

# MAPPING POWER:

A COLLECTION OF INSIGHTS ON  
THE POLITICAL ECONOMY OF  
ELECTRICITY IN INDIA'S STATES

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**Navroz K. Dubash**  
Centre for Policy Research

**Sunila S. Kale**  
University of Washington

**Ranjit Bhavirkar**  
Regulatory Assistance Project

**Ashwini K. Swain**  
Centre for Policy Research

**Elizabeth Chatterjee**  
Queen Mary University of London

**Hema Ramakrishnan**  
Madras School of Economics

**Jonathan Balls**  
Australia India Institute

**Kalpana Dixit**  
Tata Institute of Social Sciences

**Meera Sudhakar**  
National Institute of Advanced Studies

**Megha Kaladharan**  
Trilegal

**Rohit Chandra**  
Harvard Kennedy School

**Siddharth Sareen**  
Centre for Climate and Energy Transformation

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### THE MAPPING POWER BLOG SERIES

This is a compilation of several opinion pieces and blogs featuring analysis from the recently-released book, 'Mapping Power: The Political Economy of Electricity in India's States,' edited by Navroz K. Dubash (Centre for Policy Research), Sunila S. Kale (University of Washington), and Ranjit S. Bharvirkar (Regulatory Assistance Project). For more information on the Mapping Power project, visit the CPR website

**Correspondence:** [climate.initiative.cpr@gmail.com](mailto:climate.initiative.cpr@gmail.com)

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# Contents

<b>1. Reform in electricity sector is all about getting the politics right</b>	<b>4</b>
<i>Navroz K. Dubash, Sunila Kale and Ranjit Bharvirkar</i>	
<b>2. How to reform Uttar Pradesh's troubled power sector</b>	<b>6</b>
<i>Jonathan Balls</i>	
<b>3. Consumers upfront in tale of two reforms in Andhra Pradesh</b>	<b>8</b>
<i>Ashwini K. Swain</i>	
<b>4. Taking two steps forward, one step back</b>	<b>10</b>
<i>Elizabeth Chatterjee</i>	
<b>5. Karnataka's power sector: History, politics of development have consequences</b>	<b>12</b>
<i>Meera Sudhakar</i>	
<b>6. AAP and the Politics of Power in Delhi</b>	<b>14</b>
<i>Megha Kaladharan</i>	
<b>7. New Trends Demand New Strategies in Maharashtra</b>	<b>15</b>
<i>Kalpna Dixit</i>	
<b>8. The Story Behind Uttarakhand's A+ Performing Discom</b>	<b>17</b>
<i>Jonathan Balls</i>	
<b>9. Electricity Distribution in Gujarat: A Sustainable Energy Future Roadmap?</b>	<b>19</b>
<i>Siddharth Sareen</i>	
<b>10. Small Gains Behind Mounting Losses in Jharkhand</b>	<b>21</b>
<i>Rohit Chandra</i>	
<b>11. The Saga of the Subsidy Trap in the Tamil Nadu Power Sector</b>	<b>22</b>
<i>Hema Ramakrishnan</i>	

# Reform in Electricity Sector is All About Getting the Politics Right

Electricity is invariably political in India. Far from depoliticising the sector, reform will require deeper, but careful engagement with politics.

BY NAVROZ K. DUBASH, SUNILA S. KALE AND RANJIT BHARVIRKAR



*The electricity sector risks acting as a drag on the economy as its poor finances reverberate through the banking sector in the form of non-performing assets (HT File Photo).*

The Indian economy is among the fastest growing in the world. Sustaining this growth requires a healthy electricity sector that is able to meet increased demands, ideally alongside an eye to environmental sustainability. Yet, electricity consumers continue to face unreliable supply, distribution utilities are in poor financial health, and, most problematic, power plants remain underutilised even as universal 24 X 7 supply remains an unfulfilled promise. Far from buttressing growth, the sector risks acting as a drag on the economy as its poor finances reverberate through the Indian banking sector in the form of stubbornly intractable non-performing assets.

These long-standing problems have not persisted for want of attempted solutions: opening up the sector to private generation; regulatory reforms; an omnibus federal Electricity Act in 2003 to introduce competition; and successive efforts to restructure discom finances. The persistence of utility failures speaks to an underlying flaw in the approach taken thus far. All past reform efforts have had, at their core, a common effort to insulate the sector from politics.

In our recently released book *Mapping Power*, we argue that this approach is misplaced. Electricity reform will succeed only by providing greater political payoffs than the flawed status quo. In a developing country like India, where citizens' life chances are strongly influenced by electricity access, costs, and performance, electricity is invariably

political, and this is how it should be in a democratic polity. Far from de-politicising the sector, successful reform will require deeper, but more careful, engagement with politics.

Is productive political engagement possible in the power sector, leading to simultaneous electoral and electricity gains? To explore this question, we worked with a set of talented researchers to examine the politics of electricity in fifteen states from the mid-1990s to the present. In this introductory article we explain what our work suggests, not only for why politics is important for India's power sector but how it is best examined and addressed. In articles that will appear throughout this week in these pages, four of our colleagues share their state-level case study findings.

Our framework for mapping power can be summarised in three steps.

First, start with understanding statespecific factors driving politics and power. Thus, electricity politics may be driven by subsidy and quality of service in Delhi, procurement politics in Jharkhand, farmer subsidies in Punjab, the balance of farmer and industrial interests in Maharashtra, and high loss levels and theft in Uttar Pradesh.

As this suggests, mapping power requires exploring politics beyond the power sector alone, including party politics, the politics of regionalism within states, and patterns of economic development. While national-level politics and

technology drivers are also important, the starting point must be dynamics that are state-specific.

Second, four categories are crucial to understand the political economy of power: demand for access and service quality, demand for subsidies, cost of supply, and available financial space.

The first two—demand for access/ quality and subsidies—represent political demands placed on the system, and the last two represent the extent of breathing room that enables states to manage those political demands. While the importance of each of these factors may vary across states, collectively these four categories, combined with the reform process and the interaction between them as shown in the figure, constitute a way to map the political economy of power in states.

Third, applying this understanding to a forward-looking analysis, how can state governments pursue a virtuous cycle between electoral and electricity politics? In a state such as Bihar, the answer lay in promising and delivering on energy access, taking advantage of low cost power in surrounding states. In Gujarat, creatively managing farmer pressure through a mix of technical solutions and political promises was key.

Other states are trapped in a vicious cycle, and the starting point is to tackle the driving factors, whether the expanding scope of subsidies in Tamil Nadu, or high cost supply and high losses in Rajasthan. Applying this framework, which leads to diverse state-specific explanations, also allows us to comment on the national-level electricity challenges described earlier.

With regard to electricity for the poor, electoral gains and electricity outcomes point in opposite directions. In an effort to limit their losses, discoms have strong disincentives to connect new citizens to the grid and provide only minimal quantity and quality of supply to the connected poor, because most pay below-cost tariffs.

Simply calling for tariff increases to match costs is unlikely to win voter consent, given the low credibility of discoms to deliver improvements.

Resolving this situation requires developing a state-specific pathway that appropriately sequences politically credible quality improvements and tariff increases alongside, expanding the financial space to actually implement such a pathway.

Moreover, distribution company finances could be further squeezed by slower growth in industrial electricity demand, which would limit the amounts of cross-subsidies available to compensate for low paying customers.

Periodic bailouts, the most recent of which is UDAY, are intended to alleviate this financial pressure on distribution companies.

But unless the breathing room created by UDAY is explicitly and intentionally used to fundamentally alter some mix of the four key factors described above—political demands for access and subsidies, or supply costs and fiscal space—the result will only be to kick the financial can down the road.

Solving India's electricity problems by continuously devising ways to shut out politics and pretend the sector can be run apolitically simply will not work.

This is not to be naïve and suggest that the power sector must be swayed by every political gust. Rather, we need more creative politics, based on a careful analysis of state-specific links between politics and electricity, which can credibly promise and deliver on long-term electricity gains, and reap long-term political rewards.

