

## Country briefing



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

## Off-grid solar country briefing: Kenya

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

Kenya has a population of 46 million.<sup>1</sup> In 2012, 20% of the population had access to electricity. In urban areas, 60% of the population had access, and in rural areas the proportion was 7%.<sup>2</sup> Despite significant investment in grid expansion by the Kenyan government and donors, which has doubled access to electricity since 2000,<sup>3</sup> millions are still without modern energy services. The government has committed to achieve universal energy access by 2020,<sup>4</sup> though this already significant challenge will be made even more difficult by rapid population growth. By 2020 the population is anticipated to rise by over 8 million, to 52.2 million.<sup>5</sup>

Nearly 2 million households are connected to the grid and the government is making significant investments in new power capacity, including large solar and renewable energies, to connect 3 million more in the next 5 years. To encourage families to connect to the grid, the government announced a "Last Mile" initiative in 2015, waiving the upfront cost of connections for households living near grid lines and enabling the connection fee to be paid in instalments.<sup>6</sup> Interviewees noted, however, that the total cost of a grid connection is still often prohibitive, particularly once additional expenses have been added, such as wiring within the home. Even with potential grid connection and before factoring in population growth, this therefore leaves around 4 million households whose needs will more likely be met with off-grid solutions.

The off-grid sector in Kenya is one of the most established in Africa, and the largest presence of off-grid solar is in Western Kenya. The market in this region is becoming saturated and businesses are expanding to other areas. To some extent, geographic location determines the likelihood that companies will have commercial success. For example, while there is still huge room to extend the off-grid market into relatively wealthy regions around Lake Victoria, the Northern parts of Kenya,

which are further from the larger transport and commercial centres and have the smallest populations, present a challenge for the revenue streams of private companies.

Although the ease of doing business and supportive policy measures, such as the removal of VAT and tariffs, have led to a huge surge in off-grid solar, the sector is still requires significant financial support to reach low-income families and those living in remote regions. Despite the fast growing economy, 45.9% of the population still lives in extreme poverty,<sup>7</sup> meaning that millions may struggle to purchase solar products and/or enter into solar pay-as-you-go schemes.

## Policy environment

Solar energy is noted (though not off-grid specifically) in the proposed Energy Bill 2014.<sup>8</sup> The government is viewed as relatively supportive of the off-grid sector, particularly in respect of its removal of VAT and tariffs for solar imports. However, interviewees indicated that there are still challenges around the execution of policy on the ground and that there is much greater political focus on bigger industrial power provision and grid expansion. A stronger voice for the off-grid sector with policy-makers was seen as a key enabler by interviewees.

The Kenyan Renewable Energy Association (KREKA) partly covers this role need but lacks capacity. Efforts to strengthen the association could help unite the private and public sectors and help drive levers to accelerate market growth. For example, a current issue of significant concern for off-grid actors is the proposed giveaway of two million solar home kits by the Canadian developer, Sky Power, as part of a larger on-grid solar infrastructure deal with the government.<sup>9</sup> If this comes into effect, it could undermine the sustainability of the off-grid sector and dry up investment. More engagement with policy-makers around such policy decisions was seen as highly desirable by off-grid market actors.

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

<sup>2</sup>IEA, *Africa Energy Outlook* (2014)

<sup>3</sup>Nique, M (2015) GSMA, Available from: <http://bit.ly/1RHDTTrh>

<sup>4</sup>World Bank (2015) ESMAP, Available from: <https://www.esmap.org/node/55495>

<sup>5</sup>UN World Population Division (2015) Available from: <http://esa.un.org/unpd/wpp/DataQuery/>

<sup>6</sup>Business Daily (2015) Kenya Power new connections charge lowered to SH15,000, Available from: <http://bit.ly/1QjISRB>

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At a local level, there has been a recent decentralisation of power, with governors in each of

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<sup>7</sup>World Bank (2015) Available from:

<http://data.worldbank.org/country/kenya>

<sup>8</sup>The Energy Bill 2015, Available from: <http://bit.ly/1ESM4vK>

<sup>9</sup><http://www.skypower.com/news/skypower-to-donate-two-million-home-solar-kits-in-kenya/>

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the 47 counties being given more authority over development targets. Energy is centrally run in respect of finance and the national grid, but local politicians can have a significant influence on support for off-grid solar within their regions. Certain counties, such as Machakos, are reported to be actively supporting off-grid solutions which could help to set a precedent for county-level support. One interviewee advised, however, that while officials in a number of counties had expressed enthusiasm for the off-grid sector, local policy-makers were unsure how to go about support in practical terms.

### Access to finance for the private sector

In Kenya, there are around 70 banks. To be eligible for finance, however, a track record is critical. The establishment of Credit Reference Bureaus in the country a few years ago, with a supporting regulatory framework and the subsequent gathering of data, has helped build the foundations of a more streamlined lending environment. Local lending rates are around 18%, and may reduce in the medium to long-term as the sector improves its credit history and returns. The Government of Kenya is also aiming to borrow more on the international market, a move intended to free up more local capital for private enterprises at a competitive rate of interest.

