

Policy pointers

- **Mainstream commercial** investors interested in clean energy technology and energy efficiency often consider low income markets too high risk, with too low returns.
- **Yet these low-income** energy markets have great growth potential; increasingly attracting impact investors.
- **Challenges include too few** proven enterprises and business models to invest in, too little policy support and incentives for renewable or decentralised energy, insufficient information and knowledge-sharing, and too few pioneer enterprises and investors.
- **Governments should** address policy issues such as fuel subsidies and tariffs, while offering targeted subsidies, co-investment and loan guarantees. Donors can fund business model validation, support services and skills training, and can use grants as 'risk capital' for enterprise development.

Stimulating quality investment in sustainable energy for all

Governments and donors are looking to the private sector to help generate the \$1 trillion of additional investment required to achieve universal energy access by 2030. One in five people lack access to electricity, paying instead for kerosene or candles. Evolving low-income energy markets have huge growth potential but their high risks and low rates of return are more suited to impact investors than mainstream commercial investors. Crowdfunding is an exciting new way to link individual investors to local projects.

Governments and donors still have key roles to play in leveraging investment and stimulating the market. More demonstration and validation of innovative business models will increase investor confidence. Ultimately, better energy access should lead to better health, livelihoods and resilience — a key aim of 'quality investment'.

According to the International Energy Agency (IEA), nearly \$1 trillion of investment is needed to achieve universal energy access by 2030. This is just 3 per cent of the estimated total investment required to maintain and expand energy infrastructure at current rates. Universal access would only increase global energy demand by 1 per cent and CO₂ emissions by 0.6 per cent.¹ Donors and governments seek to stimulate private investment in low carbon development and energy access, through programmes such as the UN Sustainable Energy for All initiative, launched in 2012. This will require targeted investment models, combined with innovative and robust business models on the ground.

Private sector 'quality investment' balances environmental sustainability, poverty reduction, economic diversification, human capital development and social justice, while delivering an acceptable risk profile and rate of return for investors. Investments in sustainable energy for all may have different and not always compatible goals. For example, targets such as carbon savings or numbers of electricity connections require scale, which may incentivise against reaching the poorest (who are consuming less and may be located in smaller, dispersed rural communities). The high risks mean that these investments will interest angel investors more than, for

example, pension funds, which may also pursue socially responsible investment goals, but are not keen to take on so much risk. There is still a strong role for governments and donors in leveraging private sector involvement. IIED and Village Infrastructure held interviews with 13 experts, to pinpoint some of the key challenges and new innovations.

The market

One in five people lack access to electricity, while 40 per cent have no access to clean cooking fuels, risking severe respiratory damage. Even the poorest often pay for kerosene and candles. Low-income energy markets in developing countries are still immature, but with the right support they could expand, as have mobile phone and microfinance markets, especially as costs decline (for example solar photovoltaics). (For more on microfinance, see 'The pioneer bank and the evolution of the microfinance market', overleaf.)

Investors in energy in emerging markets tend to target larger-scale infrastructure and grid expansion, neglecting energy access in poor and outlying areas. But there are investment opportunities in areas beyond the grid. One of our respondents observed,

Low-income energy markets have great potential

“In Tanzania, for example, grid coverage is just 40 per cent. They are unlikely to go the route of Western grid development to the whole country.”

Another expert noted, “Like mobile versus fixed phones — countries can leapfrog towards rapid deployment of smaller distributed energy systems, bypassing some regulatory barriers”.

With innovative business models emerging, the key challenges remain access to affordable finance and how to structure that finance.

Barriers and challenges

A major barrier to private investment in low-income energy markets is the need to generate an acceptable rate of return. The portfolio companies of Acumen Fund, which target poverty reduction through impact investment, have an average profit after tax of minus 20 per cent. For the eight most profitable, profit is just six per cent.³ This suits Acumen’s mandate, but other investors — even other impact investors — may prefer greater returns. Another issue is that investment opportunities of a few thousand to a few million dollars are often too small. A respondent told us “The transaction costs and legal fees associated with multiple complex deals mean smaller investments are not worthwhile without some kind of aggregation.”

Country risks include political or economic instability or the risk of conflict over land rights. Further issues include pricing, tax and subsidy regimes and contract enforcement.⁴ Another respondent in our survey observed, “There are no easy ‘template’ solutions to mitigating investment risks in renewable energy generation for the poor”. Not understanding the risks increases investors’ anxiety. There is also a need for clear regulation: “A project site may be located in the middle of nowhere and it is not clear what the rules are; it depends on the local chief to decide what happens.”