*(Dubash is Professor, Centre for Policy Research, Kale is faculty at the University of Washington, and Bharvirkar is Principal at the Regulatory Assistance Project.)*

# How to Reform Uttar Pradesh's Troubled Power Sector

The state must first provide power supply to all and tell users to accept regular tariff hikes and timely bill payment.

BY JONATHAN BALLS



*More than 17 million rural households in Uttar Pradesh did not have a formal electricity connection in 2017 (HT Photo).*

A rare window is open for power sector reform in Uttar Pradesh. The Bharatiya Janata Party (BJP), in office in both Lucknow and New Delhi, has a sweeping mandate to transform Uttar Pradesh's troubled electricity situation. The party has made two important commitments on this front. First, they have promised to ensure every household in the state has an electricity connection and access to twenty-four-hour reliable supply. Second, they have pledged to turn around the state's five loss-making public distribution companies (discoms).

Progress in both areas is sorely needed. In 2017, more than 17 million rural households did not have a formal electricity connection. Supply remains unreliable in urban and rural areas, hampering economic growth. Since the 1980s, the state's public discoms have been accruing annual losses, the result of a large gap between the cost of supplying electricity and the revenue they recover from customers coupled with under-funded subsidised tariffs for domestic and agricultural users. The former Samajwadi Party (SP)-government signed the state up to the central government's UDAY power sector reform scheme in 2016. This allowed 75 percent of discom debts to be cleared, and various initiatives to reform their financial performance were started. But discoms are continuing to report sizeable losses.

Crucially, universal electricity access and discom performance are closely inter-twined challenges in Uttar Pradesh. Increasing access and reliability of supply will ultimately be

dependent upon success in transforming the performance of discoms. In particular, reducing the large losses discoms accrue in supplying power to domestic and agricultural consumers. Put simply, it will not be possible to provide reliable electricity to millions of additional rural households, as long as discoms face high losses supplying rural and agricultural users.

Successive governments since the 1990s have in practice focussed on access, without coupling this with serious action on improving the performance of discoms. Politics explains this. Decisive programmes on household electrification and the need to increase the hours of supply are politically popular in the short-term. Tackling the state's loss-making discoms, in contrast, requires political parties in office to allow electricity tariffs for domestic and agricultural consumers to rise regularly. They also need to take stringent action on revenue collection and theft. In a politically-competitive, multi-party state, no party has been willing to make the bargain of jointly tackling both areas, for fear of electoral repercussions.

There are challenges beyond highly subsidised tariffs, high theft levels, and poor revenue recovery for Uttar Pradesh's discom situation.

While many states can rely upon industry consumers to pay high tariffs that cross-subsidise low tariffs for other users, UP only has a small base of industry consumers. Additionally, the cost at which discoms receive power from generators is high.

On household electrification and reliability of supply, the BJP has moved fast. Progress is already evident. By way of the central government's Saubhagya scheme, millions of households have been provided with a regularised electricity connection and millions more will be connected in the coming two years. While the BJP's target of full household electrification by 2019 looks difficult, the goal may be reached soon thereafter. The BJP has drawn up a '24X7 Power For All' plan for Uttar Pradesh, which promises twenty-four hours electricity supply to all rural and urban domestic and industry consumers from late 2018. Currently, rural areas receive around 18 hours supply. This in itself represents a notable improvement above the supply situation of recent years. Towards reforming the financial performance of the state's discom, the BJP is also acting on various fronts. They have built upon programmes started by the previous SP-government to extend metering, improve billing and revenue collection, and to cut down on theft. The BJP has expended significant political capital by pushing through substantial increases in electricity tariffs for domestic and agricultural users, helping to bring down the gap between cost of supply and revenue collected. However, losses at the state's discoms remain high. With elections due in 2019, the BJP may find it politically unpalatable to take further steps to raise tariffs and cut down on losses in the coming year.

Electoral support has, for decades, been mobilised on the promise of cheap or free electricity in UP. In the 1970s and 1980s, cheap electricity was promised to farmers. In the 2000s, it was the weavers who were wooed with subsidised power. Losses are typically significantly higher in VIP districts.

A window of opportunity to change the status quo is open in Uttar Pradesh. If the BJP can deliver on reliable access for all — and link success on this front to public acceptance of regular tariff increases and timely bill payment— then the seeds of transformation in the power sector may be sown.

When the BJP last ruled in both Lucknow and New Delhi, between 1997 and 2002, they pushed through extensive structural reforms of the power sector, against significant opposition. However, shortly after doing so, they back-tracked on tariff increases, required by the state's discoms to support a financial turn-around, fearing upcoming electoral defeat. It remains to be seen whether a story of bold ambitions from the BJP giving way to electoral pressures is repeated this time around.

*(Balls is a New Generation Network (NGN) Post-Doctoral Scholar at the Australia India Institute, University of Melbourne, Australia. This research is based on work presented in full in the book Mapping Power, edited by Dubash, Kale and Bharvirkar.)*

# Consumers Upfront in Tale of Two Reforms in Andhra Pradesh

Chief minister Chandrababu Naidu, after his first failed attempt during 1999-2004, pledges to keep tariffs unchanged for all consumer categories now.

BY ASHWINI K SWAIN



*A coal yard in front of a power plant in Krishnapatnam, Andhra Pradesh (Getty Images).*

Andhra Pradesh's (AP) power sector is going through a second phase of reforms. While the first phase (1999 - 2004) was widely seen as focused on privatisation on electricity distribution, this time the goal is to ensure affordable and reliable power supply for all. To do so, chief minister Chandrababu Naidu has pledged to keep retail tariffs unchanged in the coming years for all consumer categories, while improving the quality of supply and service.

At present, there is a strong Central government push to raise retail tariffs to reflect the rising costs of supply -- a target set for states under the UDAY scheme for discoms' financial turnaround. This makes Andhra Pradesh's plan to improve electricity without any additional cost burden on the consumers particularly intriguing. Can Naidu pull off this trick while avoiding negative consequences for Andhra Pradesh's electricity sector? What are the consequences of failure?

The context for this latest gambit is the earlier reform effort of 1999-2004. Back then, despite backing from the chief minister (it was Naidu then too), supportive and skilled regulators and utilities, and Central government backing, the plan to improve discoms' health through tariff and management reforms did not receive public support. Although discoms registered efficiency gains, the public focused on the accompanying tariff hikes which caused mass agitations. Some have suggested this was central to Naidu's defeat in the 2004 state assembly election.

In his return to power in 2014 in a smaller Andhra Pradesh, Naidu has devised a second, revised reform strategy. First,

consumers are at the centre of reforms, and are promised high quality service at affordable prices. Notably, however, this does not include promises of 24x7 supply of free power to farmers, as in Telangana. Second, the reform relies on disruptive technologies to bring down the power bills of discoms through a five-point strategy: improve supply through enhanced renewable energy (RE) generation, energy storage technologies, and full capacity utilisation of conventional power plants; implement energy efficiency measures; strengthen the transmission and distribution (T&D) network to bring down losses to below 6%; adopt IT for better consumer services; and lastly, improve financial management of power projects including loan swaps.

There are early signs of progress. The state has achieved 7 GW RE installed capacity, which is 10% of the national RE capacity and 30% of the state's total generation capacity. To complement RE capacity, Andhra Pradesh has inaugurated the first thermal battery plant of India and allocated over 100 acres land for energy storage projects. The state has set a target of 1 million electric vehicles on road by 2023 backed by a dedicated electric mobility policy and planned investment of Rs 30,000 crores. Andhra Pradesh has emerged as a national frontrunner in the State Energy Efficiency Preparedness Index. To improve efficiency and reliability of the T&D network, the state has initiated a US\$ 570 million project last year, with donor assistance.

What works in Andhra Pradesh's favour is that the state has some breathing room to manoeuvre. Following the bifurcation of the state, Andhra Pradesh gained from a slight reduction in subsidised load (domestic and agriculture)



and AT&C losses. Since it is a relatively wealthy state, it has managed a persistent revenue gap by increased state subvention, from 12% of discoms' revenue requirement in 2014-15 and 2015-16 to 19% in 2018-19 (see chart), preventing a decline in quality of service. In September 2018, the per unit revenue gap was Rs 0.06, one-fifth of the national average, and AT&C losses were 11%, half of the national average, as reported by the UDAY portal. These developments make Andhra Pradesh a leader in UDAY target achievements while providing the fiscal space to manage the political demands for explicit subsidies.

