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Illuminating market systems development in fragile environments: A case study of the alternative energy market in Timor Leste

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Picture 1: Francisca da Costa holds the solar lanterns she purchased from an E4A Alternative Energy Centre (LEA)
(Source: Nick Brubaker)

Energy For All (E4A) was a three year market systems development (MSD) programme funded by the European Commission. The programme sought to improve the reach and quality of distribution networks for clean energy products (solar appliances and clean cookstoves) in rural and peri-urban Timor-Leste. The programme stimulated systemic change to address two specific problems impeding a sustainable energy market: poor availability of quality, affordable alternative energy products and limited demand for alternative energy products and services. This learning study describes the key findings and lessons learnt through implementation and should serve as a guide for others attempting MSD in similar under-developed markets.

Introduction

Timor-Leste is an energy-poor nation. When the programme was designed, only 38% of its 1.2 million residents had access to electricity (World Bank, 2010) and the vast majority of those with access lived in urban areas. In rural areas, only 10% of households were on the grid, while 90% used kerosene for light – which is expensive, unhealthy, and poses a fire hazard. For cooking purposes, 100% of rural households and 91% of peri-urban households relied on wood-fueled open fires — which is inefficient, poses risks to health and the environment, and requires labour-intensive wood collection. Although the government had tried to address this (by expanding the grid systems and distributing some household solar photovoltaic (PV)), at the start of the programme there was essentially no market for high quality household energy products in the country.

Access to alternative energy represents a great opportunity for market development efforts in high risk, low capacity environments such as Timor-Leste. Advances in technology for the base of the pyramid market have resulted in a wide range of products suitable for households at all levels of income. At the same time, energy is a service that even the poorest households pay for, even when that service is low quality, harmful, and expensive. In these environments market systems already exist and can be strengthened to catalyse access to cleaner, more reliable and more affordable products.

At the beginning of the programme, some of the challenges Mercy Corps identified in the Timor-Leste market were:

Supply: Solar energy products were low quality, largely inappropriate for rural areas, and only available in the capital, Dili. Access to improved cookstoves (ICS) was similarly limited. The capacity of market actors, particularly in rural areas to manage stock and other basic business processes was limited.

Demand: Lack of awareness of alternative energy products stifled demand. Sixty five % of the population did not know what solar energy was, which meant businesses did not see any opportunity in this sector.

Financial services: Purchasing alternative energy products required larger one-off expenditures. While several financial institutions worked in rural areas, loans were not available for energy products.

Information: None of the businesses in Timor-Leste had heard of the new brands of household solar products and fuel-efficient clean cookstoves.

Linkages: Businesses supplying energy products in the capital had almost no connection to small businesses in other parts of the county.

Picture 2: The da Costa's started a cookstove manufacturing business after receiving training from Mercy Corps (Source: Nick Brubaker)

Picture 3: Domingas da Silva displays her products at her LEA (Source: Nick Brubaker)

Infrastructure: Transportation costs were high, road infrastructure poor, and communications geographically dispersed.

Project description

Market System Development (MSD) has the potential to achieve large-scale, sustainable impact. Although the theoretical frameworks for this approach are well developed, there is still a lack of detailed analysis regarding its application, and this is particularly true for fragile settings of extreme poverty, or those transitioning from relief to development.

The Energy For All (E4A) programme is an early example of where the MSD approach has been applied in a transitional, relief to development context. Mercy Corps designed and facilitated the programme, which stimulated existing actors to build a sustainable market for alternative energy products. The programme's goal was to improve energy services, as well as reduce the household cost of energy (financial and social). It sought to strengthen and support an alternative energy market by facilitating an improved supply chain, increased customer awareness and improved availability of financial products.

