

Micro credit delivery mechanisms

Their application for clean energy projects in the pacific



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The Renewable Energy and Energy Efficiency Partnership (REEEP) – (www.reeep.org) - is an international partnership based in Vienna focused on creating appropriate market conditions for renewable energy and energy efficiency. REEEP provided initial support to ReEx Capital to establish its operations within Southeast Asia (www.reexasia.com).

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MICRO CREDIT DELIVERY MECHANISMS
THEIR APPLICATION FOR CLEAN ENERGY PROJECTS IN THE PACIFIC



MAIN REPORT

1.0 EXECUTIVE SUMMARY

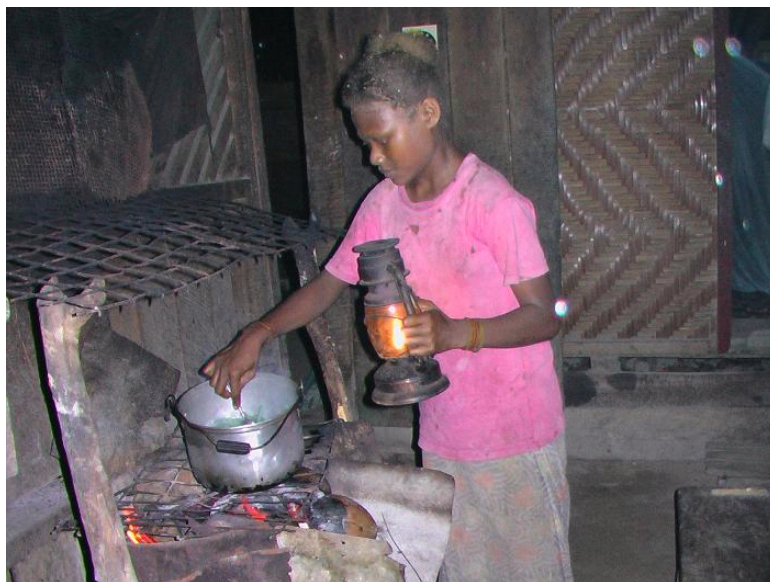
Two recent initiatives have been underway in the Pacific to develop a sustainable solar photovoltaic (PV) market to deliver electricity to those beyond the national grid who typically rely on kerosene as a fuel for lighting. These are not the first such programmes in the Pacific and they can be seen in the light of global efforts over the last 25 to 30 years to build similar markets internationally.

The focus of this report is to place these new initiatives in context; to explore their points of similarity and differentiation from each other and previous programmes and to explore what their future may hold as potential models for further deployment of solar PV across the Pacific.

The work by Barefoot Power and the Pacific Micro Energy Service Companies managed by SOPAC in the Solomon Islands and Kiribati provide contrasting approaches.

1.1 The Barefoot Power Model

On the premise that households spend more per day on kerosene than would be required to service the purchase of benign lighting systems, the Barefoot Power model is one of sourcing and delivering small low cost LED lighting systems.



Existing use of kerosene lamp

A somewhat unique feature of the Barefoot Power concept is that these lighting systems can initially be charged from a grid supply or a 1W solar panel, but can later be utilised as part of a more expensive solar PV powered system.

Integral to this approach is that Barefoot Power has moved to provide microfinancing to in-country distributors and dealers, as an effective “supplier credit” on the understanding that sales are predominantly made on a cash basis.



The Barefoot Power Solution

In a project funded by the Australian Government through REEEP¹, Barefoot Power undertook three demonstration projects, produced guidelines for providing microfinance to energy projects, tested the technical innovation of micro power generation using biofuel, and developed a comparative study on available lighting technologies. In parallel with its work in the Pacific, Barefoot Power has also been building its activities in Africa. An initial 300 households in the pilot project have been scaled up to 10,000 households in the Pacific region and over 20,000 households globally. The opportunities to further build the Pacific market are however hampered by a lack of access to microfinance.

1.2 The SOPAC Model

The SOPAC Pacific Micro Energy Service Companies (PMESCO) project, implemented in the Solomon Islands and Kiribati, is one in which larger systems including lighting, controller, battery and solar panel are offered, with customer financing. The unique point of this model as applied in the Solomon Islands, however, is that the solar entrepreneur works with his

¹ Renewable Energy and Energy Efficiency Partnership (REEEP) South East Asia & Pacific Regional Secretariat

customers to provide transportation and sales of their produce through a “cash for crops” centre to generate an income stream to meet the repayment obligations.

To date financing has been a combination of working capital raised by the entrepreneur implementing the programme combined with end user finance provided through a commercial banking facility. 35 solar home systems have been installed in the Solomon Islands under a REEEP funded project while the Kiribati element has seen only 11 systems installed due to the low level of income of targeted recipients. Efforts are being directed to build an effective “cash for crops” approach in Kiribati, possibly using the sale of sea foods as a severe drought has reduced the level of income available from copra on the island.

As a result of the work that SOPAC undertook over the 18-month life of the project, together with the local solar entrepreneur in the Solomon Islands, Willies Electrical, Willies was able to leverage further funding from the Solomon Islands’ government and the World Bank and scale up this PMESCO model to an additional 600 households, an 18-fold increase of the original project’s 35 households. Beyond this, Willies has another 1400 households that are interested in the household systems, pending further financing.



Packaged solar home system – Solomon Islands

After the close of the SOPAC PMESCO project and Barefoot Power’s kerosene replacement project, REEEP South East Asia & Pacific organised an event alongside the Pacific Energy Ministerial Meeting (PEMM) in Tonga in April 2009, entitled “Successful Microfinance Models for Clean Energy Projects in the Pacific.” The well-attended gathering discussed how



to make rural electrification a viable option for Pacific Island Countries through a microcredit facility. REEEP presented the two successful pilot projects and opened the discussion for potential investors (Asia Development Bank, World Bank, the EU and private investors) to consider up-scaling them.

For this study, in assessing the impact and potential for replication and growth of these models within the Pacific, comparisons will be drawn with global experience in the solar PV market for household systems. The Pacific does present some unique features but the question is what can be learnt from the recent work by Barefoot Power and the SOPAC programme and experience by others in similar (rural / remote) markets.



2.0 EXPERIENCE WITH PV SOLAR HOME SYSTEMS

While the solar industry has seen dramatic growth in the last few years, for more than 25 years there has also been an emerging market focused on the delivery of low levels of electricity supply from photovoltaics (PV) in peri-urban and rural settings in the emerging economies.

Much of the recent growth in PV production and demand has been driven by two main markets – those in Germany and Japan - where in an effort to accelerate the use of solar electricity both governments have mandated significant “feed-in” tariffs or heavy subsidies for domestic PV. In the orthodox grid connected environments the cost of solar electricity has been unable to compete with more conventional forms of generation but with growing concerns over the impacts of climate change and commitments to reduce CO2 emissions, its use in these markets has been promoted alongside other renewables, notably wind, though many would say that larger scale wind energy has already reached a situation where it can compete without significant incentives.

