

## Country briefing



# Accelerating access to electricity in Africa with off-grid solar

## Off-grid solar country briefing: Mozambique

This country briefing is one of 13 prepared as part of a background study for the Energy Africa campaign launched by the Department for International Development (DFID) on 22 October 2015. The study was undertaken by the Overseas Development Institute (ODI), the Global Off-Grid Lighting Association (GOGLA) with SolarAid, and Practical Action.

The analysis and conclusions in this briefing, and other reports from study, are those of the authors and do not necessarily reflect the views of their organisations, ODI, GOGLA, Practical Action and SolarAid, nor those of DFID.

All project reports are available at: [www.odi.org/publications/10200-accelerating-access-electricity-off-grid-solar](http://www.odi.org/publications/10200-accelerating-access-electricity-off-grid-solar)



## Background

Mozambique has a total population of about 28 million people.<sup>1</sup> In 2012, around 39% had access to the electricity.<sup>2</sup> In rural areas, estimates of the population with access to electricity range from Sustainable Energy for All's 5% to the IEA's 27%. In urban areas, levels of access are much higher, at 55% (SE4All) or 66% (IEA). More than 42% of the population lives in extreme poverty. The relatively low population density in combination with these high levels of poverty, represent a serious hurdle for the affordability of off-grid solar systems. Major gas reserves have been identified just off the coast and big multinationals are starting to change the local economy. It is expected that the production of gas will drive up income levels and the GDP. In the Climatescope assessment, Mozambique ranks 40th out of 55 countries.<sup>3</sup>

The solar off-grid household market is undeveloped and currently mainly driven by donors and FUNAE (Fundo de Energia), a government owned and operated fund to advance energy access, which is also in the business of manufacturing small solar PV panels. Solar market activity is dominated by larger solar systems above 50Wp, which in turn is dominated by FUNAE. Overall market penetration is however very low and almost irrelevant. Currently very few off-grid companies are operating in the market.<sup>4</sup>

## Policy Environment

A National Directorate of New and Renewable Energy at the ministry of energy is responsible for the promotion of energy access and the implementation of a policy on the development of new and renewable energy (resolution 62/2009, 14 October) as well as a dedicated strategy for new and renewable energy development 2011-2025 (EDENR). Policies reflect the government's aim to increase the role of the private sector in the field of energy but focus on medium and large systems, including mini-grids and several micro-grids for

which a clear business case is still missing.<sup>5</sup> Currently the government is producing a map of substations for the electric grid and power generation with the intention to connect every household within a 50km radius. Gaps on the map will provide a clear picture, and therefore planning security for private actors, about which parts of the country will not be serviced by the grid in the foreseeable future. Explicit regulation for the solar household system sector is still missing.

While the government seems to be committed on paper to provide rural energy access by working with the private sector, government activities do not underpin this commitment. The role of FUNAE in particular raises questions and increases policy uncertainty for the private sector. Active in project implementation, financing, and manufacturing of solar panels, it is currently positioned as a 'one stop shop'. There remains also uncertainty on the intention of FUNAE to require the use of its panels for all projects.<sup>6</sup> The business environment for international companies is weak and foreign companies will encounter a number of barriers. These include having to employ a minimum of 10 nationals for each foreign employee (which is difficult to implement for start-ups, especially in view of the lack of local skills), and complicated visa regulations.

## Access to Finance for the Private Sector

Finance needs to be made available to boost the development and entrance of private sector players in the local market. Small retailers as well as micro-entrepreneurs lack access to working capital to stock portable solar lights. According to one interviewee, larger retailers and distributors might have the access to capital but solar is not offering sufficiently high margins to be of strategic importance to them.

With the average cost of debt higher than 15%, access to local finance is restricted.<sup>7</sup> Overall the banking sector in Mozambique is perceived to lack the competition to offer attractive lending structures to the private sector. There are no restrictions on international investment, but investors face a myriad of requirements and permits

---

<sup>1</sup> United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision.

<sup>2</sup> IEA (2014). *Africa Energy Outlook 2014*, International Energy Agency. The SE4All Global Tracking Framework (2015) estimates access in 2012 at 20% nationally.

