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RES4AFRICA FOUNDATION



Summary Regulatory Review of the Electricity Market in Mozambique:

Towards Crowding-in Private Sector Investment

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This analysis is based on policies, laws and regulations adopted until April 2022. Therefore, the results will not consider and/or reflect the impact of policy and regulatory changes adopted thereafter.

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The national policy and regulatory data necessary for objective regulatory review, as well as the draft country economic, energy sector, and regulatory context was ably developed by the national consultant, Engineer A de Sousa Fernando, former deputy Minister of Mineral Resources and Energy and ex-CEO of Eletricidade de Mocambique. The regulatory analysis was based on a large national regulatory and policy database, which was validated by energy experts from the Ministry of Mineral Resources and Energy, Energy Regulatory Authority, National Fund for Rural Electrification, Electricitade de Moçambique, Mozambique Transmission Company and other institutions represented by the following sector leaders and experts: Mr. Pascoal Alberto Bacela (National Director of Energy); Mr. Joao Domingos; Ms. Marcelina Mataveia; Mr. Techini Honwana; Mr. Yara Assia Cabra Ventura; Mr. Antonio Chicachama; Mr. Antonio Munguambe; Mr. Filipe Ilidio Mondlane; and Mr. Sansao Machiana.

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Analysis of Electricity Market Policy and Regulatory Framework

This report provides an analysis of Mozambique's electricity sector policies, laws, and regulations in relation to crowding-in private sector participation in developing national electricity infrastructure. The report is part of the United Nations Economic Commission for Africa and RES4Africa Foundation joint program on Regulatory Review of the Electricity Sector in Africa: Towards Crowding-in Private Sector Investment.

Mozambique has enjoyed stable economic growth during the last two decades. With the implementation of political and economic reforms, real GDP growth averaged 5 percent between 2010 and 2020, making it one of the fastest-growing countries in Sub-Saharan Africa.

Furthermore, the country has been actively pursuing energy sector reforms for more than two decades. Reforms have included the privatization of the national utility, Electricidade de Moçambique (EdM), and the introduction of the Electricity Law, which provided an element of competition and opened up the electricity sector to new entrants. This entailed the creation of a regulatory body, the Autoridade Reguladora de Energia (ARENE), and the creation of a rural electrification fund, the Fundo Nacional de Energia (FUNAE).

The Electricity Law, adopted in 1997, regulates the licensing of energy projects and related activities. Its purpose is to open up the energy sector to greater private sector participation through concession contracts with the government and the implementation of power purchase agreements (PPAs) with the national utility EdM. The law requires that projects related to power generation, transmission, and distribution, as well as the construction, operation, and management of power plants be awarded concessions through a public competitive bidding process.

Mozambique's first independent power producer (IPP) was launched in 2015, paving the way for future negotiations and for a more standardized bidding process in recent years. Since then, several IPPs have emerged, operating under different contracts and using different resources, including coal and solar.