The pioneer bank and the evolution of the microfinance market

The evolving low-income energy access market is being compared to the microfinance market in its early years. Microfinance is popular among impact investors interested in emerging markets. A 2013 JP Morgan² survey of impact investors found 59 per cent of emerging market investors were investing in microfinance, not far behind agriculture (which, at 63 per cent, is the most popular category within emerging markets). But the story was not always the same. In its early years, microfinance depended on grants, soft loans and guarantees from donors and philanthropists. The sector received about \$20 billion in subsidies in the two decades that it took to become commercially attractive to investors. The Grameen Bank, which pioneered microcredit in South Asia, was launched in 1976 and became a bank in 1981, but took 17 years overall to break even. In doing so, it overcame many barriers for subsequent players, who took much less time to break even and attract commercial investment, and helped establish the enabling conditions and validate the business model for all players in the sector.³

Respondents saw a need to change mindsets across the board. One expert noted that in many countries the public sector does not trust the private sector (and vice versa), and another complained that investors’ short-term thinking hampers imaginative investment. It is important to empower people, whether that be enabling people in the Niger Delta to generate their own power, or enabling individuals in Europe to influence climate change or social development with their investment choices.

Investment in early-stage markets requires time. As one angel investor noted, “It is difficult to base an investment decision purely off the financials, and in-depth relationship building is often required with the venture’s team.” Much depends also on the ability of local entrepreneurs to build those relations with investors. Another investor observed, “Social impact entrepreneurs often find it difficult to explain and demonstrate their impact. Entrepreneurs who drift into it because they have seen huge market potential often grow better.”

A key challenge is the lack of impact investing opportunities into which large amounts of capital could be placed at investors’ required rates of return.³ Another is a lack of pioneer firms that could overcome barriers and build the market (as Grameen Bank pioneered microfinance).³

Investors and instruments

International organisations such as the non-profit organisations Global Village Energy Partnership (GVEP) International and Ashden, and ‘innovation accelerator’ organisations such as Embark and Ennovent, have developed finance-related guidance for enterprises. Sources range from international investment funds, donors and foundations, to carbon funds or regional challenge funds, such as the African Enterprise Challenge Fund. Entrepreneurs might also look closer to home — to local banks, microfinance agencies, or family members, locally or within the diaspora — though many don’t have that luxury. The required investment might be as little as \$5,000 or \$10,000. Embark sees a space for crowdfunding or philanthropic seed funds: “The big opportunity is finding a smart way to seed the field and then make returns from serial investments.”

The impact investment landscape is evolving, with impact-oriented funds increasingly demonstrating market-rate returns. Clean technology is familiar territory, but ‘financial first’ impact investors such as Triodos Bank tend to target European markets for renewable energy investments.⁵ According to the J.P. Morgan survey of impact investors (mentioned above²), 35 per cent of emerging market investors are investing in energy, compared with 45 per cent of developed market investors. Emerging markets are, however, gaining credibility. One angel investor observed: “Investing in

expanding energy access in emerging markets, aside from its social impact, is increasingly seen as an asset diversification strategy for private investors.”

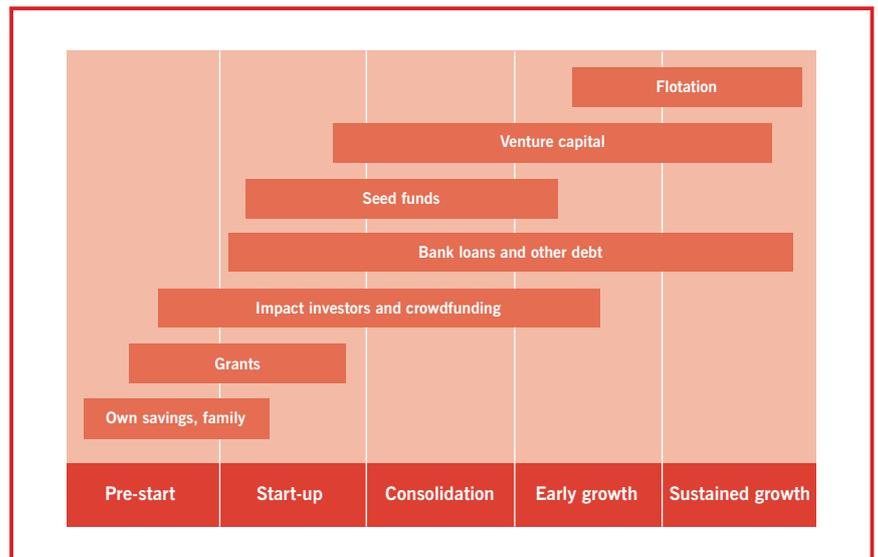
Growth is being driven by angel investors (for example via InvestInChange) and high net worth individuals. They can respond to smaller, one-off deals, co-investment and phased investments, and early-stage, high-risk investments (see Figure 1 for how funding sources typically fit enterprise growth stages). One commented, “Business angels may start by contributing a few thousand pounds, moving on to build a portfolio of 8–12 investments, with total investment equivalent to 2–5 per cent of their net wealth.” Investing through angel networks like TONIIC or Go Beyond allows co-investments that share due diligence and research into new deals. Angel investors often provide both money and support to their portfolio, which is time-consuming but crucial for early-stage investment. A major roadblock is finding lead investors — ‘first movers’ who are willing to lead on negotiation and risk taking.

