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Waterloo Global Science Initiative

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4. Success through diversity

Create an environment where energy entrepreneurs and their evolving business models can thrive

4.1 Overview

Although there is an enormous amount to be gained from achieving the three solutions we have highlighted so far, they are fairly general, broad stroke approaches to facilitating and sustaining energy access. Here we focus on a very specific and important solution: energy entrepreneurship. There is every indication that this is the key that will unlock SDG 7.

Across the world governments, economists and thought-leaders are championing the importance of entrepreneurs and innovators. That is because entrepreneurs have driven growth in many emerging economies causing governments to encourage a more of the same approach. A strong set of motivated change-makers can certainly have profound effects on a country's economy, standing and social conditions. As Wim Naudé of the Maastricht School of Management has pointed out, "Global development is entering a phase where entrepreneurship will increasingly play a more important role."⁸⁶ That is partly because donors have been shifting focus towards private sector development in the least developed countries.

The role of entrepreneurs is certainly important for energy access, and networks of motivated citizens are achieving profound innovations in energy services delivery.⁸⁷ However, the global energy access market is an extremely divergent space, representing a plethora of small segments across many countries and regions. The opportunities represented by this vast and diverse market cannot all be met using a single business model. Therefore, the global task of increasing energy access will involve many and diverse entrepreneur-driven models, which will all need room to co-exist, compete, evolve, and thrive.

Despite the promise, energy entrepreneurs who are trying to open up new energy markets with new technologies face

difficult economic and social conditions. The majority work within contexts that are uncondusive or even hostile to innovation, and where grassroots innovations struggle to survive and grow.⁸⁸ As a result, some of the highest potential market opportunities, such as the deployment of highly efficient direct current (DC) appliances, remain largely untapped. Many other market opportunities are probably yet to be identified.

Many of the solution points from previous sections of this document can and should be tailored to the specifics of energy entrepreneurship, in ways that we lay out below.

4.2 Three actions that will allow energy entrepreneurship to flourish

4.2.1 Physical spaces that bundle support for energy entrepreneurs

In the developing world, innovation often exists at the grassroots level simply because a large proportion of the population is under 35 and many young people have to innovate to make a living.⁸⁹ In the energy access sector, however, this is challenging because of the difficult business environment explored in Section 2.

Creating energy entrepreneurship ecosystems within which energy entrepreneurs can flourish will be vital to the struggle to expand energy access. Physical facilities such as incubators, innovation labs, business offices and tinkering space are crucial to many entrepreneurs who discover what works in their chosen area by exploring and doing.⁹⁰ Such facilities should also offer access to mentors and networks because learning from experienced peers accelerates the success of entrepreneurship ventures. Entrepreneurs also need access to reliable information

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from market intelligence and technology updates to legal and regulatory changes. Finally, these centres should make available a suite of tools, resources and guidelines for business model development. These can help entrepreneurs to design innovative models that work in their particular context.

The World Bank has supported the creation of eight Climate Innovation Centers: in Kenya, Ethiopia, India, South Africa, Vietnam, Morocco, the Caribbean, and Ghana. These are hubs that deliver a wide range of support and resources to budding entrepreneurs aiming to serve these markets with clean energy solutions.

Find out more in our Solution Spotlight – Incubating entrepreneurs at the World Bank’s Climate Innovation Centers (page 58).

4.2.2 Market intelligence

It is equally important to help entrepreneurs fully understand their prospective customers during business model development and communicate the viability of their model to those who can finance it. When entrepreneurs are also designers of their product – which is often the case with energy access start-ups – the need for deep market intelligence to understand end-user needs is even more important. Networks of humanitarian engineers, many of which are founders of social and profit-making enterprises dedicated to the diffusion of the technologies they create, can also help to support these entrepreneurs in recognizing the potential pitfalls that they can find themselves in if they do not understand their customers deeply enough. Engineering for Change, for example, is a non-profit dedicated to popularizing design for development principles, and currently manages a library of energy access technologies and solutions to support user-centric design in the sector.⁹¹

There are lessons to be learned here from other sectors as well, such as telecommunications. In Africa, mobile telecom companies have allowed small-to-medium size entrepreneurs to franchise brand names and open centers that sell phones, calling credit and other services. Their training programs

channel natural inclinations to innovation, providing technical training and business/entrepreneurship training, and can teach skills that will have immediate payback for energy access. Emerging energy access enterprises should also look to harness local creativity and entrepreneurial spirit in order to enhance the diffusion of their products and services.⁹²

While big data and the internet of things may seem like high-tech concepts suited to the developed world, their application in the most remote areas of the globe may create huge market building opportunities for the off-grid energy sector. SteamaCo and other enterprises are already successfully applying these platforms to support remote monitoring, operation and after sales service for off-grid energy technologies, from small solar home systems and solar irrigation pumps to larger village scale micro-grids.