Businesses in the off-grid sector have high, and growing, capital needs, and despite promising signs for the future, locally available capital finance at an affordable price is still a major constraint. Accessing finance as a start up without any historical data is particularly challenging. Interviewees highlighted a gap for seed finance to encourage more players into the sector and enable greater innovation.

Interviewees advocated that any significant financial support should enhance the market as a whole, rather than accidentally “make winners” by supporting individual enterprises. One interviewee advised that applying for finance is currently much easier for international actors more acquainted with proposal writing than it is for Kenyan entrepreneurs. However, Kenyan government funds to empower young people<sup>10</sup> and women<sup>11</sup> which have an almost

0% rate of interest were also highlighted. Promoting such schemes to the public alongside information about the off-grid sector could increase engagement in the sector by young and/or female entrepreneurs.

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

As part of the East African Economic Community, import tariffs do not apply to solar products coming into Kenya. Currently, VAT is currently applicable in Kenya, but certification by the Energy Regulatory Commission (ERC) and Kenya Bureau of Standards (KEBS) allows companies to apply for exemption. This exemption from VAT was seen by interviewees as a key market enabler. However, the sector faced significant uncertainty and cash flow issues in 2014 when VAT was reintroduced for six months, leading to some uncertainty in the market. The competitive boost of exemptions for the sector is dampened by the tax free status enjoyed by kerosene.

KEBS has recently adopted the International Electrotechnical Commission (IEC) standards based on the Lighting Global standards, but they have not been implemented into law. One interviewee advised that full implementation of exemptions on VAT and duties linked to these standards could help to create greater stability and sustainability in the market. This would put an onus on Lighting Africa to provide swift approval for products. Interviewees cautioned that it would be important to ensure that any future regulations do not unintentionally slow down or restrict the inflow of improved and/or lower cost technology.

### Consumer protection and quality assurance

Despite the high penetration rate of good quality products, interviewees advised that a typical shop in a semi-rural area of Kenya is likely to stock poor quality solar products. Overall, the percentage of high to low quality products was estimated at around 50:50 by interviewees. Counterfeit products also present a significant and growing problem for mature actors in the market.

In respect of off-grid solar, as well as KEBS' adoption of IEC specifications, standards are being set for activities ranging from training and qualifications for solar technicians, to the pre-certification of products

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<sup>10</sup> Youth Enterprise Fund (2015) Available from: [www.youthfund.go.ke](http://www.youthfund.go.ke)

<sup>11</sup> Women's Enterprise Fund (2015) Available from: [www.wef.co.ke](http://www.wef.co.ke)

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before they enter the country. The enforcement of standards is regulated by different bodies in different industries, and one interviewee advised that the ERC, who oversee off-grid energy standards, is only just starting to proactively implement quality assurance rules.<sup>12</sup>

Similarly, in respect of consumer protection, there is regulatory ambition but a lack of practical implementation. Although there are some consumer protection rules, interviewees were unaware of any attempts to proactively enforce best practice. One also highlighted the difficulty, even for companies with strong customer care facilities, to make good on warranties within a quick time frame, due to long distances and the lack of distribution infrastructure in some regions.

### Consumer awareness

In Kenya, extensive consumer awareness campaigns helping to catalyse the market, including road shows, public announcements and product placement in soap operas, were carried out by Lighting Africa. This has created a high level of awareness of solar lights and solar home systems outside the most remote regions. However, interviewees felt that, despite this awareness of solar, there is often a lack of consumer knowledge of where to purchase solar products. In many areas in the West of the country, for example, the industry is well-established, but in counties just next door it may be difficult to find a good quality solar light for sale.

Interviewees raised concerns that, in some instances, this left a gap for low quality products to enter rural markets. They advised that more awareness and marketing of the benefits of solar could significantly help accelerate the industry “further, faster” in new regions, but that these must be quickly supported by the availability of quality products to ensure that low quality products do not find space to enter the market and damage consumer trust.

### Providing a level playing field

Kerosene prices are regulated, but pegged to market rates. They are not subsidised, and relatively

expensive at \$ 1.31 per litre.<sup>13</sup> Interviewees expressed concern about a recent proposal to give away 2 million solar home kits as part of a large infrastructure agreement between the large solar developer Sky Power and the Kenyan government. One interviewee noted that if giveaways happened at such a scale it could destroy the sector, advising that it “would be a disaster, not just in Kenya but across Africa, as investor confidence in the off-grid market will be shattered.”

### Availability of consumer financing

Various mechanisms are available to assist with consumer financing. One stakeholder advised that three quarters of the home systems they sold were through channels that help customers get finance. Around 70% of Kenyans are also a part of a Savings and Credit Co-operative (SACCO) where they work or within their community, making solar home systems easier to finance through such organisations. Interest rates can be prohibitively high, however. Interviewees noted these to be between 18% and 30%, depending on the lender and customer credit history.

