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# IMPACT OF **COVID-19** ON THE INDIAN POWER SECTOR

30<sup>th</sup> March 2020







*This paper discusses the impact of COVID-19 on the Indian power sector. The objective of the paper is to broadly assess the potential impact on sector elements such as demand, supply, resources, business continuity, utility finances and investments. The paper also presents measures taken by different countries especially the power utilities to manage and mitigate the impact, particularly to provide uninterrupted supply in lockdown affected regions. The paper also presents broad recommendations for Indian policy makers and operational actions for utilities to effectively manage the services in the times of crisis, and beyond. The analysis presented is evolving as the situation unveils for India.*



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## A. COVID-19 and its Impact

The novel Coronavirus disease (SARS-Cov-2), or COVID-19, is a global pandemic which has affected over 0.65 million people across 199 countries as of March 28, 2020. COVID-19 has come to be known as one of the worst known health, social and economic crisis in modern times.

The trajectory of COVID-19 in any country depends on several epidemiological factors along with the timing, nature and degree of interventions undertaken to prevent and contain the spread. A flatter curve is desirable as it implies lower peak incidence and lesser burden on healthcare system.

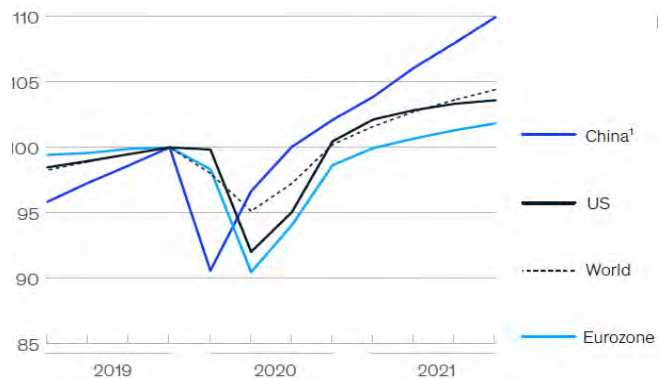
As COVID-19 tightens its grip across the world and forces several countries to impose unprecedented lockdowns, there are looming concerns over the livelihoods and overall direction of economy. The duration and degree of economic impact will depend on the trajectory of individual countries and their policy response to support health, livelihoods and larger economy. Figure 2 depicts one such scenario wherein the world economy may bounce back by Q4 2020 in case of rapid and effective control of virus spread and partially effective economic interventions.

India is in the beginning stages of managing its COVID-19 outbreak and can leverage the learnings from countries that have been successful in containing the spread. For instance, South Korea has been successful in subduing the spurt in the number of cases with its “test, track and isolate” approach. Emerging research and international experience suggest that there could be multiple trajectories which India could experience in the coming weeks, each having a different outcome in terms of impact on public health, economy, and various underlying sectors.

Figure 1: Potential trajectories for incidence of COVID-19



Figure 2: Real GDP growth, index (2019 Q4 =100)



Source: Mckinsey analysis in partnership with Oxford Economics

## B. Impact of the Power Sector in India

In India, the most COVID-19 affected sectors include aviation, tourism, hospitality, retail, manufacturing and automotive. The impact on the power sector is relatively less pronounced. The following table summarizes the market environment, potential impact and key response for the power sector in India.

