

POWERING THROUGH THE PANDEMIC

Will Covid-19 Reset India's
Approach to the Future of
Electricity?

July 2020

REPORT

Ashwini K Swain

Fellow, Centre for Policy Research



WWW.CPRINDIA.ORG

TABLE OF CONTENTS

Executive Summary	1
I. Introduction	2
II. Covid-19 Disruptions to India's Electricity	2
III. Government Responses to the Disruptions	5
IV. Long-Term Electricity Reform Agenda	7
V. Towards a Resilient Electricity Future	8
References	10

Executive Summary

While being at the threshold of 21st century transitions, India's electricity sector continues to grapple with 20th century challenges like operational inefficiencies, unreliable supply, access challenges, theft, non-payment and distressed finances. The Government of India has committed to long-term goals of energy access security for all and electricity transition to cleaner sources. The disruption caused by the Covid-19 (novel coronavirus) pandemic are consequential for both. While exacerbating the existing weaknesses in the sector, the pandemic could also affect the trend toward an electricity transition.

Against this backdrop, this report is an attempt to understand the impact of the pandemic on India's electricity, government responses, and thus, suggest a structural approach to building a resilient electricity future. We find that the Covid-19 caused disruptions in the electricity sector are pervasive and have alarming secondary effects and long-term consequences. If not addressed strategically, these impacts risk India's long-term electricity goals. While the Central and state governments have been swift to recognise the disruptions, the responses fall short of a strategic approach. The band-aid approach, focused on fixing existing patterns in the sector, appears inadequate to challenges. Ironically, the long-term electricity reform agenda – proposed in major legislative and policy amendment proposals from the Centre – shaped in times of a pandemic has failed to internalise the challenges thrown-up and insights gained from the Covid-19 experience.

The report argues that the combination of Covid-19 disruptions, technological driven cost reductions in renewable energy, and the longstanding financial and governance problems of the sector combine to create a 'critical juncture' for the sector- a moment to envision a new and alternative configuration of technology, institutions and politics that could transform Indian electricity. While this a long-term and complex conversation, the report suggests two illustrative pathways toward these goals.

Electricity as an instrument of a productive and resilient rural economy:

A resilient electricity future necessitates an alternative approach to electricity access security that enables a shift from subsidising minimal welfare through electricity to enhancing productivity by subsidising fixed costs for clean energy infrastructure to the poor. Below are two options that can reinforce each other.

- Drive a shift away from 'redistributive welfarism' (that prioritises subsidised tariffs for the poor while compromising on the quality of service) to 'productive power' that empowers and enables the poor to pay for better quality service through productive use of electricity
- Shift away from recurring and inevitably rising tariff subsidies to one-time clean energy infrastructure support for targeted beneficiaries and incentivise productive use of electricity.

Electricity transition for productive recovery:

In planning post-Covid-19 recovery, India needs a strategic approach that treats the electricity transition as a catalytic force for rebooting the economy while redirecting electricity in the direction of more resilience. Below are three steps in that direction.

- Promote domestic manufacturing of clean energy equipment based on a broad strategy that adopts a green industrial policy approach, supports innovation and addresses distributive questions.
- Seek opportunities to accelerate retirement of old and inefficient coal-fired plants through a timebound strategy based on adequate consideration of economic, environmental and political consequences.
- Consider the costs and risks associated with fossil fuel in energy planning, and strategically use tax and subsidy instruments to keep clean energy cost competitive against fossil energy.

I. Introduction

The Covid-19 (novel coronavirus) pandemic reinforces the importance of reliable electricity access. Electric power not only underpins the essential services that sustain the social order, but also builds our individual preparedness amidst the lockdown. Ironically, even as electricity makes us more resilient, electricity systems are also vulnerable to the pandemic. Efforts to flatten the Covid-19 curve are shaking the existing foundations of the electricity system.

Despite decades of public spending and reform interventions, India's electricity system remains beset with chronic problems. Persistent sector inefficiencies not only continue to be a drain on the state exchequer, but also compromise the quality of this essential service for citizens and businesses. Can India's ailing electricity sector power through this pandemic? Existing cracks in the system are likely to multiply under the pressure of Covid-19 itself as well as the pressures from emergency measures taken to contain

the spread of the pandemic. Will the ensuing short-term needs topple India's long-term electricity priorities? As the pandemic keeps spreading and government responses are evolving, the aftermath of India's electricity system remains unpredictable.

This report seeks to understand these 'predictable unpredictabilities', draw insights from the pandemic experience and suggest a structural approach to stay on course to meet long-term electricity priorities. Section II analyses immediate vulnerabilities of the sector and likely consequences. Section III provides an assessment of government interventions to mitigate the effects of Covid-19. Section IV discusses the long-term electricity reforms in the current context. The final section suggests a structural approach to fast forward positive reforms in the sector, and thus, make electricity more resilient.

II. Covid-19 Disruptions to India's Electricity

As we stare down the pandemic, economic activities are experiencing a downdraft and existing patterns are being disrupted. Electricity, a key input for most economic activities, is no exception. Unlike in other major economies, India's electricity continues to grapple with 20th century problems even while making 21st century transitions. The central government has committed to long-term goals of energy access security and electricity transition to cleaner sources. Covid-19 caused disruptions are consequential for both (Fig 1).

