



Solar Sister Nigeria

An innovative approach to standalone solar last-mile distribution that empowers women to build their energy enterprises

Solar Sister is a social enterprise that empowers women in Africa to build and operate clean energy businesses, bring energy access to their communities, and create economic opportunities for themselves and their families. This case study focuses on Solar Sister’s activities in Nigeria, where it recruits, trains, and supports women entrepreneurs as they create clean energy distribution businesses. Solar Sister presents an interesting case of an organisation that addresses the intersection of energy access and women’s empowerment. The approach relies on intense capacity-building and engagement activities. Trust between the Solar Sister entrepreneurs and their customers and very in-depth knowledge of the unique local context form the foundation for this impactful model.



Figure 1. Solar Sister product fair in Uyo, organised by Solar Sister Entrepreneurs to promote their products (Source: Solar Sister 2022)

General information

Project name	Solar Sister – Nigeria activities
Developer	Solar Sister, www.solarsister.org
Location	Nigeria (all 6 geopolitical zones)
Focus dimension	Business and financing model with a specific gender equity lens
Type of action	Electricity access intervention
Financing sources	Own sales, grants, donations
Technology	Solar PV products (solar lanterns and Solar Home Systems)

Introduction

Solar Sister was founded in 2009 and started its work in Uganda by training ten women entrepreneurs. This case study focuses on the activities of Solar Sister in Nigeria. Solar Sister Nigeria started its operations in 2014 and has since grown in engaging over 4,000 women entrepreneurs spread across 30 states in Nigeria.

Technology and operational model

Solar Sister partners with manufacturers who produce Verasol-certified Solar PV products, ranging from small **solar lamps** to larger **solar home systems** (SHS). Solar Sister's activities in Nigeria primarily aim to displace traditional energy sources such as kerosene lamps, battery-powered lamps, and small-scale diesel or petrol generators with clean and sustainable solar-powered alternatives.

One of the key elements of Solar Sister's approach is that it provides entrepreneurs with **quality-tested products**. The range of products is chosen by the Solar Sister team, and a strong emphasis is put on durability.

The products available are produced by a range of brands such as d.light and Sun King, and vary with regards to their capacities, features and warranties. To date, **over 300,000 units of Solar products** have been deployed across all geopolitical zones in Nigeria, reaching an estimated 1.7 million people with off-grid solar products. The entrepreneurs provide feedback about the products, which facilitates continuous improvement of the product range.

Solar Sister also supplies entrepreneurs with a variety of energy efficient **electric appliances, and clean cooking stoves**. While these products are not the focus of this case study, offering an array of different clean energy products is a crucial feature of the Solar Sister model.

Our Model



Figure 2. Solar Sister "recruit-train-support" model and actors involved (Source: Solar Sister 2023)

Business and financing model

The first step in Solar Sister's **"recruit-train-support" model** (Figure 2) is to recruit women entrepreneurs in last-mile communities. This is done by the Business Development Associates of Solar Sister, who work as community officers in the states of operations. The associates work in each of Nigeria's regions to identify potential Solar Sister Entrepreneurs (SSEs) who are living in last mile communities with limited or no access to electricity. Recruitment takes place through one-to-one engagement. The approach to recruitment is tailored to the local context. In areas where social norms pose a particularly strong barrier to the set-up of female-led businesses, Solar Sister engages with community leaders and heads of households.

Once agreement is reached with the entrepreneur, the associate acts as a coach. Recruited women entrepreneurs are placed in clusters called SisterHood Groups. In their cluster, each entrepreneur receives a monthly training sessions,



Figure 3. Group of Solar Sister Entrepreneurs in Gombe state receiving training (Source: Solar Sister, 2022).

inventory replenishment and peer support. The training curriculum is composed of two parts: a foundation model and an advanced module. Entrepreneurs receive the foundation module for the first 2 years of their business activity, and they then graduate to an advanced module. Training topics include technology, business skills, agency, empowerment, and leadership. New topics are added to the curriculum regularly. For example, 2023 saw the launch of a digital literacy curriculum, and other topics such as customer

Key figures

- 4,218 Solar Sister Entrepreneurs trained in Nigeria since 2014, of whom almost 3,602 are women. Currently there are 2,067 active entrepreneurs in Nigeria.
- Over 3,000 Solar Home System units sold in last-mile communities across Nigeria.
- In 2022, sales of productive use appliances more than quadrupled and SHS sales more than tripled.
- An estimated 67,119 beneficiaries of SHS sales, out of a total of 1,953,064 beneficiaries of Solar Sister's activities in Nigeria.
- Goal to reach 30,000 Solar Sister Entrepreneurs trained across Africa by 2029 bringing clean energy access to 30 million people.

data collection (Solar Sister, 2023). Entrepreneurs who have completed the basic training have the choice of accessing more advanced modules.

SSEs receive a shirt, backpack, and marketing materials, with clear branding. Entrepreneurs are guided in the purchase of future inventory, in small batches and in line with their revenues and capacity to distribute. The entrepreneurs are then supported in **raising the necessary capital** for further inventory purchases, including through access to short-term Business Booster loans, a zero interest-rate credit whereby they can purchase solar products of up to USD 200.

