

## THE BOTTOM LINE

In conflict-ridden Mali, where 61 percent of the population still lack access to electricity, demand for electricity is outpacing supply, limiting the country's prospects for industrial and economic development. At the request of the Malian government, the World Bank launched a comprehensive assistance strategy to identify the causes of the financial difficulties of the electricity utility; devise a corporate and financial restructuring program; and provide targeted technical and financial support to address priority concerns. The actions have already borne fruit, improving the financial situation of the national utility. If all the issues identified are properly addressed, the utility will be able to reduce its reliance on government subsidies.



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# Electricity Utility Reform in Mali: Lessons from Operations

## What is at stake in the reform of Mali's electricity utility?

### Mali's future depends on wider access to affordable and reliable power

Mali is vulnerable to extreme weather, including high temperatures, floods, and drought. It is also fragile and beset by conflict and violence. Together these conditions represent a critical development challenge and a source of social and political instability. In this context, accessible and reliable utility services are not only essential to provide economic opportunities to the population but also to foster peace and stability. However, the ability of the government to use electricity service for these purposes is hampered the financial and operational difficulties faced by the national utility, Energie du Mali (EDM).

EDM generates, purchases, transmits, distributes, and sells electricity to customers connected to the country's main grid and to its diesel-powered mini-grids.<sup>1</sup> The utility's customer base has expanded by almost 50 percent since 2014, with demand growing about 10 percent per year, but supply has not kept up, increasing only 33 percent over the same period. The mismatch results in frequent load shedding and the use of costly rental power solutions at peak times. In 2017, approximately 10 million people—61 percent of the population—still lacked access to electricity.

Key impediments to EDM's performance include the high cost of generation (with the bulk of electricity supplied by expensive thermal generation plants and rented power generators), high losses, and below-cost retail tariffs that had not been adjusted in many

years. The government subsidizes the utility's operations, but the subsidies are insufficient to meet the utility's cash-flow needs or to cover operating losses. The government cannot raise the subsidies because its limited resources are needed to address other priorities, such as social protection and security concerns.

To reduce the electricity sector's reliance on public funds, the Malian authorities in 2017 asked the World Bank to prepare and execute a plan for a self-sustaining electricity sector. This brief reports on progress to date.

## What are the main challenges?

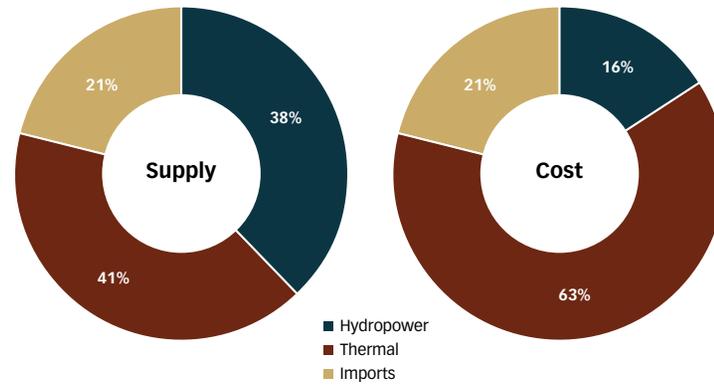
### High costs, stagnant revenues, and creeping insolvency are strangling the utility

Mali still relies heavily on expensive thermal power generation from EDM-owned plants and rented generation facilities. Over the years, both fuel consumption and cost have increased steadily as demand for electricity has grown, worsening the utility's position over time. In 2017, the share of thermal generation in the energy mix was 41 percent, with a unit cost averaging \$0.24 per kWh. Less-expensive hydropower (\$0.07 per kWh) and electricity imports from Côte d'Ivoire (\$0.11 per kWh) made up only 38 and 21 percent of the energy mix, respectively (figure 1). The considerable potential of solar technologies is not being exploited, despite the new competitiveness of solar power projects in the region, as witnessed by the \$0.042 per kWh tariff resulting from a 2017 solar auction in neighboring Senegal. Renewable energy and electricity imports are envisioned as ways to reduce the cost of energy while also ensuring the sustainability of electricity service delivery.

<sup>1</sup> The rest of the country is served by rural electrification operators through off-grid solutions and mini-grids, under the umbrella of AMADER, the rural electrification agency.

