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Lessons for Electric Utilities from COVID-19 Responses in Emerging Markets

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The COVID-19 pandemic and the resulting economic shutdown have severely depressed electricity demand across the globe, with acute consequences for the revenues and financial health of utilities, as well as smaller providers of utility services and off-grid companies. In many places, utility service providers also must manage the inability of consumers to pay for their services. Government support has been forthcoming, but utilities need to work closely with policymakers to ensure that programs are carefully designed in order to maintain ongoing system reforms, competitiveness, and affordability, and avoid long-lasting market disruptions. These support measures should avoid redundancy among sectors and ensure that resources are efficiently allocated and that welfare improvements are fairly distributed across the country in a sustainable manner. Investors must also understand changes to utilities' finances and should work to support further reforms.

COVID-19 Impacts on Revenues

Electric utilities face significant revenue loss because of the COVID-19 economic crisis. Global electricity demand is expected to contract by 5 percent in 2020, the largest decline since the Great Depression.[1] The lockdown measures in response to the crisis have significantly reduced demand for electricity in the commercial and industrial sectors. By contrast, residential demand increased because people were spending more time and undertaking additional activities at home, such as teleworking. After the lockdown eased, electricity demand started to rebound in many countries, beginning in July 2020. For example, the decrease in electricity demand in China in February 2020 compared to February 2019 was 10 percent, and after the ease of lockdown, demand in May 2020 is 1 percent below the level reached last year during the same month (weather corrected). In South Africa, reduced demand during a three-week lockdown that began on March 26 is estimated to result in revenue loss of R 4 billion (US$240 million) for an electric utility.

The net effect of the pandemic on demand varies from community to community. For example, in India, national peak power demand declined by 33 percent from February to April 2020 due to the factory and office closures in the commercial and industrial sectors, which account for over 50 percent of India's total electricity consumption.[2] The

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increased domestic demand failed to offset the decline in the overall demand for electricity. The demand for electricity in India is expected to be 7 to 17 percent lower by 2025 due to the COVID-19 economic shock, compared to a scenario without the shock.[3] Colombia, where residential consumption represents a large proportion of demand, witnessed an increase in consumption, balancing the decline in industrial demand.

Even countries without domestic lockdowns, such as some countries in Sub-Saharan Africa (SSA), are indirectly impacted. Lockdown measures outside their countries and border controls have led to large drops in trade and/or tourism-related sectors that require electricity, and/or remittances that depress domestic purchasing power.

Many countries suspended meter-reading and physical delivery of bills during lockdown. For example, as a result of the lockdown in Nepal since March 25, 2020, the electricity bill collection rate dropped to less than 10 percent from the average around 95 percent. A vertically integrated public electric utility in Nepal tried to increase consumption with a 20 percent price discount for monthly consumption below 150 units for March–April 2020, which would be a loss of NPR 500 million (US$4 million). Yet, still less than NPR 10 billion (US$83.5 million) has been collected over the last cycle compared to average monthly collections of NPR 60 billion (US$501 million) as of June 2020.[4] Billing based on average consumption of the previous months could be a sizable underestimate due to seasonal consumption variations. To overcome this challenge, the Indian state of Telangana is billing consumers on the consumption of the same month in the previous year. For unmetered customers, the volume of electricity consumption used to determine their bills can be based in designing the tariff relief.

Utilities' revenues were also affected by government measures allowing for non- or reduced-payments by consumers, payment deferrals, and prohibiting disconnections (Figures 1 and 2). Deferrals have obvious advantages over payment waivers since payments will take place later. In addition, customers who can pay or mistrust the utilities' handling of deferred payments will continue to pay on time (for example, in Madagascar).

