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Using Microfinance to Expand Access to Energy Services:

Summary of Findings



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Citi Foundation



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ACRONYMS

AFD	French Development Agency
AREED	Africa Rural Energy Enterprise
BP	British Petroleum
CGAP	Consultative Group to Assist the Poor
CEB	Central Electricity Board
CR	Cambodian Riel
EAC	East African Community
ECS	Electricity Consumer Society
FADES	Fundación para Alternativas de Desarrollo
FHI	Food for the Hungry International
GEF	Global Environment Facility
GVEP	Global Village Energy Partnership
IEA	International Energy Agency
IFC	International Finance Corporation
INR	Indian Rupee
Ksh	Kenyan Shilling
KUSCCO	Kenya Union of Savings and Credit Cooperatives
LAC	Latin America and the Caribbean
LED	Light Emitting Diode
LKR	Sri Lankan Rupee
LPG	Liquified Petroleum Gas
MFI	Microfinance Institution
MIS	Management Information System
MOU	Memorandum of Understanding
NGO	Non-governmental Organization
NR	Nepalese Rupee
NUBL	Nirdhan Utthan Bank Ltd
p.a.	Per Annum

PV	Solar Photovoltaic
RoA	Return on Assets
SACCO	Savings and Credit Cooperative
SCODE	Sustainable Community Development
SEEDS	Sarvodaya Economic Enterprises Development Services
SEEP	Small Enterprise Education and Promotion Network
SELCO	Solar Electric Light Company
SES	Sustainable Energy Solutions
SEWA	Self Employed Women's Association
SHS	Solar Home System
SME	Small and Medium Enterprise
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USD	United States Dollar
USDA	United States Department of Agriculture
W	Watt
WOCCU	World Council of Credit Unions

INTRODUCTION AND METHODOLOGY

The potential for microfinance institutions (MFIs) to offer profitable loans to purchase energy services, and thereby help alleviate poverty and promote modern, efficient energy use, has not yet been realized due to lack of experience by both the energy and microfinance fields and the lack of documented successes. In order to better understand this emerging arena, the Citi Foundation and United States Agency for International Development (USAID) funded a comprehensive study on the opportunities, barriers, costs, and impacts associated with MFI lending portfolios that have integrated energy lending into their products. This action research by Sustainable Energy Solutions (SES) and the SEEP Network, *Using Microfinance to Expand Access to Energy Services*, offers a detailed look at the business models, the clients, and the operations of selected 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. **This paper summarizes and consolidates the major findings from three individual papers on MFIs in Asia, Africa, and Latin America and the Caribbean, that are a companion to this paper.**¹

If appropriately designed, loans offered by MFIs can provide clients with access to high quality modern energy services by closely matching loan payments to existing energy expenditures or income flows. Such loans can offset the high upfront cost associated with cleaner, more efficient technologies, such as biogas, micro hydropower, wind, solar, or liquefied petroleum gas (LPG). To date, an overwhelming majority of financial support for increasing energy access has been publicly funded. Although these programs are beneficial, increased availability of loans for consumers will be essential to engage the private sector and improve the investment climate for rural energy services.² Enhanced understanding of the business opportunities for small-scale lending for energy services, as well as how MFIs can most effectively respond to these opportunities, is essential to facilitate access to appropriate financial services.

To carry out this research, SES and the SEEP Network invited MFIs in Africa, Asia, Latin America and the Caribbean (LAC) to participate in an interactive field research program. With the help of an advisory group of energy and microfinance experts, a competitive selection process was used to select six MFIs, four from Asia and two from Africa for this research. Criteria for selection included things such as organizational commitment to sustainability, minimum years in energy lending, and current loan products for meeting clients' energy needs. No MFIs from Latin America and the Caribbean responded to the invitation to take part in the field research program. Therefore, SES and the SEEP Network commissioned a desk study, augmented by telephone interviews, for a broad overview of what is happening in the Latin America and Caribbean region.

Two teams of consultants, each including an expert from the microfinance sector and from the energy sector in their respective regions, carried out the research in Africa and Asia. The field research consisted of visits to the offices of each participating MFI to interview MFI staff and management, energy companies, and clients using a common set of

1. **The three regional papers of *Using Microfinance to Expand Access to Energy Services***, which can be found on the SEEP website (www.seepnetwork.org) and SES website (www.sustainable-solutions.com), are “The Emerging Experiences of Amret, Nirdhan Utthan Bank Ltd. (NUBL), Sarvodaya Economic Enterprises Development Institute (SEEDS), and Self-Employed Women's Association (SEWA) Bank in Asia”; “The Emerging Experiences of Faulu Kenya and Kenya Union of Savings & Credit Co-operatives (KUSSCO) in Kenya”; and “A Desk Study of Experiences in Latin America and the Caribbean.”
2. Global Village Energy Partnership, proceedings of the “Consumer Lending and Microfinance to Expand Access to Energy Services” workshop, Manila, the Philippines, May 2004.

questions to guide each team's research. Primary data was collected and analyzed based on each MFI's business indicators, client and stakeholder perceptions, partnerships with energy companies, and long-term business strategies. An extensive literature review on the regulatory framework and past energy lending experiences in each region complemented the field research. It should be noted that for the LAC region it was not possible to go into as much depth as the Asia and Africa reports because there were no field visits and access to information was somewhat limited.

CHAPTER 1 • UNDERSTANDING ENERGY AND FINANCING NEEDS

1.1 ENERGY NEEDS

Poor people must have access to modern energy services if global poverty and inequality are to be reduced. By itself, energy is of little interest to most people. Instead, it is the services that energy provides that are central to practically all aspects of people's lives, such as access to water, agricultural productivity, health care, education, job creation, gender equality, and environmental sustainability.

Access to energy services can truly transform peoples' lives in a way that cuts across all development issues. For example, it would not be possible to supply safe water without energy for pumping or clean fuels for boiling water. Issues of gender equity cannot be resolved if young girls are unable to attend school because they have to collect scarce fuel wood for family subsistence. The provision of health care services should be coupled with modern lighting to enable a safe and clean work environment and refrigeration to preserve vaccines. Furthermore, productive and income-generating activities are enabled as a result of access to energy services. For example, farmers can better irrigate arable land that generates saleable crops or shopkeepers can serve cold drinks and stay open later. Entrepreneurs can earn extra income charging mobile telephone batteries, and fishermen can get their products to market through access to refrigeration.

Estimates are that 2.5 billion people rely on traditional biomass fuels (e.g., wood, charcoal, and dung) as their principal source of energy for cooking and heating, and almost 1.6 billion people, mostly in rural areas, have no access to electricity.³ At present, Africa has the lowest urban and rural electrification rates as compared to the Asia and Latin America and Caribbean regions, with less than 38 percent of the continent's population (or 337 million people) living with electricity. Although electrification rates are much higher in Asia, the region's high population count means that a full 930 million people still live without electricity—more than any other region.⁴

The use of traditional biomass for cooking is not a problem in and of itself, but the unsustainable harvest of biomass resources and inefficient combustion on open fires indoors and outdoors can cause significant damage to the environment (deforestation) and human health.⁵ Almost 85 percent of the global population that uses biomass for cooking lives in rural areas. More than 70 percent of this population—over 1.7 billion people—are located in Asia, with 575 million in

What it means to have access to energy services:

- Lighting for home/business
- Modern cooking fuels and stoves
- Better air quality indoors
- Pumped water
- Refrigeration
- Telecommunications
- Education
- Transportation
- Agricultural processing

3. International Energy Agency, *World Energy Outlook 2006* (Paris: IEA, 2006). <http://www.iea.org/textbase/weo/electricity.pdf> and <http://www.iea.org/textbase/weo/cooking.pdf>

4. International Energy Agency, *World Energy Outlook 2006* (Paris: IEA, 2006).

5. Indoor air pollution results in approximately 100,000 avoidable deaths per month globally due to respiratory ailments.

sub-Saharan Africa.⁶ These are potentially large markets for off-grid electricity and modern cooking fuels, not to mention the income-generating activities that can spring from access to modern energy systems and the financial ability to purchase them.