Crowdfunding is selling small amounts of debt or equity to large numbers of investors. Ray’s Fund, a nascent crowdfunding platform, responds to the twin trend to decentralise efforts to promote energy access for the poor and decentralise opportunities to finance such efforts. As one expert observed, “Crowdfunders have a bold approach to risk and are keen to fund early stage enterprises and experiment with business models. Platforms such as Kiva, Microplace, Sunfunder, and Mosaic have demonstrated that crowdfunding works and can aggregate and grow investment.” Crowdfunders can also partner with larger institutional investors. By refinancing investments that have been funded through the crowd, institutional investors can take advantage of the lower costs of due diligence for a deal that has matured through crowdfunding. With cries of “it sounds too good to be true”, however, there is a need to continue educating project developers and the public about opportunities and challenges.

Carbon finance — whether from public or private funds, the Clean Development Mechanism (CDM) or Voluntary Carbon Markets — is a further way to fund low-carbon energy projects. The International Finance Corporation’s medium-term Green Bonds have raised \$2.2 billion to date for renewable energy projects and energy efficiency in emerging markets. Climate Wedge provides carbon finance and advisory services to clients and also runs cookstove and biogas projects in developing countries.

Entrepreneurial development bank FMO leverages private sector investment in emerging markets. They invested 300 million euros in private sector energy projects in 2012–2011. In larger-scale energy projects they take on higher risk and partner with commercial investors. They use government funds for projects of 0.5 to 4 million euros such as small-scale rural electrification, solar lamps and solar cells. They offer a convertible grant, which can be converted into equity

Figure 1. Stages of enterprise growth and funding sources. Adapted from Irwin (2009).⁶



or a loan if a project is successful. FMO also supports microfinance organisations, for example enabling farmers in Cambodia to buy biogas digesters.

Getting the business models right

There is a need to develop innovative and robust business models and — importantly — demonstrate their effectiveness and impact to potential investors. Embark, Ennovent and Impact Investment Exchange Asia (IIX) link investors with investment opportunities and provide support and incubator services to local enterprises. To address the issue of ‘scale’, investors can invest in a developer that aggregates smaller scale projects, following the CDM approach.

The Solar for All initiative seeks to showcase and support “pioneering entrepreneurs that have been creating innovative, bankable business models, taking advantage of the decline in the cost of photovoltaics and piloting innovative payment structures such as mobile collection”. The company Eight19, for example, has a pay-as-you-go model for solar home systems in which users buy a scratch card mobile phone code that activates power for a given period.

Distribution is often a key challenge. SolarAid have pioneered microfranchising with their SunnyMoney programme, which sells solar lights in sub-Saharan Africa. Another key challenge is service and maintenance. Tata Power Solar provides solar water heating, home lighting and streetlights. Users are charged for installation and maintenance, and local residents are trained in maintenance skills.

What can governments and donors do?

The UNDP identifies two key ways to reduce risk in energy investments in low-income markets. These

are: policy derisking instruments (for example support for: designing renewable energy policy, institutional capacity building, grid connection, maintenance skills development) and financial derisking instruments (for example loan guarantees, political risk insurance and public equity co-investments)⁷. Respondents in the J.P. Morgan survey² rate their top government interventions as “technical assistance for investees”, “tax credits or subsidies” and “government-backed guarantees”. Our own respondents wanted governments to enable more private power generators to sell power to the grid, reduce import duties on technologies, and introduce tariff models and metering to reduce payment risks. Fuel subsidies and taxes should be reformed to support renewable energy. Government funds can be used for higher risk investments, either through direct investment (for example in wind turbines) or via banks such as FMO.