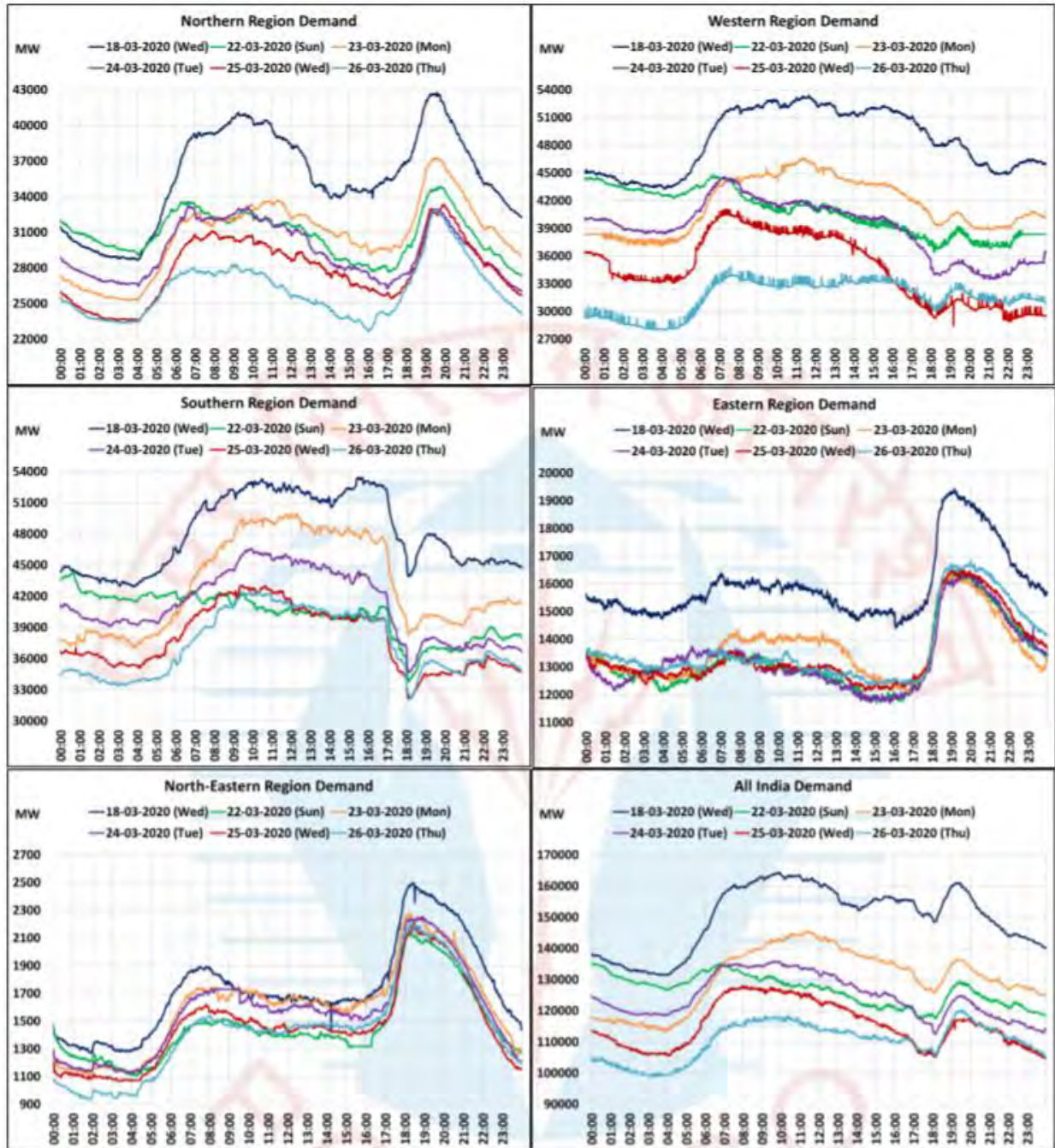
Elements	Impact
<b>Energy Consumption/Power Demand</b>	<ul style="list-style-type: none"> <li>Industrial, commercial, and traction demand hit especially during the lockdown period. Domestic demand has increased. Total electricity demand significantly affected (negative 26%) in first week of lockdown.</li> <li>Uncertainty on the lockdown period is likely to continue. Medium and long-term demand growth likely to be tepid till economy regains the pre-COVID-19 activity levels.</li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>Fuel and plant availability are not constrained as electricity supply is an essential service.</li> <li>Raw material availability (especially solar PV modules and capital equipment) impacted in short term due to supply chain disruption.</li> <li>Potential supply disruption on account of payment defaults by distribution companies (DISCOMs).</li> </ul>
<b>Price Impact</b>	<ul style="list-style-type: none"> <li>Reduced coal demand by other industries may put pressure on prices (e-auctions for coal).</li> <li>No significant impact on power offtake through long term power purchase agreement (in the short run).</li> <li>Spot prices (IEX) remain suppressed due reduced offtake by industries and surplus power availability.</li> <li>PV module cost likely to go up in the near term due to supply chain disruption.</li> </ul>
<b>Utility Finances</b>	<ul style="list-style-type: none"> <li>DISCOM finances will be affected by reduction in demand from more remunerative customers (industrial and commercial). It will also impact the DISCOM ability to cross-subsidize other customers.</li> <li>Additional working capital hit due to delay in collections including subsidy and government dues.</li> <li>Cascading impact on payments to generators and debt service by utilities/plants if lockdown sustains over a longer period.</li> </ul>
<b>Investments and Capex</b>	<ul style="list-style-type: none"> <li>Potential delay in project construction and commissioning especially for under-construction plants.</li> <li>Delay in meeting renewable energy (RE) targets, if the lockdown continues.</li> <li>Likely slowdown in future investments due to stress in capital markets, reduced risk appetite and demand uncertainty.</li> </ul>

The following sections provide details of the potential impact of COVID-19 on the sector elements.

# 1. Electricity Demand

The peak (MW) and energy (MWh) demand has been gradually falling during the lockdown period, as highlighted in Figure 4. The demand registered a significant reduction of ~26% by March 26, 2020 compared to March 18, 2020.

Figure 3: Demand patterns during management of COVID-19, POSOCO





Date	Energy Consumption (GWh)					
	Northern Region	Western Region	Southern Region	Eastern Region	North-Eastern Region	All India
18-Mar-20	827	1187	1148	383	42	3586
22-Mar-20	734 (-11%)	971 (-18%)	975 (-15%)	315 (-18%)	36 (-13%)	3030 (-15%)
23-Mar-20	724 (-12%)	996 (-16%)	1030 (-10%)	325 (-15%)	39 (-5%)	3113 (-13%)
24-Mar-20	695 (-16%)	944 (-20%)	983 (-14%)	314 (-18%)	39 (-7%)	2975 (-17%)
25-Mar-20	665 (-20%)	844 (-29%)	911 (-21%)	320 (-16%)	36 (-13%)	2777 (-23%)
26-Mar-20	628 (-26%)	771 (-34%)	891 (-23%)	327 (-15%)	35 (-16%)	2652 (-26%)

*Figures in parentheses indicate percentage change from March 18, 2020; Source POSOCO*

Continued slump in demand is expected till April 15, 2020 (or longer depending on extension of lockdown) as non-essential industries and commercial establishments have been shut. However, this is likely to change as summer sets in and we move towards warmer days beginning mid-April. With more people working from homes, there will be a spurt in domestic consumption (due to increased air conditioning load), which could partially offset the drop in industrial and commercial demand. The impact is much more pronounced in Western Region which has higher level of industrialization, followed by Southern and Northern regions.