However, the focus of this work is not on the introduction of PV into the more traditional grid-connected markets but rather its use in addressing the needs of the enormous section of the world’s population (estimated at some 1.6 billion people) that does not have access to any form of electricity. That these people are predominantly in emerging economies is probably self-evident. Their dependence on low quality fuels (biomass or kerosene) for cooking and lighting (again wide usage of kerosene) is also well documented. Early attention to providing electricity in such settings dismissed PV as too expensive and inappropriate, often preferring to mimic the approaches used by more developed nations, introducing diesel or petrol generators, promoting small scale hydro, small scale wind and various levels of more sophisticated biomass / biogas utilisation.

Nevertheless there have been a small but dedicated cadre of entrepreneurs who saw a potential to utilise PV (solar home systems in particular) and through many trials and tribulations sought solutions as to how it might be delivered in a sustainable and affordable way to those most in need. It is these entrepreneurs who have helped shape what is still an immature but growing sector of the renewable energy market, delivering electricity to increasing numbers of households that still remain well beyond the reaches of the grid.

Their stories are worth recounting in that they provide a guide as to what does and does not work in these markets. They also address a number of issues, amongst them the evolution of micro financing as a key element of their success, a point that has been recognised as one of the more salient in the search for effective strategies to deliver PV electricity to the islands of the Pacific. The role that local banks, microfinance institutions and the World Bank in particular have played in this evolution provide sobering evidence of what is really needed if this market is to have the significant impact as a solution to provide electricity to those 1.6 billion yet to access to such basic needs. Alongside the entrepreneurial efforts



there have been (well documented) efforts by aid organisations, governments, NGOs and philanthropic individuals to promote PV. These efforts have however tended to meet with limited success, except where they have worked to build the local entrepreneurial capacity, the importance of which is only too apparent.

In the literature on PV projects since the 1980s the growth of the PV market in the Dominican Republic, Kenya, Morocco, India, Bangladesh, Indonesia, Sri Lanka amongst others have often been the focus of much discussion, as much for the differences that these PV markets demonstrate as for the success or otherwise of their evolution.

It is not the intention to fully detail the background to all of these projects. There are some excellent references which do this in detail, in particular a recent publication *Selling Solar*², but to draw some parallels to the current efforts in the Pacific it is valuable to look at the underlying experience that some of these initiatives provide.

2.1 A Background on the Evolution of the Solar PV Market

As noted above, the initial activities within the PV market under aid or fully grant-based schemes lead to quite early pressure to move to a more commercial model that could address the gaps that some of these first interventions highlighted:

- Those with a strong focus on poverty eradication were not necessarily well placed to handle the complexities of introducing a new technology and all that its installation and maintenance entailed into often very remote locations.
- Many PV pilot schemes were funded under aid activities but they were ill conceived and did little to promote the uptake of PV. The utilisation of PV as an adjunct to broader development programmes – for example to provide water pumping – often saw early equipment failures (that could have been avoided with simple training and maintenance programmes) with the result that these installations were soon abandoned and the value of PV seriously questioned.
- Existing utilities who seemed to have the wherewithal to meet these complexities soon found that there was a limited fit with their mainstream interests that revolved around large scale generation installations and a somewhat captive source of consumers, constrained only by how far the grid extended. Their interests lay in grid extension, not offering what many saw as a distraction and a pressure on often limited resources – interestingly the continued promise of grid extensions presented a hurdle to others (outside the utilities) who were making concerted efforts to encourage the uptake of PV by customers who were inclined to wait for these promises to be met.

² *Selling Solar – The Diffusion of Renewable Energy in Emerging Markets* – Damian Miller, 2009 published by Earthscan



A number of those who had participated in the early PV developments had done so on a not for profit or NGO basis and as pressure mounted for a more robust approach to the market a number of these organisations created for-profit entities to take their business forward.

Miller³ highlights the activities in Sri Lanka, Indonesia and India, with reference to development of other markets and a brief summary of each is pertinent to current efforts in the Pacific.

2.2.1 Sri Lanka

In the early 1990's three Sri Lankan entrepreneurs saw a potential for PV use in water pumping within their country and established a local PV manufacturing capability. They initially believed that the promise of grid extensions and low cost electricity made it unlikely that households would consider purchasing PV systems. However when they recognised that this is fact was a significant market – there were over 2.5million unelectrified households in the country in 1986 - they faced the constraints of limited finance and a relatively small sales force. What was acknowledged was that consumers had to be convinced of the value of PV and that this could only be effectively done on a face to face basis. An attempt to team up with a nationwide consumer durables company (Singer), to tap into their considerable dealer network, failed when it became clear that the dealers did not share the enthusiasm for promoting PV. After this failure the company focused on cash sales with a small but effective group of its own dealers selling some 300 to 500 systems per year. Although helped short term by a partnership with a large 1000 system installation, the company struggled. Two of the entrepreneurs stepped down from the company. Manufacturing ceased and the focus moved to utilising imported panels. Attempts to increase the market by offering credit, from within the company's own resources, met with limited success. It became clear that success would depend on establishing a model that separated the service of PV delivery from the underlying need for credit.

Through lobbying with the World Bank, in 1997 its Energy Services Delivery Project was to be launched, copying the earlier Indonesian scheme under which a grant would be provided (to the supplier) for each solar panel (\$120 for a 50 Watt system⁴) and lines of credit would be established for the companies and banks to on lend to customers. This initiative drew the attention of Shell Solar with a resulting partnership being established. At the same time an NGO based group (SEEDS) entered the market, providing both finance and PV equipment. In due course this operation moved to focus on the deliver of financing only and the market, attracting additional competition, saw a situation where there was an important separation between those providing product and services and those willing (and able) to provide appropriate financing.

³ Ibid.

⁴ In the markets being considered here a typical PV solar home system was a 30 to 50W panel with ancillaries at a total cost of some US\$500 – enough power for a B&W TV and a limited number of lights.

Until 2003 SEEDS offered a five year loan based on a 20% down payment and 24% interest such that customers typically paid \$100-120 as down payment and \$10-15 per month over 5 years for a 50 watt system. Other financing operations entered the market and with continued support from the World Bank by 2006 over 100,000 solar systems had been sold and installed in Sri Lanka.



Solar Home PV Control System - Wisdom Solar (Pvt) Ltd Sri Lanka

Miller suggests that one of the key lessons from this Sri Lankan experience is that *although there was a long history of microfinance in the country, there was no arbitrary decision by the microfinance institutions to become involved – it only happened because the solar entrepreneur worked extremely hard to convince the country's largest micro-financier to scale up their solar activities and, equally importantly, the market infrastructure existed to sell, install and service the PV systems.*

2.2.2 Indonesia

The initiative to open a substantive PV SHS market in Indonesia fell to a European entrepreneur who moved from a Jakarta based solar business focused on supplying government projects. With the firm belief that there was a nascent demand for solar at market prices within local communities – he saw that “solar has to be seen as a mass consumer market – we need to sell solar like Coca Cola”. He saw a cash market and a convincing demand for electricity in rural areas – for TV and lighting.



With this background and drawing on personal financing, from 1994 to 1996 a network of some 40 service centres were opened in West Java and Lampung (South Sumatra). Each held stock, coordinated sales, installation and servicing and collected payments. Electronics and framing for the solar panels was done at the head office and by 1996 there were some 180 staff. The focus on after sales service was considered a key to success as was the importance that “word of mouth” had in spreading the business.