Off-grid companies and small utilities risk higher revenue losses. The off-grid power industry consists of relatively small start-ups and small and medium enterprises, and serves mostly low-income customers who may delay or default on their payments. For example, lacking other sources of revenues, 67 to 75 percent of surveyed mini- and off-grid companies have only two months or less of operating expenses available, which underlines the urgent need for bridge financing.[5] In Africa, including Kenya, Senegal, and elsewhere, governments have allowed off-grid companies to remain open as essential services.[6]

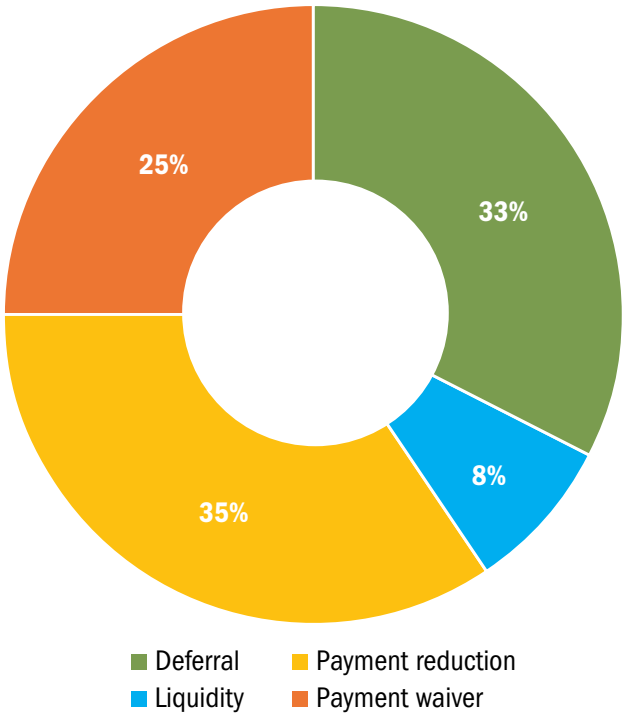

FIGURE 1 Composition of Measures in 67 Sample Countries

Source: IMF, World Bank Group. Note: Utilities include electricity (87 percent), water (57 percent), gas (10 percent), telecommunication (9 percent), sanitation (4 percent) and cable television (4 percent). The data were collected from the IMF Policy Response to COVID-19 tracker and WBG documents, which are verified and updated by the CCE team with further web-searches, e.g., national web-news, government and utilities. During the verification and updating process, more countries' data were found and added. External documents shared by WB are also included. Thus, since the data were based on availability, the results are not complete statistical survey results. The categories are defined as (i) deferral: full or part of tariff/charges, (ii) payment reduction: tariff/charges, (iii) waiver: full tariff/charges and (iv) liquidity: direct/indirect, e.g., suspended taxes to allow operations, liquidity loans/grants, partly financing operations, and equity.

COVID-19 Impacts on Costs

Many utilities' unit costs increased due to extra costs (e.g., health protection for workers, power purchase obligation, etc.) and large fixed costs. Declines in energy sales to profitable industrial and commercial consumers, which can be as much as 70 percent of electric utilities' revenues (e.g., in Sub-Saharan Africa), can create a liquidity crunch for utilities with predominantly fixed costs. The loss is severe where those consumers cross-subsidize other consumer categories, such as in the case of India and Nepal in the power sector. Fixed charges for electric utilities' services