The electricity demand growth has been moderate over last few years (5-year CAGR of 4.9%). As per the Central Electricity Authority (CEA) figures, the all-India generation (conventional and renewables) for the period April 19-December 19 stands at 1056 BU, which is a marginal increase of 0.7% over the same period in previous year. With further subdued demand in Q4 2020, the overall demand growth in FY20 will continue to be tepid or lower than previous year.

In Europe, estimates indicate a 6% drop in demand in 2020, and a 9% reduction in the wholesale power prices<sup>1</sup>. In India, the most affected sectors include aviation, tourism, hospitality, retail, manufacturing and automotive. The impact will be more pronounced with higher incidence of cases in more industrialized states and metropolitan cities. While some critical sectors and industries may bounce back in short term, national and regional level economic activity needs to be watched out to understand the impact on electricity demand in the wake of COVID-19.

## 2. Resources

From the perspective of uninterrupted electricity supply, business continuity and price impact, there are three important resources that need to be assessed: coal, workforce and labor.

- Coal:** Coal is an essential input to the power sector. Hence supply disruptions are likely to be minimal. Supply of coal at notified prices by CIL will limit any price impact of COVID-19. However, demand slowdown by end-use sectors, coupled with adequate inventories, will impact e-auction realization of CIL (~13% of volumes). If the fall in price of coal lingers due to demand-correction, it is likely to impact energy transition globally. Further, the risk of increased energy prices and job-losses from closure of coal on top of a COVID-led downturn, may be too high a risk for the political leadership around the world, including in India.

As of 28<sup>th</sup> March 2020

[www.icis.com/explore/resources/news/2020/03/23/10485642/virus-demand-hit-to-wipe-9-off-2020-european-power-prices](https://www.icis.com/explore/resources/news/2020/03/23/10485642/virus-demand-hit-to-wipe-9-off-2020-european-power-prices)" <https://www.icis.com/explore/resources/news/2020/03/23/10485642/virus-demand-hit-to-wipe-9-off-2020-european-power-prices>

- **Workforce:** Being an essential service, the availability of workforces across the electricity value chain (including coal mining) is not likely to be impacted, given that adequate preventive measures are taken to curtail the COVID-19 spread among the staff. However, slowdown in the manufacturing and construction could lead to job losses. In the long run, demand side pressure and surplus availability across the sector and delay in clean energy transition may cause unemployment. A conscious strategy will be required to redirect labor towards areas in need and those that remain unaffected.
- **Raw material:** India is largely dependent on imported PV modules for development of solar projects. While the production is expected to resume in China soon as they are lifting the lockdown, the entry barriers in India and supply chain disruption in other originating countries may lead to shortage of modules and likely spurt in prices. About 62 GW thermal projects<sup>2</sup> are currently under construction, which could be impacted due to supply chain disruptions. Spares/components for essential repairs and maintenance are also likely to be hit due to prolonged lockdown and shortage of inventory.

### 3. Electricity Supply

Being an essential service, electricity supply is currently not constrained either due to availability of fuel or generation plants. However, any coal shortages in future (due to potential shutdown of mining activity) may cause shortage of thermal generation. Currently, the already surplus capacity has increased further due to reduced demand, which is leading to reduced Plant Load Factor (PLF). The spot prices on IEX remain suppressed and have even touched three-year low of Rs. 0.6/ unit on March 25, 2020<sup>3</sup> (for a few time blocks). The sell bids volume is nearly five times the buy bids, due to suppressed open access demand.

Reliable supply is critical and could be constrained due to non-payment of dues by DISCOMs to generators owing to revenue shortfall (discussed in subsequent sections). Continued delay in revenue receipts could further impact the ability of generators to purchase fuel, hence affecting generation.

### 4. Grid stability and resilience

Along with the quantum of demand, the timing of the peak demand on grid has largely shifted to morning and become quite unpredictable, as highlighted in Table 1. Figure 4 (on Page 3) also shows that the demand patterns for March 24 and 25 are also not aligned with other days as there is much pronounced demand dip in the evening

Table 1: Timing of peak demand-comparison of 2020 with 2019

	18/03	19/03	20/03	21/03	22/03	23/03	24/03	25/03	26/03
<b>Time of peak demand - 2020</b>	9:56	10:24	9:56	10:20	6:21	11:22	9:41	7:56	19:31
<b>Time of peak demand - 2019</b>	19:15	19:05	10:44	7:20	19:21	19:27	19:24	19:16	19:47

Source: POSOCO

	Morning peak
	Evening peak

- **Demand volatility-** Due to lockdown in effect, demand has become unpredictable both in terms of quantum and timing. This tends to increase the forecasting errors and threaten the grid security. Thus, necessitating more stringent grid monitoring and balancing measures.
- **Reliability of supply-** There is increased load on electrical lines and transformers serving the domestic consumers, which creates risk of overloading, faults and hence supply disruption. Further, in absence of contingency measures, it could also lead to cascading outages which could threaten the synchronous grid.