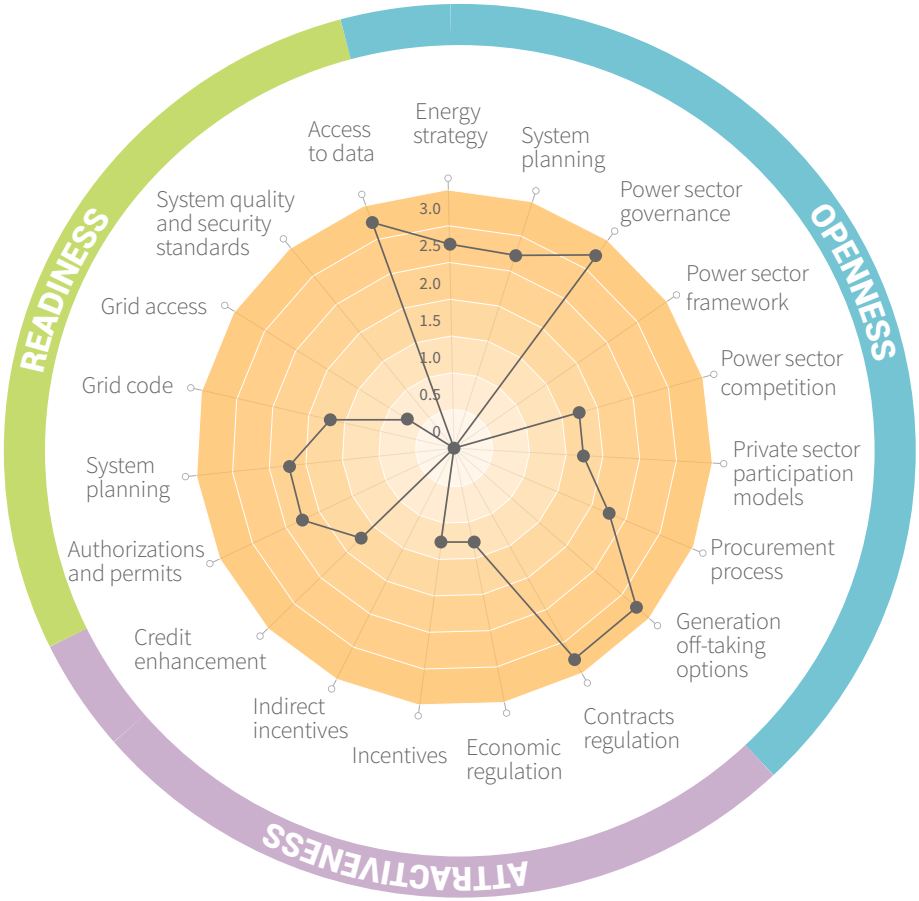
The purpose of this regulatory review is to pinpoint the main strengths and gaps of the policy and regulatory framework currently in force related to private sector participation in the entire electricity market. It further aims to offer concrete recommendations for regulatory improvement and reform towards attaining a competitive, resilient, and sustainable electricity market.

The regulatory analysis is undertaken following a comprehensive UNECA and RES4Africa regulatory review methodology, which was developed with the participation of African and international regulatory experts. The approach enables three broader assessments: the degree of *openness* of the electricity market to the private sector based on evaluation of the power sector structure and governance; the *attractiveness* of the market based on an assessment of sector economics, fair competition, and overall economic regulation; and the *readiness* of the market based on an assessment of technical regulations.

Main findings related to the Generation segment

Policy and regulatory framework governing the electricity generation market of Mozambique is effective in crowding-in private sector investments. Investors benefit from efficient and transparent *market governance*, new generation capacities planning, and a relatively open environment for private sector participation. The awarding of standardized PPAs confirms the *attractiveness* of the generation market, while the availability of *credit enhancement* instruments augments the financial sustainability of business models. Well-defined network planning and authorization requirements ensure the effective integration of new generation assets into the national power system. However, the competition in the electricity market remains limited, due to the vertically integrated structure of the incumbent, EDM. On the other hand, regulatory provisions concerning the availability and access to *direct* and *indirect incentives* for private generators remain unsatisfaying. In addition, the lack of an updated *energy strategy* remains a major barrier to interested investors which lack long-term market signals on which building their investment strategies.