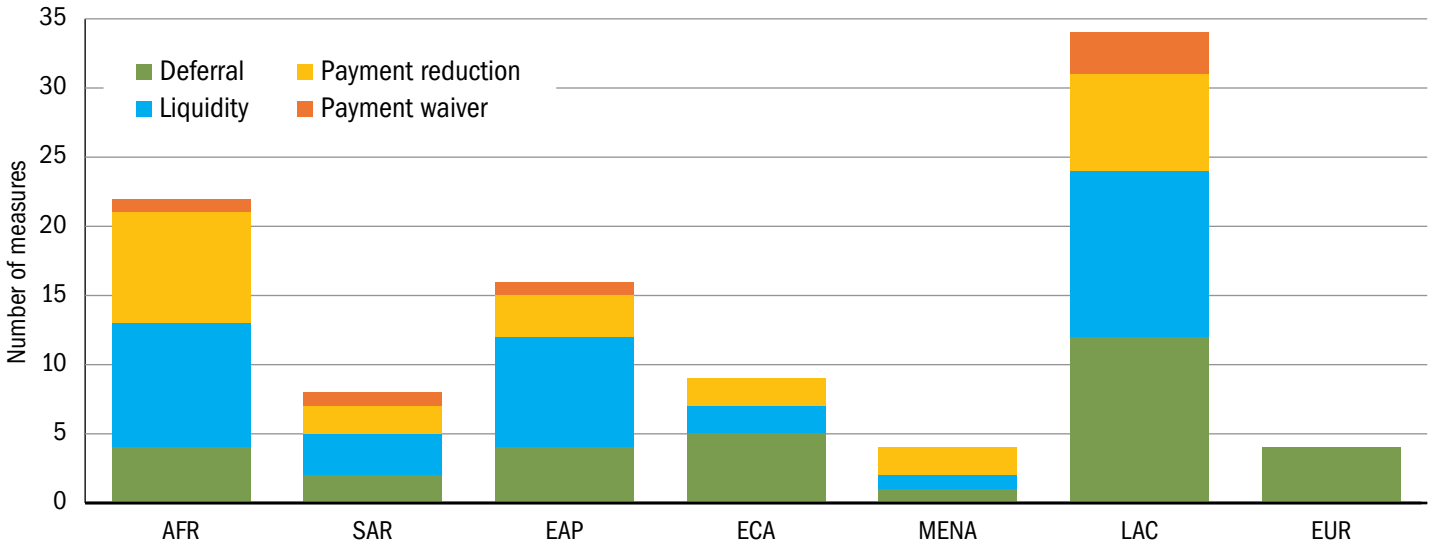

FIGURE 2 Number of Relief Measures in Sample 67 Countries by Region

Source: IMF, World Bank Group. Note: Regions according to World Bank Group regional classification: AFR = Sub-Saharan Africa; SAR - South Asia; EAP = East Asia & Pacific; ECA = Europe & Central Asia; MENA = Middle East & North Africa; LAC = Latin America & Caribbean; and EUR = Western Europe (not part of ECA).

have been waived in some countries, such as Mozambique and some states in India. In another example, in March 2020, a South African utility sent force majeure notices to independent wind farms on energy curtailment, while the utility would compensate them for their lost production. In contrast, low electricity demand during the lockdown and increasing wind and solar capacities have collapsed U.K. power prices this year and curtailment costs have soared. A grid company's electricity system operator in the U.K. expects to spend another £500 million (US$590 million) to balance the grid this summer, mostly paying wind farms to stop generating. In total, the grid company expects to spend £826 million (US$980 million) to balance the grid in the period May to August 2020.

In India, the 'Must Run' status of renewable energy power generators remains unchanged, obliging distribution companies (DISCOMs) to pay for the unconsumed power. Despite a drop in input (fuel) prices, average cost of supply (ACoS) will increase because DISCOMs have long-term power purchase agreements (PPAs) with generation companies, which usually do not allow pass-through of fuel cost reductions, and under which they must pay capacity charges (linked to plant availability for thermal and large hydro plants and "must run" status for nuclear and renewable energy). Preliminary analysis indicates ACoS will increase by 13.5 percent.[7] In other countries such as Nepal, the ACoS of the electric utility without reforms is projected to increase much more (by 72 percent) from NPR 12/kWh (US$0.10) per unit in FY2020 to NPR 20.7/kWh (US$0.175) per unit in FY2024.[8]

Government financing to targeted consumer tariff relief is not likely to cover the liquidity shortfall of many utilities due to large fixed costs. For example, a large-scale cash transfer program for basic electricity for poor households in Peru covers only 11 percent of total demand and would not help liquidity shortfalls. Often, public utilities with limited access to commercial financing sources to bridge the liquidity crisis are the most affected and require different approaches such as guarantee support measures.