<sup>2</sup> Broad status report (monthly) under construction power plants, CEA, December 2020

<sup>3</sup> Indian Energy Exchange



## 5. Utility finances

- **Revenue/cash flow (DISCOMs)**- Lifeline consumers and daily wage earners are most adversely impacted, and their paying capacity diminishes with lockdown. Closure of non-essential industries and commercial establishments is also likely to impact the collection of dues/arrears from these consumers. Further, closure of collection centers is bound to create revenue shortfall as the majority of retail consumers across India pay using cash, cheques and demand drafts.
  - **Revenue/cash flow (GENCOs)**- Generators are already reeling under outstanding dues of over Rs. 86,000 Cr<sup>4</sup> from DISCOMs. The revenue shortfall at retail end of the value chain will add to the dues of generators.
  - **Revenue/cash flow (IPPs)**- Merchant power generators, dependent on short term market for realization of revenues and/or imported fuel, could be particularly hit hard due to surplus power availability, reduced demand from open access consumers and supply chain disruption. This may lead to stressed assets if demand slump continues for long.
  - **Revenue/cash flow (RE)**- Renewable energy capacity, particularly 3.6 GW solar<sup>5</sup>, is dependent on sale of power to open access consumers (industries as well as corporates). In absence of demand, the unutilized energy would be banked considered to be utilized by DISCOMs at a price set by respective state commissions. This could lead to potential revenue shortages for these RE generators as well as put additional burden on DISCOM finances.
  - **Cross-subsidies**- Prolonged slump in power consumption by cross-subsidizing industrial and commercial consumers will create large revenue gap for DISCOMs, leading to potential spike in retail tariff.
  - **Subsidies**- Capacity of state government to fund subsidies is likely to get affected as capital is diverted for combating with COVID-19. Revenue from state departments is also likely to get impacted due to lower/delayed revenue/tax collection at their end.
  - **Central assistance**- Central assistance to the power sector, including assistance on further reforms, may get impacted due to diversion of funds towards public health, social schemes and economic stimulus to other critical sectors.

## 6. Investments and Capex

- **Increased project cost**- Based on estimates, PV module prices could increase by 10-20%<sup>6</sup> due to supply chain disruption. Incremental Interest During Construction due to project delay and increased procurement cost will increase the total project cost. This could impact the tariffs, debt service obligations and overall project viability.
- **Power offtake from new projects**- Lower spot prices, revenue shortage (utilities) and increased project cost could impact the offtake of power by DISCOMs from new projects. This may lead to fresh stranded assets and/or further contractual standoffs between developer and utilities.
- **Financing**: Financial institutions are likely to face huge stress due to prolonged lockdown and the induced long-term impact on economy. This may reduce risk appetite as well as staunch capital flows into the sector. This will also impact ability to raise public debt or equity through IPOs, etc. with the

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<sup>4</sup> <https://praapti.in/>

<sup>5</sup> As on December 2019; Source: Mercom India

<sup>6</sup> <https://www.power-technology.com/comment/covid-19-power-sector-lockdown-countries/>

global markets already reeling under financial stress. Availability of capital for CAPEX and working capital loans could also diminish.

- **Clean energy transition delay**- Distress in financial institutions (due to overall potential economic slowdown), excess power availability in market and supply chain disruption is likely to hit RE projects significantly. This could slow down the pace of RE capacity addition.



## C. Global Response by Governments and Power Utilities

Power sector functioning and uninterrupted electricity supply is critical for all countries, more so to support the efforts in combating the global pandemic. Therefore, governments and regulatory bodies across the world are responding to the crisis with various policies and measures. At the same time utilities are taking proactive actions to mitigate their risks and maintain business continuity. Some of these policy responses and tactical actions include:

S. No.	Area of Intervention	Entity	Intervention Details
1.	Power System Stability	<ul style="list-style-type: none"> <li>New York Power Authority [Public Utility Genco]</li> </ul>	<ul style="list-style-type: none"> <li>Early formation of an internal task force to ensure employee and public safety.</li> <li>Establishing an incident command structure.</li> <li>Sanitation of control rooms and regular health check-up of control room staff.</li> </ul>
2.	Power System Stability	<ul style="list-style-type: none"> <li>National Grid [North-eastern USA, UK Utility]</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on regular workforce from entering (emergency response critical) control rooms.</li> </ul>
3.	Power System Stability	<ul style="list-style-type: none"> <li>PJM Interconnections [RTO, USA]</li> </ul>	<ul style="list-style-type: none"> <li>Activation of 'Pandemic Response Plan'                             <ul style="list-style-type: none"> <li>Non-essential (80%) staff working remotely</li> <li>Back-up control centre employed, and control room staff divided among the two control rooms.</li> </ul> </li> </ul>
4.	Power System Stability	<ul style="list-style-type: none"> <li>Nuclear Regulatory Commission, [USA]</li> </ul>	<ul style="list-style-type: none"> <li>Scheduled mission-critical inspections for materials licenses and research and test reactors to continue.</li> </ul>
5.	Power System Stability	<ul style="list-style-type: none"> <li>State of Maryland</li> </ul>	<ul style="list-style-type: none"> <li>Governor orders prohibiting termination of services to residential consumers and collection of late fees.</li> </ul>
6.	Power System Stability	<ul style="list-style-type: none"> <li>California Public Utilities Commission</li> </ul>	<ul style="list-style-type: none"> <li>Directive to utilities to justify scheduled outages for next 15 days, including critical nature of interruption, dates, length of outage, location, number of customers affected, means by which consumers are notified, impact on wildfire mitigation.</li> </ul>
7.	Stakeholder information and protection	<ul style="list-style-type: none"> <li>Multiple Utilities in G, T and D operations</li> <li>G/o UK</li> </ul>	<ul style="list-style-type: none"> <li>Clear and proactive communication to consumers on continuing and suspended services including future action plans.</li> <li>Advisory to consumers against proliferating utility scams during the outbreak.</li> </ul>
8.	Business Continuity	<ul style="list-style-type: none"> <li>Federal Energy Regulatory Commission, USA</li> </ul>	<ul style="list-style-type: none"> <li>Assurance to bulk electricity system operator for accepting impacts of the COVID-19 outbreak as an acceptable basis for non-compliance with obtaining and maintaining personnel certification, in addition to various periodic actions.</li> <li>Postponement of regulatory filing deadlines by at two months.</li> <li>Dedicated Point of Contact with discretionary powers for COVID-related issues.</li> <li>Postponement of audits, certifications and other on-site activities by regional entities.</li> </ul>
9.	Business Continuity	<ul style="list-style-type: none"> <li>National Grid [North-eastern USA, UK]</li> <li>NIE Network [Northern Ireland]</li> </ul>	<ul style="list-style-type: none"> <li>Continuation of critical services including maintenance, power outage response and customer service representatives.</li> <li>Dedicated consumer helpline numbers.</li> </ul>

S. No.	Area of Intervention	Entity	Intervention Details
10.	Business Continuity	<ul style="list-style-type: none"> <li>• National Grid [North-eastern USA, UK]</li> <li>• Tucson Electric Company [South Arizona Utility, USA]</li> </ul>	<ul style="list-style-type: none"> <li>• Suspension of physical collection centres and collection related services including dis-connection.</li> <li>• Suspension of late fees.</li> <li>• Extension of payment extensions, enrolment in short-term assistance and bill discount programs to consumers.</li> <li>• Option made available to consumers to switch between time-of-use or demand-based pricing plan to basic plans.</li> </ul>
11.	Business Continuity	<ul style="list-style-type: none"> <li>• National Grid [North-eastern USA, UK]</li> <li>• NIE Network [Northern Ireland]</li> </ul>	<ul style="list-style-type: none"> <li>• Suspension of non-essential planned maintenance and services including meter reading and meter changes<sup>7</sup>.</li> <li>• Continuation of emergency meter replacement.</li> <li>• Extension of provisional bills for consumers having applied for meter change.</li> <li>• Provision for consumer self-billing.</li> </ul>
12.	Business Continuity	<ul style="list-style-type: none"> <li>• National Grid [North-eastern USA, UK]</li> </ul>	<ul style="list-style-type: none"> <li>• Suspension of energy efficiency and other services requiring visit to consumer premise.</li> </ul>
13.	Government Social and Monetary Support	<ul style="list-style-type: none"> <li>• Department of Business, Energy and Industrial Strategy. GoUK</li> </ul>	<ul style="list-style-type: none"> <li>• Agreement with all domestic suppliers of the UK. Agreement mandates: <ul style="list-style-type: none"> <li>○ Extension of additional support to customers at risk including customers in Priority Service Register<sup>8</sup>, Pre-payment customers and those with health conditions.</li> <li>○ Support to financially impacted customers through means that include pausing debt repayment and bill payments; consumer referral to third party debt advisors and suspension of credit meter disconnections.</li> <li>○ Support to prepayment meter customers impacted by COVID-19 to stay on supply through multiple interventions (credit extension for consumer or a nominated 3<sup>rd</sup> party; switching smart prepayment meter to credit mode; promotion of online payment channels; and advising self-isolated consumers).</li> <li>○ Proactive communication to consumers.</li> </ul> </li> </ul>
14.	Government Social and Monetary Support	<ul style="list-style-type: none"> <li>• Federal Government of Australia</li> </ul>	<ul style="list-style-type: none"> <li>• Extension of hardship policies (meant for consumers with low paying capacity and includes bill discounts, etc.) to consumers impacted by COVID-19.</li> </ul>
15.	Government Social and Monetary Support	<ul style="list-style-type: none"> <li>• Ministry of Energy &amp; Natural Resources, G/o Malaysia</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of discount on electricity bill for a period of six months ending September 2020. <ul style="list-style-type: none"> <li>○ @ 15% for six identified business sectors- hotel operators; travel and tourism agencies; shopping complexes; convention centres; theme parks; and local airlines offices.</li> <li>○ @ 2% for Domestic, Commercial (apart from above), Industrial and Agricultural categories.</li> </ul> </li> </ul>
16.	Government Social and Monetary Support	<ul style="list-style-type: none"> <li>• Queensland, Australia</li> <li>• Western Australia</li> </ul>	<ul style="list-style-type: none"> <li>• A \$4 billion stimulus package for economy, which includes \$200 million for subsidising utility bills.</li> </ul>