Find out more in our Solution Spotlight – Harnessing data from remote energy markets with SteamaCo and Vulcan Impact Investing (page 59).

4.2.3 Establish supportive policy frameworks

For entrepreneurs to thrive, governments must create well-defined regulations, well-crafted incentives and a reliable safety net that allows entrepreneurs to start again if their business fails. These should be formed in consultation with networks of entrepreneurs to avoid the problem of small scale entrepreneurs struggling to negotiate favourable terms with larger market players.⁹³ Such initiatives are rare in the developing or developed world but Ofgem, the UK’s energy regulator, has launched a program, Innovation Link, that works with energy entrepreneurs to establish a regulatory framework that supports new types of business in the energy space.⁹⁴ An example of a similar initiative is the Canadian MaRS Network. Besides offering a suite of resources and access to financiers, MaRS helps entrepreneurs in a variety of sectors to negotiate, and sometimes re-negotiate, regulatory issues.⁹⁵ Energy entrepreneurs also need governments to formulate quality standards and certification, as discussed in Section 1.^{96,97}

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4.2.4 Open access to financial support

Although we have already discussed finance issues in Section 2, it is worth emphasizing the central role of financial assistance in helping energy entrepreneurs establish their businesses.

Traditionally, investors prefer larger enterprises that have better resources for connecting with large numbers of customers.⁹⁸ They are also reluctant to engage early, especially in businesses that face high transaction costs and high risk.⁹⁹ Risk-averse financiers tend to try to pick winners from among the plethora of energy innovations, or see tried and true, less innovative models as more viable than others. Information is a big issue here: financiers often don't have enough data on which to base their decision-making and so opt for what they know.¹⁰⁰ Ironically, many of the less risk-averse financiers adopt a strategy where they simply opt for the newest technology and look to invest in the next big thing. This strategy also precludes them from investing in elegant, low-tech solutions such as efficient, low power DC appliances.

Solving this matrix of problems requires government, philanthropic or NGO-led investment in a framework of supporting ecosystems that connect many actors in the energy entrepreneurship space. Evidence shows that when these ecosystems are well resourced and well designed, energy entrepreneurs are highly successful.¹⁰¹ Solar Sister is an example of a program that utilizes the power of local entrepreneurs to market energy access solutions. This peer-to-peer sales solution allows women to tap into their social networks to find customers for clean energy lights and cookstoves, with the Solar Sister program providing hardware, logistical support and cashflow solutions.¹⁰² Governments can partner with such programs to maximize their chances of success.

Crowd funding and angel investors are two other emerging responses to the ongoing issue of raising funds with which entrepreneurs can trial their ideas. SunFunder,¹⁰³ SunnyMoney,¹⁰⁴ Kiva,¹⁰⁵ and Mosaic¹⁰⁶ are among a host of emerging and established companies demonstrating that crowdfunding can attract energy investment in the developing world because it doesn't require huge commitments from anyone. Angel investors are often extremely supportive of nascent ideas and fully aware (and tolerant) of the financial risk. They also network together well, sharing opportunity, research findings and due diligence, all of which takes the heat off the entrepreneur.¹⁰⁷ Governments need to work in partnership with such investors, researching, evaluating and establishing the conditions – such as microfinance opportunities, patient capital incentives and repatriation of funds – that are most conducive to their involvement.

New techniques for channeling large-scale finance to multiple small-scale projects are also being developed and implemented. Green bonds, such as those issued by the International Finance Corporation, offer a low-risk investment proposition to finance clean energy and low-carbon projects and thus bundle and securitize debt.¹⁰⁸

Partial loan guarantees have also been used to support energy projects. For example, the African Development Bank provided a partial guarantee for a wind-power project in Kenya to protect against political risks of delay or default.¹⁰⁹ National governments looking to support energy entrepreneurship need to find similar programs that will de-risk investment in this sector. Canada, for example, is establishing a national Infrastructure Bank that will support a range of capital-intensive projects by attracting private investment to supplement direct federal funding.¹¹⁰

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