

SPOTLIGHT

on Inclusive Business

Developing a successful solar lighting enterprise

It seems that there are a multitude of businesses emerging or moving into the design, distribution and sometimes the manufacture of off-grid solar power systems. Sometimes these businesses are poorly conceived; often they fail to make a compelling business case. This Spotlight offers some tips to assist those wishing to enter this increasingly competitive field.

The market

Much of the research into the provision of lighting and home electricity from renewable sources is undertaken in Africa, though the need is as great in other parts of the developing world.

- Annual expenditure on kerosene for lighting is estimated at US\$10 billion in sub-Saharan Africa and US\$36 billion globally
- Some 600 million people and more than 10 million micro-enterprises have no access to electricity
- Households often spend 10 per cent and as much as 25 per cent of household income on inadequate lighting
- Burning kerosene creates a fire hazard, causes chronic pulmonary disease and emits carbon dioxide

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d.light's solar powered LED lights replace kerosene lanterns in rural off-grid locations

Inclusive Business Spotlights shed light on specific topics concerned with the development of inclusive business. They are generated from the project and advisory work of the Business Innovation Facility and Innovations Against Poverty.



HiNation's solar charging systems support rural entrepreneurs

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Whilst there are now a small but significant number of businesses successfully selling solar lanterns and solar home systems – including d.light, Barefoot Power, Tough Stuff and SELCO – there are still considerable opportunities for businesses – manufacturers, assemblers, distributors and retail outlets – to address this need, through opening new markets, introducing or improved technologies, effectively reducing prices, or better distribution.

The cost

It is difficult to be precise about costs and prices. However, the benchmark is usually taken as the most common alternative: how much households spend on kerosene. As a result, solar lanterns typically sell for US\$10-30 and solar home systems typically sell for under US\$100.

The technology

Typically the need is addressed through solar lanterns and solar home systems, in which a solar

panel charges a battery which then provides off-grid power for lighting and usually to recharge mobile phones. Some provide the means to power radios and some even offer low-power televisions. Some businesses require users to bring their batteries to a central point to be recharged, rather than providing a solar panel. Recharging may also be delivered at a central location through other technologies such as a pedal operated dynamo.

Finance for the business and for the consumer

As with every business, raising the necessary finance can be challenging, not least because the lead times from order to delivery may be quite long and manufacturers may require some or all of the payment in advance. End users also cannot usually afford the up-front cost as one payment, so need credit, either from the seller or from a micro-finance institution. Some businesses are experimenting with scratch card and mobile money solutions to the challenge of ensuring buyers pay for their systems.

Given the large reduction in carbon emissions, businesses may be able to access carbon credits. There are a number of ways in which they may be able to do this, such as through the UN Clean Development Mechanism (CDM) or through the voluntary market. The CDM allows emission saving projects in developing countries to earn certified emission reduction credits that can then be sold. For example, Barefoot Power is one company that has registered under CDM. Registering for voluntary emission reduction certificates is generally easier than CDM but earns lower levels of income. The most successful businesses are the ones that cover at least their operating costs through sales revenue, but use carbon credits to cover research and development and perhaps dividends to shareholders. Businesses should, however, carefully weigh up the costs and benefits of seeking carbon credits. Income from carbon credits is falling and despite the potential benefits, it may not be worth the effort.

External support: Lighting Africa

A joint IFC/ World Bank program, Lighting Africa, was launched in 2007 to mobilise the private sector and co-ordinate efforts to improve access to lighting in areas not connected to the electricity grid. Lighting Africa can help solar lighting businesses in a number of ways:

- Lighting Africa has introduced minimum quality standards and recommended performance targets together with a quality assurance program, which can support market development and provide technical advice. This part of Lighting Africa is now managed under the brand of Lighting Global. The standards are available at: <http://www.lightingafrica.org/specs.html>