Existing expenditures by poor people on inefficient and low-quality energy sources are surprisingly high, both in terms of cost and time. Many poor people spend an inordinate amount of time foraging for traditional cooking fuels (fuel wood, charcoal, animal dung, agricultural residues) that could otherwise be spent more productively. Most estimates suggest that families in rural areas of developing countries spend on average approximately \$10 per month on poor quality and unreliable energy services. This represents a significant percentage of their income. For example, among the rural poor with incomes of \$10–\$20 per month, expenditures on inefficient energy can represent 20–25 percent of household incomes—which underscores the ability of energy consumers, even if poor, to pay for modern energy services.⁷

1.2 MICROFINANCE AS A TOOL FOR LIVELIHOOD IMPROVEMENT

People living in poverty, like everyone else, need a diverse range of financial instruments to run their businesses, build assets, stabilize consumption, and shield themselves against crises. Microfinance offers many of the financial services needed by the poor—working capital loans, consumer credit, savings, deposit facilities money transfer services, pensions, and insurance. By reducing vulnerability and increasing earnings and savings, financial services allow poor households to make the transformation from every-day survival to planning for the future.

The microfinance sector has grown 12 percent per year in total outreach over the last decade and now reaches over 500 million people across the globe with financial services.⁸ However, penetration of markets is still very low with the most concentrated microfinance markets in Asia only reaching 2.5 percent of estimated potential clients.⁹ The boundary between microfinance and the larger financial system is beginning to blur with the increasing participation of commercial banks and other financial institutions in microfinance activities over the last decade. As more traditional financial institutions recognize that serving poor and low-income clients can be a viable business proposition, there are considerable challenges to be overcome as the sector scrambles to scale up existing services to larger numbers of people, to reach deeper into increasingly poorer and more remote sections of the market, and to find ways to lower costs faced by both MFIs and clients.¹⁰ Partnering with the energy sector can open new financial and energy markets, attract new clients for financial services and existing clients to energy services, and help alleviate or ameliorate poverty for millions of poor people worldwide.

1.3 HOW MICROFINANCE CAN EXPAND ACCESS TO ENERGY

Access to modern energy services can be greatly enhanced if people also have access to microfinance loans to pay for these services. Over the last 20 years, microfinance has played an important role in enhancing the economic opportunities available to poor people, but the experience to date with loans for energy services and products is limited. On the energy side, especially for people living in rural areas, energy services may not be available because energy companies do not typically view them as a strong, viable market for their products and rarely offer company-provided financing options. Microfinance institutions, however, can expand access to energy for poor clients by offering credit and/or loans for energy products and

6. Ibid., *World Energy Outlook 2006: Focus on Key Topics – Energy for Cooking in Developing Countries* (Paris: IEA, 2006).

7. World LP Gas Association, *LP Gas and Microfinance: A Study into the Applications and Use of Microfinance in LP Gas Access Projects* (Paris: World LP Gas Association, 2004).

8. Helms, Brigit. *Access for All: Building Inclusive Financial Systems*. The World Bank, The Consultative Group to Assist the Poor, 2006.

9. Gonzalez, A. and R. Rosenberg. 2006. *The State of Microfinance. Outreach, Profitability and Poverty: Findings from a Database of 2600 Microfinance Institutions*. Paper presented at the conference “Access to Finance: Building Inclusive Financial Systems,” Washington, D.C. The World Bank Group and the Brookings Institution.

10. Helms, *Access for All*, 2006.

by partnering with local energy companies to help them branch out into new markets that include poor and rural people. As linkages are built between the microfinance and energy sectors, financial institutions may be more willing and able to channel capital into loans for energy services.

Access to modern energy services provides a multitude of health, environmental, educational, and gender-equality benefits, but when utilized productively, energy services offer new options for diversifying and increasing incomes—an urgent need throughout developing countries. Investment in modern energy systems by clients of MFIs and by energy companies can become more attractive if these investments are coupled with increased economic productivity. MFIs adding energy lending to the portfolio can result in more customers for the energy enterprises and the creation of energy entrepreneurs—resulting in improved productivity and quality-of-life.

CHAPTER 2 • ENERGY LENDING IN THE THREE REGIONS—ASIA, AFRICA, AND LATIN AMERICA AND THE CARIBBEAN

This section looks more closely at microfinance and energy trends within Asia, Africa, Latin America and the Caribbean separately and how these trends impact energy lending activities in each region. This trend analysis is followed by a summary and comparison of the energy lending experiences of MFIs reviewed in each regional report, that serve as companion documents to this summary.

2.1 SPOTLIGHT ON ENERGY LENDING IN ASIA

The microfinance sector in Asia leads the world in terms of both breadth (number of clients) and depth (relative poverty of clients) of outreach.¹¹ Over the last decade, microfinance in Asia has matured beyond merely a niche market into a profitable sector with commercial financial institutions, governments, and non-governmental organizations recognizing that expanding access to financial services has the potential to improve the livelihoods of the region's poor. Many MFIs in the region have diversified their portfolios to include insurance and loans for home purchase, home improvements, and financing options for the purchase or lease of equipment and other solutions for improving the livelihoods of the poor.

Recognizing the important role that energy can play in addressing the many dimensions of poverty, some Asian MFIs have introduced loans to purchase modern energy systems that can reduce monthly energy expenditures, improve health conditions, increase business and household productivity, and improve income generation. These loan portfolios demonstrate how strategic partnerships between MFIs and energy providers can improve access to modern energy, but they have barely scratched the surface of the potential market for energy products and loans for energy services in the region. For example, only 68 percent of urban areas and 30 percent of rural populations in South Asia have access to electricity,¹² leaving 930 million without electricity. Additionally, over 1.7 billion people in the Asia region rely on traditional biomass for cooking and heating purposes.¹³ These statistics indicate that the market potential for energy lending by MFIs in the Asia region is significant, particularly in the least developed countries that have low electrification rates in poor and rural communities. As the Asia region's population continues to increase, the market for modern energy—especially off-grid electrification services—can only grow.

2.2 COMPARING ENERGY LENDING AT FOUR MICROFINANCE INSTITUTIONS IN ASIA

Four microfinance institutions in four different countries in Asia, with different energy lending models, were examined in this study: Self-Employed Women's Association (SEWA) Bank in India, Sarvodaya Economic Enterprise Development Services (SEEDS) in Sri Lanka, Nirdhan Utthan Bank Ltd. (NUBL) in Nepal, and Amret in Cam-

11. Montgomery, H. and Weiss, J. Great Expectations: Microfinance and Poverty Reduction in Asia and Latin America. Asian Development Bank Institute, Research Paper Series No. 63, February 2005.

12. International Energy Agency, *World Energy Outlook 2002*.

13. Ibid.

bodia.¹⁴ These MFIs represent a wide range of engagement strategies, product offerings, and service delivery models. However, energy lending still is a small part of microfinance portfolios in Asia. In this study, it was found that energy currently represents over 30 percent of the total loan portfolio for SEEDS, but is less than 1 percent of the total (respective) portfolios of SEWA Bank, NUBL, and Amret, which have relatively new programs. Both SEWA Bank and SEEDS offer loans for the purchase of solar home systems while NUBL focuses solely on lending for the construction of biogas digesters. In addition to solar lending, SEWA Bank offers loans for improved cookstoves while SEEDS offers loans for connection to the electricity grid and establishment of village micro hydropower schemes. Energy is embedded in the basic business loans of Amret, which is mainly used by clients to purchase generators and battery charging technologies.

The energy-lending activities of both SEEDS and NUBL were established with significant financial and technical support from government or donor programs, although NUBL later funded its program itself. SEWA Bank's energy program was self-initiated, and Amret offers its energy services without an energy-specific program or particular product. Both SEWA Bank and SEEDS offer "doorstep," or convenient, delivery of energy products, credit, and service, while Amret and NUBL rely on strong client bases and their rural presence to provide energy and credit services. Amret is also particularly adept at designing flexible financing while maintaining portfolio quality.

Successful energy lending in Asia depends on a range of factors, including a strong energy partner with decentralized presence, a focus on the income-generating potential of modern energy services, and the availability of credit enhancement and technical support from sector facilitators (e.g., government and umbrella organizations supporting either the energy or microfinance sectors) and donors. For SEWA Bank and SEEDS, a strategic partnership with a strong energy company that shares organizational values and goals has been one factor of their success. SEWA Bank and SEEDS also aligned their energy lending with other livelihood and enterprise/business development programs. NUBL and SEEDS have successfully tapped into support schemes offered by government, donors, and NGOs to help address challenges when first introducing their energy lending programs. By contrast, Amret has minimal experience with energy partners and has yet to explore external support for energy lending activities.