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**Figure 1.** The energy mix in Mali’s electricity sector in 2017, by source (thermal, hydro, imports)

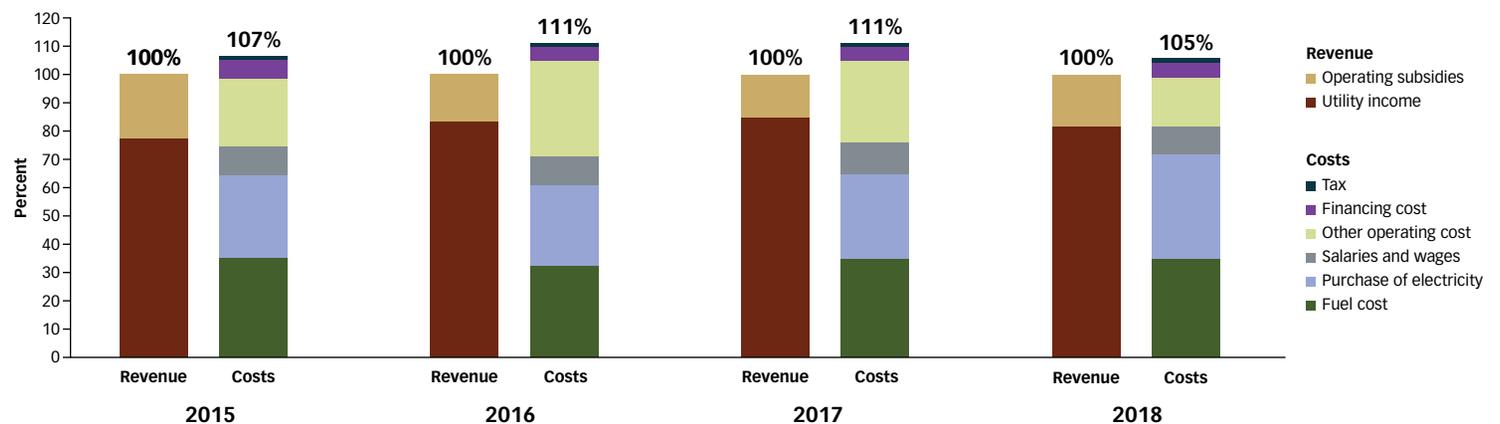


Source: Based on EDM Annual Report 2017.  
 Note: Imports shown are sourced from Côte d’Ivoire.

In the years leading up to the request for World Bank assistance, EDM was not generating enough revenue to operate as a viable business, with costs routinely exceeding revenues (figure 2). The average tariff of \$0.18 per kWh stood against an average cost of service of \$0.24 per kWh—a 30 percent average loss per unit of electricity supplied, not considering operating subsidies. On top of this, technical and commercial losses amounted to 19.5 percent of the energy supplied, the result of aging and overloaded transmission and distribution infrastructure, coupled with poor customer management. Arrearages from government entities and public sector customers were equivalent to 260 days of sales. Though tariffs had not been increased since 2004, there was no political support for raising them in the absence of a credible promise of improvements in service delivery and efficiency.

In order to continue providing electricity services, EDM was relying on bank loans to fill its cash shortfall. The situation had reached a point where EDM could no longer service its debt unless it contracted additional debt. In other words, it was insolvent. Payments to lenders and suppliers, including for electricity imports from neighboring countries, were made only after long delays.

**Figure 2.** EDM revenue and cost structure, 2015 to 2018



Source: Based on EDM annual reports.

Investment in the regional electricity system, combined with the expansion of solar PV generation and electricity storage systems, will facilitate a sustainable transition.

The approach exemplifies the wisdom of an African proverb: “If you want to go fast, go alone; if you want to go far, go together.”

## How did the Bank propose to address the challenges?

### In a first for West Africa, the Bank applied two types of financing in a combination that shows promise

The immediate priority was to achieve financial viability by improving EDM’s cash flow, increasing its revenues, reducing its expenses, and restructuring its debt. That would be followed by actions to improve the commercial, technical, and operational performance of the utility. The third priority was to reduce the cost of the electricity mix.

To promote rapid implementation of the priorities, the Malian authorities and the Bank agreed to combine two financing products.<sup>2</sup> A development policy financing (DPF) instrument was deployed to fund short-term reform actions, such as improving the utility’s cash flow and revenues, while an investment project financing (IPF) vehicle was designed to create enabling conditions for the sustainability of the reform actions. A key target of the IPF is to strengthen the transmission and distribution networks. The IPF includes disbursement-linked indicators (linked to medium-term reform actions).

The disbursement-linked indicators are used to monitor implementation of a revenue protection plan, improve fuel monitoring and storage, and increase the share of low-cost power imports and of renewable energy in the energy mix. This is the first time the two financing instruments have been combined and used with disbursement-linked indicators to improve a power sector in West Africa.

The strong engagement of the Malian authorities during the preparation of these operations led the government, in 2019, to settle the utility’s payment arrears and establish a prepayment mechanism for the government’s electricity consumption. The government also paid off EDM’s obligations to electricity and fuel suppliers, restructured its short-term debt to commercial banks using concessional funds, and increased low-cost electricity imports from Côte d’Ivoire from 40 MW to 100 MW.