The entrepreneur became convinced that the only way he could sell larger volumes was to offer finance. Local banks (who only ever lent for 2 years), and even those he approached in Europe, were uninterested. To provide a solution the company decided to offer its own financing. Once financing was offered only 10% paid cash, the remainder preferring to pay a 25% deposit and enter into a 4 year unsecured loan at market rates (30% interest) – the solar system was considered adequate security. Payments were of the order of \$12 per month for a 50 watt system.

The offer of credit had the desired effect but, without a large injection of working capital, sales had in the end to be limited as cash flow became a serious problem. Arrangements were made with suppliers for credit but with 6 month terms they were not sufficient as a long term solution. The entrepreneur had played a key role in the development of the World Bank’s 1997 Indonesia Solar Home System project, targeting the sale of some 200,000 systems, under terms as described above in the notes on Sri Lanka. Regrettably, just as the World Bank project was signed off by the Indonesian Government the Asian economic crisis hit. The cost of modules in local currency quadrupled overnight, sales halted and the business collapsed.

Though the Indonesia example is not one of long term success, it does reinforce the value of local service centres and the clear benefit that micro-financing can bring to such a business. As already noted, the experiences in designing the programme in Indonesia contributed significantly to the development and success of the World Bank project in Sri Lanka.

2.2.3 India

The genesis of the growth of the PV market in India involves an American and a national entrepreneur combining their skills in taking on what from the outset seemed a daunting project. Again, as in Indonesia, the entrepreneur had a strong focus on the quality, delivery, installation and servicing of the systems. He also saw the company as something of an evangelist for PV and worked hard to ensure that solar never got a bad name through the company’s actions. Working with very limited funds it soon became clear that an external source of credit would be critical for success. Through strong personal connections, the entrepreneur approached the Syndicate Bank and convinced his contact that solar provided a basic necessity of life – light – for those in rural areas. The bank had a record of supporting innovations in rural development and in due course launched India’s first commercial consumer finance scheme for solar. The impact was significant as the bank

offered 4 to 5 year terms with 10% down payment and 12% interest. So customers had to meet only a \$60 up front payment and \$12 to 15 per month. An added benefit was that the bank's involvement gave credibility and encouraged customers to try solar.

However, though financing was available and customer numbers growing, as in the Indonesian example, working capital became a problem. Though the Syndicate Bank offered capital – as the company was not meeting the demand the bank's scheme was generating, the entrepreneur was reluctant to take on debt, and the burden of interest payment that entailed. He attempted to attract a range of investors, both local and overseas but to no avail. He turned to the Indian Renewable Energy Resources Agency (IREDA) which had been provided a \$50m line of credit for PV at low interest rates by the World Bank but this failed because IREDA viewed the rural sector as too risky. Eventually funds were raised from a US Foundation followed by a long term loan through USAID and another through the IFC Photovoltaic Market Transformation Initiative (PVMTI). With these funds the business could grow and by 2005 had installed some 42,000 solar systems in Karnataka.



Panel Installation SELCO

Their success attracted others, including Shell Solar who, given their size, were able to move quickly into the market place that the entrepreneur had struggled for so long to establish. The presence of additional players did however also attract a large number of additional banks and prompted UNEP to launch a low interest loan scheme to provide an extra demand side incentive. This was partly through the Syndicate Bank. This created even further interest such that TATA BP entered the market with a network of some 60 dealers. What started as a few solar sales in the mid 1990s grew into thousands of systems per year being sold by many players and financed by an even larger number of banks. At the end of



2007 it was estimated that over 100,000 solar systems had been installed in Karnataka by the private sector operations.

Though again reflecting a number of differences from Indonesia and Sri Lanka, the entrepreneurial tenacity was crucial to opening the market linked with the ability to identify adequate and appropriate sources of finance and capital to build the capacity to service the demand that this generated. Of note is the fact that Shell Solar, both in Sri Lanka and India, spent only a limited time in these markets and withdrew from both by 2007. While corporates add value in market development, the nature of these particular markets requires a long and steady commitment that is not always able to be maintained by a corporate entity. It seems that the private entrepreneur not only has to suffer the pain of being the market entrant, but also has to then compete with those who ride in on his hard earned success!

2.2.4 Bangladesh

In 1996 Grameen Bank in Bangladesh entered the solar market. In contrast to the markets in Indonesia, India and Sri Lanka, the presence of the Grameen Banking operation and its huge network with associated database and considerable experience in managing micro-finance offered an exciting opportunity. The solar company was not however funded by Grameen and it took some time for it to secure adequate capital and to move from its early one year customer financing.



Grameen Shakti PV installation



After receiving a line of credit from the IFC (World Bank private sector arm) sales were offered on a discount for cash basis or 2 to 3 year loans for 75% financing at 8% or 85% at 12%. Annual sales moved quickly to some 2000 to 2500 systems. The access to the line of credit, administered by an independent agency set up just for this purpose, attracted many new players (including BRAC, an NGO of similar size to Grameen) into the market and drew additional donor support. Original targets for systems installed were met well ahead of schedule and by mid 2008 over 210,000 systems had been installed – the current target is 1 million systems by 2012 – and there are 16 different NGOs and firms active in the market. The early creation of this market, though clearly an exception given Grameen’s presence, again fell largely on the shoulders of one entrepreneur but he was fortunate that by now the World Bank and other donors were more than convinced that the PV Solar Home System (SHS) market could be run on a near commercial basis.

2.2.5 Kenya

The PV market in Kenya is viewed by many as something of an enigma. With a number of donor programmes, individuals trained under these initiatives saw the opportunity to develop the market, largely based on the sale of small PV systems that were sold for cash. PV was largely seen as a source of lighting and its popularity grew through its ownership providing a level of status for the wealthier rural families. Much of the growth of the PV market within Kenya is attributed to this and the fact that smaller units (10 to 20 W) were available in the market at a price that anecdotal report suggest allowed them to be a “compulsive” purchase. Much has been written about the Kenyan market – concerns about quality; the piecemeal purchase and installation of components; the level of duties and tariffs on PV imports and the lack of microfinance. Though seen by some as a poor example for an emerging PV market, ironically Kenya’s PV market has been important in providing a model of what can be achieved in a cash market. Interestingly this smaller scale, cash based approach was what dominated the early PV market in China.



Installation of Solar Array



2.2.6 Fee for Service

In a number of projects efforts have focused on what has been termed a “fee for service” approach. The hypothesis behind this is that where financing is scarce, changing a monthly fee – in South Africa a typical approach was a \$25 installation fee and a \$7 per month fee for service – would greatly accelerate the market. It was intended that this fee would also make provision for maintenance and battery replacement costs. However despite earlier efforts in the Dominican Republic and Honduras, Morocco and attempts in Cape Verde, Argentina and briefly in Sri Lanka, the model has not persisted. In essence it appears that such an approach can really only work where the scale is significant from the outset – or there is a substantial injection of early working capital. The modest income from fees of this level is inadequate to support the fundamental overheads that such an operation requires where customers are far from major centres with poor access and often limited communications. The fact that the systems are not owned by householders has also led to issues around the security of the systems, tampering with components and/or overuse and a reluctance to meet monthly fees.