First, Covid-19 responses, requiring social and physical distancing, has impaired electricity system operations at the consumer interface end. Electricity distribution utilities (discoms) are unable to bill their consumers and collect revenue, though they are required to supply regularly and pay to upstream suppliers. The drop in discoms' collection rate is estimated to be on the order of 70-80%, resulting in a liquidity crunch.¹

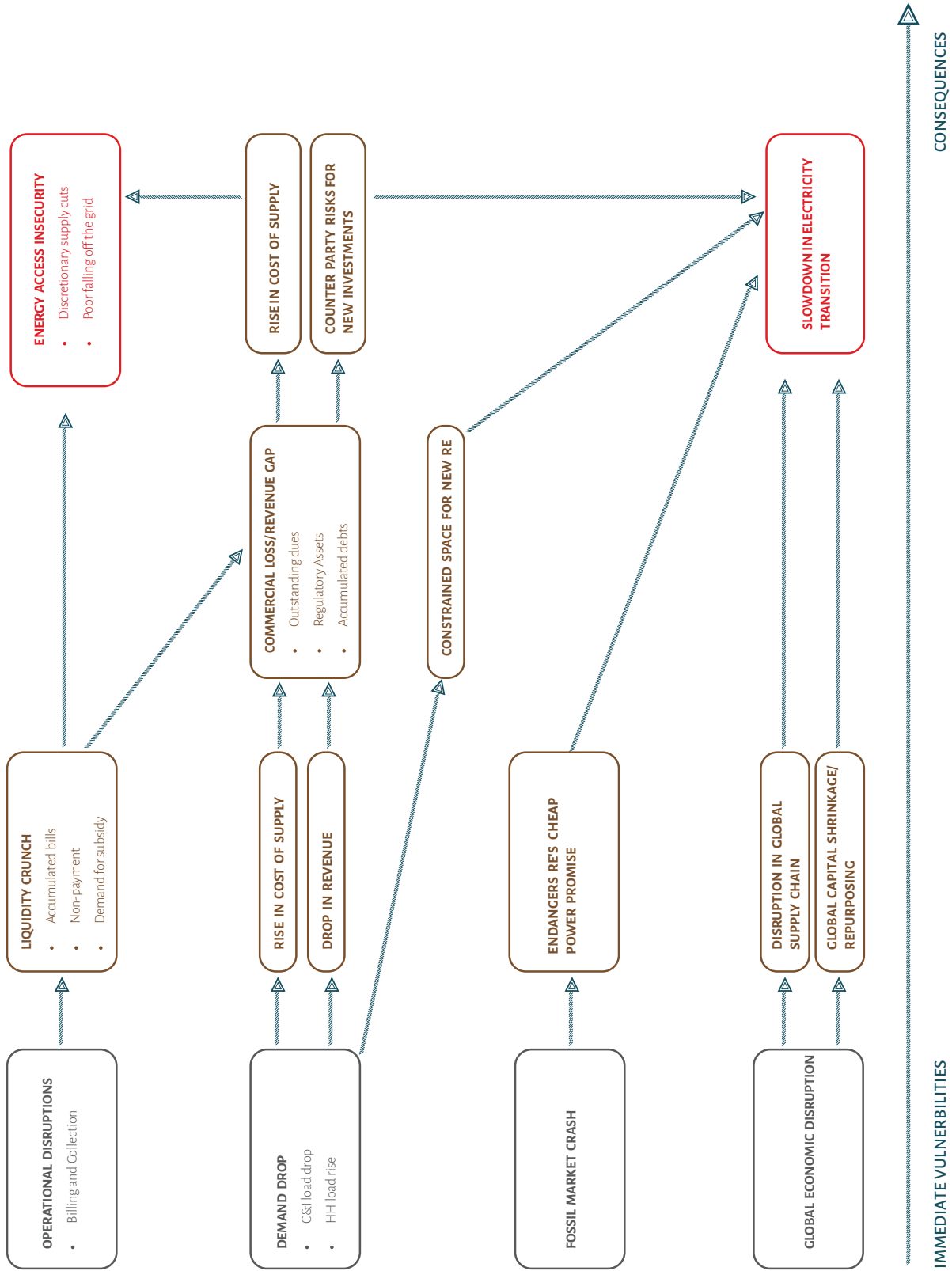
The chances of recouping electricity dues from consumers after the lockdown are uncertain. Since accumulated bills would be beyond the means of the poorest, widespread non-payment and demand for bill waiver are likely outcomes. Considering the economy is staring at a recession, recovery from business consumers could remain below expectation.² While discoms would resort to discretionary supply disruptions to cope with the liquidity crunch, enforcing recovery may push the poor off the grid. Without suitable government interventions, energy access may be threatened.

Second, a dramatic reduction in service and industry sectors during the lockdown has caused plummeting electricity demand globally. In India, power demand dropped about 25% nationally; and states have reported varied load swings. While industrial states reported high drops (e.g. about a third in Gujarat and more than a quarter in Maharashtra), less industrialised states (Bihar, Uttar Pradesh and West Bengal)

1 Several states have sought the Centre's assistance to mitigate the liquidity crisis (ANI, 2020; Raghavendra, 2020).

2 Consumers' resistance to provisional (allegedly inflated) bills (Chandrashekar, 2020; CNBC-TV18, 2020; Mishra, 2020a) and demands for bill waiver (Express News Service, 2020; Mishra, 2020b) are being mobilised across consumer categories in several states.

Figure 1: Covid-19 Vulnerabilities and Consequential Effects in India's Electricity



experienced marginal gain in demand (KPMG, 2020). This could be attributed to a surge in household load and/or longer duration of supply, implying a higher drop in commercial and industrial (C&I) demand.

