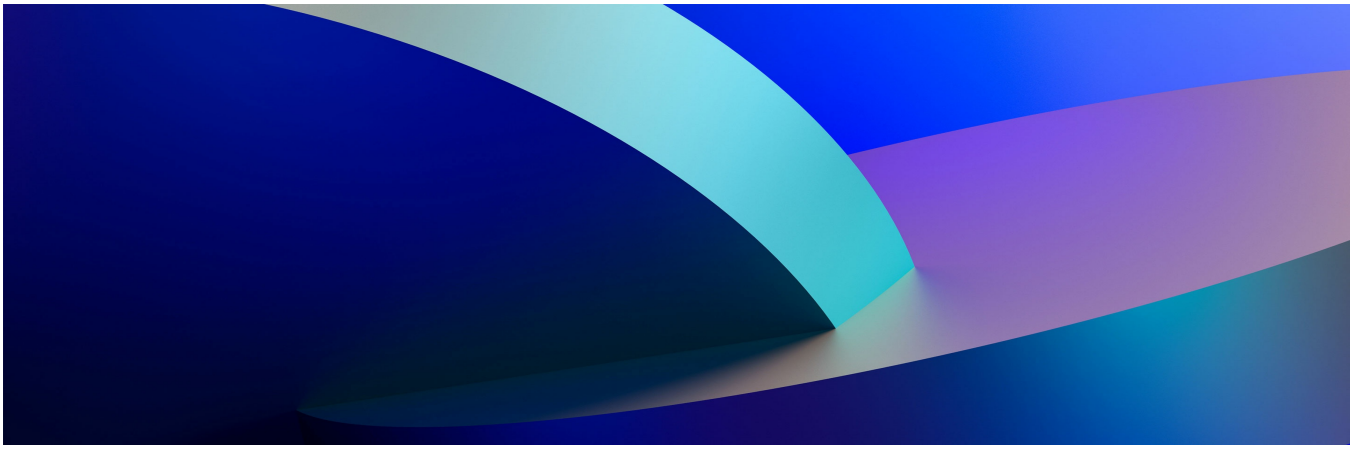

Renewable energy in Mozambique

1. Introduction

Mozambique possesses a wide range of renewable energy resources, which could not only allow the country to meet its own domestic electricity needs, but may also allow Mozambique to turn into an electricity hub within the Southern Africa region.

A Mozambique Renewable Energy Atlas was published in 2014 in order to map the potential of the renewable resources in Mozambique, namely hydropower, solar, wind, biomass, wave energy and geothermal. The total potential for generating electricity from renewable resources is over 23,000GW, most of which comes from solar energy.

The total electrification rate was about 40% in 2021. Mozambique's installed capacity stands at 2,905MW and is determined by the Cahora Bassa hydroelectric plant, which has an installed capacity of 2,075MW. Based on Sustainable Development Goal 7, which aims to ensure access to affordable, reliable, sustainable and modern energy for all, the Government’s goal is to achieve 100% universal access to electricity by 2030. In the short term, it is also committed to ensuring the electrification of all Administrative Areas of the country (Postos Administrativos) by 2024.

With this aim, the Government has launched the “Energy for All” (“Energia para Todos” or “ProEnergia”) Program, coordinated by the Ministry of Mineral Resources and Energy and financed by the World Bank and a Multi-Donor Trust Fund. This Program should contribute to the Peri-urban and Rural Electrification as well as to the Off-grid Electrification.

The Government is keen for the electricity sector to contribute to the mitigation of the impact of climate change by having renewable energy make up 20% of the national electricity grid. The main contribution to off-grid electrification is expected to come from solar home systems and mini-grids.

Mozambique has several strategies and policies to improve energy access using renewable sources, these measures include:

- New and Renewable Energies Development Policy (2009)
- New and Renewable Energy Development Strategy (2011)
- National Electrification Strategy (2018);
- Electrical Infrastructure Integrated Master Plan 2018-2043

- EDM Strategy 2018-2028.

Public-private partnership initiatives have also been promoted to increase power generation and development of electricity transmission infrastructure.

2. Legislative and regulatory framework

In recent years Mozambique have made efforts to improve the legal and regulatory framework for the electricity sector to create an enabling environment to attract private investment in renewable energy and off-grid projects.

As a result, an Energy Regulatory Authority ("**ARENE**") was created in 2017. ARENE has powers for supervision, regulation, inspection and sanctions in the field of production, transmission, distribution, commercialisation of electricity.

A new Electricity Law was entered into force in October 2022 (Law 12/2022 of July 11th) in order to adapt the legal framework of the electricity sector to the current social, technical and financial dynamics of Mozambique, as well as looking to maximise all of its renewable energy sources and reduce the use of fossil sources. The regulations of this law are still in preparation.