2.3 SPOTLIGHT ON ENERGY LENDING IN AFRICA

The microfinance sector in Africa is as diverse as the region itself, with a wide range of institutional and service delivery models addressing the complex and interconnected political, economic, and cultural systems impacting poverty. Relatively slow economic growth and declining levels of individual savings over the last two decades¹⁵ has compelled microfinance in most of Africa (outside of north and south Africa) to develop a stronger emphasis on poverty reduction and promotion of savings than in other regions. With some of the lowest electrification rates and highest levels of poverty, sub-Saharan Africa—and East Africa in particular—represents one of the most challenging environments for providing modern energy services on a cash basis. The experiences of the two Kenyan MFIs reviewed in this study only underscore the largely untapped market for modern energy services that can be accessed through microfinance.

At present, traditional biomass (fuelwood, animal dung, and agricultural byproducts) accounts for over 95 percent of the rural household energy mix in Kenya; 579 million people in Africa cook without modern cooking fuels. Additionally, electrification rates in the East Africa sub-region (Kenya, Tanzania and Uganda) are extremely low, with only 31 percent of urban populations and 2 percent of rural areas connected to the electricity grid.¹⁶ The experiences of the Kenyan MFIs reviewed in this study indicate that energy can be a catalyst for expansion into currently underserved and unserved rural markets.

14. A one-page summary of each MFI in the study and its energy portfolio, in all three regions, can be found in appendix 1. A table comparing the energy-lending characteristics of all the MFIs is in appendix 2. The separate regional reports discuss each MFI and their country contexts in depth and are a companion to this document.

15. Microfinance in Africa: Combining the Best Practices of Traditional and Modern Microfinance Approaches towards Poverty Eradication. United Nations Economic and Social Development, 2002. <http://www.un.org/esa/africa/microfinancein africa.pdf>

16. EAC Development Strategy: 2006–2010. East African Community Secretariat, 2006.

2.4 COMPARING ENERGY LENDING AT TWO MICROFINANCE INSTITUTIONS IN AFRICA

Faulu Kenya, a limited liability company, and the Kenya Union of Savings and Credit Cooperatives (KUSCCO), an umbrella organization providing support services to savings and credit cooperatives (SACCOs), show different but complementary dimensions of the microfinance sector in Kenya. Faulu Kenya is a more typical formal microfinance institution, founded as an offshoot of a larger international NGO, whose core clientele is microenterprises. KUSCCO, on the other hand, is a technical advisor to SACCOs, helping them build their capacity, and running a central finance facility that provides wholesale credit for cash-flow constraints or on-lending to SACCO clients.

The energy-lending activities of both MFIs have largely focused on the promotion of Liquefied Petroleum Gas (LPG) for cooking purposes, although each MFI has had some experience with loans for solar. Both also are developing energy lending programs for the construction of biogas digesters. Both MFIs were able to successfully establish energy-lending on a small scale using internal resources. KUSCCO accessed internal funds, including the central finance facility, to kick-start its energy-lending program. Faulu Kenya initiated energy lending using its own resources obtained by listing a corporate bond worth Ksh 500 million (US\$ 7 million) through the Nairobi Stock Exchange.

The experiences of Faulu Kenya and KUSCCO offer important lessons for the piloting and scaling up of energy lending in the East African context. First, they clearly recognize that the successful provision of consumer credit for modern energy technologies requires serious commitment from both the MFI and energy companies. This means that energy lending, as with all loan products, requires the full support of management at all levels; otherwise, it runs the risk of being sidelined when the champion is gone. Secondly, before pilot-testing any energy-lending operations, all stakeholders should agree upon a set of criteria that defines the service delivery from initial marketing and promotion to possible loan default and after-warranty service. This is usually outlined in a memorandum of understanding between the energy company and the MFI. Third, it is important to conduct a survey of the existing energy supply chains, current uses of energy, and the energy financing environment before introducing an energy loan product. As demonstrated by KUSCCO, market research helped the MFI profile the energy demand and needs of existing clients, the magnitude of potential demand, and capacity to pay, plus providing other end-user demographic information. Finally, both KUSCCO and Faulu recognize the need to continually review the effectiveness of each energy product model with the aim of improving service delivery. Possible points of revision could include adjusting interest rates, loan repayment terms, payment and equipment disbursement, and after-sales service.

2.5 SPOTLIGHT ON ENERGY LENDING IN LATIN AMERICA AND THE CARIBBEAN

Microfinance in Latin America and the Caribbean (LAC) can be described as mainly urban rather than rural, focused on serving microenterprises rather than poor households. Microfinance is fiercely competitive in smaller Central American countries, but only marginally present in larger, more populous South American markets. As a result of the rapid commercialization of microfinance in the region over the last decade, regulated institutions now serve over 65 percent of the region's microfinance borrowers.¹⁷ Most of these regulated MFIs do not serve markets where the largest potential number of energy loan clients are located—the highly dispersed rural areas, the larger countries (Brazil, Argentina, Venezuela, Mexico), and low-income households without significant income flow and productive activities.

By more narrowly targeting the so-called “economically active poor,” or individuals with established businesses that need capital to grow microenterprises, Latin America MFIs also tend to focus on middle-income populations rather than poor households with the greatest need for modern energy services. Because of this, many of the region's MFIs have insufficient capacity to service loans and little incentive to promote loans in rural areas where demand for modern energy is high.

17. Navajas and Tejerina, *Microfinance in Latin America and the Caribbean: How Large is the Market?* Inter-American Development Bank, November 2006.

Compared to Africa and Asia, Latin America and the Caribbean, on average, have higher rates of electrification and greater use of modern cooking fuels. However, more than 45 million residents of Latin America still live without access to electricity, and almost 83 million people throughout LAC rely on traditional biomass for cooking.¹⁸ Most of this potential market for modern energy services can be found in financially unserved rural areas, which hold out an opportunity for MFIs to offer energy products to expand their rural presence. Despite this large potential market for modern energy, relatively few MFIs in the region have explicit energy lending portfolios. More commonly, the energy loans are embedded in MFI business loans and are not separate, as more likely in Asia and Africa.

2.6 COMPARING ENERGY LENDING IN LATIN AMERICA AND THE CARIBBEAN

Because no MFI responded to the invitation to participate in this study, the Latin American research team could not conduct field research—only a desk review and telephone interviews—to gain insight into successful energy-lending programs in Latin America. Based on information available, the majority of the experiences documented in this study come from Bolivia, the Dominican Republic, Guatemala and Nicaragua, and summaries of the energy portfolios of two MFIs, Génesis Empresarial (Guatemala) and Fundación para Alternativas de Desarrollo (Bolivia).

Most of the energy-lending programs identified in the Latin America and Caribbean region received significant support from energy access programs funded by donors. In Bolivia, the UNDP Global Environment Facility provided subsidies for the consumer cost of solar systems, a central fund from which MFIs could obtain loans to on-lend for solar products, and energy company certification by a government body. In the Dominican Republic, the French Agency for Development provided a loan guarantee fund for three MFIs involved in lending for solar systems, and a UNDP Small Grants Program initiative provided seed funding to community credit cooperatives for solar purchases. In Nicaragua, a World Bank/UNDP-sponsored program also provided funding to MFIs to on-lend for solar systems.

The energy-financing programs of several MFIs and energy companies in Latin America and the Caribbean were severely disrupted by poorly planned government interventions in the energy sector. For example, in Bolivia, Enersol S.A., an energy company, found it difficult to attract MFIs as partners because the MFIs believed their clients would not invest in modern energy due to past government “give-away” programs. In the Latin America and Caribbean region, energy loans were sometimes embedded in community infrastructure loans, such as Génesis Empresarial’s technical support and loans to communities for potable water systems and community electrification schemes in Guatemala. In addition, grid-connection and/or solar loans were sometimes embedded in basic business loans to microenterprises, rather than given explicitly as energy loans.

18. World Energy Outlook 2006. International Energy Agency, 2006.

CHAPTER 3 • MAJOR FINDINGS FROM THE STUDY

The experiences of MFIs and energy companies reviewed in the three regional studies show that the potential market for energy products can be transformed into effective demand if individuals can access appropriately designed loans for the purchase of modern energy services. These energy-lending experiences represent a wide range of innovative strategies and approaches that offer valuable lessons for other MFIs. Although these experiences vary across regions and within countries, this study shows how energy lending was established at each MFI, the types of energy products that are offered, the role that donors and governments can play, the different business models used by the MFIs, and the risks MFIs can face in energy lending.