2.3 Summary on the Evolution of the PV Market

Through the various examples above there is a reasonably clear picture of the ingredients that are needed to establish and grow a PV solar home system market. Though the individual markets within the Pacific Islands are naturally smaller than those used as illustrations here, the issues are little different

- Solar PV is still perceived as an expensive source of electricity – this is a misconception based on the attempts to integrate it into existing large grid connected networks where traditional fossil fuelled generation. PV in fact can offer a cost effective and attractive source of electricity in rural and island environments where the option is diesel generation or the use of kerosene (for lighting). This misconception and lack of knowledge about how PV works and can be employed in these environments remains a significant hurdle.
- Attempts to develop centralised PV power networks, for small villages for example, have generally met with limited success. As a broad generality it has been seen that ownership of the SHS engenders a higher level of interest and responsibility than where systems are communally owned or leased to individual households, under a fee for service model as described earlier.
- The lack of familiarity with electricity in general and PV in particular means that a crucial element is one of building understanding and trust between the supplier and customers. A key element of this is not only having accessible points of sale but also offering a very high standard of installation and after sales service – poor performance leads quickly to loss of confidence and collapse of the market. There



must be a clear and honest explanation to customers about the capabilities and limitations of PV. Under sizing of systems leads only to disillusioned clients. Early installations in Fiji were undersized and poorly maintained such that some 300 systems failed, convincing the local population that PV was in fact a technology of last resort.

- While the selling of PV is often promoted as a commodity market, it is essential to realise that it is a service business. A robust infrastructure is critical for its long term success and is equally essentially when trying to attract (micro) financing. Financial institutions look not only for a reliable credit record from the service company and its clients but also must be satisfied that the underlying infrastructure can keep attracting and servicing a growing customer base.



3.0 THE MICROFINANCE INSTITUTION PERSPECTIVE

3.1 Background

What has been discussed so far is a background to the development of the rural PV market, largely from the perspective of the entrepreneur. What has been highlighted and clearly recognised is the essential role that microfinance must play in any significant expansion of this market.

In 1997 an excellent market study was undertaken by the SEEP network⁵. It *“offers a detailed look at the business models, the clients, and the operations of selected microfinance institutions (MFIs) in Asia, Africa, and Latin America and the Caribbean that currently have energy-lending programs. The goals of the study are to offer initial recommendations for project implementation to the global financial service community, energy companies, donors, and policy makers, highlight lessons to learn from, and identify areas that warrant further attention for using microfinance to improve access to energy services.”*

What follows draws heavily on this work, linking where appropriate to early discussions specifically on the solar PV market. It is hoped that these comments will provide entrepreneurs within or entering the PV market with an understanding of the opportunities and approaches that exist between their needs and the interests of MFIs. Equally it should help donors and MFIs focus on what has been demonstrated as the most successful approaches to the integrated funding and delivery of energy services in rural and remote locations.

There is tremendous opportunity to scale up existing energy-lending operations and establish new energy loan programs where microfinance for energy is currently unavailable. Based on the study’s detailed look into energy lending in Asia, Africa, and Latin America and the Caribbean, a set of success factors for expanding access to finance for energy services and products for the poor can be drawn out. In many cases these reflect the experience gained through the pioneering efforts of the PV entrepreneurs described in 2.0. Most of the following factors apply to MFIs and their supporting institutions. However, each stakeholder interested in energy lending will benefit by considering or tailoring these factors to their own situation to create new or expand already existing energy-lending portfolios.

3.1.1 The Partnership

Successful energy-lending programs begin with the formation of strategic partnerships between one or more groups of stakeholders - MFIs, self-help groups, energy companies

⁵ The SEEP Network, “Summary of Findings: Using Microfinance to Expand Access to Energy Services” 1997

and rural energy enterprises, government agencies, donors, commercial banks, clients, interested NGOs and supporting institutions, and more. The role played by each stakeholder in energy lending - and, more importantly, their understanding of each other's responsibilities - can make or break an energy-lending product. Effective coordination can help leverage the strength and reach of each stakeholder, minimise market distortions, increase efficiency, and help to create a strong commercial market for modern energy and loans from MFIs.

Successful energy lending seen across the Africa, Asia, and Latin America and Caribbean regions tends to feature a strong partnership between an MFI and one or more energy companies as the foundation. The nature of the partnership between an MFI and energy company largely depends upon the internal capacity and core competency of each partner. In forming partnerships, it is important to keep in mind that there may or may not be a clear demarcation of roles and responsibilities between the energy company and the MFI, however some key ingredients for partnerships are outlined in Table 1.

It is also important to understand the potential roles that can be played by public partners (donors, governments, bilateral organisations, etc.), commercial banks, and NGOs in expanding access to modern energy through microfinance. In many cases, these partners offer technical assistance, grants, and subsidies to encourage the establishment and scale-up of energy-lending activities. Many of these partnerships have emerged from initiatives by facilitating organisations, such as the Global Environment Facility (GEF), World Bank, private foundations, or energy divisions within national governments, which may have larger mandates to expand access to sustainable sources of energy and electrification in areas not yet reached by national grids.



In most of these initiatives, the stated strategy is to promote the use of and expand access to modern energy technologies, including solar and wind power, micro hydropower, biofuels, LPG cook stoves, etc. Given the low-income levels in rural areas of many developing countries, these facilitating organisations engage MFIs to improve the affordability of modern energy technologies. A new initiative launched by the Asian Development Bank (ADB) in late June 2009, E4All, looks to take the experience of such approaches and direct them at an accelerated programme to bring energy access to an additional 100 million by 2015.

Partnerships with the public sector usually include some form of end user subsidy for the cost of equipment, technical assistance to MFIs and/or energy companies, centrally located

funds from which MFIs can obtain loans for energy-related on-lending, or funding for marketing and product development activities. For example, end user subsidies and technical assistance from the various World Bank programmes highlighted earlier in this report (in Indonesia, Sri Lanka and in Bangladesh) have been critical to helping MFIs and energy enterprises scale up lending for the purchase of solar home systems.

Table 1: Some Criteria for Energy – Microfinance partnerships

<p>What a microfinance institution should look for in an energy company:</p> <ul style="list-style-type: none"> ▪ Common vision: Energy company should share the MFI’s mission and approach ▪ Reputation and reliability: MFI should ensure that the energy company has a solid reputation and track record (including the reputations of its staff, management, and Board of Directors), good references, brand recognition, and high-quality products ▪ Local market presence: Energy company should understand the local market and have a local presence where the MFI operates ▪ Capacity to meet needs of MFI clients: Energy company should be able to supply and service energy products well-suited to the needs and purchasing power of the MFI’s clients ▪ Willingness to provide technical training: Energy company must agree to train MFI staff and clients on the technical aspects of the energy products because the costs, benefits, and uses of modern energy tend to be relatively unknown to the MFI and its typical client base <p>What an energy company should look for in a microfinance institution:</p> <ul style="list-style-type: none"> ▪ Creditworthiness and sustainability: MFI should have a solid track record that includes sound accounting systems, high levels of transparency, strong client retention and performance indicators, an optimistic growth trajectory, solid loan tracking and monitoring systems, well-disciplined management, and a reputable Board of Directors ▪ Demand from the clients for modern energy: MFI should be able to demonstrate a demand for energy services ▪ Internal “champion” for energy: MFI should have at least one staff member who possesses a keen interest and willingness to coordinate closely with the energy company in designing an energy loan product for its clients ▪ Internal capacity to support energy lending: In addition to an internal “champion,” the MFI must also be able to show that it can allocate sufficient human and financial resources to start an energy lending program, as well as train its lending officers about the energy product options ▪ Flexibility in designing energy loans: MFI should be flexible in designing financial instruments for energy loans, including terms of repayment schedules, collateral requirements, loan tenure, and eligibility criteria
<p><i>Source:</i> Outcome of discussions with practitioners at Learning Workshop “Using Microfinance to Expand Access to Energy Services,” 18-22 August, 2007, Ahmedabad, India.</p>

3.1.2 Capacity Building

Internal capacity and market education are integral parts of the partnership between an MFI and energy company, and joint endeavours in these two areas are critical to the success of energy lending and to the partnership. They are important in expanding energy lending



because the costs, benefits, and uses of modern energy tend to be relatively unknown to the MFI staff and its typical client base.

