Indian elite who were desperate to see progress being made.

While this coalition in Delhi lent important momentum to the power sector reforms, Dikshit and Sagar would have to court other actors, including potential investors. The latter were particularly concerned about strikes or protests by DVB employees early on in the reform process. As such, the chief minister and DVB chairman identified DVB employees as the most likely obstacle to reform efforts, recognizing that any retrenchment or adverse change in employee benefits would likely result in protests or strikes by organized labor. To ensure success, the state government and the DVB knew they would need to commit unambiguously to protecting employee interests.

In light of Orissa’s experience, prospective investors in the DVB also wanted assurances of financial support if necessary in their early years of operation. As in Orissa, there was a dearth of data regarding DVB assets, and investors were justifiably concerned about the accuracy of T&D loss figures. Investors also sought greater certainty with respect to the regulatory environment. They were nervous that the tariff would not increase sufficiently to cover expenses, and because tariffs were fixed annually, there was no way to anticipate tariff increases or decreases. While multi-year tariff-setting had been a feature of successful privatizations elsewhere (notably in Latin America), laws governing tariff-setting in India at the time required an annual tariff decision.

Despite the importance of the regulatory environment to investor interest, Dikshit and Sagar had to acknowledge the authority of the newly established Delhi Electricity Regulatory Commission (DERC). Though the DERC was established to bolster investor confidence in the reform process by making tariff fixation and other decisions more independent from political manipulation. Neither the state government or DVB exercised direct authority over the DERC; the state government could issue policy directives intended to guide DERC policies, but these directives were not binding. Indeed, issuing these directives could aggravate the regulatory commission if they were perceived as undercutting the DERC’s institutional independence. As such, the success of the DVB’s privatization efforts depended on decisions made by the DERC.

ADDRESSING STAKEHOLDER INTERESTS

Early efforts to gain the support of union leaders resulted in a tripartite agreement between the Delhi government, the DVB, and DVB Union representatives in October 2000. Among its key terms and conditions were pledges that there would be no retrenchment as part of the anticipated unbundling and privatization package, nor would there be any adverse changes in terms of employment for DVB employees. For example, existing welfare schemes would continue uninterrupted for the purposes of retirement planning. The tripartite agreement also stipulated that there would be a blanket pay increase of Rs 500 a month (USD \$15) for all employees who transferred to the six new companies. Given the bloated DVB payrolls that these new companies would inherit, these terms and conditions represent remarkable concessions on the part of the state government and DVB.

The public announcement of this tripartite agreement marked an important moment in the reform process. The reform package had taken shape and the most likely opponents to reform – DVB employees - had been pacified. Following this announcement, the government unambiguously and repeatedly expressed its determination to proceed with reforms in the media.

Dikshit and Sagar then moved their focus to investor interests. In January 2001, the Delhi government and DVB organized an investors' conference in New Delhi to engage with interested bidders; the event drew more than 100 parties, representing domestic and international companies. In light of the Orissa experience, the Delhi government offered prospective distribution companies loan assistance of approximately 800 million USD in order to guarantee a certain return on investment, and to mitigate the need for sharp initial increases in the retail tariff during an initial five-year transition period. The loans would be repayable after five years, when T&D losses were projected to decrease sufficiently and revenue streams to the new distribution companies would likely be more secure.

In response to investor concerns about the accuracy of T&D loss figures, SBI Capital Markets shared the data they themselves collected directly from 30 district offices across the capital region. They also introduced a new, more conservative working definition of the term: they treated T&D losses not as the difference between units of energy supplied and billed by the power utility, but rather the difference between units supplied and units *paid for*. This narrower definition was referred to as “aggregate technical and commercial loss” (AT&C losses). Whereas the DVB's T&D losses were estimated at 43 percent in fiscal year 1997-98, SBI Capital Markets found that AT&C losses that year were closer to 58 percent.^{xii} That is to say, in the late 1990s, the DVB was collecting money for only 42 percent of the power they supplied to the public grid. While this information made the challenge for investors more daunting, the legitimacy of this data meant that investors could craft their financial strategies with greater confidence.