The Electricity Law created a new entity, the Manager of the National Electricity System, who shall assume the functions of System Operation and Market Operation, with support from the National Dispatch Center. The new entity will focus on the performance of functions of planning and development of the National Electricity System.

Another feature of the new law is the creation of an Energy Register, which will contain the records of energy supply activities or provision of energy services, as well as the respective suspension, modification, extension and extinction of a facility.

Other than the Concession Fee, the new Electricity Law also introduced new fees on the electricity supply activities: i) the universal access fee and (ii) the regulatory fee.

In December 2022, the Government published the Regulation on the Tariff System for the Supply of Energy through the National Electric Network, which establishes the methodology that will allow the Regulatory Authority to approve tariffs and prices.

Regarding the Off-grid area, a Regulations for Energy Access in Off-grid Areas entered into force in January 2022. It establishes the principles and rules applicable to supply activities for access to energy in off-grid areas, through mini-grids of up to 10MW and energy services (defined as services for energy consumers, preferably renewable, such as supply, financing, installation, operation, maintenance of electrical equipment and installations, including autonomous systems).

The Energy Regulatory Authority approved in 2022 several rules pertaining to the Off-grid areas: i) Mini-grids Interconnection Regulations; ii) Regulations of Technical and Safety Standards applicable to electrical equipment and installations for mini-grids and autonomous systems; and iii) Regulation of Quality of Service and Relationships Commercials in providing access to energy in off-grid areas. More recently, in May 2023, the Regulations for the Award of Concessions for Mini-Grids were published.

A revision of the electricity grid code is in course, and it is expected to include provisions respecting the integration of renewable energy plants within the national electricity grid.

The Government has launched a Renewable Energy Auction Program ("**PROLER**"), the first initiative for renewable energy auctions in Mozambique. The objective is that renewable energy power generation projects are launched in a transparent, competitive and sustainable manner, supported by a sound technical, financial and legal framework. PROLER is expected to attract Independent Power

Producers and leverage private investment of approximately 200 million Euros to implement four renewable energy projects (three solar and one wind) with a unit capacity of 30 to 50MW interconnected to the national grid.

The first tender was for a 30MW/40 MW solar power plant in Dondo, in Sofala Province. TOTAL EREN S.A. won this tender in 2022, thereby reflecting the global tendency of oil and gas majors to step into renewables. There are two tenders in course for two 30 MW solar PV plants in Manje (Tete province) and in Chimbunila (Niassa province), and it is expected that a fourth tender will be launched for a wind farm in the Inhambane province.

There is also another tender initiative being put in place, the GET FiT Mozambique program. It aims to promote tenders for on-grid PV solar projects, with storage, and small hydropower plants projects.

3. Forthcoming developments / opportunities in the renewables sector

Hydropower

The Government has recognised the Mphanda Nkuwa hydro power plant project on the Zambezi River as a key priority for the country. The 1,500MW run-of-the-river project is not only expected to meet growing domestic demand, but also is expected to create power export opportunities and thereby transform the country into a Southern Africa regional energy hub.

The Ministry of Mineral Resources and Energy, through the Mphanda Nkuwa Hydroelectric Project Implementation Office, has appointed the consortium composed by TotalEnergies, Électricité de France, Sumitomo Corporation and Kansai Electric Power, that will develop this project.

The project is estimated to be worth USD $4.5 billion. The hydropower project will comprise a dam, a power-station, and a high voltage transmission infrastructure of 1,300 Km from the project site in Tete Province to Maputo.

Mozambique public utility Electricidade de Moçambique intends to carry out a feasibility study into the potential development of a floating solar power project on the Chicamba dam (Manica province) as well as feasibility studies for battery energy storage systems BESS in ten sites in Mozambique.

SHS

The demand for Solar Home Systems (SHS) and other autonomous systems in rural and Off-grid areas is growing and there are many opportunities for investors in this market. Financing mechanisms such as Pay-as-you-go have proven to be successful with subsidies and grants are also available to SHS companies from international energy programmes.

Funding

Several funding initiatives on-grid and off-grid electrification are present in Mozambique, among which are:

- The Beyond the Grid Fund for Africa, a multi-donor facility established and managed by Nefco – the Nordic Green Bank, aims to incentivise clean-energy-based mini-grid solutions in Mozambique. It intends to fund the deployment and operation of energy services through mini-grids at specified sites agreed by the Government of Mozambique. Each mini-grid concession area is expected to be between EUR 2.0 and EUR 2.5 million.
- GET.invest, a European programme that mobilises investment in renewable energy is present in Mozambique, supporting project developers and companies towards investment readiness and link

them with financiers.

- BRILHO intends to promote business initiatives that provide off-grid energy solutions to low-income markets. Selected companies can benefit of structured non-reimbursable funding and specialised support.