Like any other new product, MFIs will need to invest sufficiently in marketing and promotion of energy loan products that emphasises education about the benefits of modern energy. This can be done jointly with energy companies or collaboratively with NGOs or development organisations that are able to reach the clients and encourage the clients to take advantage of the energy loans. Lending officers and key management staff at the MFI will also need to have some basic knowledge of the various energy options in order to adequately promote the products to clients. Most important, MFIs will need to allocate sufficient human resources and budget to work with the energy companies to market and promote energy lending products in order to expand in this area.

Experience also shows that it is crucial that all levels within the MFI are willing to work to enable the new form of lending that they are being asked to undertake. Often underlying operational constraints, in terms of duration of lending, required collateral and limited experience in lending for “hardware” can make entry into such new markets almost impossible. Loan officers generally have no latitude to vary conditions with clients and so the policies and internal lending regulations need to be reviewed before raised expectations cannot be met.

An example of such conditions existed in Indonesia as the proposed World Bank support programme was being mooted. While the Bank was offering low interest loans for PV lending, their entry into Indonesia was to be via the Central Bank. The Central Bank would in turn on-lend to commercial / regional banks that would lend to the entrepreneur and customers. This step however entailed a margin for the Central Bank so that the local bank received funds at interest rates that were not particularly favourable. In addition local banks had a long term requirement for collateral of up to 150% of borrowings, a condition that existed before the World Bank’s intervention and would have persisted once the initiative was in place. In effect, the only change that the World Bank process offered was an alternative source of funds to the Central Bank – the market would have seen little reduction in interest costs and no relaxation on collateral requirements.

3.1.3 Flexibility

There are many different energy-lending models that can successfully address the energy needs of low-income clients, but unfortunately they are not being used widely. Therefore, during the product development stages, MFIs should do market intelligence to analyse client demands, household and business cash flows, energy usage patterns, and the specific social, economic and policy conditions of the country. The Indonesia example described above is a typical (but now fortunately less frequent) example of how a well intentioned initiative can meet with hurdles if a thorough and candid review of existing lending terms and conditions is not completed.



The following elements should be considered in market development and scale-up:

- Tailor energy products to demand. Initiatives should offer energy products that - when compared to baseline or traditional energy products - reduce ongoing energy expenditures (or offer better options at a similar cost as with the Barefoot Power model) or increase revenue, improve productivity, and are easily operated with minimal training.
- Create innovative lending products. As noted in the Indonesia example above and highlighted in the majority of the projects reviewed in 2.0, MFIs need to go beyond standard lending methodologies and design products that are flexible in terms of repayment schedules, collateral requirements, loan tenure, and eligibility criteria.
- To help build the sustainability of any opportunity, work with the suppliers and distributors and capitalise on the MFI's client base. Most MFIs have a strong and loyal client base, which can be the starting point for energy lending. MFIs can improve the likelihood of success of energy lending activities by designing products that suit the unique needs and conditions of its existing client base.
- Looking beyond the household consumer to productive uses of energy is crucial to develop the energy lending and modern energy markets beyond the pilot stage. Promoting development of energy enterprises or encouraging small businesses to purchase energy systems to improve their operation and profitability and exploring the potential to link repayments with business cash flows can make the products more financially viable.
- There is really no question that the enterprise based model is the one that has proven its effectiveness and offers a real prospect to build sustainable energy delivery mechanisms.

3.1.4 The Demand in Rural Areas

Typically, energy companies will only serve rural areas if they can be sure there is an effective demand for energy products and the ability to pay for such services (cash or credit). On the other hand, many MFIs are unwilling to offer energy loans in these same areas unless there is a reliable energy company willing to serve these communities and establish rural operations. This indicates an obvious need for better coordination between the energy and microfinance sectors in serving clients in rural and remote areas who do not have access to modern energy.

In order to tap into the potentially large (and essential) rural market for energy services, MFIs should consider these possibilities:

- Use the MFI's network and existing infrastructure to increase access to energy products in the rural and remote areas. Build rural capacity by training local loan officers in the benefits and uses of modern energy products, developing a cadre of



commission-based agents, and working with energy companies in the rural areas to insure that distribution channels and service centres are included in the supply chain.

- Larger MFIs and mainstream financial institutions can capitalise the energy loans in rural areas. For instance, many smaller MFIs and credit co-operatives already operating in rural areas may find it difficult to finance energy products without external funding sources. These smaller MFIs could work as intermediaries between rural clients and larger financial institutions in urban areas to finance energy services. This is the model that has been demonstrated through the various World Bank / GEF initiatives discussed earlier.

3.1.5 Risk Management

Financing for energy systems and products calls for innovative risk mitigation strategies. In energy lending, the spectrum of risks involved is much broader since it includes not only credit risk but also risks due to failure of technology, unanticipated change or access to a better technology, and absence of (or unreliable) service infrastructure. At the current time, most energy products are marketed to their existing clients because it gives the MFI some assurance that they can minimise the risk of default and ensures high performance of the energy portfolio. This approach, however, tends to result in growth of energy products for purely consumptive uses.

Energy lending can only reach its full potential when MFIs both understand the income-generating possibilities of modern energy services and market energy products to populations without regular income in a way that produces acceptable risk levels.

Technical risk mitigation requires different strategies. Signing a standard memorandum of understanding with the energy partner (e.g., energy company, NGO, donor) can clearly define the roles and responsibilities of different parties involved, outline the terms and conditions of equipment buy-back and recovery in case of loan default or technology breakdown, and stipulate product quality specifications.

3.1.6 The Importance of Sound Regulation

MFIs are well accustomed to monitoring and regulation of the financial sector. Add in the dimension of the energy sector and regulatory issues take on new importance. It is necessary to have a regulatory framework in place that enables both MFIs and energy companies to serve the poor in an open and transparent market economy.

Regulations may be required, or need to be modified, to coordinate government mandates and their programs, national utility companies, the treasury, and even energy products. Otherwise, energy lending and markets for energy services and products can be adversely impacted by a national electricity grid extension, if such initiatives go forward unannounced



to the energy service market or a government initiates a fully subsidised technology “give-away” program.

Non-existent or unenforced equipment standards make it trying or inconvenient for any client, not just the poor, to manage. Whereas regulations that include clear guidelines for standards and labelling, can act to stimulate the market for clean energy technologies.

