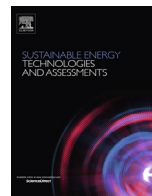




Contents lists available at ScienceDirect

Sustainable Energy Technologies and Assessments

journal homepage: www.elsevier.com/locate/seta

Original article

Women-to-women entrepreneurial energy networks: A pathway to green energy uptake at the base of pyramid

Amelie Heuër*

Formerly at SEED, Hosted by Adelphi Research, Germany

ARTICLE INFO

Article history:

Received 7 October 2016

Revised 19 February 2017

Accepted 27 February 2017

Available online xxx

Keywords:

Entrepreneurship

Women

Partnerships

Clean energy

Base of the pyramid

ABSTRACT

Adoption of existing green solutions at the base of the pyramid (BoP) remains a challenge due to the expensive upfront investments and the lack of infrastructure in remote areas, but also due to a lack of awareness and trust in new technologies and due to the lack of technical knowledge and skills for the upkeep of those innovative products.

Social and environmental small, medium and micro enterprises (SMMEs) offer one concrete means of addressing these issues, primarily because they are specialists in understanding local challenges and needs and with their extended local networks have the ability to reach the last-mile beneficiaries. By introducing new products, services and models that serve social needs and create new social relationships, they are able to maximise the uptake of green solutions in the long term.

While there is no 'one-size-fits-all' solution to clean energy distribution or adoption, the paper looks at the case of Solar Sister in Uganda, Tanzania and Nigeria, to highlight how SMMEs can introduce innovative social structures through a Triple Bottom Line (TBL) approach.

Through their unique and innovative women-to-women entrepreneurial networks, the enterprise offers a wide range of high quality clean energy products with a long life-cycle, and has created a new value chain that works for those at the base of the pyramid by positioning themselves close to their markets, tailoring innovation to social needs, mitigating high costs through micro-entrepreneurship and by growing networks and expertise through multi-stakeholder partnerships. Subsequently, they have increased local awareness, trust and ownership in the green energy products, and succeeded in large scale dissemination of the new technologies at the BoP.

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Introduction

Why is (green) energy not reaching the base of the pyramid (BoP)¹?

While great progress has been achieved in increasing access to energy globally, indeed in 2010 the World Bank reported that 1.7 billion people gained access to electricity [1] in the last two decades, the public and private sectors are still failing to cater for 18% of the world population [22], particularly for those at the BoP² [13].

* Corresponding author at: Flat 18 Burbage House, Poole Street, London N1 5ES, UK.

E-mail address: Amheuer23@hotmail.com

¹ The concept of the BoP was first introduced by C.K. Prahalad (2002) and refers to the world's poorest citizens as an segment of society lacking market access and opportunities, which inhibit them from realising their human potential.

² Of the people that do not have access to electricity and clean cooking facilities globally, 84% live in rural areas and 95% are located in sub-Saharan Africa and Asia.

To achieve the ambitious objective of ensuring access to modern energy to all by 2030³, we are faced by one key challenge; providing energy for a growing population⁴ [23], while at the same time reducing carbon emissions. The solution rests in the green energy sector where numerous innovative technologies have been developed to enhance the end-user as well as the larger power generation efficiency and promote the switch to more efficient and renewable energies. Nevertheless the adoption of those green solutions at the BoP remains a challenge due to [in many cases still] expensive upfront investments (both at national or individual level)⁵, lack of infrastructure in remote areas [18], unsuitable policies and regulations [11,18], but also due to a lack of awareness

³ Sustainable Development Goal 7.

⁴ Global population is expected to reach 8.5 billion by 2030 [22].

⁵ "While technology cost for renewable energy have been reported to decline steadily (up to 98 percent in the case of for solar photovoltaic (PV) modules since 1979), renewable energy continues to have high upfront investment costs"[21].

and trust in new technologies [11] and due to the lack of technical knowledge and skills for the upkeep of those innovative products [7].

Green and inclusive SMMEs: The solution to clean energy access at the BoP

Based on 10 years' experience of working alongside social and environmental small, medium and micro enterprises (SMMEs)⁶ – further referred to as inclusive eco-enterprises – it has become apparent that these enterprises can offer one concrete means of addressing these issues. These enterprises are specialists in understanding local challenges and needs and with their extended local networks have the ability to reach the last-mile beneficiaries [27]. Of the 202 enterprises SEED⁷ has worked with, about 22% work in the energy sector ranging from solar energy, clean cook stoves and other innovations such as biogas. Based on a recent survey [9] at SEED, their businesses have directly reached over 3 million beneficiaries⁸ and another 1 million indirectly benefits from training and awareness raising campaigns. But how do they succeed where so many have failed so far?