Remaining, then, was investor concern over the method of tariff-setting by the DERC in the out years. Recall that annual tariff exercises introduce more uncertainty as tariffs can

fluctuate more from year to year. The alternative is a multi-year tariff setting formula, such that the utility company can predict tariff changes with greater confidence. To address these key concerns, the DVB submitted an ambitious proposal to the DERC in late January 2001 that included two key components:

- First, the DVB proposed fixing reduction targets for T&D losses in advance to align investor and government expectations moving forward. The proposed T&D loss reduction targets were 2 percent a year for the first three years, then 3 percent for the following two years.
- The DVB also proposed that tariffs be calculated by a multi-year formula that took into account changes in billing revenue due to efficiency improvements. The DVB made it clear in its submission to the Commission that the five-year tariff principles (and proposed tariff increases) were being proposed in the interests of privatization, and were thus part of Delhi's broader agenda for reform.

With less than two years left in the government's tenure, the Delhi government and DVB could not wait on the DERC's ruling before accepting bids on the soon-to-be unbundled distribution companies. Following the investor conference in January 2001 and the submission of this proposal to the DERC, seven prospective companies submitted their Statements of Qualification (SOQ) to the DVB in April. With the regulatory commission's decision due the following month, Dikshit and Sagar worried that if the proposal was rejected, these investors would withdraw from the project.

In its order of May 23, 2001, the DERC declined to allow multi-year tariff fixing. They based their rejection in part on the following arguments:^{xiii}

- Uniform T&D loss reduction targets for all three proposed distribution companies might not reflect equal conditions per zone;
- Loss reduction targets should be fixed on the basis of an action plan submitted by the utility itself;
- Capital expenditure (a component in the tariff-setting formula) could not be projected "because the DVB has not been able to provide even the present value of fixed assets and is relying on a number of assumptions for the same";
- A multi-year tariff setting approach should not only include efficiency improvement plans but also plans to improve the quality of service.

The Commission argued that a multi-year tariff approach linked to some kind of index would be suitable for a "mature and stable environment" in the power sector at a later date. They argued that efficiency benchmarks need to be robust and should be such that "neither the utility nor the consumer should suffer or benefit unduly in the future" While they noted that multi-year principles "merit consideration," the proposal was not yet at a "mature stage" and "would be willing to consider any suggestion in this regard at an appropriate stage in future".

As part of its verdict, the DERC increased the retail tariff overall by 15.7 percent for the next fiscal year, against a proposed revision of about 35 percent (which, coming after a four years with no tariff increase, would not actually have been steeper than comparable increases in the past). The order left the DVB with a substantial revenue gap of 345

million USD for fiscal year 2002-03. While this deficit would not in itself pose a problem for investors, since the transfer scheme would give the new entities clean opening balance sheets, it did mean that much steeper tariff increases would become necessary after unbundling than if the gap had been covered sooner. The true setback in the DERC's verdict was its failure to accept the idea of multi-year tariff setting principles.

In addition to the DERC's formal response, it is worth noting as well that some public officials and Delhi legislators in particular considered reductions of T&D losses by only two or three per cent in the first five years following privatization to be too low. Their response reflected the assumption that, since high commercial losses of SEBs were primarily attributable to theft, putting the right people in charge or simply eliminating "political interference" would eliminate the problem.

Fortunately, SBI Capital Markets offered a solution to the problem of allegedly low loss reduction targets: Whereas bidders in the Orissa privatization bid on equity, SBI Capital Markets proposed fixing the equity price and having companies bid instead on efficiency improvement targets. Companies that pledged to reduce AT&C losses most dramatically would be awarded the project.

At the time, the Delhi government was concerned that bidding on equity would lead to an overvaluation of DVB assets and inflate share prices, such that the cost of the transaction for investors would have to be recuperated with a rapid rise in consumer tariffs. Instead, the Delhi government decided to maintain ownership of DVB assets (including land) and fix licensing fees to private investors for the duration of the licensing period. The fee would be calculated using a unique business valuation methodology by SBI markets based on future revenue and cost projections. This strategy also allowed the Delhi government to bypass the challenge of creating asset registers and updating DVB accounts prior to privatization.^{xiv}

By suggesting that prospective investors bid on efficiency improvement targets, this approach would help to mitigate concerns by investors that unrealistic or unpredictable targets would be expected once they took control. Bidding on these parameters would also legitimize efficiency targets in the eyes of the public, given that they were the outcome of a competitive bidding process. Despite this progress, so long as annual tariff setting continued, investors could still consider the regulatory environment too risky to participate.

