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## Coping with Covid-19 Challenges

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## Context & Scope of the Study

The organization of the Indian power sector along functional lines by the provisions of the Electricity Act of 2003 has strengthened capabilities in India's ability to generate and distribute power across the country. This has been made possible through specialization of functions by state-run players in the power sector and participation by the private sector as well. However, several issues threatened the going concern status of entities within the power sector.

Organization of the power sector along functional lines has structured the value chain into three broad areas, namely, Power Generation, Power Transmission, and Power Distribution. In the wake of growing power generation due to installed capacity, a growing concern is the efficient transmission and last-mile distribution from the utility companies to the end consumers. This is reflected in the inability of power distribution companies (discoms) across India to meet the FY19 target of 15% AT&C losses, attributable to poor revenue collection mechanisms and difficulty in cracking down on power theft, amongst other causes.

The effects of the discoms' inefficiency have been felt further upstream, as their persistent payment dues to power generating companies (gencos), power financing companies, and banks have created numerous stressed assets. This is

further exacerbated by the COVID-19 pandemic as lower industrial demand leads to lower revenues to offset the low revenues collected from low-income consumers of power by means of cross-subsidization. Thus, a suitable policy should target short term financing of the discoms to allow the benefits of the policy to percolate

### Executive Summary

The Covid-19 pandemic has exacerbated the financial stress permeating the entire value chain in the India power sector, right from power generation to power transmission. Select major issues are inefficiencies in operations, inability to service payables to

creditors, and gaps in last-mile connectivity to areas of significant demand (rural areas in particular).

### Recommendations

On account of the issues prevalent in the power sector, the policy recommendation suggested are as follows:

- A financial rescue package involving debt swaps with austerity covenants for improvement of operational efficiency, and issuances of corporate bonds for financing repayments to operational creditors.
- Invitation of private players for private-public partnerships to sell more complex derivative instruments in the real-time power trading markets
- Making provisions for the setting up of smart meters across the country, while implementing stricter measures to prevent power theft
- Establishment of Decentralized Renewable Energy systems in rural areas to ensure power supply that conventional power distribution networks cannot economically provide

upstream through the Indian power sector's value chain.

Further, the pandemic is revealing the cracks in our health care systems, particularly in rural areas. As per 2018 statistics, 39,122 sub centres in rural India are operating without power supply. The percentage of sub centres operating without power supply is as high as 60% in states like Jharkhand and Bihar. Along with these sub centres, 823 Primary Health Centres (PHC) (around 3%) are operating without power supply<sup>i</sup>. These health centres are our first line of defence against the contagion and without power supply the centres have limited capacity to help villages.

### Research and Analysis

According to a report by ICRA<sup>ii</sup>, discoms reported financial losses amounting to Rs.

27,000 crores in FY 19, completely undoing the reduction in losses that the UDAY scheme had achieved in FY17 and FY18. This was accompanied by a forecast of losses estimated upto Rs 30,000 crore in FY20 and Rs 50,000 crore in FY21, attributed to falling industrial and commercial demand on account of the lockdown enforced to curb the COVID-19 pandemic.

While the target Aggregate Technical & Commercial (AT&C) losses set by the Ujwal DISCOM Assurance Yojana (UDAY) has been set at 15% for FY 19, the current level is 18.8%. However, this is still a dramatic improvement from the level of 26% seen in FY16.<sup>iii</sup> On the other hand, there is great state-wise disparity in AT&C losses, with states like Bihar (34.32%) and Jharkhand (33.96%) far exceeding the national aggregate level.<sup>iv</sup>

AT&C losses are a major concern due to the fact that they contribute to unrealized revenue by the discoms, on account of power distribution, power theft, and inefficient tariff collection.

Another metric that describes the financial performance of the discoms is the gap between the average cost of supply and revenue realized per unit of power (the ACS-ARR gap). While UDAY has largely been successful in reducing the ACS-ARR gap from Rs. 0.59/unit to Rs. 0.42/unit between FY16 and FY17.<sup>v</sup> As with AT&C losses, however, regional disparities exist, with states like Rajasthan (Rs 1.16/unit) and Jammu & Kashmir (Rs 2.12/unit) far exceeding the national aggregate.<sup>vi</sup>

However, there seems to be promise for improvement, with Himachal Pradesh and Andhra Pradesh logging AT&C losses below 10%, and states like Gujarat and Maharashtra logging negative ACS-ARR gaps, signalling a move towards profitability.

Between FY17 and FY18, the book losses of discoms mainly due to a revenue increase of Rs. 66494 crores due to four broad factors, namely:

- Tariff Hike (34%)
- Improvement in billing efficiency (8%)
- Growing Energy Demand (42%)

- Others (16%)<sup>vii</sup>

Thus, potential policy solutions to improve the financial health of the power distribution sector should not only target refinancing of the debt shouldered by discoms, but also make recommendations for raising the revenues of the discoms through multiple avenues.