Contraction in higher-paying C&I demand compels discoms, reeling under persistent financial losses, to lose even more. While losing significant cross-subsidy revenue, discoms are spending more per kilowatt (kWh) of electricity supplied.³ The likely consequence is a spike in commercial loss (or revenue gap) that the discoms manage through deferring upstream payments, piling up regulatory assets and accumulating debts.⁴ CRISIL predicts that discoms' losses may double to Rs 58,000 crore and debts may increase by 30% to reach Rs 4.5 lakh crore in FY 2020-21 (HBL, 2020). Carrying costs for these 'accumulated losses' have inflated electricity rates for consumers⁵ and thus, has implications for electricity access. The typical approach so far, of using the electricity sector as an instrument of redistributive welfare through cross-subsidisation (Dubash et al., 2019), has become even less viable.

Third, the downtrend in recent fossil fuel prices, further expedited by the pandemic (Pandey and Morgado, 2020), endangers RE's cheap power promise – a key driver for its recent uptake at the state level. While the electricity demand crash shrinks the space for new renewable energy (RE) capacity addition, the fossil price crash coupled with India's lock-ins to surplus fossil infrastructure may further reduce incentives for the transition to clean energy.

Fourth, the pandemic-caused disruptions in global supply chain for clean energy technologies could also potentially setback

India's ambitious RE trajectory. Economic contraction could eliminate global manufacturing surplus and cause inflation in component costs. With a modest 3GW domestic manufacturing capacity, India depends on Chinese manufacturers for 80% of its solar cells and modules. Further disruption in the supply chain may be caused by the ongoing geopolitical tensions between the two countries and subsequent restrictions put by India on power equipment imports from Chinese manufacturers (Jai, 2020) that will not only affect the costs and pace of RE deployment, but also may delay environmental compliance of existing coal-fired plants.

Moreover, India's RE development has largely been financed by foreign and private capital. Global capital is vulnerable to the Covid-19 generated economic contraction, and the pool may also get repurposed for other critical infrastructure investment needs that the pandemic has exposed. Further, debilitating discom finances, by escalating counterparty risks, threatens private investment prospects.

In brief, Covid-19 disruptions in the electricity sector are pervasive and have alarming secondary effects and long-term consequences. While the immediate vulnerabilities are common, the consequences will vary across states and will be shaped by state specific political economy factors, viz. demand for service quality, demand for subsidies, available financial space and cost of supply (Dubash et al., 2018). If not addressed strategically, these impacts risk India's long-term electricity goals – energy access security and electricity transition. Are government responses adequate and targeted to address this chain of disruptions?

3 Discoms will save by staving off their high variable cost power purchase contracts, but will pay higher fixed costs per unit. The net effect is an increase in average cost of supply.

4 Just before the pandemic, discoms' accumulated debts were at the level of the last bailout -- Ujwal Discom Assurance Yojana (UDAY) -- their regulatory assets were around Rs 1.5 lakh crore (Bhaskar, 2020a) and outstanding dues to generators were more than Rs 1 lakh crore (<https://praapti.in>).

5 Despite UDAY taking over a large part of debts, interest costs account for 5-20% of discom expenditure. Further, in several cases, a surcharge of 5-8% are charged on top of demand and energy charges to ameliorate regulatory assets.

III. Government Responses to the Disruptions

Central and state governments have been swift to recognise the importance of electricity in the pandemic situation. While the states have flagged immediate risks, the Centre has planned measures to mitigate the effects. Since the

announcement of the nation-wide lockdown, the Centre has issued more than two dozen notifications, broadly in four broad areas (See Table 1).

Table 1: Key Responses from the Central Government

Focus Area	Description
System Operations	<ul style="list-style-type: none"> Consider the costs and risks associated with fossil fuel in energy planning, and strategically use tax and subsidy instruments to keep clean energy cost competitive against fossil energy. Permission for construction of thermal and hydro power generation projects. (MoP, April 20)
Renewable Energy	<ul style="list-style-type: none"> Essential service status to RE plants; permissions for material and workforce movement. (MNRE, March 26) Treat delay on account of supply chain disruptions as <i>Force Majeure</i>; implementing agencies may grant suitable extension to the developers on the basis of documentary evidence (MNRE, March 20). A blanket extension for the period of lockdown plus 30 days to all ongoing projects (MNRE, April 21). 'Must-run' status of RE remains unchanged during lockdown and payments to RE generators to be done regularly as per existing procedure. Allow invoice over email and if joint meter reading is not possible, discoms may choose to pay on the basis of the invoice for the previous month or the same month in previous year. (MNRE, April 01 & 04) States and ports are requested to identify land parcels of 50-500 acres for setting up RE manufacturing and export services hub. (MNRE, April 12) Solar PV manufacturing and advanced cell battery storage are announced as 'new champion sectors', to be supported by incentive schemes. (MoF, May 16)
Coal	<ul style="list-style-type: none"> CIL allows the facility of 'Usance Letter of Credit' instead of cash advance for both power and non-power customers. (MoC, April 09) The coal secretary wrote to power secretary to ensure that TPPs do not restrict intake of coal from CIL (April 03). The coal minister wrote to chief ministers asking them not to import coal and take domestic supply from CIL. TPPs are advised to reduce import of coal for blending purpose and replace it with domestic coal. (MoP, April 28) Coal is identified as a 'champion sector' to pump in investments, increase production and generate jobs. The Centre makes provision for Rs 50,000 crore to develop coal infrastructure and opens up the sector for commercial mining. (MoF, May 16) CIL has asked the government to lower railway freight rate to boost its supply volume.
Electricity Discoms	<ul style="list-style-type: none"> Power may be scheduled to discoms with 50% payment security till June 30, 2020. (MoP, March 27) Central generation and transmission companies to continue supply even to discoms with large outstanding dues. Direction to provide a 3-month moratorium on discoms' payments to generation and transmission companies. (MoP, March 28) Obligation to pay within 45 days remain unchanged and reduced late payment charge applicable only during March 24-June 30. (MoP, April 06) Rs 90,000 crore liquidity injection for discoms under <i>Atma Nirbhar Bharat Abhiyan</i> (MoF, May 16) <ul style="list-style-type: none"> PFC and REC to offer special long-term (up to 10 years) transition loans in two tranches of Rs 45,000 crore each, against guarantees by state governments. The money on offer to be used for payment of discoms' outstanding dues to generation and transmission companies. Defer the fixed charges on power not scheduled from central power plants during lockdown, to be paid in three interest free instalments in the subsequent months. Suggested 20-25% rebate on fixed cost for power supplied from central plants and interstate transmission charges for the lockdown period. (MoP, May 15) Electricity distribution is identified as a 'champion sector' to unleash investments and generate jobs. (MoF, May 16)