These actions relieved the pressure on EDM’s cash flow and contributed to the achievement of the objectives of the DPF. Figure 3

<sup>2</sup> The DPF is the Development Policy Financing for Sustainable Energy and Improved Service Delivery for Increased Stability (P167547) approved by the Bank’s Board in December 2019. The program document is available at <http://documents.worldbank.org/curated/en/908101576465260674/Mali-Sustainable-Energy-and-Improved-Service-Delivery-for-Increased-Stability-Development-Policy-Financing>. The IPF is the Mali Electricity Sector Improvement Project (P166796) approved by the Bank’s Board in June 2019. The project appraisal document is available at <http://documents.worldbank.org/curated/en/395041561428121687/Mali-Electricity-Sector-Improvement-Project>.

illustrates the linkages between the activities contemplated under the DPF and the IPF, and the objectives of the government.

The DPF and the IPF complement several ongoing regional projects:

- The Regional Electricity Access Project (P164044) aims to increase electricity grid access in Guinea-Bissau, Mali, Niger, The Gambia, and Togo.
- Solar Development in Sub-Saharan Africa–Phase 1 (Sahel) focuses on strengthening the technical capacity of the West Africa Power Pool to prepare a large-scale solar project.
- The Guinea-Mali interconnector (P166042).
- The Battery Energy Storage Systems and Synchronization Project (P167569) will enable the regional power system to accommodate rising shares of variable renewable energy capacity.

Overall, investment in the regional electricity system, combined with the expansion of solar PV generation and electricity storage systems, will facilitate a sustainable transition away from generation based on expensive fossil fuels and aid government efforts to achieve universal access to affordable, reliable, and modern electricity services.

## What are the key lessons from the World Bank’s engagement in Mali so far?

### Three lessons stand out

**High-quality analytical work builds consensus.** In 2017, many stakeholders were aware that EDM was struggling to operate as a going concern. However, there was no agreement on priorities. The corporate and financial restructuring program undertaken in Mali made it possible to identify the drivers of EDM’s financial difficulties, provide supporting quantitative data, and recommend reform actions. Critically, it provided all stakeholders and donors with the same information, paving the way for consensus building.

**An inclusive approach among stakeholders builds buy-in.** In Mali, the utility, the ministries of energy and finance, and the donor community were full participants in the reform process. Within the World Bank, teams specializing in energy, macroeconomics and fiscal management, and poverty and equity worked together and with the International Monetary Fund to conduct a productive dialogue with the Malian authorities. This multisectoral engagement was essential

## MAKE FURTHER CONNECTIONS

Live Wire 2014/9. "Tracking Access to Electricity," by Sudeshna Ghosh Banerjee and Elisa Portale.

Live Wire 2014/16. "Capturing the Multi-Dimensionality of Energy Access," by Mikul Bhatia and Nicolina Angelou.

Live Wire 2014/20. "Scaling Up Access to Electricity: The Case of Lighting Africa," by Daniel Murphy and Arsh Sharma.

Live Wire 2014/35. "Planning for Electricity Access," by Debabrata Chattopadhyay, Rahul Kitchlu, and Rhonda L. Jordan.

Live Wire 2014/36. "Supporting Hydropower: An Overview of the World Bank Group's Engagement," by William Rex, Vivien Foster, Kimberly Lyon, Julia Bucknall, and Rikard Liden.

Live Wire 2015/38. "Integrating Variable Renewable Energy into Power System Operations," by Thomas Nikolakakis and Debabrata Chattopadhyay.