<sup>7</sup> Meter changes are required in cases of service provider change and Smart Meter installation drives

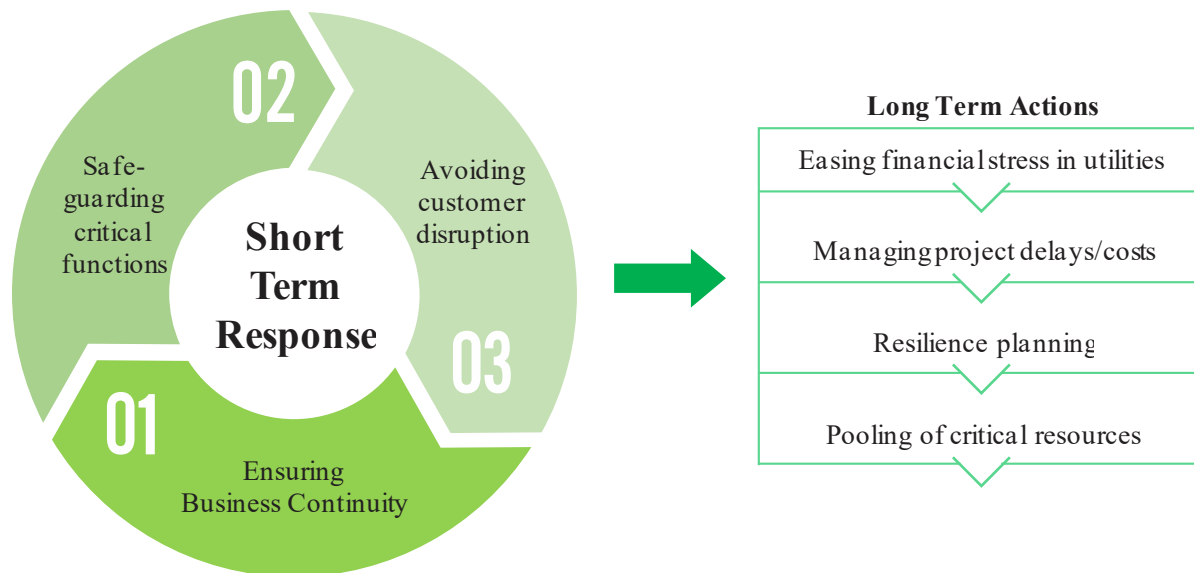
<sup>8</sup> Utility consumer record including consumers of who are of pensionable age, have children under 5, or a disability or long-term medical condition



S. No.	Area of Intervention	Entity	Intervention Details
			<ul style="list-style-type: none"> <li>Stimulus package (by Western Australian government) that intends to freeze cost increase for electricity bills.</li> </ul>
17.	Government Social and Monetary Support	<ul style="list-style-type: none"> <li>Malaysia</li> </ul>	<ul style="list-style-type: none"> <li>\$4.8 billion stimulus package includes \$33 million for maintenance of alternative electricity and water supply in rural areas.</li> </ul>
18.	Government Social and Monetary Support	<ul style="list-style-type: none"> <li>MNRE, India</li> </ul>	<ul style="list-style-type: none"> <li>Direction to all RE implementing agencies to treat COVID-19 related supply chain disruption as force majeure and grant time extension for projects.</li> </ul>
19.	Limiting outbreak	<ul style="list-style-type: none"> <li>Multiple Utilities in G, T and D operations</li> <li>National Grid [North-eastern USA, UK]</li> <li>FERC, USA</li> <li>Nuclear Regulatory Commission, USA</li> </ul>	<ul style="list-style-type: none"> <li>Cancellation of large meetings; limiting/ceasing external meeting attendance, external visitors to premises, international travels and inter-facility travels.</li> <li>Remote work capabilities for non-essential staff and closing visitors' centres.</li> <li>Precautionary measures mandatory for employees before entering a customer's premise to limit exposure.</li> </ul>
20.	Corporate Social Responsibility	<ul style="list-style-type: none"> <li>SP Group, G/o Singapore</li> </ul>	<ul style="list-style-type: none"> <li>A 5% voluntary reduction in director's fee.</li> <li>Senior management (Vice President and above) has accepted reduced performance bonuses (8-15% reduction in annual salaries).</li> <li>One-time donation of SD 1500/- to ~400 frontline offices to recognise and encourage their ongoing efforts during the outbreak.</li> </ul>

## D. Recommendations

On the whole, the key focus should be on – Response (during the emergency conditions and beyond), Recovery (post-Covid), and Resilience (in the long-term). From a specific company, and/or a utility perspective, a more data driven and analytics approach that covers the impact on 4Cs – (i) Cash; (ii) Customer; (iii) Costs, and (iv) Capital will be critical to assess. All the above will have short, medium and long-term implication for the utilities, in terms of business continuity, customer management, managing cash flows, implementing new investments, employee and work force management, etc. Factors like safety, security, resilience, etc. will come to fore in the longer term.



