Empowering Utilities for the Energy Transition
Executive Summary

The energy transition and universal access to electricity cannot be achieved without well-performing power utilities.

As the stewards of the world’s power grids, utilities will be at the heart of efforts to decarbonize electricity supply and electrify energy demand (referred to jointly in this paper as the “energy transition”). Utilities will need to significantly increase the share of renewable energy in their generation mixes, modernize networks to integrate these variable power sources into the grid, and manage the ever-more varied and complex power needs of industry, households, and transportation. In addition, utilities will need to be at the forefront of an accelerated push to provide electricity access to the nearly 700 million people who still lack it today. Meeting these demands while ensuring reliable and affordable electricity service will require well-performing, financially sustainable utilities that i) are able to access inexpensive long-term financing; ii) are viable off-takers for private power investors; iii) make efficient use of any public finance they receive; and iv) have the technological and managerial capacity to harness the opportunities created by an increasingly modern, distributed power system. Although no two countries will be impacted in exactly the same way, these changes will transform power sectors in low-income and middle-income countries (LICs and MICs).

However, utilities around the world are already struggling to deliver affordable and reliable power. A new World Bank database that tracks the financial and operational performance of more than 180 utilities in over 90 countries shows that fewer than 40 percent of utilities are able to collect enough revenue to meet their annual operating and debt service costs—the bare minimum for financial sustainability. This situation is especially bleak for utilities in LICs and lower-middle-income countries (LMICs), where high costs of supply, low tariffs, operational inefficiency, and poor sector planning and procurement often create persistent cycles of underperformance. Technical and commercial losses in power distribution hover between 12 and 15 percent for the median utility in LICs and LMICs, where over half of utilities also have outstanding customer payments equivalent to more than five months of revenue. Utilities that are unable to recover their costs have to make up the shortfall in other ways. Often this results in underinvestment in critical maintenance, upgrades, and system expansion, and increased dependence on government subsidies. Utilities in LICs and LMICs are more likely to rely on such subsidies, adding fiscal burdens to the governments that can least afford to pay them. The data paint a bleak picture and present a stark warning: many utilities are ill-equipped to fulfill their role in achieving the energy transition and universal access.

The energy transition and the push to universal access will create new challenges for utilities, further threatening their performance. For many utilities, achieving the energy transition and universal electricity access will require massive upfront capital investment.
For instance, suitable sites for renewable energy sources such as wind and solar are often far from cities, requiring longer transmission lines to deliver their power to demand centers. Modeling in this paper shows that decarbonizing a hypothetical utility’s power supply mix by 2050 could increase the required intensity of its transmission network by 30 percent. Much of this additional capital will need to come from the private sector, but many utilities in LICs and MICs have limited access to private financing and its costs are often prohibitively high. Though a reduced reliance on fossil fuel power can decrease a utility’s operating costs over time, these reductions take time to materialize and are often not sufficient to offset higher upfront capital costs. Furthermore, the shift toward greater capital intensity could make utilities more vulnerable to shocks, such as spikes in interest rates. Rising access and electrification of transport and industry will mean that some utilities will also have to contend with rapidly rising demand, which may exacerbate their existing liquidity challenges and make their networks more complex to manage. For other utilities, a growing number of customers using distributed energy resources (DERs) such as rooftop solar could make it more difficult to recover increasing capital costs.

The changing power sector landscape will also create new opportunities to improve utility performance, but utilities that already perform well will be best positioned to seize them. Many utilities, particularly in LICs, are highly exposed to fluctuations in the prices of fossil fuels, which can make costs even harder for utilities to manage. Substituting generation from liquid fossil fuels with renewable generation in line with least-cost planning can help create longer-term price stability for utilities and their customers. DERs and new business models can also create opportunities for proactive utilities to better manage power flows and expand their service offerings to customers. National and international commitments to decarbonization can create additional momentum to lower political barriers to power trade and regional integration, helping utilities reduce their costs and improve network resilience. However, these benefits will not materialize on their own. Attracting investment for new renewable energy sources and for transmission and trade infrastructure requires financially viable utilities that are credible contractual counterparties. To integrate new customer-facing technologies and business models, utilities need the necessary technical and managerial capabilities. At present, too many utilities in LICs and MICs are falling short.