First, recognition of electricity as an 'essential service' and continuation of supply during the lockdown is a sensible decision. While the Union Ministry of Power (MoP) exempted movements for generation and transmission from lockdown restrictions, states have deferred bill payment due dates to ensure electricity access to citizens.

Second, Centre's efforts on RE listed in Table 1 are important signals in favour of the electricity transition. The Ministry of New and Renewable Energy (MNRE) has asserted that there is no slowdown for RE, by continuing business as usual in tendering process.⁶ Recent modifications in the ultra mega solar power projects scheme, allowing generation-linked incentives for participating states, may help to get the hesitant states on board.⁷ Further, there is a greater push for domestic manufacturing of clean energy equipment to address the supply chain vulnerability (IANS, 2020). However, these efforts lack adequate attention to staving off the effects of demand drop and dealing with consequential effects like growing counterparty risks and a potential financing crunch.

Third, the Centre continues its protective impulse on coal - seeking to maintain production, promote sales and substitute imports - likely because workers, some poorer states, and key sectors like railways are heavily dependent on the coal economy. The simultaneous push for coal protection and RE penetration shows lack of policy coherence and can possibly be explained by diffused responsibilities across line ministries and diluted accountability to long-term electricity goals.

Fourth, the liquidity support is essentially a debt swap that seeks to help the discoms by converting high penalty outstanding dues into low interest debts. However, states are not willing to guarantee repayment and, as of end-June 2020, there were few takers (Chatterjee, 2020). This ad hoc fiscal measure does not address the critically constrained financial space at the state level. Ironically, discoms' outstanding dues are as much as their receivables from the state governments, which collectively owe about Rs 57,000 crore towards subsidy payments and another Rs 54,000 crores towards electricity dues (Tripathi, 2020). Other waivers and moratoria are too little to compensate for discoms' losses.⁸ Moreover, the discoms cannot use these rebates to cut their losses; the Centre has asked to pass the benefits on to electricity consumers.

Taken together, these measures do not consider the long-term pressures in the sector, and thus, fail short of a strategic approach to India's electricity future. The government responses appear to kick the can down the road. Bucking the rhetoric of 'self-reliance', this approach problematically seeks to restore the pre-Covid-19 low-level equilibrium in electricity.

6 Despite the lockdown, tendering for three critical RE projects were completed through virtual platforms. First, a 2 GW solar project auctioned by the National Hydro Power Co. Ltd.; second, a 400 MW tender that allows to split a single project into several wind and solar plants across the country, overbuild to ensure 80% capacity utilisation annually, and sell the excess power in the market; third, manufacturing linked solar contracts for 3 GW equipment manufacturing capacity and 12 GW generation capacity deployment. Besides, India discovered a record low solar tariff of Rs 2.36 per kWh in auction of another 2 GW capacity. Following the completion of auction on June 30, Minister R K Singh tweeted that "Covid-19 fails to halt the aggressive RE growth story."

7 MNRE, Modifications in the scheme for "Development of Solar Parks and Ultra Mega Solar Projects", June 15, 2020, available at https://mnre.gov.in/img/documents/uploads/file_f-1592551752084.pdf.

8 NTPC has offered to waive off Rs 1,363 crore and defer Rs 2,064 crore fixed charges to discoms (PTI, 2020).

IV. Long-Term Electricity Reform Agenda

Despite, and perhaps, because of the disruptions, 2020 is a pivotal year for electricity in India. There has been substantial churn in the policy space over last few months. Amidst the pandemic, the Centre notified a proposal for legislative reforms seeking to update the electricity laws to keep pace with rapid developments in the sector. Simultaneously, a range of policy instruments (notably an update to the National Tariff Policy) and fiscal mechanism (a Rs 3.5 lakh crore financial restructuring plan) are being planned.⁹ The risk is that these changes are being undertaken without a viable and coherent long-term vision for the sector, let alone one that internalises the challenges of Covid-19. Several aspects of long-term reform agenda remain perplexing.