### 1. Business continuity

Reliable electricity supply is critical for enabling other essential goods and services. Thus, it is imperative to ensure the continuity of core business functions across the entire electricity value chain (generation, transmission, distribution and load dispatch) to ensure uninterrupted supply. Some of the imperatives in this regard are:

- **Prioritize core functions**
  - Assess the core functions, services and processes needed for uninterrupted operations and task relevant people for management and continuity of those functions.
  - Suspend all non-essential and risk prone functions. For instance, in the case of DISCOMs, the non-essential functions could be cash collections, non-essential repairs and maintenance, enforcement, procurement, construction, trainings, etc.
- **Review key challenges and bottlenecks**
  - Assess potential bottlenecks which could impede functioning and uninterrupted supply, including but not limited to working capital availability, revenue impact, manpower availability, spares and tools, breakdown prone network zones, etc.
  - Develop mitigation strategies.



- **Employee safety first**
  - Ensure employee safety. Staff engaged in critical operational areas such as control room, load dispatch, field operations and emergency response to faults/ outages etc. need to be safeguarded on priority, from infections at workplace, home and commute.
  - Direct other non-essential staff to work remotely but in an accessible manner, with due directions to maintain the recommended hygiene.
  - Identify and isolate the most vulnerable staff with pre-existing conditions.
  
- **Seamless command structure**
  - Create a nodal team to ensure rapid response and execution of commands. The nodal team, comprising senior officials from different functions, business units and geographic divisions, should report directly to senior management. They should keep the management updated on critical events, incidents and operational information.
  
- **Online working**
  - To the extent possible, relax the processes so that the teams can work online and get approvals, directions, etc. from senior management through emails or online filing systems.
  - Transition to online file management and decision making, considering immediate priority of social distancing as well as for improving operational efficiency in longer term.
  
- **Risk mitigation**
  - Safeguard utility operations and consumers from unforeseen threats such as cyber-attacks and scams. Review, minimize and mitigate threats. For instance, one common way to mitigate threats is by proactive communication to staff and consumers to avoid any pitfalls, like phishing scams.
  - Use Virtual Private Network for remote access to utility database and online tools. These steps need to be taken depending on the vulnerabilities of the respective organization/utility.
  
- **Close tracking and monitoring**
  - Frequently track the financial, operational and staff health-related indicators, for quick decision making and stakeholder management (such as regulators, government authorities and public).
  
- **Revenue and cash flow**
  - Improve online mechanisms and remote collection efforts to enhance revenue collection (in the absence of functioning cash collection centers during crisis).
  - Inform customers about digital options and sensitize them to pay online to minimize impact on cash flow.
  - For large consumers used to paying bills through cheques/ drafts, the payments could be converted into installments.
  - Defer all non-essential expenditures to conserve cash.
  
- **Metering and Billing (DISCOMs)**

- Wherever smart metering/AMR is unavailable, billing cycle could be temporarily shifted to bimonthly and tactical actions be taken such as self-reading and/or average billing (based on historic trends) to avoid disruption of commercial process to the extent possible.
  - In line with global practices, metering could be deferred in high risk areas to avoid the spread of COVID-19.
- **Regulatory continuity**
    - Tariffs determination process has been deferred by regulators across India. In case of prolonged lockdown, some processes could be completed with online information submission and hearings and provisional tariff could be announced in order to avoid revenue deficit/gaps for DISCOMs and avoid tariff shock for consumers.

## 2. Avoiding customer disruption

- **Rapid response team**
  - Keep a rapid response team ready. To support the efforts in combating COVID-19, rapid response to requests and resolution of issues is required for supporting other essential services. This necessitates 24x7 availability of dedicated response teams, channels for quick communication, availability of raw material and tools and access to relevant sites for repairs and maintenance.
- **Customer Helpline**
  - Improve the online and telephonic helpline support for registration of critical complaints such as no-supply.
- **Disconnection/Reconnection**
  - Utilities may decide to reconnect disconnected domestic consumers to provide safety and convenience during lockdown. Similarly, automatic disconnection of prepaid customers could be avoided on non-payment or mechanisms must be enabled for customers to pay online for continuous supply.
- **Late fee/non-payment**
  - Waive off the late fee for marginal consumers (for lockdown period) in consultation with regulator. This is a global practice.
- **Consumer awareness**
  - Create awareness amongst consumers by proactively providing them vital information and updates such as scheduled outages, prevention of scams, payment mechanisms, tips on energy conservation and steps taken by utility to provide uninterrupted supply, etc.

## 3. Safeguarding critical functions

- **Emergency shelter for system operators and control room staff**
  - Stock the essential food, medicine, sanitizers, costs, toiletries and other important materials.
  - Be prepared to quarantine control rooms if needed. For instance, in NYISO (New York being one of the worst affected areas), the technicians are being moved into trailers for self-quarantine.



- **Decision making**

- Take strict measures to avoid threat of infections and disruption in command structure.
- As a contingency measure, revise the processes to allow for an alternate authority to make critical decisions if required.

- **Load dispatch**

- Contingency measures to be taken by policymakers/load dispatchers/regulators to manage volatile demand such as reduction of technical minimum in states experiencing heavy demand drop, mobilization of additional spinning reserves, deployment of fast response gas and hydro capacity for balancing, protocol for managing overload situations in local grids, etc. Train staff engaged in such functions and processes and make them aware of the measures and revisions in standard operating procedures.<sup>9</sup>

- **Pooling of spares**

- Pool/share spare equipment and materials required for urgent maintenance/repairs with contiguous states.