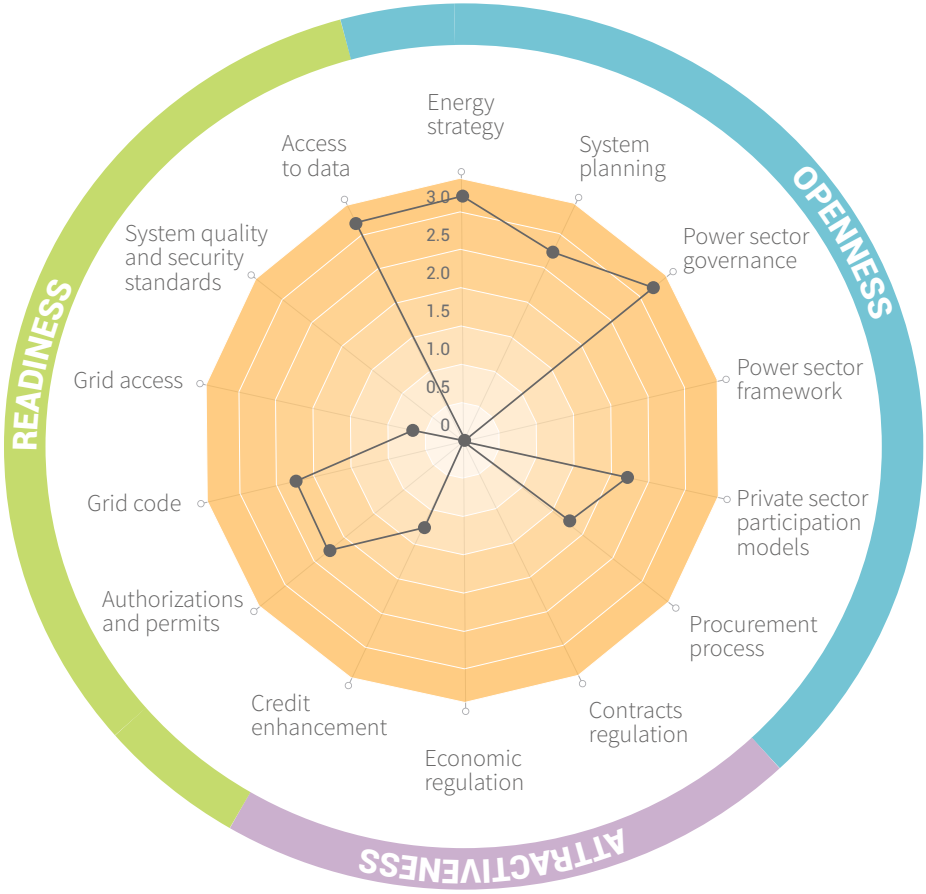
Figure 1: Overview of the generation segment



Main findings related to the Transmission segment

In Mozambique, a transmission investment plan and clear network development targets are present. However, despite concessions being made available to private entities, the transmission segment only offers moderate *attractiveness* to the private sector, as the regulation does not define the standard provisions that need to be included in these concessions. The access to several *credit enhancement* instruments to private investors in the transmission segment, such as concessional lending and revenue escrow agreements, is also possible. The regulatory environment demonstrates fair *readiness* since the *grid code* provides system operation rules and connection rules for generators. However, the contractual framework for connections to, and use of, the transmission network is not defined. Furthermore, the public sector preference to go progressively on implementation of full unbundling has limited actual private sector participation beyond the generation market. Finally, data on dispatching and quality of transmission service is not publicly shared, limiting transparency.

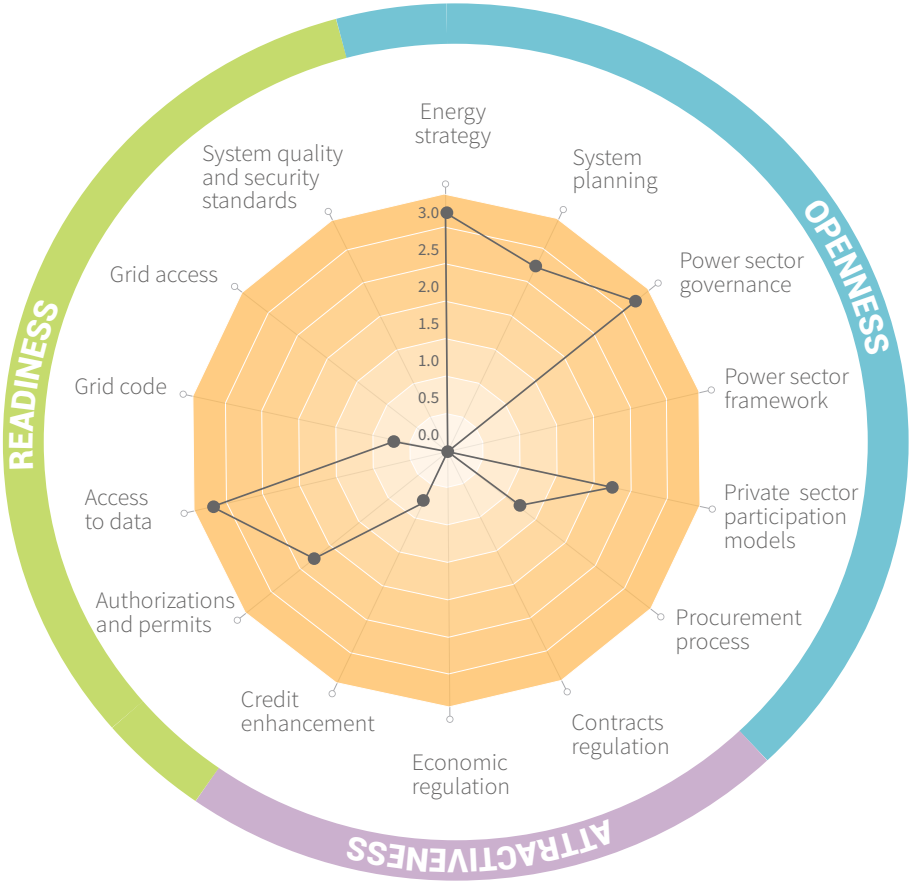
Figure 2: Overview of the transmission segment