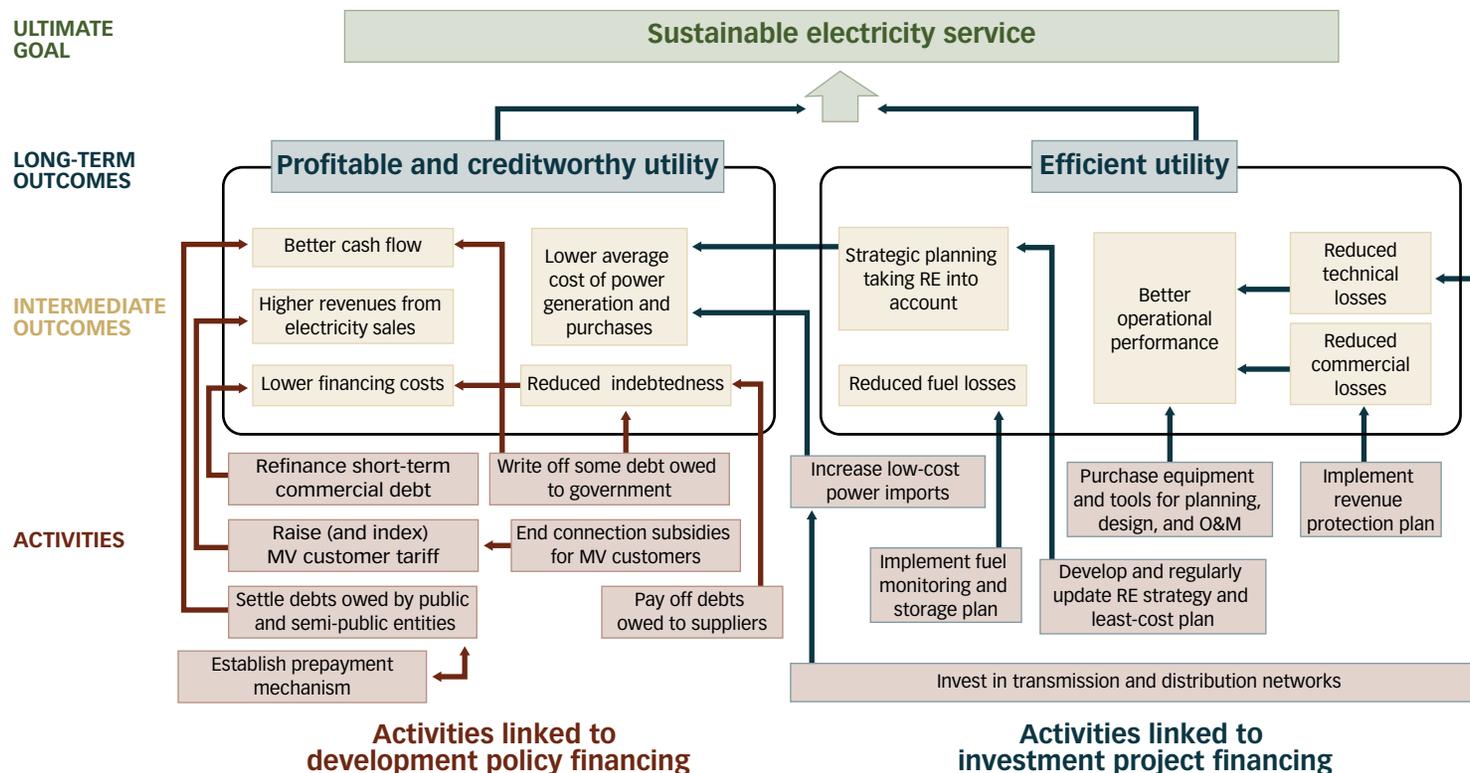
Live Wire 2015/48. "Supporting Transmission and Distribution Projects: World Bank Investments since 2010," by Samuel Oguah, Debabrata Chattopadhyay, and Morgan Bazilian.

Live Wire 2015/51. "Scaling Up Access to Electricity: Emerging Best Practices for Mini-Grid Regulation," by Chris Greacen, Stephanie Nsom, and Dana Rysankova.

Live Wire 2016/66. "Can Utilities Realize the Benefits of Advanced Metering Infrastructure? Lessons from the World Bank's Portfolio," by Varun Nangia, Samuel Oguah, and Kwawu Gaba.

Live Wire 2017/77. "Electricity Tariffs for Nonresidential Customers in Sub-Saharan Africa," by Masami Kojima and Jace Jeusun Han.

Figure 3. Theory of change of Mali's electricity utility reform



Note: MV = medium voltage, O&M = operations and maintenance; RE = renewable energy.

to reaching agreement on reform actions and designing a financing approach (IPF plus DPF) aligned with the government's vision. The approach exemplifies the wisdom of an African proverb: "If you want to go fast, go alone; if you want to go far, go together."

**Achieving universal access in Mali requires a combination of structural reforms to improve on-grid electricity service delivery and off-grid solutions to serve sparsely populated areas.** In the short term, Mali opted to adjust electricity tariffs for medium-voltage industrial and commercial customers only. This adjustment was combined with measures to eliminate inefficiencies and improve performance so as to gain political and public support for further tariff adjustments in the medium-term, if

needed. Significant further efforts will be needed to achieve universal access to electricity in a country where 10 million people still lack it. Electricity tariffs in rural areas are double those in cities and urban areas, owing to low population density in vast areas of sparsely settled semi-desert land. A tariff study has been commissioned to explore solutions to improve affordability for the poor. Off-grid solutions based on renewable technologies (solar, wind) are already being deployed in rural areas. Ultimately, the goal is to expand coverage to underserved areas, leaving no one behind.

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