However, for long term gains, Andhra Pradesh will need to use this breathing room to bring down the costs of supply and create enough demand for the additional power capacity it is adding through RE and augmented capacity utilisation. Naidu hopes his plans for industrialisation will absorb the surplus power. Whether this works will depend on growth in industrialisation as well as proper resource planning for the additional generation capacity.

Notably, Andhra Pradesh has proactively sought to capture the gains of falling RE generation costs as technology improves. The counter, and more problematic story, is that industrial consumers would leave the grid to capture these gains through direct installation of RE, which would cut into the cross subsidy available for poorer customers. Andhra Pradesh is seeking to manage this transition by proactively adopting these disruptive technologies in an effort to reduce the power bills for all, but also retaining industry through improved quality and a stable tariff.

In this tale of two reforms, Andhra Pradesh has moved from a price and privatisation-focused effort to one that aims to put consumers upfront. If they fail, the results would be dismal and all too familiar – low tariffs combined with growing stranded capacity as new generation finds no takers, and cross subsidy declines as industrial customers flee.



But the Andhra Pradesh reforms are designed specifically and deliberately to avoid these traps, which is what makes them interesting. If Andhra Pradesh succeeds, it will signal an alternative, consumer welfare-focused, model of power reforms. While it is too early to predict success, this is an effort worth watching..

*(Ashwini K Swain is executive director at Centre for Energy, Environment & Resources, and visiting fellow at Centre for Policy Research. This research is based on work presented in full in the book Mapping Power, edited by Dubash, Kale and Bhavirkar.)*

# Taking Two Steps Forward, One Step Back

West Bengal's journey shows that the temptation for political interference in the day-to-day operation of power utilities is ever present.

BY ELIZABETH CHATTERJEE



*The cooling towers of Meija Thermal Power Station in Bankura, West Bengal. CPI (M)'s embrace of economic reforms had brought rewards in the state's electricity sector (Shutterstock).*

Into the 1990s, West Bengal's sultry summers meant interminable power cuts and fewer than one in five rural households had electric lighting. Today, by contrast, villages across the state are electrified and Bengal's utilities boast a shelf of prestigious awards. Nonetheless, there are also dark clouds on the horizon as financial losses once again start to mount – thanks most recently to a 23% cut in electricity bills for this year's Durga Puja displays.

West Bengal's journey shows that escaping a low-level equilibrium in the power sector is possible, but sustaining a virtuous circle of payment and performance is often difficult. The temptation for political interference in the day-to-day operation of power utilities is ever present.

Though the CPI(M) had governed West Bengal since 1977, its electricity record had been unimpressive. All this changed when the nominally socialist administration revised its economic strategy in order to court private investment. Reliable power would be a pillar of the new pro-industrial turn.

In the early 2000s, a team of senior bureaucrats and consultants began electricity reforms. Well aware of the failures of privatisation and deregulation in other states, they developed their own incremental reform path. Outside Kolkata, utilities remained under public ownership, but managers were granted greater autonomy. Officials hoped to further “reduce the human element” of corruption and inefficiency through computerisation and performance monitoring throughout the workforce. The ultimate goal was profitability, which would guarantee the utility's independence.

This model looked surprisingly similar to another very different and more famous case: Gujarat. Both emphasised improved utility governance, technical solutions, and winning over employee unions. Both rejected outright privatisation and sought to minimise citizen participation in their electricity regulatory process. Together, these cases suggest that public sector reforms may offer a pragmatic alternative to controversial electricity liberalisation.

While popular opposition had stymied power reforms elsewhere in India, Bengali policymakers also benefitted from a series of favourable factors. Earlier, land redistribution meant that there was no powerful farmer lobby to block tariff hikes.

Like the BJP in Gujarat, the CPI(M) was able to call upon its political dominance and disciplined, centralised structure to manage dissent.

The results were impressive. From losses of Rs 1,009 crore in 2001— more than a third of total expenditure — West Bengal was one of only three states with profitable utilities in 2011. Rural household electrification rose from 20.3% in 2001 to 98% today.

Yet, as early as 2010, there were ominous signs that utility independence was under threat.

While the CPI(M)'s embrace of economic reforms had brought rewards in the electricity sector, state violence over land acquisition in Nandigram and Singur created a groundswell of popular discontent.

Intensifying competition between the CPI(M) and Trinamool Congress, in turn, increased the temptation to meddle in the power sector in order to win votes. Combining quarterly billing data with satellite images of nighttime lights across West Bengal, a recent working paper by the economist Meera Mahadevan shows this politicisation at work. She finds that the new Trinamool government rewarded constituencies it narrowly won in 2011 with faster electrification and systematically lower bill collection. Billing data from these areas is full of suspiciously round numbers, she argues, suggesting it has been manipulated. Key posts in the electricity regulator were also left vacant, undermining its power of oversight, while tariff hikes were delayed.

Traces of utility independence nonetheless remain. The original reformers mobilised to ensure tariff rises in 2012. After the 2016 state elections, which Trinamool again won handsomely, tariffs were once again allowed to rise. The new government has also ushered in an impressive expansion of rural electricity access. As Lok Sabha elections approach, though, tariff hikes have been blocked despite increasing utility costs. Utilities therefore face mounting financial losses, threatening their ability to invest in the sector's continuing growth. Eventually, consumers will pay the price.

Classic theories developed in the West suggest that democratic competition makes politicians more likely to deliver collective goods. West Bengal's ambivalent trajectory—two steps forwards and one step back—suggests instead that intensifying competition encourages short-term strategies that undermine the power sector's

long-term health. A similar pattern is visible even in wealthier states like Tamil Nadu and Punjab, where fierce party-political competition has driven the expansion of populist subsidies and spiralling utility debts. Conversely, one-party dominance may give politicians the confidence to take unpopular decisions like cutting subsidies or cracking down on theft.

Today, the Trinamool regime looks dominant, its CPI(M) rival a spent force and the BJP still playing catch-up. Will the administration therefore decide to take a long-term view and end interference in the power sector? Previous experience suggests that this depends on how politicians perceive the likely risks and rewards. If consolidating electoral strength remains the key concern, as it seems presently, they will continue to reward new voters with cheap electricity and turn a blind eye to power theft.

If ensuring robust industrial and revenue growth becomes the priority, the long-term benefits of high-quality electricity may begin to outweigh the perils of short-term dissatisfaction. As citizens begin to expect 24/7 power in Kolkata and beyond, they may start holding politicians to this higher standard. In the longer term, then, popular pressure will become the guarantor rather than the enemy of a virtuous cycle in the power sector.

*(Elizabeth Chatterjee is a politics lecturer at Queen Mary University of London. This research is based on work presented in full in the book Mapping Power, edited by Dubash, Kale and Bharvirkar.)*

# Karnataka's Power Sector: History, Politics of Development Have Consequences

Electricity subsidies are often attributed to the incompetence of ESCOMs and are rarely interpreted as welfare policy.

BY MEERA SUDHAKAR



*Many who thought the loan waiver was a valid response to agrarian distress argued for managing costs by cutting the other biggest subsidy component in the budget – government subvention to the Electricity Supply Companies (ESCOMs) (Reuters photo).*

**When Chief Minister** HD Kumaraswamy announced crop loan waivers in his first budget after he came to power in May this year, there was widespread concern about how the state would finance these. Many who thought the loan waiver was a valid response to agrarian distress argued for managing costs by cutting the other biggest subsidy component in the budget – government subvention to the Electricity Supply Companies (ESCOMs).

This is estimated to be ~ 11,048 crores for FY2018-19 according to the most recent tariff order issued by Karnataka Electricity Regulatory Commission (KERC) and is owed by the government to the ESCOMs in the state so that they can provide free electricity to irrigation pump sets below 10 HP, a key plank in the government's welfare policy.