Mobile money is used widely in Kenya. There are around 15 million people with mobile money accounts,<sup>14</sup> making it easy to adopt mobile phone payment systems and assess customer credit-worthiness. This is backed by good mobile phone services and penetration levels – 33.6 million people have mobile phone connections.<sup>15</sup> Companies such as M-KOPA are now selling thousands of mobile phone enable solar systems each month. However, one interviewee felt strongly that pay-as-you-go services may currently be out of reach for a large part of the population due to the relatively expensive up-front costs and repayment plans.

### Level of local skills

Interviewees advised that the level of skills, education and human capital within the country are good, with Kenyan workers from the off-grid sector also in demand in other East African countries. The

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<sup>12</sup> The Energy Regulatory Commission, Available from: [www.erc.go.ke](http://www.erc.go.ke)

<sup>13</sup> Climatescope (2014), Available from: <http://bit.ly/1waBjSO>

<sup>14</sup> GSMA Intelligence (2015), Available from: [www.gsmainelligence.com](http://www.gsmainelligence.com)

<sup>15</sup> GSMA Intelligence (2015), Available from: [www.gsmainelligence.com](http://www.gsmainelligence.com)

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Kenya Renewable Energy Association (KERA) advised that sector specific training is part of their focus, in particular the “development of a solar PV training curriculum, training of trainers, equipping of select technical training institutions and development of a facilitation service for training and licensing”.<sup>16</sup> Training through KERA is now being linked to standards (i.e. required training to gain technical accreditation), suggesting a growing potential to drive customer quality and protection through more training programmes.

### **Summary and recommendations**

The Kenyan market for off-grid solar technology is far more advanced than it is in most other African countries and there is a good enabling environment. The market can be accelerated through greater capital finance for practitioners, a more specific government focus at national and local level and by ensuring that successes in the West of the country can be extended into new regions and to low income consumers. Concerns that solar home kit giveaways as part of state-backed infrastructure projects may undermine the market must be addressed.

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<sup>16</sup> KERA Report (2015)

<b>Area</b>	<b>Situation</b>	<b>Opportunities</b>
<b>Policy framework</b>	Although the regulatory framework is broadly supportive, including critical VAT and tariff exemptions, more can be done to integrate off-grid targets and supportive measures into national energy planning.	<ul style="list-style-type: none"> <li>- Work with the government to integrate off-grid targets into policy.</li> <li>- Support KEREA to drive standards and build advocacy channels between the off-grid sector and the government.</li> </ul>
<b>Access to finance</b>	The Kenyan off-grid market is relatively well-established. Credit Reference Bureaus are in place and there is a strong banking sector. Access to capital finance is still a challenge.	<ul style="list-style-type: none"> <li>- De-risking instruments to drive more capital to the sector.</li> <li>- Seed finance to support new organisations and trial new technologies.</li> </ul>
<b>Fiscal barriers</b>	Exemptions from VAT can be obtained through certification by the Energy Regulatory Commission. However, exemptions were temporarily repealed in 2014, increasing uncertainty.	<ul style="list-style-type: none"> <li>- Build more certainty around VAT exemptions through policy measures and / or clearer government support.</li> </ul>
<b>Consumer protection &amp; quality assurance</b>	Although standards are in place, they are not being implemented effectively. In some areas of the country consumers may not be able to get hold of high quality products, leading to poor quality goods filling the gap in supply.	<ul style="list-style-type: none"> <li>- Support the implementation of quality assurance measures by the ERC.</li> <li>- Help facilitate investment for organisations selling quality products.</li> </ul>
<b>Consumer awareness</b>	There is a high awareness of solar products in many regions, but finding good quality products may be a challenge for some customers.	<ul style="list-style-type: none"> <li>- Increased education around high quality versus low quality products.</li> <li>- Greater supply of good quality products in all regions.</li> <li>- Awareness campaigns in some regions are still needed.</li> </ul>
<b>Level playing field</b>	Kerosene is not subsidised. However, subsidies for connection to the national grid and the potential for large-scale giveaways may impact market growth.	<ul style="list-style-type: none"> <li>- Increase policy-maker knowledge about the off-grid sector and the impacts of decisions regarding grid access and giveaway schemes.</li> </ul>
<b>Consumer financing</b>	Though interest rates are quite high, 70% of Kenyans are involved in Credit Cooperatives and 15 million people already have mobile money accounts. This provides strong foundations for consumer financing and PAYG solar products.	<ul style="list-style-type: none"> <li>- Support innovative financing schemes which match the agriculturally-based economies of rural areas.</li> <li>- Support measures to increase capital finance to companies offering mobile enabled solar systems.</li> <li>- Support programmes which address the needs of lower income consumers.</li> </ul>
<b>Level of local skills</b>	There is a good level of skills and human capital in Kenya - and skilled employees are also in demand in other neighbouring countries	<ul style="list-style-type: none"> <li>- Increased support for training programmes via KEREA.</li> </ul>



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