3.1 ESTABLISHING ENERGY LENDING

Asia: SEWA Bank established energy lending through internal and external financing and a strong, exclusive partnership with the energy company SELCO. Recognizing an emerging demand for solar among its clients, SEEDS' parent organization (Sarvodaya) established a pilot project to provide solar home systems to clients with a credit facility using government and donor financial support. NUBL's first energy-lending initiative was coupled with a government loan fund and failed, but it reintroduced a successful and internally-funded energy product with technical support from the NGO Winrock International. Amret's energy-related activities were through typical business loans, without a particular energy program or funding.

Africa: In Kenya, Both Faulu Kenya and KUSCCO established energy-lending programs largely in response to repeated client requests and a desire to avoid having their business loans diverted to purchase energy products. Faulu Kenya's energy lending was conceived, funded, and implemented without the help of external assistance. KUSCCO's energy-lending program was established as a way to serve the energy-financing needs of member SACCOs (i.e., their clients), after an initial detailed market analysis by its research department. To facilitate the introduction and delivery of modern energy technologies, KUSCCO restructured its operations and established a specialized unit within its head office dedicated to energy activities.

Latin America and the Caribbean: Energy companies and energy-focused NGOs play an increasingly important role in establishing energy lending in LAC, mainly to expand market penetration into areas where individuals cannot afford energy systems on a cash-only basis. For example, the energy company Enersol, S.A., partnered with the MFI Prodem in Bolivia without external funding or assistance and explored partnerships with other financial institutions on its own. Government and donor support in the form of loan funds and end-user subsidies is largely responsible for the participation in energy lending by many of the MFIs reviewed in Nicaragua, Guatemala, and Bolivia.

3.2 ENERGY PRODUCTS OFFERED BY MICROFINANCE INSTITUTIONS

Asia: SEWA Bank has taken a somewhat progressive approach by offering a wide selection of energy products, ranging from solar home systems, solar battery charging, solar lanterns, solar headlamps, sarai cookers, and improved cookstoves. SEEDS' energy products include solar home systems, grid connection, and village micro hydro. NUBL is currently comfortable with providing a single energy product, the biogas loan, while Amret is open to the client's choice of energy system because its energy lending is through its traditional business loans.

Africa: KUSCCO and Faulu Kenya offer loans for LPG stoves and cylinders and solar systems. Both MFIs are in the process of introducing biogas products.

Latin America and Caribbean: Energy lending experiences to date in the LAC region have mainly focused on solar products, though some MFIs have offered loans for grid connections.

3.3 ROLE OF DONORS AND GOVERNMENTS

Donors and governments can help address the challenges of introducing energy lending with credit enhancement and technical assistance schemes offered. These institutions can help MFIs successfully ally with energy companies, for example, by providing funds for pilot programs and learning exchanges by MFI staff to observe successful partnerships in other countries.

Asia: Donors and governments in Asia, singly and jointly, have a reasonably-sized footprint in supporting modern energy, and have set up apex and support agencies to help poor people move to cleaner options, including renewable energy. For example, the government of India created the Indian Renewable Energy Development Agency Limited to facilitate a wide spectrum of financing (debt financing with soft term loans, equipment financing, lease financing, and on-lending through financial intermediaries to introduce renewable energy, energy conservation, and energy efficiency). In addition, the United Nations Environment Programme set up a credit facility in southern India, with the support of the United Nations Foundation and the Shell Foundation, to help rural households finance the purchase of solar home systems.

Government and policy support for energy lending in Sri Lanka and Nepal has helped to make modern energy systems more affordable to low-income clients and lower risks associated with energy products faced by MFIs. The government of Nepal established the Alternative Energy Promotion Center to promote renewable energy technologies and administer subsidies. The Biogas Sector Partnership is its executing agency to provide technical support and quality control for biogas implementation.

The government of Sri Lanka, with the assistance of the World Bank and Global Environmental Facility (GEF), implemented the Renewable Energy for Rural Economic Development project to provide refinance, grant, and technical assistance and promote off-grid electricity services and grid-connected investment projects to encourage competition in the power sector.

In Cambodia government and donor-driven projects are the norm. The latter are mainly small regional, product-specific initiatives supported by the World Bank and Asian Development Bank, for example. The government, through the Ministry of Industry, Mines, and Energy has somewhat broader programs, such as the Rural Electrification Fund, established to accelerate rural electrification and reduce the cost of supplying energy, and the National Biodigester Program, established to utilize the potential of biogas as an indigenous, sustainable energy source in Cambodia.

Africa: This study looked at two MFIs from Kenya and can therefore only report on the support from donors and government in Kenya. The Government of Kenya has taken many steps toward improving the policy and regulatory environment affecting modern energy services, including complete liberalization of LPG import industry and removal of import taxes on LPG fuels as well as removal of import and value added taxes on solar panels.

Support from donors has focused on medium-sized initiatives for specific energy products, but is not overwhelming. The World Bank and Shell Foundation helped KUSCCO connect with new energy partners and introduce a new energy product (biogas). GEF and the International Finance Corporation (IFC) launched a market initiative to promote solar technologies in Kenya, India, and Morocco, which made financing available to MFIs to address market barriers and accelerate solar penetration. The IFC is also piloting “Lighting the Bottom of the Pyramid,” a global initiative to increase access and affordability of modern lighting technologies—particularly light emitting diodes (LEDs). It is being piloted in Kenya and Ghana through the introduction of new technologies, development of distri-

bution channels, and an offering of funding and technical assistance to energy enterprises and rural lighting vendors.

There are three emerging programs that have potential to support MFIs in expanding into energy lending. One is the United Nations Development Programme/European Union support for a regional strategy and funding for scaling up access to modern energy in the East African Community (EAC). The second is GVEP International, which is planning to establish an East Africa regional investment hub to provide funding and business development assistance to small and medium sized energy enterprises. Finally, the Africa Rural Energy Enterprise Development (AREED) program led by UNEP plans to work with selected MFIs to develop consumer credit facilities that could be accessed by customers of energy enterprises, thus developing their energy portfolios. AREED countries include Tanzania, Zambia, Senegal, Ghana, and Mali.

Latin America and the Caribbean: Government and donor engagement in Nicaragua and Bolivia has made lending for energy more attractive to MFIs through end-user subsidies and central loan facilities. In the Dominican Republic, the UNDP Small Grants Program provides revolving credit to community groups and rural MFIs to finance individual household solar systems. Plan Sierra, a government program funded by the French Agency for Development, offers technical assistance to rural solar dealers and installers and sets a below-market interest rate for solar loans disbursed within each revolving fund. Bolivia has a Rural Electrification Project established by the government, UNDP, and GEF with funding to deliver off-grid electricity via photovoltaic systems. The World Bank and UNDP/GEF initiated an off-grid rural electrification program in Nicaragua (Nicaraguan Renewable Energy for Rural Zones Program Initiative) which partners with energy companies and microfinance institutions to demonstrate the effectiveness of microfinance and business development in enhancing rural electrification schemes.

3.4 BUSINESS AND FINANCING MODELS FOR ENERGY LENDING

Successful energy lending in MFIs in the Africa, Asia, and Latin America and Caribbean regions tends to feature a strong partnership between an MFI and one or more energy enterprises as the foundation. The success of energy-lending activities reviewed in this study also depended upon the support and participation of other partners, including government, donors, and energy- or poverty-focused NGOs.

Financing provided hand-in-hand with technical assistance. In this model, the MFI enters into a partnership with one or more energy enterprises to design and issue loans for energy products. This is best illustrated by the partnership between SEWA and SELCO in India, where the MFI and the energy company have a common mission and approach to help the poor purchase energy equipment with small loans that are backed by service and maintenance of the energy products. The success of this business model depends on a solid understanding of the market and assurances to clients of equipment and training support to grow the product. This is necessary because poor communities seldom understand the potential benefits of modern energy (given its cost) and often need education, support, and assurance to upgrade to a modern energy source and take on a loan. In a slight variation of this model, the government of Nepal reworked grants to offer partial price subsidies (25–45 percent of the cost of a biogas unit, depending upon its size) directly to the client, which were channeled through the energy company, as seen with NUBL and the apex Alternate Energy Promotion Center.