Clients may be unwilling to invest in an off-grid technology if they believe the government will extend the electricity grid to their home or business for free. A 2003 government-run solar home system give-away program in the Dominican Republic all but destroyed the commercial solar market in one province. An annual donor supported subsidy programme in Nepal limited the period during which customers for PV solar household systems would consider a purchase.

3.2 Summary of the MFI Approach

Though the information offered above may seem somewhat daunting, it does reflect much of the experience that was demonstrated by the consideration of the entrepreneurial evolution of the solar PV market addressed earlier.

Both sides of the solar PV market, the technical services delivery and the micro-financing, have remarkably similar goals and interests. This is not surprising in that what is critical in this still developing market is that all involved have a common goal, one of sustainable and replicable delivery of energy to remote, rural markets.

What is also clear is that the real successes have been largely predicated not just on high quality service and the access to finance, but also on the availability of some form of subsidy or incentive, to reduce the effective cost to end users. The experience recounted so far would suggest that the most successful financial support is that which lowers the cost burden but require that end users purchase their PV solar household systems. Though not documented here, there has been much written about the rapid failure (both in terms of equipment and implementation) of programmes where energy services have been provided on a fully donated basis.

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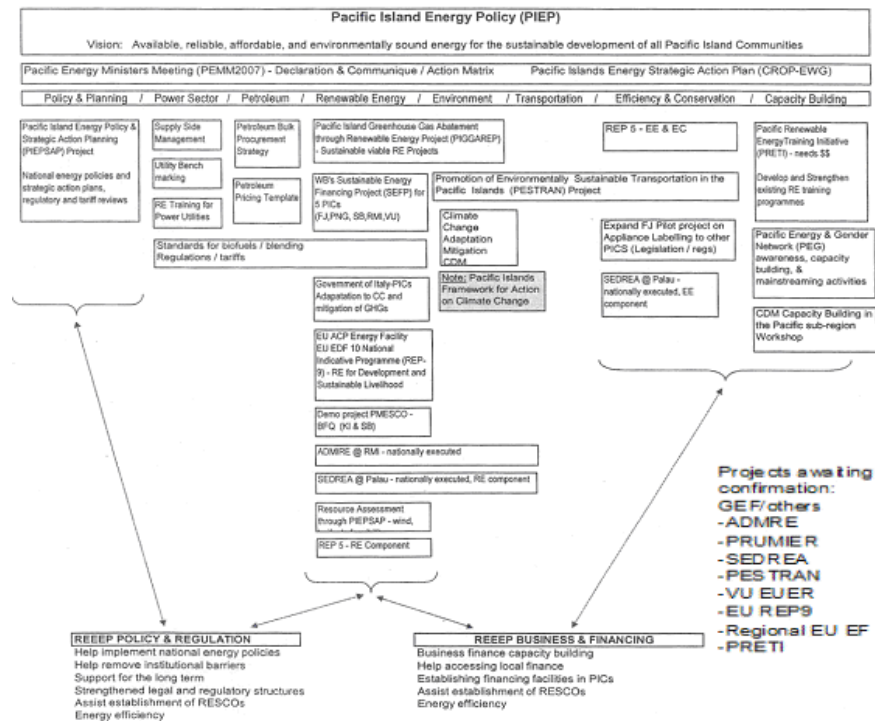
4.0 AN APPROACH FOR THE PACIFIC

The work undertaken in preparing this report has not sought to provide an analysis of the energy market within the Pacific and the potential within it for the use of solar PV household systems. Others have considered the market in considerable detail over many years. It is considered however that there is a well demonstrated need and demand for alternative, clean energy supplies and that PV solar household systems offer a practical solution in many situations.

4.1 Programmes within the Pacific

What is apparent is that there is considerable donor interest in involvement in the provision of energy services within the Pacific. It is generally acknowledged that this interest is not well coordinated and that as a result there is often duplication of effort. What is of importance in the context of the solar PV markets is that these donor initiatives do not undermine the immature but emerging private sector efforts that have been identified in this report.

For a regional meeting of REEEP in 2007, SOPAC prepared the following diagram in an attempt to delineate the regional energy activities – it is a sobering example of the complexities, linkages and crossovers between programmes in the Pacific.



The above diagram covers all energy activities whereas the following Table 2.0 provides a partial summary of recognised donor / Financial Institution programmes currently underway in the Pacific that have a direct (or potential) impact on the growth of the deployment of solar PV. Without detailed background on each of the proposals and a current update on their status, it would be unreasonable to critique each of them but the focus on solar PV is clear.

The potential for overlap with existing programmes – or more positively the opportunity to build on these – is clear under the EU projects in particular which have a focus on the Kiribati / Gilbert Islands where the expansion of the REEEP supported SOPAC programme has yet to be confirmed. It is important that the EU programme looks to utilise the entrepreneurial strengths that have begun to be built through the SOPAC initiative – only with such collaboration can we hope to see a sustainable growth in this market.

Table 2.0: Energy Programmes within the Pacific with PV Components

Country	Donor / Agency	Programme – (as understood in June 2009)	Value
Niue	EU	Supply of 70 kWp PV grid connected array	€0.6m
Tonga	EU	Grid connected RE on Tongatapu. Outer islands with RE / hybrids	To be confirmed
Kiribati / Gilbert Is	EU	Outer islands 500 to 1000 100Wp SHS	€1.2m
Kiribati / Gilbert Is	EU	Larger SHS for social and economic development 200 to 250 300Wp systems	€0.6m
Kiribati / Gilbert Is	EU	Electrify 20 to 40 community halls	€0.1m
Kiribati / Gilbert Is	EU	5 schools & island council + service centre	€0.6m
Kiritimati (Christmas Is)	EU	Service Centre	€0.1m
	EU	Grid connected solar array 10-15kWp KSEC HQ	€0.1m
Marshall Islands, Palau and others	EU	Multi-country programme through SPC to electrify households, school, health centres, small businesses for approval in 2009 and start up in 2010	
PNG	ADB	PPTA 7113 – PNG Evaluation of least cost energy options	\$1.2m
Fiji	ADB	ADTA 4850 – Fiji Component 2 will assist in establishing the Rural electrification Programme	
PNG / Solomon Islands / Vanuatu	ADB	RETA – promoting RE in the Pacific. Support solar farm development in Vanuatu. In Vanuatu and Solomon Island also assist with DNA. Develop regional Pacific CDM Centre	
Micronesia, Palau, Marshall Islands	Japan / JICA	Grid connected solar PV	In preparation
Tonga	JICA	Solar Home Systems - Requested, govt considering.	In preparation
Asia Pacific	ADB	Energy for All - Programme under development but specific Pacific Working	