First, the key focus of proposed legislative reforms is to improve economic viability of the sector, and thus, move to an investment friendly electricity system, but this approach fails to account for the political economy of the sector. The provisions include a stringent contract enforcement system and payment security mechanism between the generation and transmission companies and off-takers (discoms), micro-privatisation of distribution, cost-reflective tariff structure and reduction in cross-subsidisation (Swain et al., 2020). To facilitate the tariff reforms, an amendment to the National Tariff Policy is under consideration that seeks to drive a shift away from consumption category tariff to load and consumption based tariff (Singh, 2020). Further, the Centre has mandated a switch to prepaid smart meters for all in three years to ensure prepayment from consumers.

This approach fails to consider the politics around electricity tariffs in several ways. The objective of cross-subsidy reduction seems rhetorical: suggested tariff structure - as presented in a 2018 proposal¹⁰ - will still require high consuming consumers to pay more. The only beneficiary are small business consumers who are currently paying cross-subsidizing rates. Besides, electricity duties fixed by the state governments have been an additional instrument for progressive cross-subsidization in several states. The proposal to enforce prepayment on all is likely to create an unjust accountability structure and hurt the poorest – the poor are accountable for payment, but providers are not accountable for service (Swain, 2020). Planned switch from ratepayer subsidisation to taxpayer subsidisation does not consider the asymmetry in subsidy demands and financial

space in the states.

Second, the draft bill makes provision for a National Renewable Energy Policy for promotion of RE generation and to prescribe a minimum share of power purchase from various RE sources. A legislative mandate for RE is a welcome step. But it is short-sighted to pursue legislative backing without a larger electricity transition vision and strategy that creates an enabling environment for penetration of RE as well as other clean energy technology options. The Centre's push for technology specific RE purchase obligation is misplaced in a country where states have a diverse resource base. In the absence of adequate generation resources, the targets may not be complied with and high penalties may promote non-cooperation from the state governments.

Third, current reform proposals have a strong centralising tendency with problematic governance overtones (Swain et al., 2020). Over past two and half decades of reform interventions, states have often failed to achieve the desired objectives. The variation in performance can be explained by diverse political and economic factors (Dubash et al., 2018). Instead of fixing the process in the states, the proposed reform agenda seeks to redirect the responsibilities to the Centre. But the past two decades of Central intervention give little confidence that centralisation is a panacea to the sector's governance challenges.

The electricity reforms discourse tends to focus on the chronic sector challenges and how to fix the existing patterns, and by doing to so, it does not acknowledge the opportunities for new configurations of technologies, institutions and politics around electricity. Ironically, the reform agenda shaped in times of a pandemic fails to internalise the challenges and insights from Covid-19 experience.

A long-term vision should build on the learnings from the Covid-19 period, which, while being disruptive, offers insights for structural reforms in the power sector. First, the lockdown provides a test case for impending load migration from discoms. As RE has become cost competitive and predictable, the chances have increased that high-paying consumers will move off-grid. The lockdown provided an indication of the consequences when C&I consumers no longer cross-subsidise agriculture and households. This

9 CII, CEOs Digital Interaction with Hon'ble Minister, Shri R K Singh, May 15, 2020, available at <https://www.youtube.com/watch?v=vXWCowolWso>

10 Ministry of Power, Proposed amendments in Tariff Policy, September 10, 2018, available at https://powermin.nic.in/sites/default/files/webform/notices/Seeking_comments_on_revised_provision_at_Para.pdf

creates an impetus to find alternative ways to manage subsidy demands. Second, the crisis creates a stimulus to find technology fixes to disruptions in system operation. In an unintended development, Prime Minister's call for lights out for 9 minutes on April 5, was an exemplary test of grid balancing under sudden demand variation by 27% (31 GW) (POSOCO, 2020). A comparable disruption occurred on supply side, on April 21, when annular solar eclipse plunged solar generation by 12 GW (Bhaskar, 2020b). The grid's ability to balance on both instances may help to assuage

the concerns about the integration of variable RE. In another example, smart meters, being pushed to ensure prepayment and check discoms' loss, may be used to build the resilience of discoms in billing and collection.

The way forward must seek to break free from the patterns that ail and seek to build on the reforms that enable a transition. We discuss a structural approach in the next section.

V. Towards a Resilient Electricity Future

The combination of Covid-19 disruptions, technological-driven cost reductions in RE, and the longstanding financial and governance problems of the sector combine to create a 'critical juncture'¹¹ for the sector. This is the moment to envision a new, and alternative configuration of technology, institutions and politics that could transform Indian electricity (Dubash et al., 2019). Our focus should not be on restoring the pre-Covid-19 patterns and underlying low-level equilibrium in electricity. Rather, we must use this critical juncture to fast forward positive reforms and overdue structural changes to achieve the long-term goals, and in the process, build a resilient electricity future. While this is a longer-term and complex conversation, here we suggest two pathways toward these goals in a Covid-19 impacted world. While these are illustrative, they give an indication of the kind of change in mindset required, so that electricity policies are based on future-oriented visions, rather than short-term band-aids.

Electricity as an Instrument of a Productive and Resilient Rural Economy

A low-level equilibrium trap in electricity distribution -- poor quality, poor payment, populist politics -- has been a longstanding policy concern. Successive reform prescriptions have prioritised economic viability of the business as the only way to improve electricity services for citizens and businesses, and thus achieve electricity access security. Covid-19 makes this equilibrium even more unviable and provides a test case of what happens when electricity-centred redistributive welfarism falls apart. This necessitates a shift in India's approach to electricity access security and

find alternative ways to manage subsidy demands. Below are two options that can, while reinforcing each other, enable a shift from subsidising minimal welfare through electricity to enhancing productivity by subsidising fixed costs for clean energy infrastructure to the poor.