On the other hand, cancellation of power purchases is a financial loss to independent power producers (IPPs). In Canada, a public utility has cancelled $20 million (whether the currency was in US dollars or Canadian dollars was not available) worth of electricity purchases from six private run-of-river hydro power facilities, citing the pandemic as a force majeure event. In Pakistan, some private wind power producers (WPPs) have raised concerns with the governments as their power generation has been curtailed, which results in irreparable loss to WPPs (under a single tariff as opposed to a tariff bifurcated between capacity and energy payments) and which is against the Energy Purchase Agreements, the Renewable Energy Policy, the Power Acquisition Request, and the tariff determination.[9] In SSA, 40 percent of power is supplied by IPPs who may risk payment by utilities. Before the crisis, 44 percent of SSA utilities met operation and maintenance costs and debt services, but with the crisis only 6 percent are expected to do so (assuming 15 percent demand drop and 10 percent collection reduction).[10]

Delays in power generation projects due to lockdown have large costs for governments, the private sector, and society. For example, in Nepal, completion of 24 hydropower projects with a net 1.2GW is expected to be pushed back at least two years.[11] The losses from delays in new projects in the past six months alone will amount to NPR 13 billion (US$109 million), and existing hydropower plants have not been operating due to the lack of maintenance, spare parts, and transport of materials. Interests for loan repayment must be paid even as work has stopped. Private sector projects have borrowed NPR 750 billion (US$6.3 billion), more than double the banking sector, for ongoing construction of plants up to 3GW.[12]

There is commitment from banks for another NPR 300 billion (US$2.5 billion) worth of hydro projects in the pipeline. These costs of construction would rise by an additional 15 to 20 percent, likely resulting in no profit margin for private producers. The private sector has been demanding (i) compensation from the government for project delays, (ii) a two-year deadline extension for projects, and (iii) a 1 percent customs tariff on construction material instead of the current 5 percent. Looking at other country examples, in Cameroon, all parties declared force majeure in a hydropower project for construction. In Ghana, a gas project with a guarantee support by an international finance institution will face high risks of nonpayment as it drew on the letter of credit. Chile ruled out new tenders due to electricity demand estimated to fall 5.4 percent in 2020.[13]

COVID-19 Net Impacts

Due to the ongoing pandemic, estimates are uncertain, but potentially significant. For example, the Nepal electricity sector is likely to experience an additional financial viability gap of NPR 137 billion (US$1.1 billion, no information available about nominal or real prices and discount rate) without tariff increases in the next 10 years. The loss of DISCOMs in India is expected to increase to Rs 50,000 crore (US$6.7 billion) in FY2021, or up by 67 percent from FY2020 (nominal prices).[14] A South African electric utility's debt was at R 450 billion (US$25 billion), equivalent to 9 percent of 2019 GDP in nominal prices, which investors and ratings agencies identified as the government's biggest contingent liability. As a result of COVID-19 impacts, on May 2020 the South African government announced its allocation of R 33 billion (US$2 billion) for the utility in 2020/21 for purchase of equity.

Similarly, very few estimates are available of net impacts on the economy that are attributable to the electricity sector but could be substantial. In India, the waning financial performance of the electricity sector will have knock-on effects in the financial sector, which already carries a disproportionately large share of power sector nonperforming assets (for example, assets representing 22 percent of India's installed power-generation capacity were reported to have burdened Indian banks as nonperforming assets in 2018).[15]