Our respondents also said donors could fund more of the soft costs, but should “stop giving things away for free”. They could kick-start innovation by “putting a couple of ‘first dollars’ into an investment vehicle” and help develop market infrastructure such as internet or mobile platforms, new payment systems, legislative reform, research on consumption patterns or renewable energy potential. ‘Enterprise philanthropists’³ can support local enterprises while also creating public goods (such as replicable business models, local skills, supply chains, infrastructure or customer awareness) that can be used by other enterprises for social impact. The right kind of grant support can help pioneer firms develop and validate inclusive business models or create new base-of-the-pyramid markets. Grants are, in effect, the “ultimate risk capital” for pioneer businesses because they are not given in the expectation of a specific financial return, and so can tolerate uncertain commercial viability.³ And grants don’t just benefit the pioneer firms, but also copycat competitors that spring up in their wake.

Notes

- ¹ International Energy Agency (IEA). 2012. *Key World Energy Statistics*. IEA, Paris. Available at: www.worldenergyoutlook.org/publications/weo-2012/#d.en.26099 ■ ² Saltuk, Y. et al. 2013. *Perspectives on progress: the impact investor survey*. J.P. Morgan and the Global Impact Investing Network (GIIN), London, UK. See: www.jporganchase.com/corporate/socialfinance/document/130107_Perspectives_on_Progress.pdf ■ ³ Koh, H., Karamchandani, A., Katz, R. 2012. *From blueprint to scale: the case for philanthropy in impact investing*. Monitor Group, Mumbai, India. See: www.mim.monitor.com/blueprinttoscale.html ■ ⁴ International Finance Corporation (IFC). 2012. *Private investment in inclusive green growth and climate-related activities: key messages from the literature and bibliography*. IFC, Washington, DC. See: http://siteresources.worldbank.org/EXTPREMNET/Resources/489960-1340717984364/Private_Investment_Inclusive_Green_Growth_Climate_Related_Activities.pdf ■ ⁵ Palandjian, T.P. 2010. *Investing for impact: case studies across asset classes*. The Parthenon Group and Bridges Ventures, London, UK. See: www.parthenon.com/ThoughtLeadership/InvestingforImpactCaseStudiesAcrossAssetClasses ■ ⁶ Irwin, D. 2009. *Investment: a guide for sustainable energy enterprises and NGOs*. The Ashden Awards for Sustainable Energy, London, UK. See: www.gvepinternational.org/sites/default/files/investment_guide_final.pdf ■ ⁷ Waissbein, O. et al. 2013. *Derisking renewable energy investment: a framework to support policymakers in selecting public instruments to promote renewable energy investment in developing countries*. United Nations Development Programme, New York, USA. See: www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment/ ■ ⁸ See also: Bellanca, R., Wilson, E. 2012. *Sustainable Energy for All and the private sector*. IIED, London, UK. See: <http://pubs.iied.org/G03383>

Next steps

Low-income energy markets are still immature but have great potential. Angel investors, high net worth individuals and crowdfunders are key, as are finance instruments such as convertible grants and targeted funds from donors and governments. The sector needs more pioneer firms and investors, and incubator models such as Ennovent and Embark. Practitioners and investors are calling for greater coordination and knowledge sharing between initiatives, for example on product quality, pricing and logistical procedures. FMO encourages supported companies to share their experience in Africa, saying “Competition is fine, we should stimulate it, but people are too protective of their own models.”

In the J.P. Morgan survey,² four out of five fund managers emphasised the importance of impact measurement for raising capital. The Rockefeller Foundation is looking to build investor confidence by developing standardised metrics to compare and contrast investment options.⁵ Our respondents wanted more systematic recording of indicators and validation of business models, including their environmental and social impacts.⁸

What is clear, however, is that there is a growing body of opportunity for investors, large and small, to invest in low-income energy markets. As these markets mature, this combination of inclusive business models and sustainability impact monitoring should ensure positive outcomes for people’s health, livelihoods and resilience.

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About the series

A commercial investment’s ‘quality’ determines whether it promotes or undermines inclusive sustainable development in low-income countries. This briefing is part of an IIED series that investigates the notion of quality investment across different sectors and themes. Individual briefings do not start from a specific definition of quality investment. Rather, a final briefing will review the series and discuss implications for such a definition.

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