<sup>3</sup> <http://global-climatescope.org/en/country/mozambique/#/details>

<sup>4</sup> GIZ (2014): AMES-M Solar Component Assessment and Recommendations

<sup>5</sup> [https://hivos.org/sites/default/files/mozambique\\_profile.pdf](https://hivos.org/sites/default/files/mozambique_profile.pdf).

<sup>6</sup> GIZ (2014): AMES-M Solar Component Assessment and Recommendations; stakeholder interviews

<sup>7</sup> <http://global-climatescope.org/en/country/mozambique/#/details>

---

and the system is difficult to navigate. High levels of corruption and an underdeveloped financial system have a negative impact on the overall investment climate.<sup>8</sup> Investors are also concerned about constraints on the repatriation of profits.

### Import of solar household related equipment and fiscal barriers

Reduced or exempted VAT and import duties would allow the cost to the end-user to decrease, as well as increase margins for retailers, and therefore help to drive private sector development in the country. But any product, including solar, is charged 17% VAT in Mozambique. Import tariffs vary for different product categories. Most renewable energy products are charged 7.5%. If import agent fees and 'facilitation' fees are added, interviewees estimated the overall tax burden can be as high as 30-40%. Interviewees were under the impression that high tariffs are in place, and will remain, to protect FUNAE's manufacturing activities.

### Consumer Protection and Quality Assurance

Market penetration is still very low and therefore the influx of low quality products is not yet a problem. There is, however, no policy or regulation applied to assure quality in the market. This will become increasingly important as the market grows and should be implemented as early as possible. One interviewee reported that GIZ is working with the University Eduardo Mondlane to develop a test lab and train technicians to test solar products. Continued funding for the lab however remains insecure. If standards were to be adopted the capacity of state authorities to enforce them are rated low. All institutions involved need to be strengthened to sufficiently police minimum standards.

It is further expected that the FUNAE-run factory will not be able to compete with global solar panel prices and quality. Due to its small scale and missing fully automated manufacturing it will face quality and warranty issues.<sup>9</sup>

### Consumer Awareness

Donor projects to provide schools and clinics with solar electricity have driven local market awareness and interest. A baseline study by GIZ suggests that 65-75% of the population have some awareness of solar products. It is, however, estimated that in more rural areas awareness is much lower. To date no consumer awareness raising campaign has been implemented.<sup>10</sup> Given that overall availability of products in the country remains low, any campaign should be carefully coordinated with retailers that have actually added solar products to their portfolio.

### Providing a Level Playing Field

Most of the households in Mozambique that do not have access to the electric grid rely on kerosene for lighting purposes. To control the maximum retail prices of all fuels, the government employs an automatic price adjustment system. After suspending the system in 2004 it was reintroduced in 2012 following protests against fuel shortages in 2011. In 2013 the government froze the price for the domestic use of kerosene at USD 0.47 per litre,<sup>11</sup> which constitutes a substantial price subsidy. Levelling the playing field between modern and traditional means of lighting would catalyse market development as it increases the value proposition for a solar product for end-users and therefore in turn for retailers.

### Availability of Consumer Financing

The microfinance sector in the country is small and in the cities, with weak coverage of rural areas. None of the microfinance institutions (MFI) are known to have a lending programme for solar currently. Interest rates of 50-60% make credit from MFI very expensive.<sup>12</sup>

Mobile money was launched in 2012, but adoption to date is slow in a society where 86% of the population does not have a bank account.<sup>13</sup> There are more than 15 million connections in Mozambique, equalling a mobile phone penetration

---

<sup>8</sup> <http://www.state.gov/e/eb/rls/othr/ics/2013/204700.htm> [14/09/2015]

<sup>9</sup> GIZ (2014): AMES-M Solar Component Assessment and Recommendations

<sup>10</sup> Stakeholder interview

<sup>11</sup> [https://energypedia.info/wiki/Fuel\\_Prices\\_Malawi#At\\_a\\_Glance](https://energypedia.info/wiki/Fuel_Prices_Malawi#At_a_Glance) [14/09/2015]