Main findings related to the Distribution segment

Similar to the transmission segment, private participation is theoretically possible through a concession or an engineering, procurement, and construction (EPC) model, albeit it has not occurred yet. EDM remains the sole national concessionaire for the distribution system and the segment lacks defined PPP models or competitive tenders that would aid in making private participation a reality. Mozambique performs moderately in the *attractiveness* Dimension of the distribution segment as the review has highlighted some gaps arising from the lack of standardized *contract regulation* to define the rights and obligations of electricity distributors as well as a transparent network tariff structure to provide information for private investors to evaluate the profitability of potential projects. *Access to data* and *authorizations and permits* score well in the *readiness* Dimension of Mozambique´s distribution segment while the remaining other Topics leave ample room for improvement. There is no dedicated distribution *grid code* and the current *grid code* currently only considers the transmission system and does not define the system operation rules for the distribution system.

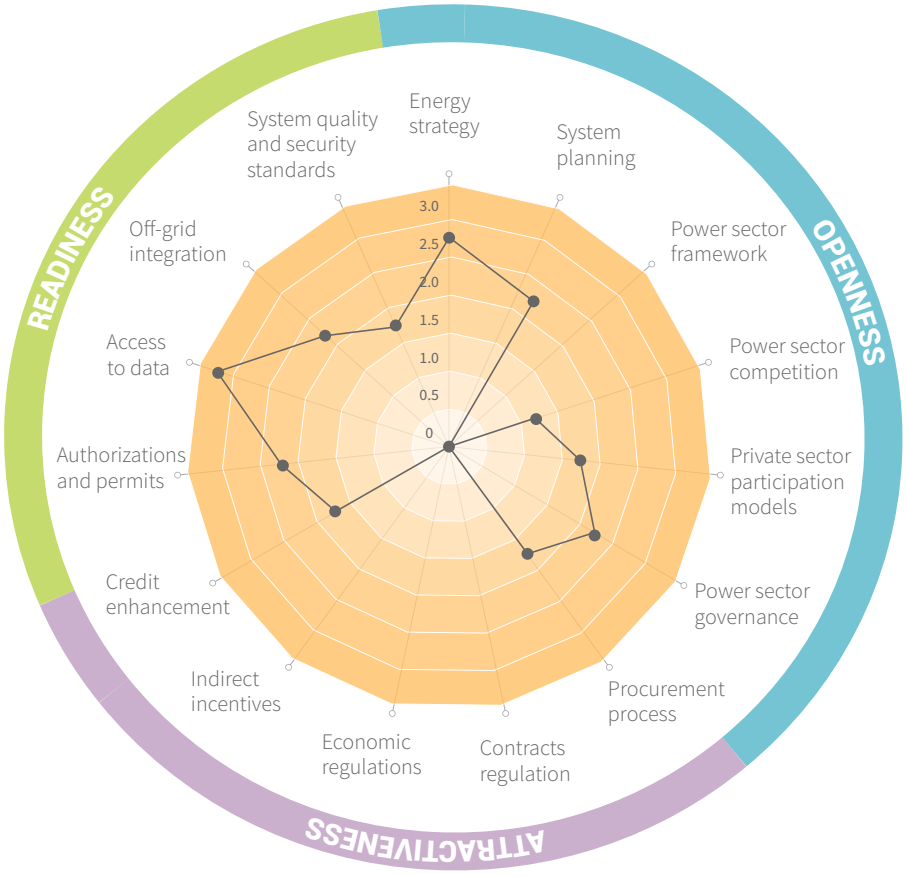
Figure 3: Overview of the distribution segment