Electricity subsidies are often attributed to the incompetence of ESCOMs and are rarely interpreted as welfare policy. This has led to a near-complete silence about the continuous cycle of evasion of responsibility in the sector: the government subvention owed to the ESCOMs is only partially-paid; the ESCOMs delay payment for power bought from state-owned generating stations hoping this would be set off against the subsidy owed to them; and in turn, municipal bodies do not pay the ESCOMs for the electricity they consume. In this way, the power sector has become the flexible and convenient current account for the government whenever it needs a bit more fiscal wiggleroom. What seems to make this cycle of evasion acceptable is the widespread belief that subsidy payments to utilities are somehow ill-justified.

This belief stands on a now-familiar storyline which turns the utilities into villains of fiscal problems of the state – inefficient public utilities that have no incentive to improve performance, compromise fiscal prudence and prevent much needed public expenditure on sectors such as health and education, all due to political pressures from rural constituencies. In this story, the solution is straight forward: there must be strong political will at the top of the hierarchy to implement tough measures to reform the sector.

Unfortunately, this kind of thinking that seeks to separate “petty” politics from what are considered technical matters of utility operations has contributed to the obfuscation of the very real political negotiations that have been happening in the sector. This thinking has also stifled what would be a useful debate in the sector on whether and how publicowned companies can be incentivised to become commercially viable and less prone to corruption.

This thinking has restricted the debates in the sector to ways and means to improve technical and commercial efficiency parameters in public utilities without acknowledging the central role that electricity departments and utilities played in agricultural development until the recent past and how to transition out of this regime and at what cost.

Political settlements therefore, have occurred under the guise of techno-economic adjustments. For example higher agricultural tariffs in the northern region are justified on the basis of deeper ground water levels in that region.

The real effect of this adjustment, however, is not on ground water consumption as that is completely free for users. Instead, ESCOMs in the regions with low paying consumers receive a higher allocation of the budgeted power sector subsidy in the State relative to their share of sales to consumers that do not pay for electricity (IP sets account for 97% of this sales revenue).

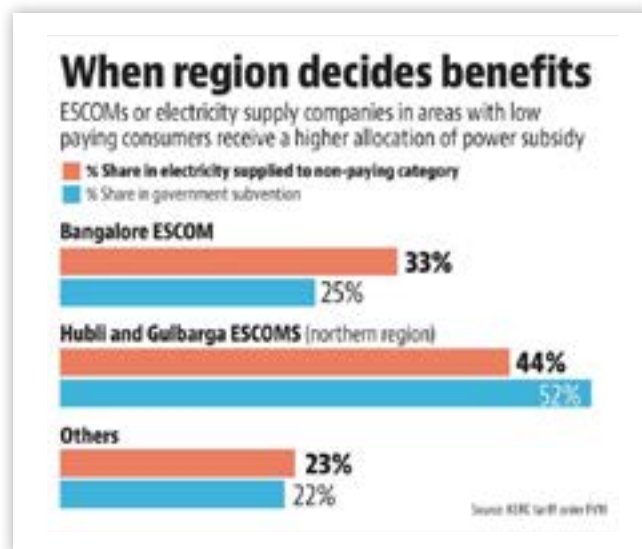
Historical factors such as structural differences across regions in Karnataka also affect seemingly technical issues such as tariff determination subsidy.

For example, Karnataka's strategy of relying on a services-led growth around Bengaluru also left most paying consumers concentrated in one region.

The creation of regional ESCOMs as part of the reform in 2002 was meant to create autonomous companies that could operate on commercial principles according to cost of supply in each region.

In practice, however, tariff setting norms and subsidies in the state have evolved an equilibrium that can accommodate the vastly different consumer profiles in various regions of the state so that most of the budgeted power subsidy is allocated to the ESCOMs in the northern region.

The state's historical context and its politics of development, including the debate on the inequalities between the



northern and southern regions, has consequences for the balancing act that is required in the sector- often brokered by the energy department and the regulator. It is useful to be mindful of this political dynamic in the sector rather than relying on measurement and monitoring based on technical parameters alone.

(Meera Sudhakar is a graduate student at the National Institute of Advanced Studies. This research is based on work presented in full in the book *Mapping Power*, edited by Dubash, Kale and Bharvirkar.)

# AAP and the Politics of Power in Delhi

BY MEGHA KALADHARAN

In 2013, a young political party, the Aam Aadmi Party (AAP), led by Arvind Kejriwal, charted a course to one of the most significant electoral upsets in Indian political history. A substantial plank of AAP's successful election campaigns in 2013 and 2015, as seen in its manifesto, is the emphasis on making electricity and water affordable to the common man. Interestingly, power sector reforms had been key to sustained electoral victories by Kejriwal's predecessor, Sheila Dixit of the Congress Party, over the three previous legislative assembly elections as well. During Dixit's period in power from 1998-2013, the focus was on improving the quality of power supply in Delhi through privatisation of the electricity distribution sector. AAP's election campaign questioned the success of this privatisation model by alleging financial irregularities by distribution companies (discoms) as well as collusion between the Congress government and the discoms to keep tariffs artificially high.

Since coming to power in 2014, the AAP has sought to translate its political vision of affordable basic needs into reality in at least two ways. First, the AAP provided a flat 50% subsidy on power consumption below 400 units for domestic consumers. While consistent with its political agenda, the subsidy has been criticized on a few grounds. In particular, the power subsidy is so broad-based that, on an average, over 80% of Delhi homes benefit from it. Moreover, as a Brookings India study notes, given that the upper limit of 400 units is quite high, wealthier households consuming more power receive more in subsidy than do poorer households. In May 2018, the subsidy scheme was revised to steer greater subsidy toward lower consuming, and therefore, presumably less affluent households, by offering an additional subsidy of Rs 100 for consumers with a monthly consumption under 100 units. However, concerns regarding benefits being claimed by middle and high income households persist.

The subsidy scheme also throws up new challenges to management of discoms. Since the subsidy is paid by the government, any delays in transfers to the discoms has a cascading effect on the sector, as the discoms also delay payment to generating companies, resulting in an additional financial burden of late payment charges. In the absence of a significant tariff hike since 2014, the additional consideration of delayed subsidy payments from the government could adversely impact the discoms' financial health.

A second consumer-friendly move spearheaded by AAP is the proposed imposition of penalties on discoms for unscheduled power outages. This effort has run afoul of the larger political context in Delhi, one shaped by a struggle for authority be-

tween the elected government and the Lieutenant Governor (LG). AAP had originally mooted this idea in 2015 but the Delhi High Court had struck down the scheme as it had not been approved by the LG. Earlier this year, the LG approved this scheme, however, it will come into effect only upon notification by the state regulatory agency – the Delhi Electricity Regulatory Commission (DERC). This would require an amendment to the existing DERC (Supply Code and Performance Standards) Regulations, 2017, which already sets out timelines for resolution and compensation payable to consumers by discoms on account of various defaults including meter complaints and power supply failure. While the government has proposed a penalty of Rs 50 per hour for the first two hours and Rs. 100 for each subsequent hour of unscheduled power outage, payable by discoms to consumers, the existing DERC regulations are more nuanced as they account for seven categories of power supply failures and a differential timeline for resolution of defaults, ranging from two to twelve hours, within certain categories depending upon the percentage of the aggregate technical and commercial losses in a particular zone. Therefore, it is unclear if the government's scheme is in fact an improvement on the existing regulations.

The AAP's moves in the Delhi electricity sector illustrate the challenges of implementing a political vision in the sector without crossing over into pure populist policies that also undermine the financial health of the sector. For instance, the government needs to consider the scope of the existing electricity subsidy – who are the intended beneficiaries? In what way can the scheme be targeted to ensure that benefits are passed on only to the intended beneficiaries? In the context of the proposal to impose penalties on discoms for power outages, the government should be cognisant of stepping into a purely regulatory sphere and answer why changes to the existing regulations are required to begin with. Further, in both schemes, consumer interests are at the forefront but allaying concerns of the distribution companies is key to long term sectoral sustainability.