By introducing new innovative products, services and models they address social needs and create new social relationships. The case of Solar Sister [11], an eco-enterprise which operates in Uganda, Tanzania and Nigeria, provides a good example of how new innovative social structures can maximise the uptake of green energy at the BoP by incorporating a Triple Bottom Line (TBL)⁹ approach into their business model from the outset.

This paper aims to address the question around the role of inclusive eco-SMMEs in addressing energy poverty and the design features that make them successful in tackling this intrinsic problem. Firstly, the paper discusses how these enterprises are able to create trust in the products and obtain direct customer feedback by using existing formal and informal networks, which gives them a unique market position. Secondly, the paper shows that green innovation should be combined to socio-economic empowerment as clean energy access has a multiplier effect when linked with other entrepreneurial activities. Furthermore, the paper argues that it is crucial to acknowledge the gender dimension in the context of increasing access to (green) energy as women are an essential target group and are at the centre of the solution in terms of dissemination. Finally, the paper discusses how more enabling environments can be created through alternative financing and multi-stakeholder partnerships to maximise the growth and impacts of inclusive eco-SMMEs like Solar Sister.

Methodology

Since 2002, SEED has promoted TBL solutions at grassroots level by selecting and supporting over 200 inclusive eco-enterprises in 37 countries. Through an annual award scheme, the SEED Awards identifies promising, innovative and locally-driven start-up inclusive eco-enterprises in countries with developing and emerging economies, which have the potential to make real improvements in poverty alleviation and environmental sustainability while contributing to a greener economy. Those SMMEs work in a wide

⁶ Also known as green and inclusive enterprises or eco-enterprises.

⁷ Founded in 2002 by the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP) and IUCN (International Union for Conservation of Nature), SEED strengthens the capacity of small grassroots enterprises in developing countries to enhance their social, environmental, and economic benefits, builds bridges between entrepreneurs and policy makers and stimulates exchange and partnership building.

⁸ Based on the replies of 29 respondents.

⁹ The term 'Triple Bottom Line' was coined by John Elkington in 1997 and considers the social (people), environmental (planet) and financial (profit) performance of an organisation or business.

range of sectors such as sustainable agriculture/aquaculture, biodiversity, green technologies, waste and sanitation, and energy. Solar Sister was one of the 2011 SEED Winners.

In 2014–2015 SEED observed in depth a sample of those inclusive eco-enterprises to provide insights for policy and decision-makers on the role of eco-enterprises in achieving sustainable development, and on enabling factors that can help them overcome barriers and reach scale and replicate. Quantitative and qualitative interviews were conducted with over 60 enterprise owners, executives, business partners and beneficiaries in Colombia, India, Kenya, South Africa, Uganda and Viet Nam, which resulted in 12 case studies. For each case study, the answers of the enterprise owners/executives were compared with those of partners and beneficiaries to validate the performance and the impact of those enterprises. With regard to enabling factors and challenges, the results were compared between the 12 case studies to ascertain commonalities and differences, and in turn identify trends between those enterprises. While the enterprises operate in varying sectors and have unique products and services, they all share the common objective of introducing green innovation at the grassroots to address social, environmental and economic local problems. The comparative analysis furthermore revealed that they share similar features in their partnerships, organisational structures, business models and they experience comparable challenges. Through one of the case studies, this paper discusses innovative social structures that could be introduced to enhance the uptake of green innovation at the BoP and contribute to local change.

Whilst innovation may imply the development of new technology, it can also involve new ways of organising an enterprise's supply chain in a way that is more environmentally friendly and efficient, or bringing new skills or services to people in the community [19]. In a local setting, innovation really has value when it not only generates additional profits for an enterprise, but when it helps to address local social and environmental problems. In this paper, the definition of 'social innovation' is in line with that of the European Commission paper ([3]):

“Social innovations are innovations that are social in both their ends and their means. Specifically, we define social innovations as new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. They are innovations that are not only good for society but also enhance society's capacity to act.”

Social innovation for improved impact

Tailored last mile distribution through unique market position

A feature that inclusive eco-enterprises share is their physical closeness to local markets, which provides them with a unique position to know and reach their market and to respond to changing demands from customers and the wider community [4]. In the case of Solar Sister, by combining solar and clean energy technology with an Avon-style direct sales network, Solar Sister is able to tailor its products for different market segments ranging from small households, businesses as well as institutions such as school and health clinics.

The enterprise buys a wide range of products, consisting of simple solar lighting, lights plus mobile phone charging products, plug and play home kits¹⁰, larger customised designed solar systems¹¹

¹⁰ “Plug-and-play solar home system kits can provide power for multiple appliances, such as lights, mobile phones, TVs and fans. The systems are often sold as complete kits (solar module, charge controller/battery box, lights and appliances) that can be easily assembled” [10].

¹¹ Pricing vary depending on system sizing.

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