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		Group has been agreed	
Pacific	WB / ADB / AUSAID / NZAID	PRIF – establish a new advisory centre for infrastructure and services improvement in the Pacific. The Pacific Infrastructure Advisory Centre, situated in Sydney, will analyse, plan, and provide technical assistance to help Pacific countries develop sustainable infrastructure and services that support national development goals.	US\$200 million over 4 years
Pacific	REEEP	Regional solar PV industry association and certification scheme	
Pacific	REEEP	Development of new microfinance systems for existing microfinance institutions in the Pacific to increase clean energy lending	
Pacific	World Bank	<p>Energising the Pacific programme which focuses on 6 Pacific Island Countries and includes a sustainable energy financing project (SEFP) which focuses on small RE generation.</p> <p>Energising the Pacific has linkages to the (PRIF) - a joint initiative of AusAID, NZAID, the Asian Development Bank, and the World Bank Group.</p> <p>World Bank established a risk management fund from GEF, managed by ANZ Bank and eligible for local financial institutions.</p> <p>A framework is in place to (i) improve efficiency, (ii) reduce oil dependency (demand side management, efficiency utility) and (iii) develop a Master Plan per country that brings all energy issues together (EE and RE integrated into overall energy provision).</p>	
Pacific	Iceland, New Zealand and the United States	International Partnership for Energy Development in Island Nations (EDIN), an international partnership to further the use of energy efficient and renewable energy technologies in island nations and territories. EDIN Partnership is initially to assess the potential for geothermal electricity generation within eighteen Pacific Island Nations including US territories.	
Marshall Islands and Palau, with FSM	UNDP	Study to identify the linkages between energy and poverty reduction.	
Pacific	SPREP	Pacific Islands Greenhouse Gas Abatement through Renewable Energy Programme (PIGGAREP). Range of projects across all member countries	Ongoing



4.2 Moving the Solar PV Agenda Forward in the Pacific

The background of the solar PV markets covered in this report reflects the fact that many are in rural and remote settings. The remote nature of many communities is exacerbated in the Pacific by their (small) island settings with limited regular access. Given the similarity between the nature of the markets studied here and focusing on the recent projects undertaken by Barefoot Power and SOPAC, what conclusions can be drawn about the potential for their expansion and replication?

4.2.1 The Key Elements of the Barefoot Power Model

In reporting on their project Barefoot Power explains:

In the Pacific, the majority of energy infrastructure is ploughed into large projects that rarely reach households, such as gas pipelines and large transmission lines. Little if any budget is spent on rural electrification – a total of \$5-10 million per year for the Pacific is likely. However, our field studies indicate that 1 million households in the Pacific are spending about US\$1/week on kerosene, or US\$50 million/year, so this represents the largest easily available budget with which to sustainably invest in rural electrification. In short, many of the poor have the funds themselves to gain access to electricity, but lack affordable options.

In 2006, Barefoot Power tested this theory with a 1-year payback product of a US\$50 home lighting kit, using one 7W compact fluorescent lamp (CFL) and one LED lamp. This product gave approximately 400 lumens of light, 20 times more than a normal kerosene lamp (20 lumens). This was recharged from the grid once a week for slum-dwellers around Lae, and also in a 1-year micro-financed lease-purchase project in New Ireland. This product sold reasonably well, but was not moving quickly enough to create a full-scale business. Therefore, the target payback period (recovery of the initial purchase price) was lowered to 6 months, or a retail price of US\$25, and local manufacture was discontinued to focus all efforts on distribution and sales. Just prior to the start of this project, sales were made in Papua New Guinea (PNG) and Fiji of 2000 \$7 AC-rechargeable white LED desk lamps and a US\$25 1W solar desk lamp, within just 2-3 months. This product gave about 40 lumens of light, significantly brighter than a kerosene lamp, and had a payback period of 3-6 months for users. Larger, expandable kits were also popular for \$20-\$50, and there was initial interest from microfinance partners. Hence, there were high hopes that improved versions of these products could successfully redirect kerosene cash expenditure from being burned in lamps to being invested in household electrification assets, such as lamps, house-wiring and solar panels.

In summary, during 2007-2009, this market experiment has worked, not only for Barefoot Power, but also some competitors, and considerable investment is starting to flow into these 0.5-5W home lighting products. Tens of thousands of households have been reached in 2 short years, and while this is a tiny fraction of the 300 million households (globally) that lack



electricity, there is high hopes that achieving annual connection rates of 5-10 million households per year, or population growth rate, can be achieved before 2015, leading to a real and significant reduction in households using kerosene lamps from 2015-2030, and full elimination of kerosene lighting by 2030-2050. In countries such as Vanuatu, which has just 20,000 households lacking electricity, kerosene lighting can be eliminated within 2-5 years.

This process reverses the traditional approach to rural electrification, allowing a small improvement in energy access with a rapid payback period to be implemented in the household (ie. lamps are installed first, not last), then over time, house wiring is added, a village mini grid is formed, and then mini grids are interconnected with each other and the main electricity network. This process breaks up the lumpy investment of traditional rural electrification, reducing payback periods for investors and hence vastly reducing perceived investment risk.

The approach appears robust and importantly has delivered access to lighting to an impressive number (some 10,000) Pacific households in a relatively short time frame – in comparison, consider the relatively low sales of (larger) PV systems that were achieved in the early years of many of the operations in South Asia for example.

The Barefoot Power programme supported by REEEP also included a number of other elements: a booklet was produced on the opportunities for microfinance exploring the options for lighting and the use of biofuels (coconut oil) in a diesel generator to demonstrate its potential as a central recharging point for lighting not linked into a solar PV system.

The reports provide some very valuable insights into the solar PV market and in particular highlight the opportunities and challenges in the Pacific and offer a unique source of information.

In the report on Microfinance, Barefoot Power outlines what has been done in the Pacific and makes a suggestion on the structure that will help the market move forward. Their analysis shows that within the region, microfinance is still very immature and that there is considerable potential if more could be mobilised. In particular they comment that:

End-consumer financing will enable communities over the long term to access cheap, affordable electricity. Traditional approaches to energy investment require millions of dollars to install urban style “poles and wire” infrastructure. However, this investment can be broken up into short 1-2 year investment tranches that match microfinance industry norms, and of course, reduce risk:

- 1) The first loan an MFI makes within a community area might be to one micro energy entrepreneur, for \$4,000, to sell \$5-\$50 LED lamps and 1-5W solar panels for cash to 500 households in 5-10 villages.*



- 2) *2) If the entrepreneur is reliable, he/she can act as an agent for the MFI to secure the next loans for each of the 500 households to take a 1-2 year loan of a \$50-\$200 for home lighting kits (5-20W). Battery charging systems may be used initially to tie users to the entrepreneur and decrease the risk of loan default (disappearing solar panels).*
- 3) *3) If these individual loans are repaid well, households can graduate to solar loans or larger loans. Alternatively, if desired and the community is organised well, a battery-free community mini-grid may be installed using a pico-hydro, a biomass gasifier or other low cost micro power generation technologies.*

This will lift MFI loan portfolios from the initial \$400,000 of energy loans towards the \$20-30 million that is required to fund full electricity access. However, cash sales via entrepreneurs will be a very important first step to stimulate rapid progress with minimal skill capacity, whilst at the same time, building up MFI understanding of energy loans via the familiar micro enterprise loan. It will also assist in skilling up village technicians to install more complicated mini-grids in the not too distant future.

The independent reports that Barefoot Power has produced provide wide ranging comments on options for technologies, market structures and financing. Their argument that a lower cost entry point, not necessarily solar PV per se from the outset, makes sense and is reflected in their success within the region. As a commercial entity they have suffered from attempts to enter a market where the parallel financing capacity has not matured at a rate to match the market growth that they believe (and have demonstrated) they can catalyse.