Energy companies lending directly. Some for-profit energy companies in Latin America and the Caribbean have experience offering financing for modern energy services without using third-party microfinance. Energy companies in the region established their own credit programs largely in response to sparse MFI presence in the rural areas they served. For example, in the Dominican Republic and Honduras, subsidiaries of the energy company Soluz offer micro-rental financing options to rural clients. The Soluz enterprises combined have collected over 200,000 monthly payments for rental energy systems. Additionally, Soluz Honduras has financed over 1,300 energy systems through micro-credit without a third-party MFI.¹⁹

19. Rogers, et al. Innovation in Rural Energy Delivery: Accelerating Energy Access Through SMEs. Navigant Consulting, Inc. and Soluz, Inc., 2006.

Subsidies linked with microfinance. A business model used in all three regions combines subsidies with microfinance for the clients. In this model, subsidies are offered as either subsidized funds or grants to MFIs for further on-lending as loans combined with funds for technical assistance. In many community electrification projects, construction is funded by a mix of in-kind contributions from the community, grants from facilitating organizations, and loans from financial institutions. In these cases, a financial intermediary, such as a bank or MFI, is expected to fill the gap between estimated project costs and project subsidies. For example, SEEDS is a participating credit institution in a larger World Bank program with local banks, and it finances about 25–30 percent of the total cost of an energy access project. Génesis Empresarial uses a variation of this model and bundles credit and technical assistance together.

Conventional loans. Amret's (Cambodia) energy financing is embedded in its conventional business loans. Amret provides loans to invest in growth and provide working capital for energy enterprises. Although most of Amret's current energy-related loans are for diesel-powered generators, batteries, and battery chargers, it is an important model to keep an eye on and observe whether the same entrepreneurs can be encouraged to adopt other, cleaner options in the future.

Bulk purchases of energy equipment. A fourth model is the on-lending model adopted by umbrella organizations or second-tier MFIs, like KUSCCO, whose energy products are sold in bulk to member SACCOs and their clients directly. An important aspect of this model is that KUSCCO purchases energy equipment (mainly LPG stoves and cylinders) in bulk at reduced prices and maintains an inventory for distribution to member SACCOs. The sale of high-value consumer goods brings up the average profits of the administrative unit of KUSCCO, and sale to second-tier MFIs allows KUSCCO to transfer its risk to first tier MFIs. This model could be interesting for many rural-based retail co-operatives in South Asia that often pass on the benefits of lower costs to its members through the wholesale purchase and retail sale of household grocery, fertilizer, seeds, and other farm equipment.

3.5 POTENTIAL RISKS FOR MICROFINANCE INSTITUTIONS IN ENERGY LENDING

Energy equipment cost borne by MFI. Sometimes the MFI pays the upfront cost of equipment and installations to the energy company, and the client repays the MFI. Because the MFI recoups this cost over a period of time from its clients, it is vulnerable to risk if the technology is replaced or changed (for example, unplanned grid extensions experienced by SEEDS), there may be a delay in installation which might prompt clients to cancel their loans (Faulu Kenya), or change in ownership patterns of the community infrastructure from the community to private entities (Génesis Empresarial).

Limited view of consumption loans. Many of the MFIs in the three regions view energy purely as a consumptive product that clients take advantage of in addition to enterprise development loans. Consumption loans are often only offered to repeat clients who have demonstrated their credit worthiness to the MFIs via successful completion of their business loans. Although considered prudent financial practice, this approach can limit mass-scale penetration of energy loans, since non-clients or individuals with inadequate cash flow or collateral may not be considered eligible.

Difficulty finding a reliable energy partner: One risk the MFI faces is a lack of (or difficulty finding) reliable energy companies and energy enterprises that can partner with the MFI to provide products suited to clients' needs, plus training and timely installations in new markets, both in rural and urban areas. Failure in these latter two areas may affect the reliability and brand image of the partner MFI as well as the reputation of the modern energy products themselves. Many MFIs have taken on the stock management function, as seen with SEEDS and KUSCCO, when energy vendors lack strong rural networks. Since such functions do not fall within the core competency of many traditional MFIs, these organizations can face significant financial risk associated with maintaining inventory of modern energy products in-house. However, SEWA Bank and SELCO have mitigated this risk through a partnership that ensures that finance is provided by the MFI and energy products and service are provided by the energy company. In other words, there is a clear division of labor.

CHAPTER 4 • SUCCESS FACTORS FOR EXPANDING ENERGY LENDING

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. 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.

The partnership (or partnerships) is the single most important factor

Successful energy-lending programs begin with the formation of strategic partnerships between one or more groups of stakeholders—MFIs, self-help groups, energy companies 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, minimize 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 Box 1. For example, with Faulu Kenya, energy product and loan marketing and development is handled by the MFI with minimal help from the energy company. In other cases, the energy partner introduces the MFI only when a potential client expresses the inability to pay the upfront costs of the equipment (e.g., SEEDS' grid-connection loans). Additionally, product development and needs assessments can be conducted individually by only the energy entrepreneur, as in the case of SEEDS, or jointly by the MFI and energy company as in the case of SEWA Bank and SELCO.

It is also important to understand the potential roles that can be played by public partners (donors, governments, bilateral organizations, 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 organizations, 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 strategy is to promote the use of and expand access to modern energy technologies, including solar and wind power, micro hydropower, bio-fuels, LPG cookstoves, etc. Given the low-income levels in rural areas of many developing countries, these facilitating organizations engage MFIs to improve the affordability of modern energy technologies.

Box 1. Some criteria for energy-microfinance partnerships

What a microfinance institution should look for in an energy company:

- 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

What an energy company should look for in a microfinance institution:

- 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

Source: Outcome of discussions with practitioners at Learning Workshop "Using Microfinance to Expand Access to Energy Services," 18-22 August, 2007, Ahmedabad, India.

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 World Bank's PERZA program in Nicaragua has helped MFIs and energy enterprises scale up lending for the purchase of solar home systems. In Nepal, where there is a large government subsidy for the cost of a biogas digester, clients can obtain loans from NUBL for the remaining cost. KUSCCO has been able to successfully scale up energy-lending in Kenya largely due to technical support and funding from the World Bank and Shell Foundation.

Partnerships and collaborations formed to support expansion of energy lending can be done in different ways:

- Establish a relationship with a reliable and reputable energy company that can supply the energy products best suited to the needs of the MFI's clients. In addition, especially with a new product, such as modern, energy systems, it is important clients are assured that they will have service and maintenance readily available and can trust that the equipment will work as advertised (or that they will be trained to operate it properly).
- Collaborate with other livelihood and poverty reduction programs to expand market penetration of modern energy services and access financing options available through MFIs. For example, energy access can complement the goals of NGO- and government-run health, education, housing, and gender-equality programs because the benefits of energy are fundamental to the goals of these types of development programs.
- Align energy-lending with enterprise/business development programs that require energy technology to enhance productive uses or income-generating activities. MFIs can play an especially important role by developing loan packages that encourage people to purchase the energy technology or service and the equipment (e.g., a water pump or a sewing machine) or resources (e.g., working capital or fixed capital assets) needed to generate income. Energy companies can facilitate this by designing "productive-use" technology packages that include both the energy technology or service and complementary equipment and appliances to serve the microenterprises.

Build capacity, even outside the comfort zone, to sell the product and educate the market

Internal capacity and market education are integral parts of the partnership between an MFI and energy company, and joint endeavors 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 emphasizes education about the benefits of modern energy. This can be done jointly with energy companies or collaboratively with NGOs or development organizations that are able 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. In addition, there are these suggestions to consider:

- Joint marketing of the energy product and lending product can be done with targeted pamphlets, radio shows, and promotional displays in MFI branches, focused on presenting a simple cost-benefit analysis of modern energy products. Field demonstrations can let clients actually see how the energy product works and can benefit them. This was shown to be very important to the SEWA and SELCO partnership.
- Learn from other experiences at MFIs, even in other regions, to better understand the possible approaches and pitfalls associated with energy lending. It is then possible to adapt proven models to the local conditions. This makes the sharing of best practices in the energy and microfinance sectors vitally important.
- Engage commission-based agents (e.g., the *banksaathis* of SEWA Bank) and/or partner with energy companies and suppliers, energy associations, or supporting institutions to raise awareness of the benefits and uses of modern energy systems and answer technical questions.
- Focus first on highly visible businesses and institutions—market vendors, entrepreneurial individuals, community centers, etc.—as energy loan clients to encourage word-of-mouth understanding and communication about the energy loan products.