Mitigation Measures to Protect Financial Viability of Utilities

Within an available data sample of 67 countries, only eight countries were found to have direct and indirect government liquidity support to utilities (Figures 1 and 2). Those include (i) performance linked liquidity loans in India, (ii) use of reserve and investments funds to support liquidity in Peru, (iii) liquidity including loans in Brazil, (vi) liquidity in Pakistan, (v) government financing of chlorine procurement for safe water in Mexico, (vi) government purchase of equity of a utility in South Africa to relieve solvency challenges of the utility and to indirectly improve the liquidity position of the utility, (vii) a stabilization fund on conditions to retain the workforce in South Korea, and (viii) tax suspension on potabilization products for water treatment in Colombia. Twenty-nine countries (43 percent) of the sample involved government budget support for the utilities, but they are mostly focused on the consumer tariff measures.

COVID-19 provided an opportunity for some utilities to conduct much-needed structural reforms. India used the crisis as an opportunity to accelerate power sector reforms, which, among other things, include provision of loans linked with performance and privatization. A South African electric utility is to dispose of some of non-core assets to raise capital and reduce its mounting debt. The utility developed an aggressive turnaround plan for one of its subsidiaries that incurred millions of rand in debt by deviating from procurement guidelines. Cote d'Ivoire has recently completed a debt restructuring of a public electric utility company and is ensuring good-practice standards with well-targeted tariff measures. The country is also updating the power sector plan and the least-cost power development plan and recalculating revenue requirements for the sector. The utility's good practices will help sustain the momentum achieved before the COVID-19 outbreak. Good planning with regular updates and execution are limited in many utilities in emerging market economies. In the past, opportunistic sector reforms were overtaken by events (for example, a power crisis, the end of civil war, etc.), which lacked a proper roadmap incorporating the limited capacity of the client countries and were unsustainable. The Nepali government has been

working to improve the financial viability and governance of the electricity sector with a series of programmatic development policy support by an international finance institution and a second development policy financing, which incorporated the COVID-19 impacts, was approved on June 2, 2020. COVID-19 and its consequences have also provided the impetus for reform, for example, active dialogues on electricity sector reform in Pakistan.

Measures that incur extra costs could contribute to sustainable long-term benefits. For example, due to the containment measures, demand-side management (DSM) measures are sometimes being postponed (smart meter installation in Brazil, for example). But in South Africa, the utility is encouraging DSM as it expects a rebound of electricity demand after the lockdown. A DSM campaign five years ago saved 350 MW.

Recommendations for Utilities and Investors

The following recommendations are based on broader reviews of the impacts of COVID-19 on utilities, some of which were highlighted above. Many of these recommendations were fundamentals of the electricity sector and not specific to COVID-19, which underlines the utmost importance of ensuring such fundamentals.

During the crisis, utilities should work with governments to make sure that support programs avoid redundancies and ensure that welfare improvements are fairly distributed.