First, drive a shift away from 'redistributive welfarism' (that prioritizes subsidised tariffs for the poor while compromising on the quality of service) to 'productive power' that empowers and enables the poor to pay for better quality service through productive use of electricity (Swain and Dubash, 2019). This will require a comprehensive strategy that seeks to complement reliable electricity supply to rural areas with targeted interventions to mobilise its productive use. In designing a strategy, insights can be drawn from the experience of strategically bundling rural electrification with promotion of electricity-powered irrigation and agricultural innovations during 1970s and 1980s, and its productive impacts on rural livelihoods and national food security (Barnes, 2014; Swain and Charnoz, 2012). Simultaneously, understanding subsequent politicisation of this approach leading to the anarchy around electricity pricing and groundwater usage is critical to avoid perverse lock-ins (Dubash, 2007). Another example is rural electrification in the USA in 1930s that prioritised productive use of electricity as well as local institution (cooperatives) building for ownership and management of the electric grid- a model that has been replicated in several developing countries (Barnes, 2007) and also inspired India's initial thinking on electrification. The Central and state governments in India are already committed to reliable supply for all; the next step is to promote rural industries and businesses (such as

¹¹ Critical juncture is a situation of uncertainty entailing decisions and developments that "establish certain directions of change and foreclose others in a way that shapes politics for years to come" (Collier and Collier, 2002: 27).

agro-processing and cottage industries) with the required financial and infrastructure support. While ensuring electricity access security and enhancing electricity demand, such an approach can help to build resilient rural economies that are critical to post-pandemic economic recovery.

Second, a parallel approach would be to shift away from recurring and inevitably rising tariff subsidies to one-time clean energy infrastructure support for targeted beneficiaries. There are some efforts to deliver the low-cost benefits of RE directly to the poor through capital subsidies for solar home systems, solar pumps and solar agricultural feeders, thus reducing the growing subsidy burden.¹² These efforts need to be prioritised, ramped up and redesigned to incentivise productive use of electricity. The shift from electricity tariff subsidy to electricity infrastructure subsidy for RE not only ensures access security for the poor but also reduces the need for ratepayer cross-subsidies while accelerating the electricity transition. Moreover, expedited RE deployment through these interventions could stimulate the domestic component manufacturing industry and generate larger developmental co-benefits.

These paths to energy access security would admittedly require large government spending at a time of fiscal crunch. Yet, the reward is equally large: the transformative potential to propel a rural-led growth trajectory, and thereby, gradually offset recurring demands for state-sponsored welfare spending.

Electricity Transition for Productive Recovery

In planning post-Covid-19 recovery, electricity transition as a growing economic activity could be a catalytic force for rebooting the economy while redirecting electricity in the direction of more resilience. During past few months, there has been several developments in favour of RE. India needs a strategic approach to stay on course for the transition.

First, domestic manufacturing of clean energy technologies is critical to meet India's transition targets. The government has already identified solar PV and advanced battery cell manufacturing as 'new champion sectors' and plan to put in place incentive schemes for these industries. It could go further to plan a green industrial policy approach (Dubash, 2019) that supports innovation and addresses distributive questions. In absence of a comprehensive strategy, targets are proclaimed without anticipating supporting policies and ecosystem. For example, despite being a frontrunner in RE promotion, India has one of the lowest number

of RE patents.¹³ Another example is the mismatch in component manufacturing and deployment: solar with 3 GW manufacturing capacity had about 7 GW deployment annually, while wind with 10 GW manufacturing capacity had 2 GW deployment over 2019 and 2020. A broad approach to domestic manufacturing would fix these discrepancies and help to accelerate the transition, while creating jobs and contributing to reboot the economy.

Second, the current situation could potentially be ameliorated by accelerated retirement of old and inefficient coal-fired plants, a topic that is increasingly discussed (Gadre et al., 2020; Ghosh and Raha, 2020; Shrimali, 2020). Unfavourable structure of power purchase agreements and variable cost-based scheduling has led to a situation where inefficient plants are in use while new and efficient plants are unutilised. The National Electricity plan has identified 48 GW of coal capacity to be retired by 2027. The Centre has advised retirement of polluting plants, with emissions higher than pre-set norms. It could go further to expedite the retirements by developing a timebound strategy based on adequate consideration of economic, environmental and political consequences. Depending on the specifics of particular states, it is a likely win-win opportunity: retirement of old plants will create space for additional clean energy as well as put currently unutilised efficient coal-fired plants in use. The latter in turn will ameliorate the stressed public capital (about 40 GW stressed coal capacity are locking in Rs 1.74 lakh crore capital) that can finance the electricity transition.

Third, the Centre has seized the moment with the oil price drop to increase excise duty on petrol and diesel to boost tax revenue. By contrast, it continues its protective impulse for coal with waivers and regulatory relaxations. The government need to consider costs and risks associated with fossil fuel and strategically use tax and subsidy instruments to keep clean energy cost competitive against devaluing fossil energy.

These are initial, and illustrative ideas toward using the critical juncture of the Covid-19 moment to induce long-term and structural changes toward a new and better equilibrium for Indian electricity. Much lies in the details. However, the first step is to develop a vision consistent with new developments in technology, the potential for new institutional arrangements and the shifting politics of a Covid-19 era, and subsequently to design policies and implementation strategies to achieve this vision.