The E4A programme exceeded its targets for every donor indicator. Close to 26 alternative energy business retailing household energy products were operational in peri-urban and rural areas, more than 36 000 households had access to alternative energy products (solar lanterns, phone chargers, and ICS) and more than 10 000 products had been sold or provided. Household purchases of alternative energy products have since been tied to social, economic, and environmental benefits. At the same time, the programme also encountered challenges. For example, with regard to solar products there was very little 'crowding in' of new businesses, some retailers dropped out of the market system, and one brand's warranty did not function well. For ICS, stock of components was not always steady due to irregular import patterns for the key components needed for the hybrid import/local production models, lower quality but visually indistinguishable products threatened to undermine trust, and the cookstove market did not spread to rural areas because the stoves were too large and heavy to be transported.

Findings

Supply chains are not always reliable: Unreliability of product supply is a major challenge, and was the most significant threat to this project. Throughout the programme, lead firms in Dili periodically sold out of products, which meant that solar retailers and cookstove manufacturers halted production and sales. This was due to a variety of factors: remoteness, bulk purchasing, cash flow issues, and stock management.

Business approaches of retailers vary: Variable levels of success can be partly attributed to different cultures of doing business. Almost all the programme partners had basic existing businesses, with established purchasing channels and experience managing stock and cash – yet few had plans for growth, marketing and/or reinvestment in their business. This was due to a combination of limited trust, limited understanding that investing time could increase sales, poor financial management, and a cultural reluctance to use proactive sales techniques.

Performance of lead firms can be uneven: At the outset of the programme, it was assumed that lead firms would perform a variety of tasks related to supporting retailers. Yet lead firms failed to adopt many of those functions. The reason for this underperformance appeared to be the nature of the firms' business and insufficient incentives. Because the alternative energy market was a relatively small proportion of the overall business, many businesses were motivated by social good rather than profit, which was not sufficient incentive to commit the required time and resources.

Other projects or distribution efforts can pose challenges: At the same time that the E4A programme was being implemented, the government of Timor-Leste was expanding electrification and distributing a limited number of free solar home systems and cookstoves. Although the number of people who would benefit from these services was very low, uncertainty over who would receive these services created some reluctance to purchase alternative energy products. There had been previous government programmes to install solar units on clinics and community buildings which had also built an expectation of free government assistance, but this programme had limited impact and was no longer continuing.

Trust is of vital importance: This was true at all levels of the programme. Households had to trust the quality of the stoves and the businesses that sold them, businesses and manufacturers had to trust the lead firms and in households, rural businesses had to trust their sales agents, and lead firms had to trust international suppliers. While E4A was able to encourage trust in many of these areas, other types of trust proved difficult to build, or were undermined. Specific trust-building activities included joint participation in training by Dili-based distributors and retailers (delivered by reps from the international suppliers) and subsequently through quarterly business meetings to share their successes and challenges, and for suppliers to present new products. The project also built trust with government by bringing representatives to international events, such as the Global Alliance for Clean Cooking Forum in March 2013, to demonstrate project alignment with global thinking.

Lessons learnt

Rigorous analysis of informal rules improves intervention design and tactics: Trust and social capital between market actors shape outcomes. Market facilitators should identify areas where trust needs to develop, as well as potential points of vulnerability that could cause a break down of trust, and explicitly devise strategies to build and strengthen trust. A deep understanding of business owners' norms and mindsets can also improve success in 'picking winners.' Consumer norms around purchasing decisions and credit should also be taken into account. Such informal cultural rules should be understood and planned for during programme design, and should influence the adaptation of the programme as more is learnt.

Picture 4: Francisco Soares at his LEA Kadeli Diak (Source: Nick Brubaker)

Understanding incentives and capacities is key to sustainability and systemic change: There must be a balance between working with established businesses able to invest their own capital, and with businesses who have a strong drive to make the market system function, as these are often smaller and have less formal capacity. Understanding both incentives and capacities allow programmes to stimulate systemic change. If a business's motivation is social good, as was the case for some of the businesses in Timor-Leste, it may not be sufficient to justify the owners investing significant time and effort. With rural businesses, those most incentivised – and most active, were often the smallest.