In Delhi, while issues in the power sector have resonated with the electorate and their concerns have been amplified by political parties, finding the balance between political goals, financial viability and institutional constraints continues to be a challenge.

*(Megha Kaladharan is a lawyer working on regulatory and policy challenges in the Indian electricity sector at Trilegal, an Indian law firm. This research is based on work presented in full in the book Mapping Power, edited by Navroz K Dubash, Sunila S Kale, and Ranjit Bharvirkar.)*

# New Trends Demand New Strategies in Maharashtra

BY KALPANA DIXIT

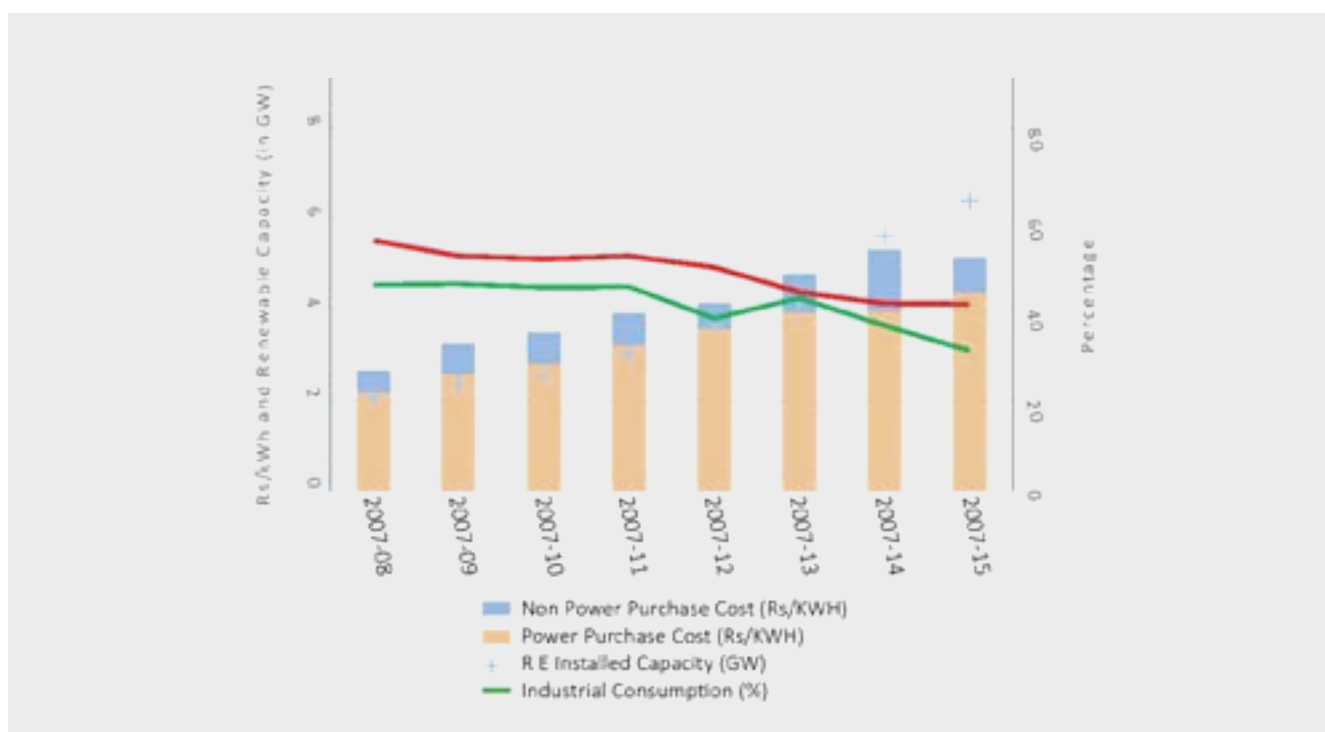
Recent events show extreme discontent in rural Maharashtra. Fifty-eight silent Maratha Kranti Morchas in one year have mobilized lakhs of people. Recent agitations have demanded reservation for Marathas. And the Kisan Long March was based on a demand for farm loan waivers and implementation of the Swaminathan Commission's recommendations. All these events indicate a deep-rooted crisis in agriculture and allied sectors in Maharashtra, the share of which in the gross state value added (GSVA) has declined to 11.9% in 2017-18.

The lack of economic opportunities in various parts of Maharashtra is closely tied with the failure of basic infrastructural facilities, mainly water and electricity. Once recognized as the best performing public sector agency, the electricity utility in Maharashtra is now in a state of flux. The distribution sector is constrained by the legacy of high-cost power and large capacity addition but lower-than-expected industrial demand growth. Further, there is pressure from the centre to increase the share of renewable energy (RE), including rooftop solar with net metering. A recent tariff proposal by the Maharashtra State Electricity Distribution Company Ltd (MSEDCL) demanding a 23 per cent hike was met with strong

opposition from grassroots activists. In view of these potentially unsettling emerging trends, it is imperative for the state to revise its political strategy of managing the sector.

Figure 1 depicts some recent trends in Maharashtra's electricity sector. Especially noteworthy is the rising cost of power, now among the highest in India. As a result, the annual revenue requirement for Discoms has ballooned from Rs 2.67/kWh in 2007-8 to Rs 6.15/kWh in 2015-16. At the same time, the share of industrial electricity consumption declined from 45 per cent in 2007-8 to 31 per cent in 2014-15. This was due to sluggish industrial growth and a high number of industrial consumers purchasing power privately. Consequently, industrial revenue decreased by 15 per cent during this period. The installed capacity of RE reached 6.40 GW which, while impressive, came at a high cost. Subsidies to agricultural and powerloom consumers have reached Rs. 10,500 crore in 2014-15, indicating growing pressure on state finances. While distribution losses have consistently declined over the years (down to 14.51 per cent according to the latest tariff proposal), in view of persisting unmetered supply to agriculture, this issue is far from settled. Another

**Figure 1:** Financial and Physical Profile: Maharashtra



worrying trend is backing down of contracted power (6000 MW to 8000 MW per year) due to sales migration away from the grid (to open access consumption). In the case of Mumbai, both Tata Power and Reliance Infrastructure (now taken over by Adani Transmission) failed to contract power through competitive bidding, depriving consumers of the benefits of competition.

A complete understanding of the recent trends requires a deeper exploration of the political forces historically driving this sector. The story of electricity development in Maharashtra is best characterised by state attempts to accommodate both industrial and agricultural interests. The latter had a dominant role in the state Congress party and the broader politics of the state. The development of cooperative sugar factories provided a strong institutional foundation for the ruling Congress and helped initiate early rural electrification in the state. The adoption of flat rate tariff for agriculture in 1977 benefited well-off farmers by reducing the input costs for cash-crops. The expansion of electricity to rural areas was a part of a virtuous cycle of reaping electoral gains by building institutional networks cooperative, educational and panchayati raj. This cycle was broken in the 1990s with the decline of cooperative institutions, factionalism within the Congress party and growing pro-urban bias within the Congress leadership.

The Congress government had also adopted early generation reforms by negotiating a deal with Enron, which proved controversial. This started an era of high-cost power in Maharashtra. The Shiv Sena-BJP government came to power for the first time in 1995. However, since the new government had enlisted many disgruntled Congress leaders, there was no discernible change in policy. Along with substantially increasing the electricity subsidy burden, the Enron project also constrained the public utility's ability to add new capacity for nearly a decade (1995-2005).

The sector entered into a stage of stagnation thereafter with low capacity addition, high load-shedding and selective expansion. The newly established Maharashtra Electricity Regulatory Commission (MERC) and active civil society organizations (CSOs) tried to arrest this trend, but with little success. The state's high economic growth pattern, however, enabled the state to continue cross-subsidizing agriculture. This ensured the stability of the Congress-Nationalist Congress Party rule for three successive terms (1999-2014). There were some attempts to direct the reform process proactively, mainly by bureaucrats. These included initiating internal reforms such as feeder separation and introducing transparency (under pressure from MERC and CSOs) as well as negotiating reasonable capacity addition deals. However, factors external to the sector (industrial growth slow-down and the centre's RE push) hampered these initiatives. Consequently, the large capacity addition and ensuing demand shortfall led to the current situation of surplus power.