- Get feedback from all stakeholders, including clients, to improve the ability of MFI staff to respond to client needs, ensure proper understanding and operation of the energy technology by the client, and help reduce monitoring and repair costs.

Flexibility is key to deeper market development

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 analyze client demands, household and business cash flows, energy usage patterns, and the specific social, economic and policy conditions of the country. In sum, the following elements should be considered in market development and scale-up:

- Tailor energy products to demand. MFIs should offer energy products that—when compared to baseline or traditional energy products—reduce ongoing energy expenditures or increase revenue, improve productivity, and are easily operated with minimal training. Energy companies need to respond to the clients of the MFIs and offer energy packages that match their demands and purchasing power. Typical energy products well-suited to microfinance include renewable energy systems such as solar lanterns, solar dryers, battery chargers, biogas, small hydropower; cookstoves and LPG canisters; electricity hookups; and water purification. Create innovative lending products. 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. MFIs also need to explore the possibility of offering parallel loans or packaging energy loans with other, larger loans (for housing or agriculture, for example). However, it should be noted that the quality of the loan portfolio is dependent on solid loan tracking and monitoring systems and strong, well-disciplined management.
- Capitalize 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. Such information could be gathered through market research and surveys focusing on issues, such as current demand for energy products, gaps in the energy market, efficiency and costs of energy systems in use, linkages between seasonality and availability of power, and effect of seasonality on particular energy systems. The MFIs should not ignore the potential among an energy company's clients or fail to take advantage of a parent institution's wider client network.
- Find and develop new clients. 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. Another potential market being missed by the MFIs is largely agriculture-based and/or informal. This population segment has little or no measurable formal income, but demonstrates tremendous potential for increasing income-generating activities with improved access to modern energy services.

Run, don't walk, to the existing infrastructure and distribution networks to expand access to energy and microfinance 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, rural market for energy services, MFIs should consider these possibilities:

- Seize the opportunity to use the MFI's network and existing infrastructure to increase access to energy products in the rural and remote areas. In addition, the MFI can 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 centers are included in the supply chain.
- Larger MFIs and mainstream financial institutions can capitalize 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.
- Offer affordable credit to rural entrepreneurs and farmers to purchase energy products for productive purposes, such as establishing rural energy businesses and for agricultural use and improvement.

Credit risk and new technical risks are manageable, but mitigation must be front line

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 minimize 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. In some situations, collaborating with an insurance company to cover the technical risk provides the best coverage. However, if this is not possible, the MFI can set up its own internal insurance product where liability is restricted to the value of the insurance fund mobilized. Partnering with other energy companies in the region is useful to avoid overlap (among other benefits), and can help ensure the most efficient use of resources to expanding the outreach of energy access.

Regulatory issues matter and energy lending adds new twists and turns for MFIs

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, if not decimated, by a national electricity grid extension, if such initiatives go forward unannounced to the energy service market or a government initiates a fully subsidized 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 labeling, can act to stimulate the market for clean energy technologies. Value-added tax programs can create a cost burden to the poor client. 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. In Kenya, a lack of standard cylinder and valve sizes makes it difficult and cost-prohibitive for clients to obtain LPG refills. Therefore, MFIs need to embrace but not depend on supportive policies and learn to anticipate potentially damaging policies.

Look before leaping: MFIs and energy companies need to learn about each other and figure out how to work together

Increasing access to energy services through microfinance is hindered by a lack of coordination and poor communication between the energy and microfinance sectors. Too often, this study found problems and issues that could be directly traced to lack of understanding or knowledge about each other's fields, or miscommunication. MFIs were not skilled in managing equipment inventories or attuned to the details of honoring equipment warranties or the ramifications of replacing abused equipment; energy companies had misperceptions about suitable interest rates and length of loan terms. MFIs and energy companies therefore need to have good working relationships and knowledge of their respective roles and capabilities.

There is also a general lack of documentation of experience in energy lending, both successes and pitfalls. Disseminating this information—what works and what does not—within the microfinance and energy sectors is a vital first step to address this knowledge gap. With this kind of information, the common traits across regions, methodologies, and loan design can be distilled in order to help replicate and scale-up energy lending. Interested MFIs and energy practitioners should spend time reviewing documented examples of institutions that have successfully financed energy systems in their specific region and elsewhere. Evaluating the positive and negative lessons learned by MFIs already engaged in energy lending can prove invaluable to MFIs, energy companies, NGOs, governments, donors, and international supporting institutions interested in establishing and appropriately scaling up energy-lending operations.

Take advantage of new funding strategies wherever they exist

Establishing and scaling up energy lending requires a level of financial resources that may be out of reach for many MFIs, if not accompanied by external support, such as that from bilateral or multilateral donors and foundations. To develop and launch energy-lending products, an MFI must invest in market research, client and loan officer training, and significant marketing and promotion efforts. Moreover, an MFI needs to be inventive and flexible in identifying appropriate energy products and delivery mechanisms. The MFI needs room to experiment to design appropriate lending models for each energy product that emerges as important for the clients. In addition, some energy companies may ask the MFI to pay for energy systems up front or purchase them in bulk, both of which require abnormal cash outflows by the MFI. There is an opportunity for governments, donors, and supporting institutions to step in and fill these funding gaps and help minimize the costs associated with lending for energy-related activities. Some options for governments and supporting institutions to consider are these:

- Rework government subsidies to buy down interest rates for consumers, or guarantee loans. Another important opportunity for synergy between government grid-extension programs and microfinance is developing loan packages to buy down connection costs for consumers.
- Provide seed funding for innovation around new markets, particularly rural, remote, and low-income clients, using energy as a catalyst for expansion. In addition, funds are needed to spur innovation in how to capture and monetize the carbon benefits from the clean energy loans that are made by the MFI. This is a new and emerging area that has some promise.

- Relax government regulations for key energy investments, including value-added taxes; introduce appropriately designed subsidies and tax-incentive programs; and establish co-financing arrangements.
- Support energy and microfinance umbrella organizations that bridge the gap between the two sectors by financing and implementing information dissemination and stakeholder coordination; assisting with energy marketing programs; sharing best practices; developing learning portals; and providing seed funding to pilot new approaches. These umbrella groups can also encourage national utilities and energy companies to explore possible partnerships with MFIs.
- Help jump-start energy lending through funding for technical and credit risk guarantee funds and loans to MFIs to on-lend for energy purposes.

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**APPENDIX 1 • BRIEF SUMMARIES OF
THE MFIS IN THE STUDY**



SEWA BANK

Ahmedabad, India

Summary

- Established in 1972 first as a registered trade union, SEWA Bank is now a registered urban cooperative bank that provides working capital and savings facilities for poor self-employed working women.
- 291,535 active savings accounts and 44,909 shareholders (as of March 2006)
- Operates mostly in urban (80%) but also in rural areas (20%)
- Bank branches in 11 of 13 Gujarat districts
- Under direct regulation of Reserve (Central) Bank of India

Energy Loan Products and Characteristics (est. 2005)

- **Products:** SEWA Bank offers loans for solar home lights, solar lanterns, and battery-charging systems. SEWA also promotes smokeless cook stoves, solar cookers, and sarai cookers, which are available on a cash basis. SEWA is also piloting loans for biogas plants and biomass dryers.
- **Model:** Individual lending to existing client base with savings account at SEWA Bank; offered only in Ahmedabad and surroundings.
- **Prerequisite:** Energy loan clients must have (or open) a savings account upon taking an energy loan.
- **Interest Rate:** 17% declining p.a, but 7% is refunded upon completion of loan on time
- **Repayment Period:** 35 months
- **Loan size:** Unsecured loans – Max INR 50,000 (US\$1,250); Secured loans – 100% of the value of security
- **Warranty Period:** Free maintenance and operation during the warranty period (varies with product)

Energy Partners

- Offers energy lending exclusively through Solar Electricity Light Company, Ltd. (SELCO)

Energy Lending Model

- **Market Development:**
 - SEWA markets through its existing promotional channels such as mobile vans and displays in monthly fairs and through some of its other parent NGO programs.
 - SELCO assesses clients' needs to help them purchase the least costly and best suited energy option.
 - A compulsory 15-day trial period for energy technology is offered during which SEWA Bank ensures clients are satisfied and voluntarily buy the products based on genuine need.
- **Appraisal and Processing:** MFI follows its standard processes in addition to an energy needs pre-assessment of client by vendor/technically trained staff.
- **Disbursement:** SEWA Bank disburses payment directly to SELCO, which then becomes the liability of the client.
- **Installation and Training:** SELCO installs the system and provides user training at time of installation as well as during its business counseling hours.