12 Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM KUSUM) Scheme and Grid Connected Solar Rooftop Programme are two notable interventions supported by central budgetary support and provisions for matching support from the states.

13 By 2016, India had 1,415 RE patents as compared to 6,853 by Brazil, 157,725 by China, 22,803 by Germany and 90,837 by USA (<http://resourceirena.irena.org/>).

REFERENCES

- ANI. 2020. "COVID-19: Odisha Govt Writes to Centre with Suggestions to Ease Burden of Power Sector in State." *Economic Times*, April 9, 2020. Available at <https://economictimes.indiatimes.com/small-biz/productline/power-generation/covid-19-odisha-govt-writes-to-centre-with-suggestions-to-ease-burden-of-power-sector-in-state/articleshow/75061261.cms?from=mdr>, accessed on June 20, 2020.
- Barnes, Douglas F. 2007. *The Challenges of Rural Electrification: Strategies for Developing Countries*. Washington DC: Resources for the Future.
- . 2014. *Electric Power for Rural Growth: How Electricity Affects Life in Developing Countries*. Second Edition. Washington DC: Energy for Development.
- Bhaskar, Utpal. 2020a. "States Making Inadequate Subsidy Payments to Struggling Discoms." *Mint*, February 9, 2020. Available at <https://www.livemint.com/news/india/states-making-inadequate-subsidy-payments-to-struggling-discoms-11581269555741.html>, accessed on June 20, 2020.
- . 2020b. "India Records 12 GW Drop in Solar Power Generation during Eclipse." *Mint*, June 21, 2020. Available at <https://www.livemint.com/industry/energy/india-records-12-gw-drop-in-solar-power-generation-during-eclipse-11592737672017.html>, accessed on July 01, 2020.
- Chandrashekhar, B. 2020. "Consumers Rue Big Bills as Discoms Fail to Convince Them." *The Hindu*, June 13, 2020. Available at <https://www.thehindu.com/news/cities/Hyderabad/consumers-rue-big-bills-as-discoms-fail-to-convince-them/article31822468.ece>, accessed on June 20, 2020.
- Chatterjee, Anupam. 2020. "Why Most Discoms Are yet to Get State Govt Nod for PFC-REC Loans." *Financial Express*, June 30, 2020. Available at <https://www.financialexpress.com/industry/why-most-discoms-are-yet-to-get-state-govt-nod-for-pfc-rec-loans/2007939/>, accessed on July 01, 2020.
- CNBC-TV18. 2020. "Coronavirus Effect: Consumers across India Receive Inflated Electricity Bills for Lockdown Months." *CNBC-TV18*, June 10, 2020. Available at <https://www.cnbctv18.com/energy/coronavirus-effect-consumers-across-india-receive-inflated-electricity-bills-for-lockdown-months-6102061.htm>, accessed on June 20, 2020.
- Collier, R.B., Collier, D., 2002. *Shaping the political arena: Critical junctures, the labor movement, and regime dynamics in Latin America*. Second Edition. Notre Dame: University of Notre Dame Press.
- Dubash, Navroz K. 2007. "The Electricity-Groundwater Conundrum: Case for a Political Solution to a Political Problem." *Economic and Political Weekly* 42 (52): 45–55.
- . 2019. "Green Industrial Policy Is a Timely Idea for India to Explore." *Hindustan Times*, March 5, 2019. Available at <https://www.hindustantimes.com/columns/green-industrial-policy-is-a-timely-idea-for-india-to-explore/story-ex4GEnUAOz6Xrhl7jVz8M.html>, accessed on June 20, 2020.
- Dubash, Navroz K, Sunila S Kale, and Ranjit Bhavirkar, eds. 2018. *Mapping Power: The Political Economy of Electricity in India's States*. New Delhi: Oxford University Press.
- Dubash, Navroz K, Ashwini K Swain, and Parth Bhatia. 2019. "The Disruptive Politics of Renewable Energy." *The India Forum*, no. July 05.
- Express News Service. 2020. "Orissa High Court Notice to Government over Exemption of Power Bills." *The New Indian Express*, April 30, 2020. Available at <https://www.newindianexpress.com/states/odisha/2020/apr/30/orissa-high-court-notice-to-government-over-exemption-of-power-bills-2137185.html>, accessed on June 20, 2020.
- Gadre, Rohit, Atin Jain, Shantanu Jaiswal, Vandana Gobar, and Dario Traum. 2020. *India's Clean Power Revolution: A Success Story with Global Implications*. Bloomberg NEF.
- Ghosh, Arunabha, and Shuva Raha. 2020. *Jobs, Growth and Sustainability: A New Social Contract for India's Recovery*. New Delhi: Council on Energy, Environment and Water.
- HBL. 2020. "Weak Power Demand, Huge Losses: Discoms' Debt May Spike This Fiscal." *Hindu BusinessLine*, June 5, 2020. Available at <https://www.thehindubusinessline.com/economy/weak-power-demand-huge-losses-discoms-debt-may-spike-this-fiscal/article31760925.ece>, accessed on June 20, 2020.
- IANS. 2020. "Govt Working on Mega Plan to Triple Solar Manufacturing Capacity." *ET Energyworld*, July 4, 2020. Available at <https://energy.economictimes.indiatimes.com/news/renewable/govt-working-on-mega-plan-to-triple-solar-manufacturing-capacity/76786536>, accessed on July 07, 2020.
- Jai, Shreya. 2020. "Modi Govt Bans Power Gear Imports from China amid Border Stand-Off." *Business Standard*, July 4, 2020. Available at https://www.business-standard.com/article/economy-policy/modi-govt-bans-power-gear-imports-from-china-amid-border-conflict-120070301568_1.html, accessed on July 07, 2020.
- KPMG. 2020. "Power Demand and Supply Analytics Pre and Post Covid-19 Lockdown." KPMG.
- Mishra, Twesh. 2020a. "Lockdown Shock: Residential, Commercial Consumers Suffer High Electricity Bills in Delhi." *Hindu BusinessLine*, May 3, 2020. Available at <https://www.thehindubusinessline.com/economy/lockdown-shock-residential-commercial-consumers-suffer-high-electricity-bills-in-delhi/article31494545.ece>, accessed on June 20, 2020.

