



MOZAMBIQUE

COMMERCIAL METERING STRATEGY

Between July 2016 and October 2017, SRUC supported Electricidade de Moçambique (EdM) in developing a Commercial Metering Strategy and Implementation Roadmap to support the utility’s commercial transformation and prioritize initiatives that improve efficiency and effective operating procedures related to its metering technologies.

WORK ASSIGNMENT SUMMARY

The Sector Reform and Utility Commercialization (SRUC) Task Order (TO) supported Electricidade de Moçambique (EdM), the government-owned utility in Mozambique, as it underwent an organizational transformation initiative to make the company more efficient, financially viable, and operationally sustainable. A key component of this transformation was improving EdM’s procedures, processes, and technical and human capacity to conduct effective commercial metering throughout its service territory.

CHALLENGE

EdM is Mozambique’s vertically integrated, government-owned utility that provides electricity throughout the country. As the country’s industrial base and economic activity has grown, and as the utility continues to add more residential and commercial customers, it has struggled to modernize its internal systems, procurement practices, and workplace culture in tandem. EdM also struggles with high

aggregate technical and commercial (AT&C) losses, estimated at 26 percent in 2017, which cost the company an estimated US\$50 million annually.

Given these and other challenges, EdM's leadership undertook a broad initiative to move the company toward a more commercial, efficient, and streamlined structure. As part of this organizational transformation, EdM prioritized a significant reduction in its AT&C losses. To this end, EdM had to address a number of issues related to commercial metering, including:

- **High failure rate of pre-payment meters.** Approximately 120,000 new meters are installed per year, but an additional 40,000 older pre-payment meters must be replaced.
- **Insufficient testing of meters.** Only five percent of EdM's meters are tested each year.
- **Inadequate meter testing capacity and processes.** EdM's meter calibration lab was rudimentary and it needed to improve its ability to inspect and test meter performance.



Discussing EdM meter data collection processes for Maputo City.

APPROACH

In close collaboration with EdM, SRUC recommended improvements to metering challenges and loss reduction initiatives through two stages:

1) The development of a Commercial Metering Strategy (CMS) and Implementation Roadmap

- Consulted with EdM staff, particularly the Directors of the Commercial and Business Performance Management Departments, for input on current practices and challenges around commercial metering.
- Identified organizational changes and new distribution infrastructure investments necessary to improve metering processes and provided associated cost estimates for implementing changes.
- Developed a toolkit for meter inspectors and a template for inspections for large commercial customers, which were large contributors to loss totals given their high levels of consumption.
- Made recommendations on the use of various technologies appropriate for deployment in Mozambique, such as specific Advanced Metering Infrastructure (AMI) modules for metering of large commercial customers.
- Developed a Strategy and Implementation Roadmap for the utility's commercial metering agenda, which was structured around nine strategic loss reduction initiatives.

2) Meter Testing Laboratory Roadmap

- Conducted a detailed review of the practices and processes EdM used to test metering equipment and identified the technical standards for EdM's existing and installed meters.

- Carried out a gap analysis comparing those practices and processes with leading international practice for meter testing to understand new capabilities that needed to be built within the company.
- Defined an organizational structure with a suitable mix of staffing and skills needed to successfully operate a potential new meter testing laboratory.
- Identified infrastructure needed to successfully operate a potential new meter testing laboratory and provided an associated cost estimate for procuring and building those assets.
- Developed a roadmap to illustrate to EdM the path forward and the next steps that could put in place a new meter testing laboratory and improved testing and calibration capabilities.

KEY RESULTS

- A comprehensive **Commercial Metering Strategy and Roadmap** customized to EdM's goals and capabilities to support loss reduction nationwide.
- **Detailed specifications for a meter testing laboratory** and processes for meter testing that will decrease operational and maintenance costs, reduce field team responsibilities, and bring down AT&C losses.
- Four **detailed business prospectuses** that EdM can take to the international donor community in Mozambique containing detailed next steps, resources, and timelines for the most important activities identified under the CMS, including:
 - Revenue Protection for High Voltage and Medium Voltage Customers;
 - Voice of Customer, a prospectus focused on improving customer service, in order to showcase potential partnership opportunities with the international development community in Mozambique.;
 - Long Term Loss Reduction Plan; and
 - Field Force Management (Piquete), a prospectus focused on improving operational efficiency challenges and customer experience in order to showcase potential partnership opportunities with the international donor community in Mozambique.

M&E INDICATORS

- Number of laws, policies, regulations, or standards to enhance energy sector governance formally proposed, adopted, or implemented as supported by USG assistance – **6 internal utility standards proposed**, including, Commercial Metering Strategy for EDM, Meter Laboratory Testing Standard, and 4 business prospectuses for improved procedures. (Standard Indicator: Eg.7.3-1)

FOLLOW-ON WORK

EdM's leadership used the CMS and Roadmap to organize loss reduction and metering priorities as part the utility's large-scale transformation. EdM's Chief Operating Officer presented the four detailed business prospectuses to the donor community as company priorities. KfW, the German bilateral foreign assistance agency, funded the infrastructure investments identified under the Revenue Protection for High and Medium Voltage Customers prospectus. At EdM's request, SRUC took on another one of the activities identified in the CMS – to design and implement a Network Commercial Integrated System (NCIS) pilot. Finally, EdM adopted the recommended specifications for the meter testing laboratory and initiated a procurement for a technical partner to undertake that work.