- **After Sales Service:** Free after sales service during the warranty period
- **Communication and Feedback:** Commission-based loan agents called *Banksaathis* collect loan repayments from clients on behalf of SEWA Bank.

Loan Portfolio Performance (as of August 2006)

- **Clients Served and Market Penetration:**
 - Total loans disbursed: 94
 - Total loan amount disbursed: INR 641,992 (US\$16,000)
 - Total energy portfolio < 1% of SEWA Bank's total loan portfolio
 - Installed 28 solar home systems and 66 single solar lights
 - Clients include energy end consumers (household consumption), hawkers (energy for productive use), and energy entrepreneurs
- **Financial Analysis:**
 - 100% repayment rate; no defaults recorded
 - SEWA Bank expects to reach the break-even point and operational efficiency by scaling up its portfolio and reducing transaction costs.

Potential for Scale-Up

Strengths:

- The partnership between SEWA Bank and SELCO provides a “one stop shop” for clients by combining efficient energy products and services with a credit facility in one location.
- Loan officers possess technical capacity to deliver energy loans and the technical products themselves.
- Together, SEWA Bank and SELCO emphasize energy for productive uses and income-generating activities, including promoting energy enterprises.
- SEWA Bank tends to market some of SELCO's products that don't require loans to both its members and non members. This can be turned into a business opportunity, strengthening SEWA's business model.

Challenges:

- SEWA Bank's flexible loan mechanism could jeopardize the quality of its portfolio as its current tracking systems are not geared to tracking unscheduled repayments, which could lead to fraud and misappropriation.
- Provisions of the current business model, such as the 7% interest subsidy to encourage timely repayments, should be reconsidered as it may affect long term sustainability.
- *Banksaathis* are not employees of SEWA Bank but are agents commissioned to collect loan repayments. Adequate controls should be built in to safeguard against credit risks such as human error, fraud, death, illness or resignation of the *banksaathis*.
- SELCO depends on SEWA Bank's infrastructure to market its products and services. Cost of scaling up will be high for SELCO unless they can develop a sales and service network in Gujarat.

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SEEDS (SARVODAYA ECONOMIC ENTERPRISES DEVELOPMENT INSTITUTE)

Moratuwa, Sri Lanka

Summary

- Registered as a limited liability company (not-for-profit) and has been in operations since 1998
- Provides credit for enterprises and livelihood improvement, and also offers a bundle of non financial services
- Focus on rural poor who wish to start or expand micro-business ventures or be self-employed
- Offers individual and group lending
- Branch offices in 27 districts of Sri Lanka
- Total client base of 887,430 with 161,461 active borrowers

Energy Loan Products and Characteristics (est. 1999)

- **Products:** solar home systems (SHS), grid connection, and micro hydro
- **Model:** separate sub-division for energy lending (“Alternative Energy”) headed by deputy banking director; individual lending methodology for SHS and grid connection; micro hydro loans offered through Electricity Consumer Society (ECS)
- **Interest Rate:** SHS – 10% flat p.a. / Grid – 8% flat p.a. / Micro hydro – 16% declining p.a.
- **Repayment Period:** 2-6 years, monthly installment (SHS)
- **Average Cost:** SHS – US\$360 - \$900 / Grid – LKR US\$160 - \$360 / Micro Hydro – USD\$9,000 - \$18,000
- **Loan size:** SHS – US\$225 – \$900/ Grid – US\$135/ Micro Hydro – 30-50% of total project cost

Energy Partners

- SHS: SEEDS has Memorandum of Understanding agreements with 11 solar companies that stipulate minimum product and service standards.
- Grid Connection: Client gives affidavit to SEEDS that authorizes Central Electricity Board (CEB) to disconnect power in case of default.
- Village Micro Hydro: ECS enters into an agreement with the energy equipment supplier, not SEEDS.

Energy Lending Model

- **Market Development:**
 - **SHS:** While marketing its own services, solar companies introduces SEEDS to those clients who require a loan and distributes SEEDS application forms for an energy product loan
 - **Grid Connection:** CEB markets SEEDS’ loan products to potential clients visiting its office
 - **Micro-Hydro:** Project developer manages Electrical Cooperative Societies (ECS) in promoting micro-hydro project and is responsible for bringing together the key stakeholders

- **Appraisal and Processing:**
 - **SHS:** Solar Company performs preliminary loan appraisal of client and submits it to SEEDS district office
 - **Grid Connections:** Based on cost estimates supplied by Central Electricity Board, SEEDS screens creditworthiness of the client
 - **Micro-Hydro:** SEEDS—based on individual loan applications from ECS members—approves loan (30-50% of total project cost)
- **Disbursement and Repayment:**
 - **SHS:** Solar company collects 15% of equipment value as down payment upon installation; SEEDS disburses 85% of equipment value as loan to the client, but payment for equipment is made directly to solar company
 - **Grid Connections:** Loan scheme requires 20% equity contribution from the clients, which is used to service suppliers. SEEDS then disburses the loan (LKR 15,000 or US\$135) and transfers payment directly to CEB.
 - **Micro-Hydro:** Most of the loan is paid directly to equipment suppliers and the balance to the ECS. An ECS representative collects monthly payments from other members to cover maintenance and operation costs as well as loan repayment, which is remitted to SEEDS every month
- **Installation and Training:**
 - **SHS:** Once loan is sanctioned by SEEDS, solar company installs equipment at client's house and provides basic training
 - **Grid Connections:** Grid connection initiated only after the loan is transferred to Central Electricity Board by SEEDS.
 - **Micro-Hydro:** Project developer is required to train ECS members in operation and maintenance of the micro-hydro system
- **After Sales Service:**
 - **Solar Home Systems:** Solar company provides compulsory maintenance within 5 months of fixing equipment and every six months thereafter for 3 years
 - **Grid Connections:** Not Applicable
 - **Micro-Hydro:** Not Applicable
- **Communication and Feedback:**
 - **Solar Home Systems:** Complaints registered through solar company or SEEDS
 - **Grid Connections:** Not Applicable
 - **Micro-Hydro:** The ECS is expected to enter into a direct agreement with the energy equipment supplier.

Loan Portfolio Performance

- **Clients Served and Market Penetration:** (as of August 2006)
 - 20 of SEEDS' 27 branches offer energy loans
 - Total loans disbursed: SHS – 58,000 / Grid – 3,692 / Micro hydro – 14
 - Total loan amount disbursed: LKR 955.1 million (US\$8.56 million)

- Constitutes 30.8% of total microfinance portfolio
- Clients were involved in rubber and tea plantation and farming as well as small non-farm businesses.
- Average monthly income ranged from LKR 4,000 to LKR 23,000 (US\$35 - \$200)
- **Financial Analysis:** (as of June 2006)
 - 35% PAR > 60 days
 - Cumulative repayment rate of only 86%
 - RoA of 1.5% (as of March 2006)
 - Solar loans constitute 94.3% total energy portfolio and have high defaults

Potential for Scale-Up

Highlights:

- SEEDS has excellent market credibility and reputation as pioneer in microfinance and energy lending in Sri Lanka. It can therefore mobilize funds from a wide range of lenders.
- Client-friendly door-step services.
- Outreach is almost island-wide.
- Well-developed energy stakeholders have made SEEDS' credit facility for energy products possible.
- Risk-mitigation strategies are key to minimizing technical and credit risk
- SHS subsidy programs have enabled energy and microfinance stakeholders to scale up SHS outreach in rural areas

Challenges:

- SEEDS has demonstrated success in energy lending and has been able to partner with World Bank's renewable energy project RERED. However moving over from a grant driven to a business model may be a challenge for SEEDS in subsequent expansion after the project period
- Market segmentation for SEEDS' energy and non energy clients is very different which makes it difficult for SEEDS to piggy back on its general portfolio and bring down costs of servicing and monitoring.
- External factors like ethnic clashes, market crisis, unplanned grid extensions and natural calamities prevent SEEDS from scaling up to reach economies of scale
- Micro-hydro projects are essentially grant driven and SEEDS is an important stakeholder in the project. However project and community dynamics may effect SEEDS' ability to continue lending to this projects
- High costs of solar home systems do not lend itself very well to microfinance lending and may deter SEEDS from lending for this product

