

Market Analysis for Solar Home Systems in Sierra Leone

SNAPSHOT : SOLAR SECTOR
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Intro

Off-grid solar energy has the potential to help meet acute energy needs of Sierra Leone, a country with one of the lowest levels of access to energy in the world. Solar lanterns and solar household systems can improve both economic and social outcomes, particularly for low income and rural households and businesses that cannot expect access to electricity in the coming decade.

Sierra Leone Opportunities for Business Action (SOBA), a DFID-funded private sector and market systems development programme, undertook an analysis of the solar market to better understand constraints and opportunities faced by the sector and to determine best-placed and systemic investments for the programme.

The Context of Sierra Leone: Why Focus on Small-Scale, Off-Grid Solar?

Sierra Leone lacks adequate power generation, transmission and distribution infrastructure with an electrification rate of just 5 percent, one of the lowest in the world (IEA, 2015).

The national grid only extends to parts of the capital Freetown and a few larger towns. Grid access is practically non-existent in rural areas where most of the population of Sierra Leone resides. Where electricity is available, access to it is exceptionally challenging and costly. Sierra Leone ranks 178th out of 189 countries in the Getting Electricity rank of the World Bank's Doing Business 2016 report. The government-subsidised electricity tariff in Sierra Leone is USD 0.28/kWh, twice as much as the average across the continent.

The absence of cost-effective energy alternatives weighs on household and business budgets, limits productive potential and hampers overall economic growth.

According to one survey, households in rural Sierra Leone spend USD 187 per year on battery-powered lighting and mobile phone charging. Investment in solar products, which boast lighting and mobile phone charging capabilities, can result in significant savings.

Solar home systems and pico solar lanterns can offer a high-quality, low-cost, customisable, adaptable and sustainable alternative for many homes and businesses. Although this technology has not yet reached Sierra Leone en masse, it is part of a growing and thriving marketplace in a number of other African countries. Sales of pico solar lighting products have increased dramatically across Africa and Asia in recent years, going up from 2.4m units in 2011 to 15m units in 2014 (Lighting Global, 2015).

Key Characteristics of the Solar Home System Market in Sierra Leone

- The solar market in Sierra Leone it still in its infancy.
- There are only a few solar distributors based in Sierra Leone who import certified (Lighting Africa, IEC) solar products such as solar lanterns, solar home systems (including with plug and play devices) and larger off-grid systems.
- The channel to market for these distributors is mainly through numerous NGOs based in Sierra Leone, who

purchase solar devices and distribute them to their beneficiaries.

- The market in Sierra Leone is also filled with low or unknown quality solar products imported by local retailers. The persistence of these sub-standard products on the local market often undermines consumer confidence in solar products more broadly and results in 'market spoilage'.

Key Constraints Facing the Solar Home System Market in Sierra Leone

Distribution and Skills Constraints

- High transportation costs and order volume barriers limit inventory and product availability.
- Companies operating in the market are plagued by limited experience, capital and capacity as there is limited track record of sales of solar products in the country. Solar distributors also lack financial and business management capacity which prevents their businesses from growing.
- International solar suppliers perceive Sierra Leone as an exceptionally high risk market.
- There is a shortage of a skilled workforce required for the solar sector, particularly in terms of maintenance, distribution and marketing.

Information and Awareness Constraints

- There is little awareness about the availability and benefits of certified solar products among the general population of Sierra Leone, and the rural population in particular.
- The awareness of solar products that does exist is often a perception of low quality due to the proliferation of the market by sub-standard, uncertified products.

Finance Constraints

- Investors consider Sierra Leone a high risk country with limited attractiveness. It is a small market, boasting just under seven million people, most with limited purchasing power. High inflation and the recent Ebola outbreak have further undermined investor confidence.
- Distributors of solar household systems in Sierra Leone require significant working capital and there is no local SME financing available to support businesses in their growth phase. High working capital requirements also arise from high transportation costs and high costs associated with long term customer payment options such as PAYG, which significantly boost sales.
- Solar suppliers rarely offer trade financing.
- Commercial financiers, including banks and MFIs, are not positioned (or interested) in servicing solar distributor financing requirements.
- Consumers in the solar market also face constraints in accessing finance for purchasing solar products.
- PAYG options are limited and unproven in Sierra Leone.

Key players in the solar market in Sierra Leone:

- Consumers both rural and urban, high-income and low income
- Solar distributors and international solar suppliers
- Financial service providers, including banks, MFIs and investment funds
- Telecoms and mobile payment platforms
- Associations and advocacy groups
- Government of Sierra Leone (GoSL) and regulatory bodies
- Development and donor community

Sierra Leone Solar Market Opportunities

1. Acute energy challenge. Energy is more expensive and more challenging to acquire in Sierra Leone than in most other sub-Saharan African countries. Sierra Leoneans are highly aware of the costs associated with energy access and consumption and interested in quality, cost-effective alternatives.
2. Engaged and open-minded private sector. There are a number of local solar distributors that though small and poorly-capitalised, are willing to challenge norms, lead discussions on policy reform, trial new distribution and marketing strategies, and make internal performance improvements that are required to attract outside financing.
3. Attentive and keen Government of Sierra Leone. Recognising the solar home system (SHS) opportunity, forward-leaning and action-oriented GoSL has proven willing to entertain complex and challenging reforms as well as to collaborate closely with the private sector and civil society to facilitate the development of the solar market.
4. Strong donor (DFID) engagement. In support of the GoSL energy sector momentum, a number of high profile donors have lined up to support change – these include DFID and the Millennium Challenge Fund, that are explicitly supporting energy and with a private sector-led approach in mind.

5. Strong learning and technological improvements gleaned in other contexts and applied in Sierra Leone. As a late comer to the solar market, Sierra Leone can attract suppliers with superior products as well as base of the pyramid consumer uptake expertise that was hard-won in other regions.

Recommendations for SOBA

A number of recommendations to catalyse the development of the solar home system market in Sierra Leone emerged from the Solar Home System Market Analysis:

1. Improve local solar distributor performance
2. Trial new route-to-market strategies that reduce customer acquisition costs
3. Unlock working capital constraints for local distributors
4. Develop local PAYG opportunities
5. Solidify the duty waiver and streamline registration process for solar products

With these foundational changes completed, larger external investment and solar supplier attention required to scale solar product uptake across Sierra Leone is likely.

Alongside, it is also worth exploring the potential for other renewable energy solutions, ranging from larger scale power for industrial use to new electricity models to power households. SOBA aims to grow its energy portfolio along these lines.