The electricity problems in rural India can be addressed through Decentralized Renewable Energy (DRE)<sup>viii</sup>. This is characterized by the location of power generation near the point of consumption. DRE includes off grid solar systems, mini or micro grids powered by biomass, hydro, solar or any combination of these. The total installation of off grid solar is 762MW as of July 2018. The upfront costs of installing DRE systems is higher than the conventional sources. Hence the initiatives have been mostly taken by the Government and NGOs. However, considering the lifetime costs and inefficiencies of long-distance transmission, DRE system's deployment could be cheaper than the centralized grids. Furthermore, DRE systems offer additional environmental and economic benefits in the form of reduced emissions and employment opportunities at village level<sup>ix</sup>. The current major pathway to electricity access is grid expansion. However, there are few cases exist where grid expansion is not the appropriate solution:

- It is not viable for DISCOMS financially to extend the grid to some regions because of its remoteness, terrain or low energy demand.
- The revenue realized is less than the average cost of supply because of lower tariffs set to cater to rural areas. This further accentuates the DISCOMS losses.
- Connection to the grid may not necessarily guarantee access to power as the quality and reliability of power in rural areas continue to be a challenge.

In these scenarios DRE systems will act as a complementary solution for conventional electricity sources. Studies have shown that for small and isolated villages with low load factors decentralized energy systems are better suited<sup>8</sup>.

There are many case studies across states that have used biomass, solar, hydro energy sources that prove that DRE systems can be used in a sustainable way to meet the energy requirements of isolated villages.

Despite this fact, private sector participation has been scarce so far. A major contributing factor is the financing challenges that have persisted due to a lack of policy signals. Banks have been less than willing to extend loans to DRE systems, unlike major renewable projects, due to DRE systems' evolving business model, income security and lack of collateral from entrepreneurs as well as consumers, who are mostly farmers. Another factor hindering the DRE take off is the aftermath of grid extension. There is a lack of policy visibility in the scenarios where the grid extends to the areas where either mini grid or off grid systems exist. For instance, the Uttar Pradesh government has given 3 scenarios where DISCOMS and mini grid operators (MGOs) operate their separate networks or MGOs sell surplus to DISCOMS or the MGOs are purchased by DISCOMS. Despite these options, there is little clarity on the commercial arrangements for grid interconnectivity. Clarity needs to be provided with regards to the tariffs to the MGOs<sup>9</sup>.

## Policy Implications/ Recommendations

Given the Covid-19 situation with many businesses on halt, the discoms have stopped making payments to gencos since state electricity departments are not taking coercive measures to recover bills from the consumers. This has created uncertainty for the recovery of payments by distribution companies to gencos and by gencos to Power Grid Corporation. Further, low demand on the industrial front has diminished a major revenue source for the discoms. In the wake of these issues, the following policy measures are recommended to ease the financial burden to stressed discoms<sup>x</sup>:

- The government can reduce burden by issuance of lower fixed interest rate swaps by state-run banks to discoms to exchange their existing dues to financial institutions. The

fraction of swapped loans that are not recovered from the discoms can be offset through the issuance of treasury bonds.

- The government can also purchase existing bonds issued by the discoms in previous years to reduce the yields on these bonds, permitting discoms to finance their existing debt to gencos through issuances of corporate bonds at lower yields. However, through the swap mechanism, introduced earlier, the government should introduce a set of covenants regarding the discoms' usage of the proceeds from bond issuances. This should include conditions on repayment of operational creditors (the gencos) and capital investment for network strengthening, building transmission and billing efficiency.
- While the current real-time power trading system certainly alleviates demand risk to discoms, the government could float tenders for a public-private partnership. This will invite investment banks with risk management divisions to structure more complex derivatives for the market, such as future contracts, options, etc. Eventually, improving the power prices and efficiency of both gencos and discoms because they will be pressurized to become more competitive with respect to demand forecasting, risk hedging, etc.

The commercial losses can be combated by the following steps:

- Replacement of defective meters by electronic meters / smart meters: Smart meters can register real time or near real time consumption of electricity and export. The meter can be read both locally and remotely.
- Law enforcing and stringent action to the theft of power: From various reports it has been found that the theft of electricity in many developing countries ranges from 20 to 35 percent of distribution networks. Effective ways to avoid such thefts are:
  - Artificial intelligence system based on energy consumption pattern
  - Power line impedance technique
  - Injection of unwanted harmonics to illegal consumers.



In order to stimulate capital investment necessary to establish DRE systems in rural areas

- The government can take up financial measures like setting up dedicated small finance banks that cater to the DRE sector. Further to alleviate the credit risk, the banks should undertake the solidarity lending concept, where a small group of entrepreneurs and farmers borrow capital collectively and the group members encourage each other to honour the loan payments. Predicated on the conditions of solidarity lending the government may stand as a guarantee to boost lending for the DRE sector.
- Tariff restructuring needs to be done such that the feed-in-tariff to the mini and off grid operators justifies the cost of generation and connection of the grid.

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