## 4. Long term actions

- **Easing financial stress**

Prolonged lock down and slump in industrial/commercial demand could have exacerbated financial position of utilities because of reduced availability of subsidies and cross-subsidies and revenue slippage. Some of the proposed measures in this regard are:

- Announce stimulus packages/financial support for utility to continue services to customers (such as waiver of arrears and late fee particularly to marginal consumers and those affected worst by COVID-19. Such cases could be tracked and identified with support of relevant authorities and DISCOM database).
- Infuse capital in utilities to improve the liquidity<sup>10</sup>.
- Defer interest payment and moratorium on existing debt.
- Take policy initiatives (such as recognition of COVID-19 as force majeure) for pass through of tariffs due to delays, etc.
- Defer late fee by generators and relaxation of payment security mechanism (Letter of Credit) for DISCOMs struggling to clear the dues.

- **Managing project delays and financial impact**

Project delays and increased raw material cost is likely to increase total project cost, impact retail tariffs and compound existing stress for financial institutions. In long term it could impede investments. Thus, following steps are proposed to manage the potential challenges:

- Classify COVID-19 as force majeure for conventional projects, in line with action taken by MNRE for RE projects and to allow deferment of the project completion dates.

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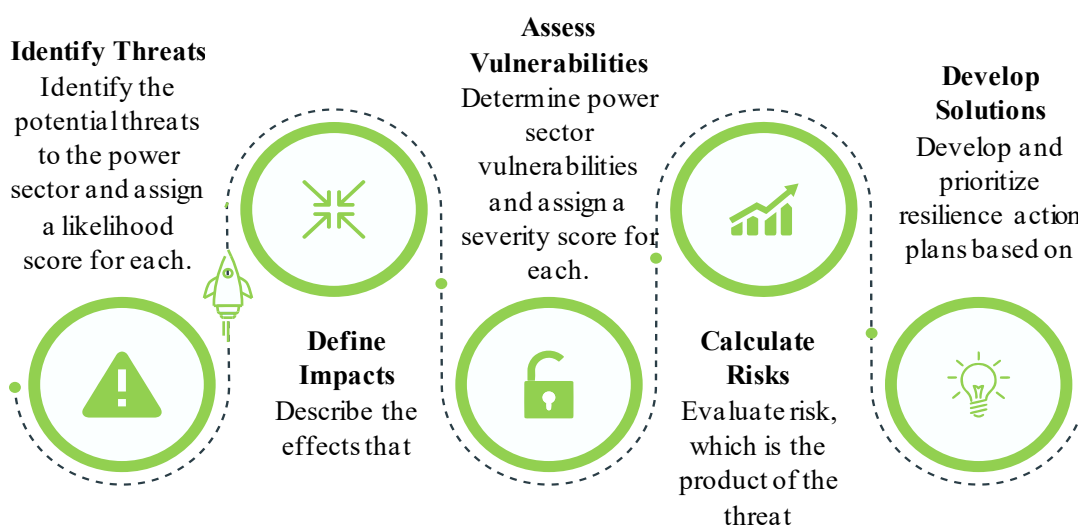
<sup>9</sup> CERC has relaxed compliance with DSM regulations and implementation of RTM to provide relief to utilities

<sup>10</sup> RBI has taken measures such as rate cuts, long-term repo operation (LTRO) and moratorium on term loans

- Increase moratorium in payments to projects under construction.
- Have additional headroom for classification of defaults and NPA.
- Relax taxes and duties for imported equipment/module affected by supply chain disruption.

▪ **Resilience, as a core attribute embedded in power sector planning and operation**

Resilience hinges on provision of secure, reliable and affordable electricity supply. The sector could face an array of threats—operational, technological, cyber and natural<sup>11</sup>. Policymakers as well as market players must plan and invest in improved resilience to ensure continuity of supply and sustainability of operations. Resilience entails anticipation of potential risks, readiness to mitigate, a ability to respond to unmitigated risks and finally adapt with emerging scenarios. Following illustration highlights a typical process of resilience planning. Some of the areas which could be firmed up are operational protocols, stress testing of new investments, prioritization frameworks, disaster recovery and response, outage management, emergency response, hotline filed gangs, cybersecurity, etc.



*Source: Resilient Energy Platform, NREL*

▪ **Managing power centric staff**

- Create a resource pool of critical staff engaged in core functions that can be managed by agencies such as CEA to meet the requirement of affected utilities, when needed. This will ensure that the critical functions of utilities and system operators are not compromised due to lockdown, emergencies, etc.

▪ **Managing raw material pool**

- Pool critical equipment, repair material and tools and make it available to affected utilities during emergencies.

<sup>11</sup> Even though the probability of Covid-19 event is extremely low, the scale of disruption is so massive that it necessitates resilience planning to manage and mitigate the impact of such an event in future, and utilities must be prepared for that.



## About the USAID SPARC Program

USAID launched the “Smart Power for Advancing Reliability and Connectivity (SPARC)” program in close collaboration with the Ministry of Power, Government of India in 2018. SPARC is a three-year initiative with the objective of supporting the transformation of operational and financial performance of electricity distribution utilities. The implementing partner of the USAID SPARC Program is KPMG Advisory Services Pvt. Ltd.

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