The political leadership has maintained a functional equilibrium in the state all these years by successfully managing the dominant interests through a combination of explicit and implicit subsidies (non-action in case of theft and arrears). The continued viability of this strategy is under threat from macro technological forces and changing federal policy. In this context, the mediatory role of the state assumes critical importance, mainly in resolving the issue of high-cost long term power purchase contracts and in incentivizing the bureaucratic machinery to play a developmental role.

*(Kalpana Dixit teaches political science at the Tata Institute of Social Sciences, Tuljapur. This research is based on work presented in full in the book Mapping Power, edited by Navroz K Dubash, Sunila S Kale, and Ranjit Bharvirkar.)*



# The Story Behind Uttarakhand's A+ Performing Discom

BY JONATHAN BALLS

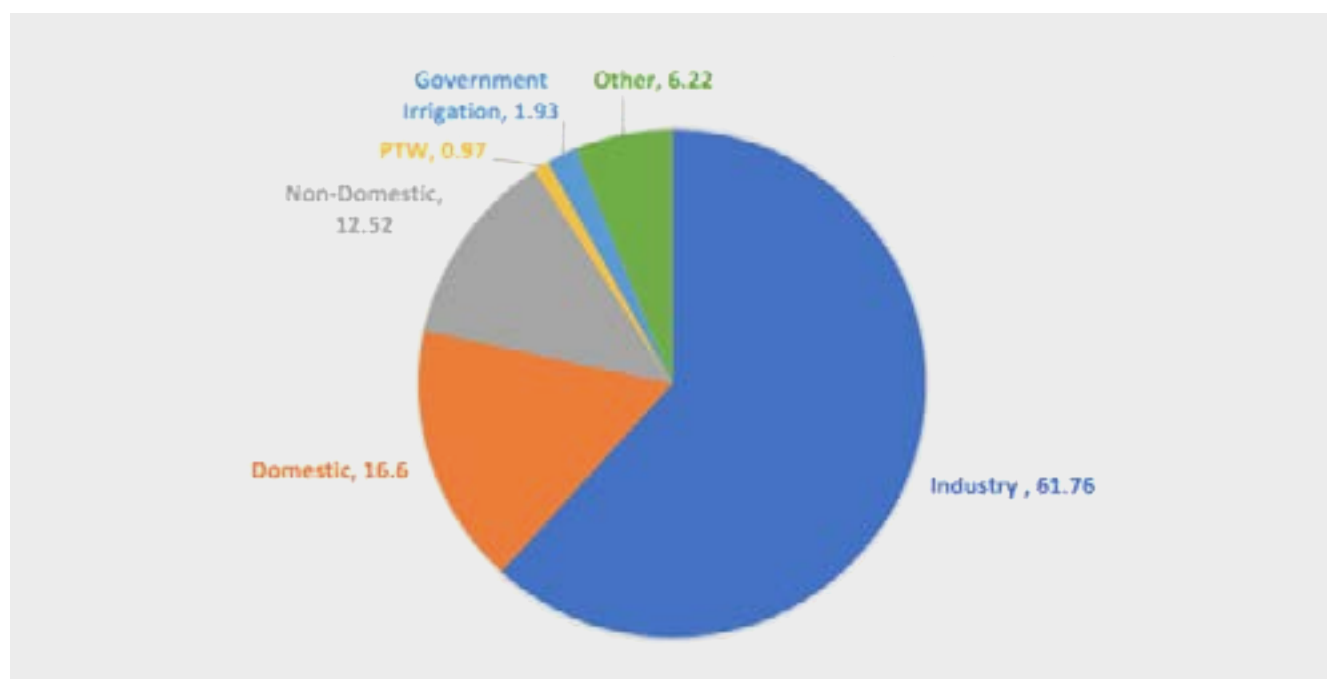
This year Uttarakhand's state electricity distribution company (discom) was awarded an A+ by the Ministry of Power for its strong performance. This is an impressive achievement. Every year the Ministry of Power evaluates the financial and technical performance of India's state discoms, giving each a rating between A+ and C. The Uttarakhand Power Corporation Limited (UPCL) was the only discom outside of Gujarat to secure an A+ rating. Only five of forty-one state discoms in India were given the top mark.

Uttarakhand's power sector has undergone a remarkable transformation over the last two decades, to arrive at the position today where the state's lone public discom is able to out-perform most of its peers around the country. At the root of this transformation have been two crucial elements: plentiful cheap hydro power coupled with rapid industrialisation in the state. Together these have been a golden combination for Uttarakhand. With cheap power and plentiful industry revenue, the UPCL has been able to improve its financial performance. This has happened even while the UPCL continues to report high commercial losses among non-industrial consumer groups.

When setting out as a newly formed state in 2000, Uttarakhand was under-developed, with low levels of industry and subpar electricity transmission infrastructure. Shortly after the state was formed, the UPCL's industry users made up 21 percent of consumption, and the discom was reporting aggregate technical and commercial (AT&C) losses of 54 percent. The consumer mix and loss levels were akin to neighbouring Uttar Pradesh, from which Uttarakhand was carved-out. Yet while Uttar Pradesh has seen little change in its power sector situation in the years since, Uttarakhand's power sector was soon to be on a path of transformation.

First, Uttarakhand had inherited a large amount of hydro power generation capacity. In 2003, the total energy available to Uttarakhand was 5,300 million units, while the state's requirement was just 3,900 million units. In 2003, the newly set-up Uttarakhand Electricity Regulatory Commission (UERC) capitalised on this advantage, ordering a reduction in electricity tariffs. In its first tariff ruling, it significantly reduced the tariff that the UPCL had to pay the state's hydro power generation company, which allowed it to then order

**Figure 1:** Revenue Mix in 2016-17



the UPCL to reduce the tariffs that it charged to all consumer groups, except farmers. This firmly established Uttarakhand as a low tariff state, attractive for industry.

Second, in 2003 the Government of India launched an industrial policy for Uttarakhand and Himachal Pradesh, which included generous tax and central excise benefits to industry investing in the state. The policy was a huge success. Between 2000 and 2011, the number of factories in the state more than tripled. The result of this was that a favourable consumer mix was won for the UPCL. By 2011, industrial consumers contributed 63 percent of the UPCL's revenue, even while they only made up 1.1 percent of its customers. Industry revenue is important, because industry users pay higher tariffs, cross-subsidising discom losses made supplying domestic and agricultural consumers at lower tariffs.

Plentiful cheap hydro power and a large revenue stream from industrial consumers transformed the position of the UPCL. In 2016-2017 the UPCL's reported AT&C losses of just 16.28 percent. Power cuts in Uttarakhand are limited, universal electrification has been achieved, and the state government does not subsidise electricity tariffs.

The UPCL has been able to secure its A+ rating even as clear problems remain. Beyond industry consumers, AT&C losses associated with all other users in the state were 27 percent in 2016-2017. In seven distribution divisions, AT&C losses are in excess of 30 percent, including Roorkee where they are 36 percent. For years the UPCL has moved slowly to deal with these losses. Every year the UERC orders

the discom to act on high levels of provisional billing, to replace mechanical meters and defective meters, and to claim outstanding arrears. Each year the UPCL makes little progress on these problems.

Having a state discom ranked A+ for its performance makes Uttarakhand an outlier state in terms of its power sector. Looking to the future, several road bumps lie in view. Rapid economic growth and industrialisation in the state has meant that electricity demand has risen fast. Yet there has been insufficient cheap hydro power capacity added to meet this demand. Instead, the UPCL is increasingly purchasing much more expensive gas-based generation. This is feeding through to higher tariffs. Coupled with this, central government incentives are now expiring which brought many industry players to the state. Industrial consumption over recent years has decreased marginally in Uttarakhand. The UERC puts this down to growing use of open access mechanisms that allow industry to buy power from generators outside the state, the installation of rooftop solar, and the effects of energy efficiency programs. If Uttarakhand fails on providing quality and reliable supply of power at competitive rates then industry consumption may fall further. In such a scenario, the UPCL's performance is likely to suffer, and its A+ rating will be at risk.