<sup>12</sup> Stakeholder interview; GIZ (2014): AMES-M Solar Component

Assessment and Recommendations

<sup>13</sup> World Bank: Mobile at the Base of the Pyramid

[https://www.infodev.org/infodev-files/mobile\\_apps\\_at\\_the\\_base\\_of\\_the\\_pyramid\\_mozambique.pdf](https://www.infodev.org/infodev-files/mobile_apps_at_the_base_of_the_pyramid_mozambique.pdf) [14/09/2015]

---

of 58%.<sup>14</sup> As long as products are unavailable in the market, access to consumer financing plays a subordinate role in creating an enabling environment, but should not be neglected when the market starts to develop.

### **Level of Local Skills**

The level of local skills is rated as very low. Almost all engineers in companies are foreigners and often external installation teams are required to install PV systems. Micro entrepreneurs and small retailers lack the technical knowledge and are not aware of products. The Institution Industrial de Maputo (IIM) is offering training, but the classes offered are not yet fully subscribed because opportunities for trained technicians are scarce in a market that is so far dependant on FUNAE.<sup>15</sup>

### **Summary and Recommendations**

Mozambique is a nascent market with high potential for solar household systems. The sector is currently driven by donors and the state-owned FUNAE. A clear commitment and acknowledgement of the government to work with the private sector could have catalytic effects for the development of the market.

---

<sup>14</sup> GSMA: <https://gsmaintelligence.com/markets/2444/dashboard/> [14/09/2015]

<sup>15</sup> GIZ (2014): AMES-M Solar Component Assessment and Recommendations

Area	Situation	Opportunities
Policy Framework	Government is committed to provide energy access and acknowledges on paper the role of the private sector; the government owned FUNAE is however competing with the private sector and creates uncertainty for companies	Work and leverage FUNAE's commitment and expertise in the sector to promote market development through right incentives for the private sector  Ease the doing business for foreign companies
Access to Finance	Access to finance is difficult, foreign investment possible but high administrative burdens;	Facilitate the access to finance by streamlining the process for foreign investors; work with multilateral development banks and donors to provide access to finance, especially seed, to companies interested in entering the market
Fiscal Barriers	High VAT and tariffs make products expensive and do not incentivize product import	Remove VAT for solar lighting products and spare parts; lower import tariffs for solar products to stimulate healthy competition with FUNAE manufactured panels.
Consumer Protection and Quality Assurance	Low market penetration and number of products in the market	Implement effective quality assurance schemes parallel to market growth to avoid market spoilage
Level Playing Field	Kerosene for the domestic use is currently subsidized	Phase out subsidies and reallocate freed up monetary resources to promote market development
Consumer Awareness	A good general level of awareness for solar	Build on general awareness to educate population and other stakeholders about the benefits of solar lighting products.
Consumer Financing	Is not available	Promote development as the solar off-grid market develops
Level of Local Skills	Level of skills is low / demand for skills also low due to limited private sector activities	Work with private sector to develop useful vocational training curricula



ODI is the UK's leading independent think tank on international development and humanitarian issues.

Our mission is to inspire and inform policy and practice which lead to the reduction of poverty, the alleviation of suffering and the achievement of sustainable livelihoods.

We do this by locking together high-quality applied research, practical policy advice and policy-focused dissemination and debate.

We work with partners in the public and private sectors, in both developing and developed countries.

---

Readers are encouraged to reproduce material from ODI Reports for their own publications, as long as they are not being sold commercially. As copyright holder, ODI requests due acknowledgement and a copy of the publication. For online use, we ask readers to link to the original resource on the ODI website. The views presented in this paper are those of the author(s) and do not necessarily represent the views of ODI.

© Overseas Development Institute 2015. This work is licensed under a Creative Commons Attribution-NonCommercial Licence (CC BY-NC 4.0).

ISSN: 2052-7209

**Overseas Development Institute**  
**203 Blackfriars Road**  
**London SE1 8NJ**  
**Tel +44 (0)20 7922 0300**  
**Fax +44 (0)20 7922 0399**



This material has been funded by UK aid from the UK Government, however the views expressed do not necessarily reflect the UK Government's official policies.