4.2.2 The Key Elements of the SOPAC Project

In contrast to a wide ranging, multi-pilot programme undertaken by Barefoot Power, the SOPAC project has taken a far more focused approach. Working with a more traditional solar PV household package (some US\$500 in cost) their approach has been one of working not only with the entrepreneur, an existing electrical and solar power operator in the Solomons, but also in helping the end users to generate adequate income to purchase the systems. Financing has been arranged through a local bank with purchasers paying a 25% down-payment then settling the loan over a 2 year period.

A key innovation of this project is the involvement of “Cash for Crops” centres. The local entrepreneur works with his clients to transport their produce to the market (in locations close to his own business) and arranges that income from these sales is deposited into individual’s accounts with the local bank. A portion of this income is retained to cover the debt repayments.



Within the SOPAC project, although of small scale in the initial pilot project, it is encouraging to see the active participation of a traditional banking group in providing both working capital and end user credit.

In discussions with the entrepreneur who has lead the efforts in the Solomons Islands it is clear that he may well face restrictions in his ability to grow unless he can source additional working capital. As we have seen, for an effective expansion of such operations there are inherent overheads in setting up sales and servicing facilities, staffing, marketing ad publicity and sourcing of inventory. The entrepreneur is reluctant to bring in additional equity (and hence partners) and expansion is understood to be through family connections, rather than a more orthodox commercial expansion.

As a result of the work that SOPAC undertook over the 18-month life of the project, together with the local solar entrepreneur in the Solomon Islands, Willies Electrical, Willies was able to leverage further funding from the Solomon Islands' government and the World Bank and scale up this PMESCO model to an additional 600 households, an 18-fold increase of the original project's 35 households. Beyond this, Willies has another 1400 households that are interested in the household systems, pending further financing.

The failure to fulfil the project targets in Kiribati, due to the lack of purchasing power in the community, highlights perhaps that there should be some alternative to these large systems and that the approach that Barefoot Power have followed might be one option to be considered.

It is interesting to reflect on the fact that this is not the first PV initiative within Kiribati. An earlier programme met with some success but although it started with private sector interests, the continuation of the project is now run by KSEC Ltd, a government owned company mandated to manage rural electrification and also the partner in the current SOPAC project.

A report by SIDS on the earlier Kiribati project notes:

"The systems installed have shown to be effective. Of the 250 PV lighting systems installed on the outer islands of Kiribati in 1994, more than 95 percent were efficiently working after five years of operation.

- *The success of the PV lighting systems has changed the public perception towards PV systems, confirmed by the increase of solar product sales to private individuals.*
- *The rural population is now aware of the benefits of using solar PV systems at an affordable price. School children can now do their homework at night. Social life has improved as the availability of light has enabled church groups and private individuals to get together at night.*



- *13 full-time and 14 part-time jobs have been created in Kiribati as a direct result of this project.*

And added:

The use of solar energy for rural electrification can easily serve as a model for other countries with minor modifications to fit local conditions. The following factors have to be considered:

- *The number of households must be carefully determined so that viability of the project is maintained. For example, in the case of Kiribati, the number of systems should be no less than 50 to allow for a proper maintenance of the systems.*
- *A back-up service should be provided so that the systems are properly maintained. A site technician should be recruited to reduce the cost of maintaining the systems. In the case of Kiribati, one field technician can properly maintain up to 125 systems.*
- *The level of income of the households in the targeted area must be determined to ensure that they can afford to pay the fee. In Kiribati, a fee of \$15 a month is affordable by the majority of population in the rural area.*
- *The connection of additional appliances like refrigerators and VCRs, apart from lights and radios, must be carefully evaluated so that the resultant fee is still affordable to the users.*
- *Training of technicians in charge of maintenance is crucial to the success of the project.”*

This importance of the service nature of such ventures cannot be over emphasised. The earlier Kiribati project demonstrated this, as have all of those covered in section 2.0. The low population density and dispersed island nature of Kiribati (and much of the Pacific) exacerbates this issue, however, if it is ignored it is unlikely that any programme of this nature will be sustainable.

The identified interest of the EU in supporting the use of PV solar household systems and small centralised systems in the outer islands of Kiribati does provide an opportunity to build on KSEC’s work and that supported by SOPAC. A project that ignores the lessons learnt through their work will however have limited success.



4.2.3 REEEP Round 7 Microfinance Project

The Foundation Development Cooperation (FDC), already active in the Pacific promoting micro-credit activities, has been awarded a REEEP grant of €100,000 to implement the “Pacific Renewable Energy and Microfinance (PREM) Project”. The aim of the initiative is to assist in the development of innovative and sustainable microfinance for renewable energy and energy efficiency loan products. The initiative will be commenced by conducting a baseline survey in the three Pacific Island countries of Fiji, Samoa and Vanuatu. The initiative has commenced in June 2009 and will run for twelve months. It is anticipated that this new project will draw on the experience of the SOPAC and Barefoot Power projects as it considers the best practices in micro-financing within the Pacific. Its success will be measured by its ability to encourage additional MFI participation in this energy market.

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5.0 SUMMARY

The work undertaken through the Barefoot Power and SOPAC projects supported by REEEP provide some solid evidence that within the Pacific:

- There is a market demand for solar PV
- There are communities where cash purchases of smaller scale lighting systems work well (with or without a PV panel)
- Larger solar PV systems require access to end user finance
- There is still limited experience amongst MFIs when it comes to energy / PV solar systems
- There appears to be some institutional reluctance within the MFIs to support more micro-finance for the PV market
- A services based approach, with effective, long term technical support, is as crucial as sourcing appropriate financing.

Perhaps not unexpected, the earlier reviews of the PV entrepreneurs and the global perspectives of the MFIs reinforce what has been encountered in the Pacific. Other initiatives in the Pacific have demonstrated that implementing service based activities is made more difficult by the vastly dispersed nature of (small) island based communities with limited regular access.

There are no “easy fix” solutions but given the access to suitable lighting and PV products at a range of costs, the focus should be on building the confidence of regional MFIs in providing support to the industry. This can be done at a local level by supporting the entrepreneurial growth in the industry but it may also take some higher level discussion with MFIs to encourage them to seek out these opportunities and to approach the PV market with a more open mind.

As cost is clearly an issue, the model of subsidy that the World Bank has promoted with some success in South Asia and elsewhere is worthy of consideration. Full grant payment for systems appears counter-productive but establishing a vehicle that can buy down at least part of the PV cost may be an inevitable requirement to build the market beyond where it stands today.

It is worth noting that Barefoot Power have engaged with an international MFI to support its growth (using an innovative supplier credit model) which is allowing further development of its operations predominantly in India and Africa but also in the Pacific. Their model is gathering increasing support. A near term target is to displace 50% of the kerosene



usage for lighting in the Vanuatu market by late 2010. Sales are currently 500 to 1000 systems per month.

There is still an ongoing need for donor support to this market. The experiences recounted here, and comparisons with the historical development of similar markets elsewhere, suggest that it is still very immature within the Pacific and cannot be expected to grow organically. However, there is considerable knowledge available from existing solar PV initiatives and businesses in many developing economies which, together with the albeit limited Pacific experience, must be used to catalyse an accelerated growth of the PV market in the region.

The success of any future initiatives must only be measured by the sustainable delivery and ongoing utilisation of solar PV as a reliable source of energy within the region.



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