Building sustainable utilities to navigate changing power sector landscapes will require concerted efforts from policymakers, regulators, development financiers, and utilities themselves.

Governments

Governments have a crucial role in lowering the costs to utilities of achieving the energy transition and reaching universal access. They need to create robust policy and legal frameworks that reduce private investors’ risk and develop new infrastructure based on least-cost planning and transparent procurement.
Governments
Governments can also minimize complexity in permitting, including for land use for renewable generation and transmission infrastructure. In power sectors that rely heavily on fossil fuels, it will fall to governments to manage sensitivities around phasing down fossil fuel generation and phasing out distortionary subsidies. Public policies and incentives focused on energy efficiency can help mitigate some of the impacts of rapidly growing demand.

Regulators
Regulators need to ensure that utilities are able to recover reasonable costs through tariffs, including the costs of achieving universal access and the energy transition. They will also need to adopt innovations in tariff design that efficiently and fairly allocate these additional costs between utilities and their customers. This includes adopting two-part tariffs that enable utilities to recover fixed and variable costs, which will become increasingly important as power sectors become more capital intensive and as more utility customers adopt DERs. Compensation for these grid-connected DERs must reflect the value they add to the system.

Utilities and Utility Managers
Utilities and utility managers need to translate sound policymaking and regulation into sustainable operation of their networks. This will require them to improve their service delivery, reduce their losses, improve their billing and payment collection, maintain and modernize their infrastructure, manage administrative and workforce costs, and invest in managerial systems and capacity. The opportunities presented by the changing power sector landscape will not materialize on their own but must be proactively sought out and developed by utilities. This requires professionally managed, commercially oriented utilities that are governed according to principles of efficiency, transparency, and accountability. To maintain trust and credibility with customers and financiers, utilities need to improve their public communication, including publishing financial statements and operational data in a timely manner.

Development Financiers
Even if governments, regulators, and utilities all play their part, achieving the energy transition and universal access will create incremental costs for some utilities. Modeling in this paper suggests that a typical utility would require a 1.2 percentage point decrease in its cost of capital to offset the incremental costs of decarbonizing its power supply. Development financiers play a key role in offsetting these costs to keep the energy transition and universal access affordable for LICs and MICs. They can scale up concessional capital that offers longer tenors or lower interest rates compared to commercial financing. And they can reduce private sector investment costs through concessional risk mitigation instruments. At the same time, development financiers need to ensure that any concessional financing is linked to progress by governments, regulators, and utilities in improving the performance of their power sectors. Figure 1 summarizes these actions.
The longer these efforts are delayed, the harder it will be for utilities to provide affordable, reliable, and sustainable electricity to their customers. Well-run, well-regulated utilities that operate in transparent, supportive policy environments will be best placed to mitigate the challenges and seize the opportunities presented by a rapidly transforming power sector landscape. These utilities will thrive as they provide clean, secure, and affordable electricity to meet the demands of a growing base of customers with increasingly sophisticated needs. They will also have better access to investment, and at a lower cost. By contrast, utilities that are not able to recover their costs, that operate in unpredictable political and regulatory environments that are subject to arbitrary interference, and that lack the necessary managerial and technical capabilities, will struggle to maintain affordable and reliable service. These utilities will not only see their performance deteriorate further but will jeopardize national and international targets for decarbonization and universal access. To date, the goals of the energy transition and universal access have received more attention than the importance of utilities in achieving them, especially in LICs and MICs. Filling this gap, this paper aims to serve as an urgent call to action for policymakers, regulators, utilities, and financiers.
The Critical Link
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Energy Sector Management Assistance Program