*(Jonathan Balls is a New Generation Network (NGN) Post-Doctoral Scholar at the Australia India Institute, University of Melbourne, Australia. This research is based on work presented in full in the book Mapping Power, edited by Navroz K Dubash, Sunila S Kale, and Ranjit Bhavirkar.)*

# Electricity Distribution in Gujarat: A Sustainable Energy Future Roadmap?

BY SIDDHARTH SAREEN

In the era of the unbundled electricity sector, Gujarat's emergence as India's leading light is premised on its early recognition that energy policy must engage meaningfully with politics. A steady, coordinated approach characterised its trajectory in the early 2000s, gradually separating the black box of electricity into electric generation, transmission and distribution. Unlike the travails of distribution faced by many other states, Gujarat benefitted from implementing the *jyoti gram yojana*. It accompanied this innovative material intervention with the political savvy of crafting a compromise with key farmer constituencies, convincing them that their electricity access quality would be enhanced. During the mid-2000s, it put in place a parallel distribution network based on feeder separation and a specially designed transformer, supported by the deployment of dedicated power sector police units. This technologically and administratively addressed the problem of line theft, especially in remote rural areas where leakages persist in many states, ostensibly based on political patronage.

Both measured action between the finance and energy departments to restructure accounting practices during unbundling, as well as enhanced revenue recovery, provided Gujarat's distribution sector bottomline with cushioning. This enabled foresightful investments: for instance the state, long known for its wind energy capacity, championed solar uptake. A decade ago, well before India's first solar policy of 2011, Gujarat incentivised solar developers with attractive 25-year feed-in tariffs. While locked-in high-cost contracts placed a significant financial burden on state coffers, this nonetheless ensured quick response in a sector that has since undergone rapid expansion and become key to our national energy future. Evaluating bidders on their techno-managerial capacity, the state saw stalwarts from sectors like jewellery and pharmaceuticals step into solar energy. More recently, under the UJALA programme, Gujarat's manufacturing sector made a strong national contribution on energy efficient lighting for demand side management. Large photovoltaic module factories have begun emerging, too.

Currently sixth in terms of installed solar capacity, Gujarat has the largest solar pipeline in India. While solar parks set up in dedicated remote areas require new transmission

infrastructure investment, there is still enormous untapped scope to increase small-scale rooftop solar uptake. For growth in decentralised solar generation, grid coordination logics must be geared towards renewable energy integration. With rapid technological evolution and falling costs in energy storage, India has the opportunity to ensure revenue sharing with prosumers and revolutionise the changing energy sector. By leading on renewable energy integration, Gujarat can become a role model for sustainable energy transition.

The conditions that have enabled these recent successes are closely linked with the state's political economy. Gujarat has traditionally hosted a strong business orientation, a culture that attracts investment and assures promoters and developers of smooth project implementation. This requires smooth tendering and licensing processes with transparent criteria that lower risk and thereby project financing costs. Continuous rule by the same political party has allowed an element of long-term planning that has benefitted the electricity sector. Weakening support for the political coalition, however, could unravel cooperation with key farmer constituencies. How will continued expansion and improvement of electricity access be secured for the millions who continue to live in energy poverty, without electrified households, despite electric lines having reached their villages? GUVNL has been sub-contracting on-gridding to increase coverage to the tune of a lakh households annually. Yet dependence on dirty fuel sources with adverse health impacts persists, from large factories to poor villagers who use labour-intensive practices to cook a basic meal. The stakes remain high and micro-grids must be part of the solution. This urgency warrants an enhanced role for the Gujarat Energy Development Agency.

A mix of long-standing private sector distribution utilities in urban areas and four large regional public utilities across the state has worked well in tandem with a state regulatory body that mandates gradual improvements in efficiency. In recent years, having installed sufficient generation capacity after private sector entry has allowed consistent focus on tackling problems in electricity distribution, and the largely top-down approach Gujarat has followed has enabled a coordinated, functional

effort. This is no mean achievement; it warrants praise. These advantages put the state in a position to lead by example on the many challenges that will modulate India's energy future. The rapid shift to renewables and particularly solar energy sources requires regulation to stay ahead of current developments to ensure optimal evolution towards sustainable energy systems. A stronger national grid is key, and the announcement of a nationwide solar energy price ceiling, and players like NTPC with its recent 2 GW solar energy auction, constitute clear signals that solar uptake can help shape new electricity markets and logics. How this will play out with ambitions of electrifying transportation is a key question going forward.

In sum, Gujarat's electricity distribution sector has progressed against formidable odds. It has generated

public benefits – energy efficiency and access – and led on renewable energy adoption. Yet steep challenges remain and demand similar political economic acumen and gumption. As floods in Kerala and wildfires in the Arctic add political pressure for global action on climate change, places like California and Sweden are leading by example. States such as Gujarat can expand such initiatives and showcase prowess in the politically fraught context of India's electricity distribution sector.

*(Siddharth Sareen is a researcher at the Centre for Climate and Energy Transformation, University of Bergen, Norway, where he works on the governance of energy transitions. This research is based on work presented in full in the book Mapping Power, edited by Navroz K Dubash, Sunila S Kale, and Ranjit Bharvirkar.)*

# Small Gains Behind Mounting Losses in Jharkhand

BY ROHIT CHANDRA

In the last week, Jharkhand's state government inaugurated its first fleet of electric cars for official government use. Launched with much fanfare and coverage, the chief minister, energy secretary, and JBVNL (the state's main discom) MD were all in attendance at an event in which Ranchi joined the 'energy revolution'. Yet the installation of charging stations around JBVNL offices and the procurement of electric vehicles is a strange ambition for a city which is still plagued by regular power cuts, even in some of its most affluent neighbourhoods. In a state where almost half of all households are still without power, this event is yet another public relations exercise overshadowing the state's more fundamental energy problems. Jharkhand's power problems originate from three key areas: financial distress, capacity problems and out-of-state conflicts.

Jharkhand has had a history of low tariffs, high technical and commercial losses, and high external dependency due to a lack of in-state generation. Almost seventy percent of JBVNL's power purchase costs come from Central generators, or entities like the Damodar Valley Corporation (DVC). From the latter, the cost of power tends to be unusually high, accounting for a large portion of JBVNL and the Energy Department's overall expenditure. While the PPAs with DVC will expire in a few years, for now JBVNL has been stuck with both high-power procurement costs and major problems in recovering dues and preventing theft. A severe shortage of working capital over the last decade has led to the state's discom frequently defaulting on or delaying dues to generators; it is barely capable of maintaining manpower, procurement pipelines and the existing grid infrastructure.

In the last six months, the JSERC approved major increases (between Rs. 1.90-3.15) in retail tariffs across almost all categories of domestic and commercial consumers, both rural and urban. In a departure from almost a decade of JSERC rulings, the most recent tariff orders sweepingly simplified JBVNL's existing tariff schedule and also declared its intent to eventually dispense with the massive cross-subsidies that had been in place from industry to domestic and agricultural consumers. Not surprisingly, the government soon stepped in with a large financial compensation package to JBVNL so that rural customers would be minimally affected by these hikes. While this is a commendable move towards improving the financial situation of the JBVNL, much like the previous UDAY scheme all it really does is move liabilities from the discom to

the state government; a temporary bandage as opposed to the deep surgery needed to fix the state's power problems.

The crisis in the state's electricity bureaucracy is just as worrying. Despite the many promises made to the Central government associated with UDAY, accusations of meter tampering, graft, and preferential treatment in the granting of industrial power connections are rife among the state's power bureaucracy. Not long ago, an open and shut case of industrial power theft was dismissed in the Ranchi High Court because JBVNL engineers failed to collect sufficient evidence, leading to the discom MD admitting that "[O]ur engineers lack proper training and skills to gather evidence to prove industrial power thefts. This combined with the rapid spread of subcontracting for many basic functions has left the state discom with little credibility of actually accomplishing the grandiose expectations of the Central government's electrification schemes before the next election.