- **Electric utilities should seek balanced government support. Targeted support for consumers without matching support for utilities' liquidity gaps may not always help** utilities/IPPs facing plunging energy demand, given their relatively large fixed costs. Such liquidity constraints could be dire for many small off-grid companies that serve rural and/or low-income consumers. Unbalanced support will impair the sector's viability.
- **Electric utilities should avoid potentially redundant support programs.** For example, in a case where the government has already been supporting the liquidity and working capital of small businesses, utilities should avoid supporting these same businesses with payment relief. Utilities should align their support programs with other government measure to optimize resource allocations.
- **Cross-subsidization by commercial and industrial customers for residential (and in some cases also agricultural) consumers should be carefully reassessed.** Cross-subsidization among and/or within customer categories has been a long-standing practice for many utilities, regardless of COVID-19. However, since these subsidizing commercial and industrial energy consumers at higher tariff have also reduced their demand during the lockdown, utilities' revenue losses could be even greater. Higher tariffs paid by industrial and commercial consumers could increase the prices of goods and services they produce, which will reduce their competitiveness and could ultimately decrease affordability of those goods and services for the poor. There are cases where residential consumers cross-subsidize industrial and/or commercial consumers. However, in the context of COVID-19, it was widely reported that the utilities' financials were negatively affected when industrial and/or commercial consumers subsidize residential consumers.
- **Electric utilities should ensure that consumers understand that COVID-19-related tariff relief will be temporary, with a clear exit strategy.** As a norm, utilities should aim to design, implement, and closely monitor relief measures in a targeted manner with clear eligibility criteria to ensure that the most vulnerable benefit while minimizing costs overall.
- **Electric utilities should seek government support tailored to their situations (e.g., macroeconomic, governance, consumer profiles, costs of utility services, tariff structures, power purchase agreements, financial and operational performance of utilities, geography, climates, power generation technology mix, etc.).** Such support should be linked to performance, based on evidence, and as part of a reform roadmap supported by strong monitoring and evaluation systems (rather than opportunistic reforms) to efficiently use resources, improve performance, and ensure sustainability. The reform roadmap could include digitalization and system flexibility improvements as variable renewable energy integration advances, especially to deal with the curtailment of variable renewable energy. Reserve thermal generators could improve acceleration of start-time, start-stop cycles, and ramp capabilities[16] to be flexible to adapt to extreme load changes. Energy storage technologies could be used to move variable renewable energy to times when it is required and provide a stack of services to balance the grid. Demand response could provide an opportunity for consumers to play a significant role in the operation of the electric grid by reducing or shifting their electricity usage during peak periods in response to time-based rates or other forms of financial incentive. Use of a smart grid technology could be used to enable increases of prosumers.[17]
- **Electric utilities should fully understand the costs and benefits** of proposed support and reform measures in the

short, medium, and long terms, and their implications on net welfare and distributional impacts.

- **To be better prepared for future crises, electric utilities should aim to maintain cash reserves and consider purchasing insurance products that provide coverage for business interruptions.** Clear financing policies can provide guidance to respond to revenue shortfalls. While insurance may not address all challenges, policy can be accommodative in case of future disruptions. Regulatory and bond rating agencies should support utilities that seek to boost emergency reserve funds.

In many emerging market countries, it is even more important that an independent and technically capable regulatory authority be established and functioning. Such a regulatory authority could be consulted, and could review and approve the proposed measures that result in cost increases, financial costs, revenue deferral, revenue decline to ensure long term economic sustainability, and also manageable liquidity impact.

Investors should support the aforementioned reform roadmap, especially digitalization and system flexibility improvement, which will improve the resilience of the system and mitigate the financial loss of those investors from curtailments of the variable renewable energy.

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Please see the following additional reports and EM Compass Notes about responses to COVID-19 and about reaching unserved and underserved populations in emerging markets:

Leveraging Inclusive Businesses Models to Support the Base of the Pyramid during COVID-19 (Note 84, May 2020); *What COVID-19 Means for Digital Infrastructure in Emerging Markets* (Note 83, May 2020); *Artificial Intelligence in Agribusiness is Growing in Emerging Markets* (Note 82, May 2020); *Artificial Intelligence in the Power Sector* (Note 81, April 2020); *Accelerating Digital Connectivity Through Infrastructure Sharing* (Note 79, February 2020); *Creating Domestic Capital Markets in Developing Countries: Perspectives from Market Participants* (Note 77, January 2020); *Artificial Intelligence and 5G Mobile Technology Can Drive Investment Opportunities in Emerging Markets* (Note 76, December 2019); *Closing the SDG Financing Gap—Trends and Data* (Note 73, October 2019); *The Role of Artificial Intelligence in Supporting Development in Emerging Markets* (Note 69, July 2019).

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[16] Ramp capability of power generation indicates how flexible and quickly a power plant's power output is changing, either ramping up (increasing) or ramping down (decreasing), to accommodate large changes in net load, potentially leading to scarcity events and threatening system security.

[17] A prosumer is a person who consumes and produces a product. In this context, a prosumer is someone who both produces and consumes electricity.

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