After starting their businesses, the SSEs continue to receive marketing advice, mentoring, and support from other women in the network.

The entrepreneurs mostly sell their products **door-to-door** within their communities or at **markets**. Trust between the entrepreneurs and customers

and in-depth knowledge of the customers' ability to pay is the foundation for this model. Entrepreneurs propose different payment plans depending on the cost of the product, the customer's individual circumstances, and the ability to pay. Most customers pay for Solar Home Systems within 5 months, following an initial down payment. In training, SSEs learn to recognise the ability to pay of potential customers and what payment schedule might be most suitable for them.

Solar Sister operates on a not-for-profit basis and its model relies on securing finance from a mix of sources. Roughly half of the funds needed for operating Solar Sister come from the **revenues of sales**. The organisation finances its entrepreneur training and support activities through **grants** which are raised from different sources (Solar Sister, 2021). Grants also allow Solar Sister to purchase products in bulk and offer the entrepreneurs favourable pricing for products compared to directly purchasing at the manufacturer. Financiers include private foundations and individual donors as well as development finance such as the results-based financing from the [Nigerian Electrification Project](#), or the [GEF Small Grants Programme](#).

Finally, various **partnerships** strengthen Solar Sister's model. For example, Solar Sister partners with [Lighting for Africa](#) (IFC), who verify all products in terms of quality before they offer them to the entrepreneurs and their customers. To better estimate demand and more efficiently recruit entrepreneurs in Nigeria, Solar Sister partnered with [Fraym](#) on data to predict demand in women-led households. Fraym combined local survey data and satellite imagery to identify where potential customers live and to build hotspot maps (data.org, 2021).



Figure 4. Solar Sister Entrepreneur developing her business goals for the year (Source: Solar Sister, 2022)

Social and environmental impacts

Solar Sister monitors and reports on a wide range of **social impacts**, such as the direct impact on the SEE's income and livelihood as a result of their activity. Other impacts monitored include how many of the SEE go onto develop new businesses (including in other sectors), or how many SEEs report becoming active leaders in their communities.

Solar Sister addresses **gender-specific barriers to energy access and economic empowerment**, including women's lack of access to capital and training. The organisation thus bridges gender-based technology and economic gaps. Through the concept of women-to-women entrepreneurial networks (Heuer et al., 2017), SEEs go from being end-users of energy to playing an active part in the renewable energy value chain and become role models for other women within their networks. Moreover, women customers who purchase the solar products benefit from increased savings,

extended working hours or other benefits such as extended study time for their children.

In terms of **environmental impacts**, Solar Sister monitors its climate impacts through its own in-house methodology and partner with the Global Off-Grid Lighting Association (GOGLA) to estimate the impact of solar energy distribution. Recently, Solar Sister launched a repair and recycling programme, and waste management has become a mandatory module within the SEE training programme (Solar Sister, 2023).

Replicability

Solar Sister's experience in Nigeria sheds light into promising replicable approaches to **last mile distribution** of off-grid solar products. The reliance on local distribution agents is a key feature of many solar off grid business models, and it tends to face multiple barriers such as high distribution costs, low initial sales volumes, limited consumer and

Lessons learnt

- Models focused on women's entrepreneurship need to address gender-specific barriers such as women's lack of access to capital and training, and tailor recruitment and training strategies to local contexts.
- By centering women as managers and users of off-grid solar products and being present close to their markets in last-mile communities, Solar Sister is able to tailor its products to address the local needs, which can vary strongly per region.
- Sound and lean impact monitoring is needed to raise the finance needed in an innovative model such as Solar Sister's. (Solar Sister has shared its learnings regarding the challenges of data collection and reporting (Solar Sister, 2020).)
- Partnerships are vital for pooling resources and capabilities and accessing finance.



Figure 5. A Solar Sister Entrepreneur with her customers (Source: Solar Sister, 2022)

supply chain information, among others (Energia, 2019). Solar Sister addresses these challenges by providing intense capacity building and support to its last-mile distributors.

Solar Sister is an interesting case for Nigerian practitioners looking to prioritise **gender impacts** as a non-financial KPI and to address Nigeria's gender equity disparities within their operations. The organisation is an example of the practical application of a holistic understanding of women's empowerment that goes beyond the delivery of access to electricity or the creation of income generation activities to encompass women's access to decision-making and leadership.

The model also demonstrates the strong opportunities for businesses that focus **on women as customers** (ICRW and Acumen, 2015) as well as the untapped potential for models that give opportunities for **women entrepreneurs**, be it as distributors or productive users of energy. With around 1.5 million micro businesses, Nigeria's microentrepreneurs account for a large share of economic activity and employment. The share of female ownership of micro-businesses accounts for about 41%. In total, 23 million Nigerian female entrepreneurs operate in the Nigerian micro-business segment (PwC, 2020). The potential for replication of Solar Sister's model is therefore substantial.

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Further resources

- Solar Sister in BBC's The Conversation: <https://www.bbc.co.uk/sounds/play/w3ct37ms>
- Solar Sister's YouTube channel: <https://www.youtube.com/@SolarSistervideo>



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