Main findings related to the Off-grid segment

Mozambique's off-grid market segment displays a fair degree of *openness* to private investment. This is mainly due to the clear electrification policy and programs such as Projecto Energia para Todos – ProEnergia. The broad national electrification policy is evidence of Mozambique's strategic commitment to the development of the off-grid market. Furthermore, the country's commitment is reinforced by the Regulation on Off-Grid Energy Access, approved on September 15, 2021, which details the relevant concession requirements and the rights and obligations of the parties involved. However, the sector currently offers limited incentives for private investors, mainly due to the absence of VAT or import duty reductions on generation assets and off-grid components, as well as the lack of defined standard retail contracts or rules on metering and tariffs. In addition, the lack of a standard tariff calculation tool has led to uncertainty in financial planning for potential investors. On the other hand, with the enactment of the Regulation on Off-Grid Energy Access, great progress has been made in the *readiness* Dimension by adopting clear rules on *off-grid system integration*, detailing commercial and exit options for mini-grid business continuity in the event of encroachment with the main grid, as well as specifying *system quality and security standards*.

Figure 4: Overview of the off-grid segment



Recommendations

To enhance the *Openness* of the electricity market


Energy strategy

- Adopt an updated energy strategy, detailing strategic long-term priorities for the development of the electricity sector.
- Set ambitious but realistic and quantifiable targets (i.e., in terms of power generation technology development, network expansion, serving customers, reducing GHG emissions, etc.), and adopt an explicit roadmap for their achievement.


System planning

- Improve system planning by implementing formal plan review procedures, and a periodic review timeline.


Power sector framework

- Assess feasibility options for EDM restructuring to create a separate entity with the responsibility of transmission asset management and system operation.
- Explore potential benefits of separating EDM's generation and distribution functions to create more opportunities for private sector participation in both market segments, as well as in electricity trading and retailing.


Procurement process

- Adopt rules and procedures for processing and evaluating unsolicited proposals.

To enhance the *Attractiveness* of the electricity market


Contracts regulation

- Adopt a standardized PPA template, or blueprint, for specific generation asset technologies to reduce transaction costs.
- Adopt standardized Transmission and Distribution Service Agreements to establish roles and responsibilities, as well as clarify the financial terms during a project period.
- Adopt a standard model for power supply agreements with clients of off- grid and mini-grid operators.


Economic regulation

- Define transparent rules for tariff setting and a consequent tariff methodology based on clear service cost-components, including network services.
- Adopt the principle of cost-reflective tariffs for stand-alone networks and introduce a standard tool for calculating mini-grid tariffs.



Indirect incentives

- Review the current regulation on tax and duties exemptions dedicated to electricity infrastructure investors and simplify access to these instruments.



Credit enhancement

- Evaluate the effectiveness of extending the access to multilateral and government guarantees to improve the bankability of electricity infrastructure investments.

To enhance the *Readiness* of the electricity market



Authorizations and permits

- Ease the procedures to obtain authorizations and permits through the implementation of a one-stop shop for their request and issuance.



System planning

- Further improve the network development plan by adding a formal review procedure as well as regular assessments of the network expansion and grid flexibility needs.



Grid code

- Implement a dedicated distribution grid code to enhance regulatory certainty.



Grid access

- Clarify the contractual framework for the connection to and the use of transmission and distribution networks as well as the allocation of costs.



Off-grid system integration

- Introduce compensation mechanisms for mini-grid operators' stranded assets in case of arrival of main grid infrastructure in the area.

As Mozambique takes further bold steps towards its energy sector regulatory reform, the UN Economic Commission for Africa and the RES4Africa Foundation remain committed to partner with Mozambique in addressing any of the identified regulatory and policy gaps. They also commit to supporting regulatory capacity development, as well as any area of particular reform interest of Mozambique towards greater *openness*, *attractiveness*, and *readiness* of the electricity market.



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