Some public officials also suggested that the multi-year tariff scheme was in some way collusive. Why would the DVB apply for future tariffs on behalf of corporate entities (the new distribution companies) that did not yet exist? Some legislators believed that the new distribution companies should apply themselves for permission to set multi-year tariffs once they had assumed management of utility operations. These concerns reflected a lack of credibility on behalf of the DVB but also highlighted a lack of understanding across India about the goal of the multi-year principles – that is, to save consumers from a dramatic tariff increase in six years by increasing the tariff gradually over five.

Though the state government and DVB were ready to accept bids on DVB distribution companies, the DERC's rejection of multi-year tariff principles halted the process, marking the lowest point in Delhi's power sector reform process. Dikshit's tenure would end two years later, meaning that the political momentum required to implement new initiatives would only decrease with further delay. What's more, data collection and financial modelling would have to be updated if too much time passed before formal bids were invited.

CONCLUSION

Facing the rejection of multi-year tariff setting principles, DVB Chairman Jagdish Sagar had to decide how to respond to the Regulatory Commission's rejection of multi-year tariff-setting principles. He identified three possible courses of action:

1. The DVB could accept the DERC's decision and in turn accept annual tariff setting exercises. This strategy would pacify the regulatory commission, a key ally in the reform process, and also allow the reform process to move forward in an expedient manner. However, annual tariff setting practices would likely deter the investors, jeopardizing the success of reform efforts. Multi-year tariff setting principles were a crucial component in mitigating investor risk.
2. Second, the DVB could resubmit its proposal for multi-year tariff principles after incorporating some of the DERC's feedback. Addressing DERC concerns would also preserve the relationship with the regulatory commission and could also lead to the successful implementation of a multi-year tariff schedule. However, revising and resubmitting the proposal would take as much as a year or more, compromising the DVB's ability to implement the DERC's new decision.
3. Finally, the DVB could leave its proposal unchanged and instead ask the state government to integrate multi-year tariff setting principles into the government-issued policy directives. This is a risky endeavor because even if the government agreed to issue these directives, the DERC would not be legally bound to align with them, and would in turn be offended at perceived political interference. In this event, the DVB's only further option would be a trial at the Indian Appellate court, which would take more time and money with no certainty of outcome.

Given the limited time left in the current government's tenure, the chairman needed to act quickly in response to the DERC's ruling. How should he balance the legitimate concerns of the regulatory commission, government, and private investors to ensure the ongoing momentum of Delhi's power sector reforms?

Appendices

APPENDIX 1: Charts and Tables

TABLE 1. Delhi Vidyut Board Transmission and Distribution Losses, 1991-1998 (Percent of power supplied)

Fiscal Year	Percent of power supplied
1991-92	22.56
1992-93	22.46
1993-94	30.32
1994-95	32.18
1995-96	42.55
1996-97	42.11
1997-98	42.72

Source: GNCTD, INR-USD conversion by author

TABLE 2. Delhi Vidyut Board Commercial Losses, 1994-1998 (Millions of USD)

Fiscal Year	Commercial Losses
1994-95	109.0
1995-96	176.7
1996-97	187.3
1997-98	191.1

Source: GNCTD, INR-USD conversion by author

TABLE 3. Delhi Vidyut Board Revenues and Expenditures, 1992-1998 (Millions of USD)

	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Revenue Income	380.9	428.6	486.6	481.1	501.7	632.6
Revenue Expenditure	470.0	504.3	612.3	680.2	702.4	841.6
Operating Deficit	89.1	75.7	125.6	199.1	200.8	209.0