To be fair, the state's discom has not been the sole cause of electricity problems in Jharkhand. Because of the language of the DVC Act, 1948, the DVC is responsible for power supply to seven districts in Jharkhand for more than 11 million residents. Because of the protracted financial disputes with Jharkhand leading to the withholding of power, and its underinvestment in distribution infrastructure, the DVC was recently hauled up by the National Human Rights Commission for failing to perform its statutory duty in those seven districts. Such overlapping jurisdictions and the inability for the state government and its politicians to resolve these disputes over the last decade and a half has meant that much of Jharkhand is still very far from the utopian vision of Power for All.

Unless Jharkhand is able to shed (or renegotiate) its legacy contracts, complete its within state generation projects, and generate some reserves of working capital for JBVNL, it is difficult to see the light at the end of the tunnel. Until then, selling dreams of electric cars seems like a cruel joke to the tens of millions of citizens who watch the car zooming by at speed, ignoring them as they are left in the dark.

*(Rohit Chandra recently completed his doctorate at the Harvard Kennedy School. His work focuses on state capitalism and energy policy, and he is currently writing a book on India's coal industry. This research is based on work presented in full in the book Mapping Power, edited by Navroz K Dubash, Sunila S Kale, and Ranjit Bharvirkar.)*

# The Saga of the Subsidy Trap in the Tamil Nadu Power Sector

BY HEMA RAMAKRISHNAN

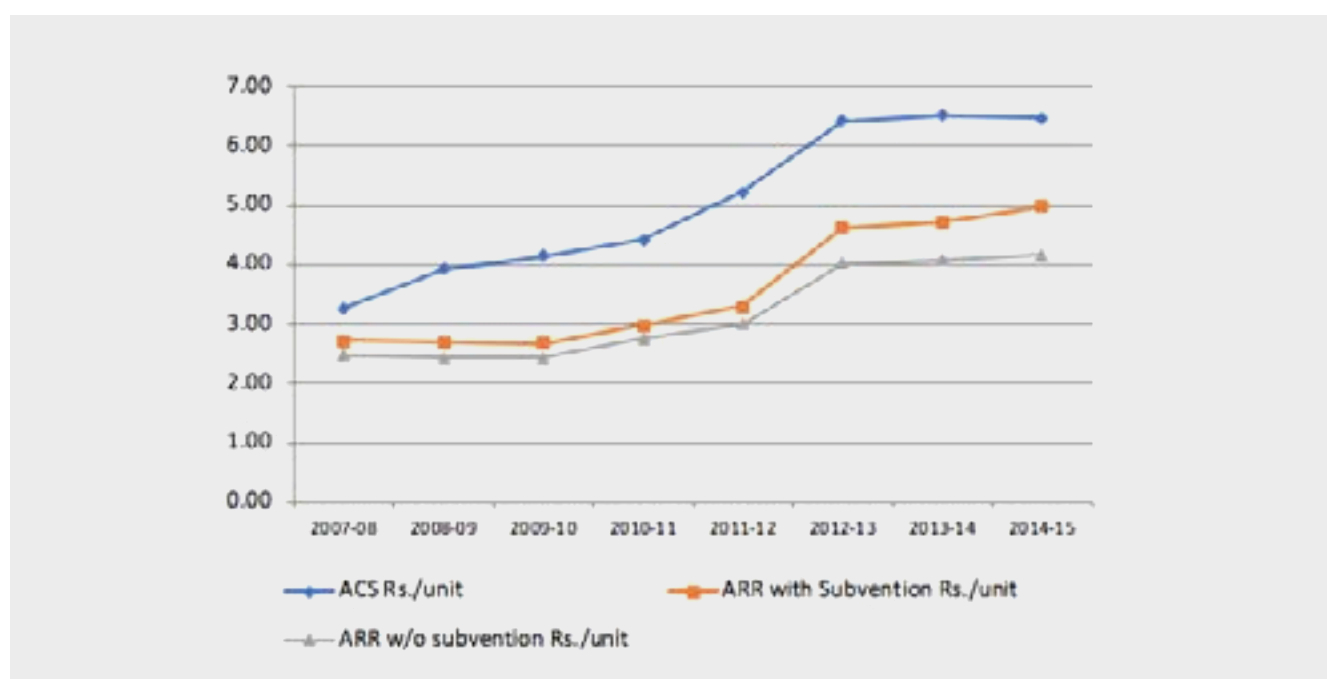
The electricity sector in Tamil Nadu has the third highest generating capacity, has achieved near total electrification of all its households, and can boast of the highest capacity for renewable electricity generation among the Indian states. At the same time, in terms of financial performance, Tamil Nadu's power sector has been among the worst performing three utilities in the country in recent years.

During the fifties and sixties, in spite of having significant expansion of rural electrification and also subsidising the consumption of rural consumers, the utility was able to generate a modest surplus without any subvention from the state government. However, since 1970-71 it has been incurring losses on account of the subsidised rates for electricity to certain consumer groups, as required by the state government. The state government's subvention provided to the utility was adequate to compensate for this till 2000-01 after which it has been inadequate.

Between 2008 and 2012 severe power shortages were witnessed and the utility was able to meet only two-third of the maximum demand. The industrial sector bore the brunt of this shortage and while Chennai suffered two hour power cuts for a period of time other areas faced 12 to 14 hours of power cut. A higher proportion of the energy sold to the consumers came from power purchased at a higher cost compared to the cost of TNEB's own generation. For the period 2002-03 to 2014-15 the subvention from the government covered only 29 per cent of the utility's losses, on an average. The cumulative amount of uncovered losses at the end of 2014-15 was close to Rs. 90,000 crores. TNEB's debt burden was about 50 per cent of the state's debt in 2013-14.

After the legislation of the Electricity Act in 2003, TNEB was among the last states to unbundle and the unbundling is only cosmetic. The Tamil Nadu Electricity Regulatory Commission (TNERC) was constituted in 1999 but was

**Figure 1:** Average Cost of Service and Average Revenue Realised (Source: Power Finance Commission Reports)



without a Chairman till 2002. The members and staff of the Commission have mostly been chosen from ex-TNEB employees. The TNERC its first tariff order issued in 2003, directed TNEB to get all consumption metered, including those of agricultural pumps and huts, within three years and to issue new connections only on a metered basis. As of 2017 this has not yet been implemented. Between 2003 and 2010, TNEB did not seek any tariff revisions and did not submit the mandatory Annual Revenue Requirements. The regulatory process is thus subject to 'state capture' and the deeply ailing state utility is protected from any effective competition.

The continuously deteriorating financial position of the utility has adversely impacted the cost and the quality of access in the state. In addition, the indiscriminate subsidies have created significant negative externalities by promoting unsustainable use of groundwater and have also eroded the competitiveness of the industrial sector due to the double burden of cross subsidies and power cuts imposed on them.

Why and how did all this come to pass in a sector whose financial performance was good till the seventies, within a state that had good economic and human capabilities? The answer requires an understanding of the evolution of the power sector in Tamil Nadu as institutionalised through the provisions in India's Constitution, its Directive Principles for

State Policy and relevant legislations, and as shaped by state level political economy aspects relating to its governance. In particular, the interplay between group interests, political aspirations, technological factors, and the nature of control afforded to the state government over this sector have influenced, and in turn have been influenced by the performance outcomes in this sector.

The problems started in the sixties when the green revolution happened. The increased risks and unequal economic impact of green revolution on the farming community gave rise to a well organised peasant movement that managed to avail a lot of concessions from the state governments. Subsequently, the sector became a means to gain political popularity and financial rents at the same time, by subsidising consumers in an indiscriminate manner, while the utility went deeper and deeper in the red. There is a path dependency in this process that seems to be difficult to escape. Having gone down this path, both vested interests and competitive politics constrain the political will to reverse the trend and the sector seems to be caught in a subsidy trap.

*(Hema Ramakrishnan is a faculty Member at the Madras School of Economics. This research is based on work presented in full in the book Mapping Power, edited by Navroz K Dubash, Sunila S Kale, and Ranjit Bharvirkar.)*