Implementing 'hybrid' market development programmes that combine pure facilitation with more traditional activities must be done strategically: Donor interests or demands plus the realities and capacities encountered on the ground mean that most programmes will have to include some service delivery or subsidy. It is important to develop a strategy that allows the programme to do this without undermining the overall approach. For example, in areas where Mercy Corps had the heaviest footprint, sales of solar products were some of the lowest in the country. This can be attributed to the belief that Mercy Corps would be providing the technologies for free, and that there was no need to purchase these products. As much as possible, programme designs should avoid mixing market approaches with direct delivery approaches.

Subsidies should be intentionally crafted: Actors should first be encouraged to act without cash subsidies, or as little as possible should be offered to test incentives and encourage those most willing to invest. Some micro and small businesses will require a reduction in risk in order to incentivise investing in the market; Mercy Corps chose to provide a 50% cash subsidy to participating micro and small businesses to purchase initial stock. By the end of the programme, 25 of 26 of these businesses had reinvested capital in additional product stock. At the same time, because this subsidy was consistent, it's unclear whether the businesses would have participated with a lower up-front subsidy.

Market development programmes require longer/more flexible intervention timeframes, particularly in high-risk settings: It is difficult to predict the timeframe needed to facilitate sustainable market growth. Programmes with short timeframes may be forced to intervene directly to accelerate the process and ensure linear targets are reached on deadline; these actions may be counter-productive to the long-term health of the system. Where market systems are weak, follow-up programmes or legacy grants may be needed to allow a core team to shift roles and continue light-touch facilitation activities. With the E4A programme, even though it was well managed and exceeded nearly every project-specified target, a tight schedule meant that Mercy Corps sometimes played a role beyond that of pure facilitator. In particular this was the case for identification and selection of new retailers, which was largely led by Mercy Corps once it had become clear that the Dili distributors were struggling to find retailers themselves. Mercy Corps also stepped in to lead technical and business training for new retailers as staff from the Dili distributors lacked the skills to deliver this effectively; with a long programme Mercy Corps would have focused on first building the capacity of lead firm's staff so they could deliver training themselves.

Upfront and regular engagement with government and donors minimises disruptions to programming: To ensure the project approach and philosophy is supported, and that government subsidised activities will not impact the target areas, consultation with government and third party actors is critical during both programme design and programme implementation. An advocacy strategy may prove useful for some risks, while others will require a mitigation strategy; for example, at the design stage, E4A discussed the programme strategy with the government, and selected target areas that would be least affected by upcoming grid expansion.

Programmes must develop indicators to measure system change, as well as the sustainability of the system: Ways of measuring systemic change need to be set up alongside the outcome indicators of a programme. These should be regularly revisited and adjusted as an understanding of the market deepens and evolves. Even though the E4A programme vastly exceeded targets in terms of businesses involved and products sold, there are still questions as to whether it will be sustainable and therefore successful. For example, Mercy Corps focused heavily on measuring the number of businesses trained (input), the number of businesses ordering stock (output), and on pure sales numbers (outcome). Although these are clearly important measures some other measures of system strength, such as reinvestment rates and the frequency of interaction between nodes in the system might have provided greater additional insight into broader strength of the system. If targets chosen at the project outset are not revisited with the donor, interventions may evolve simply to meet donor targets, rather than to facilitate systemic change and achieve the larger goal.

Market development programmes would benefit from a package of core tools and guidance: Many market development programmes rely on the creativity and vision of managers who regularly reinvent tools and processes. These managers would be well-served by accessible, ready-to-use guidelines to lead a new programme manager through programme startup, recruitment, design and implementation. The market-systems development sector should continue efforts to develop a central point to share useful core tools – and help set expectation among donors that such tools and processes will be used.

Reference

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* Additional pictures
* Authors' profiles
* Acknowledgements

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