Source: GNCTD, INR-USD conversion by author

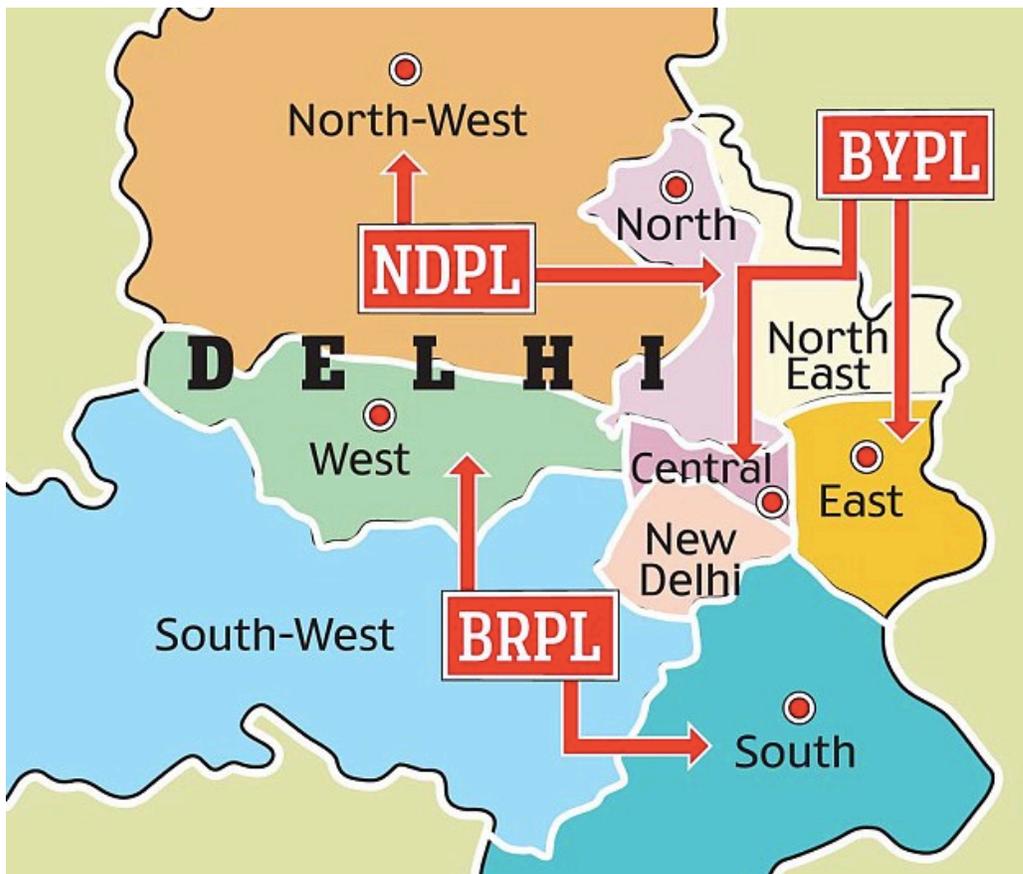
TABLE 4. Projected cash outflow from the Delhi government to the Delhi Vidyt Board

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Without Reforms	381.01	360.89	334.70	362.15	395.91	432.87	473.32
With Reforms		669.04	527.11	487.62	310.61	140.85	-28.91

Source: Sagar 2004, INR-USD conversion by author

APPENDIX 2: Figures

Figure 1. Distribution Companies in Delhi by Zone after Power Sector Reforms^{xv}



Source: Bagga 2013

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Endnotes

- ⁱ High rates of rural migration and population growth caused Delhi to grow from less than 1.74 million
- ⁱⁱ Transmission and distribution losses (T&D losses): the difference between energy supplied and energy billed, i.e. unaccounted energy. Sagar 2004.
- ⁱⁱⁱ Mukherjee 2014.
- ^{iv} Mukherjee 2014.
- ^v Mukherjee 2014.
- ^{vi} Mukherjee 2014.
- ^{vii} Mukherjee 2014.
- ^{viii} Mukherjee 2014.
- ^{ix} The DVB's unserviceable liabilities would pass to the successor entities and the distribution companies would not take over the DVB's receivables. The new distribution companies would retain a 20 percent collection charge on actual collection.
- ^x Ramakrishnan 1998.
- ^{xi} GOI 1991.
- ^{xii} Sagar 2004.
- ^{xiii} DERC.
- ^{xiv} Sagar 2004.
- ^{xv} *North Delhi Power Limited (NDPL), later Tata Power Distribution Limited; BSES Ramuna Power Limited (BYPL); BSES Rajdhani Power Limited (BRPL).*