———. 2020b. “Delhi Government Urged to Waive off Electricity Bills during Lockdown.” Hindu BusinessLine, May 5, 2020. Available at <https://www.thehindubusinessline.com/news/national/delhi-government-urged-to-waive-off-electricity-bills-during-lockdown/article31508306.ece>, accessed on June 20, 2020.

Pandey, Aalok, and David Morgado. 2020. “Historic Low Oil Prices—Not an Immediate Threat to Renewables, But World Must Not Lose Green Momentum.” Asian Infrastructure Investment Bank (blog). April 23, 2020. Available at <https://www.aiib.org/en/news-events/media-center/blog/2020/Historic-Low-Oil-Prices-Not-an-Immediate-Threat-to-Renewables-But-World-Must-Not-Lose-Green-Momentum.html>, accessed on June 20, 2020.

POSOCO. 2020. Report on Pan India Lights Off Event (9 PM 9 Minutes) on 5th April 2020. New Delhi: Power System Operation Corporation Limited.

PTI. 2020. “NTPC to Give Rs 1,363 Crore Rebate on Fixed Charges to Discoms.” Economic Times, June 10, 2020. Available at <https://economictimes.indiatimes.com/industry/energy/power/ntpc-to-give-rs-1363-crore-rebate-on-fixed-charges-to-discoms/articleshow/76308543.cms>, accessed on June 20, 2020.

Raghavendra, V. 2020. “Central Help Sought to Bail out Discoms.” The Hindu, March 26, 2020. Available at <https://www.thehindu.com/news/national/andhra-pradesh/central-help-sought-to-bail-out-discoms/article31168111.ece>, accessed on June 20, 2020.

Shrimali, Gireesh. 2020. “Making India’s Power System Clean: Retirement of Expensive Coal Plants.” Energy Policy 139 (April).

Singh, Sarita. 2020. “In Biggest Consumer-Centric Reforms, Govt Proposes to End Power Tariff Differentiation among Consumers.” Economic Times, June 2, 2020. Available at <https://economictimes.indiatimes.com/industry/energy/power/power-tariff-differentiation-among-consumers-may-end/articleshow/76143537.cms?from=mdr>, accessed on June 20, 2020.

Swain, Ashwini K. 2020. “Not so Smart Meters.” Indian Express, March 19, 2020. Available at <https://indianexpress.com/article/opinion/columns/smart-meters-ministry-of-power-6320887/>, accessed on June 20, 2020.

Swain, Ashwini K, Parth Bhatia, Ira Sharma, Sarada Prasanna Das, and Navroz K Dubash. 2020. “Comments on the Draft Electricity (Amendment) Bill, 2020.” New Delhi: Centre for Policy Research. Available at <https://cprindia.org/research/papers/comments-draft-electricity-amendment-bill-2020>, accessed on June 20, 2020.

Swain, Ashwini K, and Olivier Charnoz. 2012. “In Pursuit of Energy Efficiency in India’s Agriculture: Fighting ‘Free Power’ or Working with It?” AFD Working Paper 126. Paris: Agence Francaise De Development.

Swain, Ashwini K, and Navroz K Dubash. 2019. “Beyond Poles and Wires: How to Keep the Electrons Flowing?” In Policy Challenges 2019-2024, edited by CPR. New Delhi: Centre for Policy Research.

Tripathi, Bhaskar. 2020. “India’s Covid-19 Bailout Package May Fail to Reform the Power Sector.” Scroll.In, May 22, 2020. Available at <https://scroll.in/article/962559/indias-covid-19-bailout-package-may-fail-to-reform-the-power-sector>, accessed on June 20, 2020.

ACKNOWLEDGEMENTS

This report is produced by the Initiative on Climate, Energy and Environment at the Centre for Policy Research (CPR-ICEE). CPR-ICEE aims to stimulate an informed debate on the laws, policies and institutions shaping climate, energy and environmental governance in India. Our research focuses on improved understanding of climate, development and environmental challenges and pathways to improved outcomes, in four key areas: climate policy and institutions, the political economy of electricity in India, low-carbon energy demand patterns in urban areas, and air quality governance.

The author is grateful to Prof. Navroz K. Dubash for his valuable comments and insights on multiple drafts of this report. The report also benefitted from comments from Parth Bhatia, Thomas Spencer and Shirish Sinha. The author thanks Mandakini Chandra for her support in production and outreach. This work is supported through a grant from the Children's Investment Fund Foundation (CIFF), UK and additionally supported by a core grant from Oak Foundation, USA. The report represents analysis and views of the author alone, who also is responsible for accuracy and interpretation.



www.cprindia.org



[cpr_india](https://twitter.com/cpr_india)



[CentreforPolicyResearch](https://www.facebook.com/CentreforPolicyResearch)