

Powering change in low-income energy markets

■ EMMA WILSON AND BEN GARSIDE



Market-based interventions to improve access to energy rarely benefit the poorest, especially if they are driven by specific technologies or external agendas, such as climate change mitigation. Failure to understand local needs and preferences results in inappropriate goods and services and low uptake. Yet business can deliver low-carbon technologies to the 'bottom billion' and support sustainable development. To do so, they must work more closely with government agencies, development practitioners and local communities in designing and delivering products and services. Impact should be measured in terms of development benefits, not products sold or carbon emissions saved.



Donors and development agencies tend to seek out the 'sweet spot' where climate change mitigation, adaptation and poverty reduction can be addressed simultaneously — and they see the private sector as a key player in making this work.

Yet the agendas to mitigate climate change and increase access to energy to reduce poverty are frequently incompatible. Studies suggest that low-carbon energy programmes aiming to reduce emissions — which require scale — have often targeted the middle poor, not the poorest.

While continuing to push for 'adaptation co-benefits' in mitigation projects, it is important to de-couple 'access to energy' from other agendas, and set targets and incentives to deliver energy services to the poorest.

Prahalad and Hart's Base of the Pyramid (BoP) paradigm suggests that companies can deliver development benefits and make a profit by targeting the four billion people at the base of the economic pyramid who live on less than US\$2 per day. To date, such approaches have also tended to focus on the middle poor. Yet in theory, it should be possible to reach the poorest — the 'bottom billion' — and still make a profit.

For this to work, we must consider local people not only as consumers but also as producers or distributors, and as co-designers of products and business models. Businesses must start from the perspectives of local communities. This involves removing external agendas, understanding local needs and preferences, and co-designing business models to deliver benefits that communities will use and maintain in the long term.

Understanding local needs

Efforts to promote access to energy for all should be rooted in the needs of local communities. In many cases, access to electricity for all households may be a secondary need, after fuel for cooking and access to clean water, sanitation, health care and education. A solar-powered water pump may be more useful to the whole community than solar home systems, which only the wealthier can afford.

Needs are perceived differently by women and men, young and elderly, and by groups of different status within a community. Market research needs to consider different groups and the power relations that influence how decisions are made in a community.

More than that, communities should be encouraged to drive the design of an appropriate response — starting with the simple question "energy for what?" and armed with a better understanding of the full range of resource and technology options available to satisfy their needs.

Boosting social acceptance

It is vital to understand how and why people take up new technologies and services. Social acceptance can make or break adoption of — and payment for — new energy technologies and services among the bottom billion.

Affordability is, of course, an important factor. This requires a low-cost business model, including materials and distribution. Competition stimulates low-cost design innovation but is often lacking in BoP markets. For example, China's National Improved Stove Programme



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tried to address this by holding competitions to design locally appropriate stoves.

Attracting finance to support low-cost energy access has been a challenge. Donors have supported many pilots, and some investors have put money into larger schemes. But there is a 'missing middle' of available finance to make the step from small-scale pilot to self-sustaining business. We need to consider how carbon finance can be designed to benefit the poorest, and be made more accessible. Adaptation finance as it becomes more available may be a better mechanism to focus on.

Affordability also depends on the structure of payments for goods and services. Remote metering systems, pre-payment 'smart cards', and payment through a network of distribution outlets or by mobile phone can keep costs down for utilities. But acceptance of electronic payment systems may depend on existing community trust and social networks.

Microfinance can work when carefully structured to suit local situations. Energética in Bolivia lowered default rates on loans by using a flexible model that allows loan payments to be rescheduled to match agricultural production cycles. But in India poor borrowers rejected commercial microfinance schemes through the Bank Self Help Group Programme because of high lending rates and loan shark type behaviour.

Poor people can and do pay for energy services. But they are often given a limited choice of products with clear drawbacks — for example kerosene lamps and candles that are a fire risk and emit poor quality light.

People will not pay for new products or services, however, if they see them fail. For example, a history of failed solar power projects (as in Nigeria), or low-quality products (such as cheap imports from China), will influence overall perceptions of solar potential. India has large solar uptake partly because people have more evidence that it works.

In some cases, people may be reluctant to give up their traditional technologies. While Western practitioners promote efficient stoves to reduce the health impacts of indoor air pollution, a study from Thailand highlights the many uses of smoke in poor homes, including food preservation and keeping away insects.

Meaningful involvement

Community involvement ranges from being fully informed and participating in decision making to partial or outright ownership. Community-managed micro-hydro projects in Nepal have enjoyed greater access due to appropriate tariffs and a loan system, better maintenance and less vandalism, and increased productivity following end-use training.

Another approach is to co-design products and business models. The D-Lab programme of the University of California Davis has worked with local communities to develop products including solar fruit dryers in a women's co-operative in Nicaragua.

The more value that local people can capture across the value chain, the more likely that access-to-energy interventions will reduce poverty. To make value chains inclusive, it is important to understand the range of local skills and capacities. SolarAid's early business model in sub-Saharan Africa was based on people producing solar products locally, but they later discovered that people could capture more value through micro-franchising.

It is not always a case of bringing in new, 'green' technology. People can create opportunities by better managing their own resources and local value chains. Experts in Malawi and Sri Lanka propose legalising and modernising charcoal value chains to create local jobs and make cooking practices more efficient and sustainable — rather than seeking 'cleaner' alternatives to wood-based fuels.

Another way to capture value is for businesses to align their goals with local and national development planning. Business could also use this as an opportunity to push for government incentives to support low-carbon technologies, for example reducing VAT and import tariffs. In the Niger Delta, for example, the World Bank is supporting local-level dialogues between government and practitioners to promote the uptake of renewable energy technologies.

Next steps

Low-carbon energy technologies can improve access to energy in the poorest markets and BoP business models may be able to provide a part of the solution.

Business models must be rooted in community needs and offer opportunities throughout the value chain. This requires companies to work with government and development practitioners to marry the skills of development planning and participatory engagement with sound business and technical sense.

It is important to measure and demonstrate the economic and social benefits of interventions and to raise awareness overall about energy access options. Businesses and developers need to improve their communication and share their successes — and failures — more openly.

Of course the private sector is not in the business of endless research, development and education, and at the end of the day needs to realise a profit margin. There is a strong argument for government and development agency support, particularly for first movers.

Success will require incentives and support for BoP energy markets, using low-carbon technologies where appropriate, yet driven not by low-carbon targets, but by local energy needs and development goals. Much can be achieved by empowering communities to make informed energy choices and play a greater role in shaping markets — as discerning consumers, co-designers, producers and entrepreneurs — and ultimately in making those markets work for them.

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