Solar Energy Investment Opportunities in Mozambique

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Mozambique - Introduction

- Coastline 2500 km
- One road from north to south
- Many ports serving SADC
- Humid tropical climate
- 30m people
- Almost 50% younger than 15 years
- Almost 50% below poverty line
- HDI 180 (out of 188)
- Doing Business Rank 54 out of 100
Macro-economic Situation – Stabilising?

EUR to MZN Chart

13 Sep 2008 00:00 UTC - 10 Sep 2018 13:28 UTC

EUR/MZN close 70.04846 low 29.94745
high 88.26714

Source: xe.com
Energy in Mozambique

- Hydro resources (Zambezei)
- Gas resources Mid and North
- Coal reserves in Tete Province

- Net exporter to SADC -> increase
- Investments connections SAPP
- Planned > 2GW hydro, > 1GW Coal, >0.5 GW Gas

Source: geni.org
**Grid Coverage of Mozambique**

- All administrative district capitals (126) have been electrified
- Only 27% of households connected
- Average consumption: 260 kWh/yr/capita
- Retail price of Electricity USc 8 (lifeline tariff: USc 4)
- Average generation cost: USc 9
- Vast areas that will unlikely be electrified anytime soon

Source: geni.org
Energy Sector – Breakdown of responsibilities

• **MIREME** (Ministry of Natural Resources and Energy) – Sector Coordination; permits; concessions; licenses

• **HCB** (Hydro power at Cahora Bassa; 1.2 GW) – Production of hydro power, contracted mostly to SAPP

• **EDM** (Vertically integrated electric utility) – Some generation, transmission, all distribution

• **ARENE** (Regulator) authority to set tariffs, but still ‘under construction’

• **FUNAE** (Rural Electrification) – authority to look after remote area electrification; implements its own projects

• **APIEX** (Investment Promotion Agency) – provides incentives for investors, incl. provisions for capital movements
Electricity Access Policy and Regulation

- Plano Quinquenal do Governo 2015 – 2019 (Five year plan): all Mozambicans to have access to electricity by 2030
- Unlikely to be achieved with current plans and resources
- Strong role of private sector is likely to be required, however regulations to facilitate this are not in place yet
- New Energy Law (draft) expected to increase role of private sector
Key donors shaping the Mozambique Energy Sector

- WB Electrification Strategy (currently in final draft)
- JICA Electrification Master Plan (on-going)
- USAID SPEED+ Review of the Energy Law (on-going)
- UK Compact for off-grid solar energy
- EU Joint Declaration on renewable energy
- KfW GET.FiT programme ‘design study’ (on-going)
- AFD programme ‘auction design’ with EDM (on-going)
- ENABEL supporting FUNAE with off-grid energy solutions

Private Sector Relevant Funds:
- EEP / REACT / EnDev / Brilho / ElectriFI
Solar Energy Potential Mozambique

- 1,785 and 2,206 kWh/m²/year
- Currently installed: 3 MW
- Under construction: 70 MW
- Under study: 300 MW
- Potential: 23,000,000 MW

- Industry cost indication: 9-11 cents US

Source: solargis
1) **IPPs**: two bilaterally negotiated deals; EDM working on auctioning model; most projects involve EDM as a shareholder

2) **Captive Power**: Not (yet) allowed; various studies exist

3) **Minigrid**: few experiences from FUNAE without full cost recovery; no privately invested projects, but some planned; regulatory issues.

4) **Hybridisation of Stand-Alone Diesel**: some projects in tourism / mining

5) **Solar Home System Sales**: relatively underdeveloped market for rural electrification, but available everywhere;

6) **PAYGO**: only two companies which are developing the market; some regulatory issues
Planned Private Sector Solar Energy Projects

**IPPs**
- 40 MW by Scatec in Mocuba (under construction)
- 30 MW by NEOEN in Metoro (advanced studies?)
- 30 MW by EDM in Dondo (study)
- 20 - 40 – 100 MW with storage by in Nacala (feasibility study)

**Minigrids**
- 200 kW Minigrid by CRONIMET in Chiloane (study)

**PAYGO**
- Solarworks! (thousands of systems operational)
- Epsilon Energia (hundreds of systems operational)
Associação Moçambicana Energias Renováveis

- Representing private sector interests in Mozambique
- 50+ aspiring members
- Organisation registered mid- 2018
- Currently establishing chairperson
- Operational early 2019?
GET.invest support to the Mozambique Market

2016-2018

• Support establishment of AMER
• Support ALER Status Report on Renewables
• Translation of Minigrid Policy Toolkit in Portuguese
• Renewable Energy Conference / Trade Mission / B2B matchmaking

2019-2021

• Market information products on various segments (AMER/ALER)
• Support to investors: coaching, technical assistance (APIEX, CTA, etc.)
• Pipeline Related Capacity Building (ARENE; FUNAE; MIREME; etc.)
• Finance Catalyst – coaching, advisory to developers / companies
• Direct support (TA) to developers of de-central RE projects
QSWOT for Private Sector Solar Energy in Mozambique

**Strengths**
- Very high solar potential

**Weaknesses**
- Government indebtedness
- Economic Instability
- Government Dominance in E Sector

**Threats**
- Political instability
- Economic Instability
- Government Dominance in E Sector
- Government indebtedness

**Opportunities**
- Planned Infra Development
- Low Electrification Rate
- Few actors on market
- SAPP Market Access
- Very high solar potential
Conclusions

• Mozambique is open for business in renewable energy
• Risky macro-economic environment
• Government dominated sector: coordinate with EDM/FUNAE
• Sector is not yet ‘transparently’ regulated by ARENE
• New Energy Law will enable more opportunities
• In the meantime: negotiate with EDM and FUNAE
• Opportunities exist in:
  1. IPPs (negotiated / auction)
  2. Diesel Hybridisation
  3. PAYGO
  4. Minigrids (regulation)
  5. SHS sales
Recommended Reading

RECP: Mozambique Country Profile https://www.africa-eu-renewables.org/market-information/mozambique

ALER

FUNAE: Renewable Energy Atlas:
http://atlas.funae.co.mz/?layers=layerResourcesMarProjects&lat=-19.455243&lon=33.467895%3C/p%3E&z=13

FUNAE: Carteira de Projectos
http://www.funae.co.mz/index.php/pt/cartera-de-projectos-1
Thank you for your attention!

www.africa-eu-renewables.org

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