- Lighting Africa has stimulated the creation of a laboratory at the University of Nairobi that can test and assess off-grid lights and systems for manufacturers, distributors and others
- It can provide market information, undertake market research and assess trends, all of which reduces risk for new entrants. Reports are available a number of countries such as Ethiopia, Ghana, Kenya, Tanzania and Zambia
- Lighting Africa promotes partnerships with microfinance institutions to help consumers afford the capital cost of solar. Some solar businesses, such as Barefoot Power, have considerable experience in developing such partnerships
- Lighting Africa undertakes and supports consumer awareness programmes to demonstrate the benefits of clean and affordable off-grid lighting and thereby help to build the market
- Lighting Africa is aiming to increase access to finance: it is seeking (a) to put in place a trade finance facility to support manufacturers, not least so that they can build larger stocks and reduce delivery times, (b) to develop a trade finance facility to support importers and distributors, so that they can order in larger quantities, and (c) to encourage more micro-finance institutions to lend to consumers and particularly to encourage recognition of African lighting standards and warranties

Further information is available from www.lightingafrica.org.

Issues to consider

To create a robust business model, there are some key issues that need to be addressed. A fuller list of issues and questions are available in the *Checklist: Developing a successful solar lighting enterprise* available at <http://bit.ly/ZfqCdE>

Finance

- How much investment will be required? From where will it come?
- Will customers be able to pay the full cost or will they need credit? If they need credit, how will that be provided?
- At what price will you sell lamps and systems? Will you subsidise the cost of lamps? How many will you need to sell to cover all of your costs?
- Will you be relying on carbon credits? How will you demonstrate products are in use to satisfy the carbon credit requirements?

The market

- How big is the market at which you are aiming?
- Are there already competitors in the market?

The technology

- What technology will be used?

Quality

- Will the design meet recognised international standards?
- How will quality be controlled?

Sales and marketing

- How will products be marketed and distributed?
- Will there be a need to train distributors and retailers and, if so, how will they be trained? Will they be given additional support?

Partnerships

- If you are new to this sector, would it make sense to forge a partnership with an existing player?



Additional Resources

Checklist: *Developing a successful solar lighting enterprise*, available at www.inclusivebusinesshub.org

Financial support and business advice

Other sources of financial support and business advice include

- Organisations that support social entrepreneurs, such as Ashoka Changemakers www.changemakers.com
- Programmes supported by international development agencies, including Innovations Against Poverty and Business Innovation Facility, both at www.inclusivebusinesshub.org, and Africa Enterprise Challenge Fund www.aecfafrica.org
- Financers and foundations that focus on small-to-medium enterprises such as GroFin in Africa www.grofin.com and Good Energies Foundation www.goodenergies.com
- Crowdfunding sites such as Indiegogo www.indiegogo.com and FundedByMe www.fundebyme.com that connect entrepreneurs directly with investors
- Incubators and accelerators, such as Agora Partnerships www.agorapartnerships.org
- Development finance institutions such as the International Finance Corporation www.ifc.org and Asian Development Bank www.adb.org
- Commercial financiers including banks, micro-finance institutions and credit providers.

A comprehensive database of organisations that provide financial or advisory support for companies targeting low-income customers is available on the Practitioner Hub for Inclusive Business, <http://businessinnovationfacility.org/page/data-of-financial-and-technical-support-for-inclusive-businesses>.

Carbon Credits

- The UN Framework Convention on Climate Change publishes range of methodologies and guidance notes <http://cdm.unfccc.int>
- Global Village Energy Projects (GVEP) working with Ashden Trust has published *Carbon finance: a guide for sustainable energy enterprises and NGOs* <http://goo.gl/79XpE> and *Investment: a guide for sustainable energy enterprises and NGOs* <http://goo.gl/f1t75>

Example Projects

Sida's Innovations Against Poverty programme has supported a number of innovative solar power businesses. Sunny People, for example, is establishing a network of micro-entrepreneurs to distribute its solar-powered mobile phone chargers to rural Kenyans. In Nigeria, d.light is distributing solar-powered lighting and energy solutions using an innovative consumer-financing model where families pay off the product cost on a payment schedule that meets their (often irregular) income streams. In Zambia, HiNation has taken a different approach to the distribution of its HiLights portable solar lighting and mobile phone chargers by working through rural entrepreneurs and local businesses, who in turn rent HiLights to end users at a lower cost and with greater convenience.

For more examples of innovative approaches to solar power systems, visit the Practitioner Hub for Inclusive Business, <http://www.inclusivebusinesshub.org>.



For further information and to view other Spotlights, go to:

Practitioner Hub on Inclusive Business: www.inclusivebusinesshub.org

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