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NIRDHAN UTTHAN BANK LTD. (NUBL)

Rupandehi, Nepal

Summary

- Registered under the Development Bank Act of 1996 and in operation since 1998
- Follows the group lending methodology pioneered by the Grameen Bank
- Target market is poor entrepreneurs , particularly women, or bottom 40% of population in Nepal
- Operates in 10 out of 75 districts
- 4 area offices and 43 branch offices (as of September 2006)
- 2,527 centers (comprised of 6-8 groups with five members each)
- 75,874 total clients

Energy Loan Products and Characteristics (est. 2005)

- **Products:** domestic biogas plant
- **Model:** Grameen Bank group-lending methodology with no collateral
- **Prerequisites:** successful repayment of at least 2 general loans, adequate land for biogas construction, and adequate cattle (although the latter can be resolved by obtaining cattle loan in parallel with biogas loan)
- **Interest Rate:** 16% declining per annum
- **Repayment Period:** 2-5 years (2 years for loan without collateral and 5 years for loan with collateral)
- **Average cost** (varies by size of biogas plant and location): NR 19,300 – 37,500 (US\$272 -\$528)
- **Loan size:** US\$232
- **Warranty Period:** 3 year warranty with free after-sales service within warranty period

Energy Partners

- No formal MOU exists between NUBL and biogas company; roles not defined and full potential of collaborations not yet explored. The arrangement is rather on a case-by-case basis.
- Of the 60 registered biogas companies in Nepal, NUBL currently works with 12
- Government subsidies allow for poor households to pay only 25-40% of the cost of a biogas plant.

Energy Lending Model

- **Market Development:** NUBL provides price quotations from different companies to client and disseminates information to clients in meetings.
- **Appraisal and processing:** MFI uses its standard procedures.
- **Disbursement:** First phase of loan disbursement (10,000 NR or US\$141) to client for purchase of equipment, material, labor, etc. Second phase of loan disbursement (5,000 NR or US\$70.40) to biogas company
- **Installation and Training:** Biogas company assesses the feasibility of installation at client's house, gives

cost estimation and constructs the biogas plant. It also trains clients on operation, maintenance and provides a detailed user manual.

- **Repayment:** Field officer makes collections in center meetings
- **After sales service:** Initial warranty for 3 years and later the cost of part replacements is charged from the client
- **Communication and Feedback:** NUBL establishes the connection and coordinates with energy company

Loan Portfolio Performance (as of October 2006)

- **Clients Served and Market Penetration:**
 - Total loans disbursed: 65
 - Total loan amount disbursed: NR 975,000 or US\$13,735
 - Total energy portfolio < 1% of total loan portfolio
 - Typical clients for biogas loans are farmers with cattle, mostly living in lowland areas, some with small businesses
 - In Nepal, biogas is mainly for cooking (80%) and lighting (20%), so its adoption mostly relates to women.
- **Financial Analysis:**
 - 100% repayment rate on energy loan portfolio

Potential for Scale-Up

Highlights:

- Strong presence of all key energy stakeholders (MFIs, biogas companies, Nepal government, NGOs, etc.)
- Biogas technology is simple, proven and locally manufactured.
- With its well regarded credibility in Nepal, NUBL can bridge the credit gap to meet the energy needs of clients
- Government's subsidies for biogas plant installation reaches poorest of the poor.

Challenges:

- Huge gap between the demand and supply of biogas installations in Nepal, which has increased due to political conflict (Maoist movement)
- Difference in perceptions of client needs prevents collaboration between biogas company and MFI. Present cost of servicing biogas loans very high and not well suited for mass scale penetration
- NUBL needs to introduce energy products more aggressively through marketing and client education

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AMRET
Phnom Penh, Cambodia

Summary

- Registered as a licensed MFI in Cambodia whose primary objective is to contribute to rural development
- Operates mostly in rural and semi-urban areas
- Operates in 59 districts in 13 southern and central provinces, with 30 district branch offices
- 2,622 solidarity groups (each group has 5 clients) clubbed together in 1,450 village associations
- Also caters to creditworthy individuals who may or may not be members of a group
- Total client base of 113,702

Energy Loan Products and Characteristics

- **Product:** energy lending part of individual business loan product – mainly to purchase batteries or diesel generators; all loans for energy equipment purchases are used to establish rural electricity enterprises, battery charging service stations or to enhance existing productive enterprises.
- **Model:** individual business loan that requires collateral up to two times the loan value
- **Prerequisites:** high creditworthy individuals older than 18 years of age, married with permanent address in operational districts who can provide physical collateral
- **Interest Rate:** 36-42% p.a. decline for loan at client's house; 24-36% p.a. declining for loan at Amret
- **Repayment Period:** up to 24 months
- **Loan size:** Maximum CR 20,000,000 (US\$5,000)
- **Warranty Period:** provided by diesel generator and battery suppliers (length of time not specified)

Energy Partners

- Amret has not collaborated with any energy enterprises thus far.
- Clients interact directly with the energy enterprise (e.g. battery/diesel generator suppliers) without any involvement of Amret.

Energy Lending Model

- **Market Development:** No specific marketing and outreach activities carried out by Amret for energy loans
- **Appraisal and Processing:** Amret staff responsible for conducting loan appraisal, including feasibility analysis of the enterprise and detailed study of client cash flows
- **Disbursement:** Can take place at district office or client's home, with interest rates higher for the latter
- **Installation and Training:** Not Applicable
- **Repayment:** consumer repays energy loan to Amret based on flexible repayment schedule decided at time of disbursement

- **After sales service:** Based on warranty period of diesel generator and battery purchased
- **Communication and Feedback:** Energy suppliers are expected to interact directly with clients, with no intervention whatsoever from Amret

Loan Portfolio Performance (as of June 2006)

- **Clients Served and Market Penetration:**
 - Total loans disbursed: 707
 - Total loan amount disbursed: CR 354 million (US\$88,200)
 - Total energy portfolio = 0.7% of total microfinance portfolio
 - Over 79% of energy clients are female
 - 36% are 30-39 years old
 - Geographically dispersed over 50 districts
- **Financial Analysis:**
 - 100% repayment rate on energy loan portfolio

Potential for Scale-Up

Highlights:

- Large client base and wide geographical presence with a good rural branch network
- Good balance between offering flexible financing and maintaining solid portfolio quality
- Successful in mobilizing funds and equity from diverse sources
- Good MIS system in place

Challenges:

- Lack of coordination and knowledge among stakeholders in both energy and lending sectors
- No existing MOUs with energy providers and lack of coordination with government agencies that have pledged funding for renewable energy technology development
- Need to establish separate product line for more specific energy products such as solar photovoltaic or biogas digesters
- Need for Amret to be more actively involved with promoting its energy lending product to its target clients.

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Summary

- Established in 1991 as a subsidiary of Food for the Hungry International (FHI), an international NGO
- Registered limited liability company
- 3,130 active groups; 70,000 total clients
- 20 branches operated through 30 offices covering 48 of Kenya's 67 districts
- Loans disbursed as on 2006 is US \$ 30 million and present outstanding of US\$ 17 million. Main product offering is a traditional business loan to small and medium enterprises.

Energy Loan Products and Characteristics (est. 2003)

- **Products:** Liquid Petroleum Gas (LPG), Solar, Biogas (under development)
- **Interest Rates:** LPG – 10% flat rate; Solar – 20% flat rate
- **Repayment Period:** LPG – up to 1 year but most common is 3-6 months; Solar – up to 1 year
- **Average Cost:** LPG – varies according to use (burner and 6kg cylinder US\$65); Solar – US\$140-380
- **Loan size/ceiling:** LPG – none (determined by clients' needs and ability to service loan); Solar – US\$1,430

Energy Partners

- **LPG:** Kenol Kobil, Total, BP, Shell and Caltex
- **Solar:** Chloride Exide
- **Biogas:** To be defined as program develops

Energy Lending Model

- **Market Development:** Energy provider establishes extent of market for energy services. Loan officer markets products to clients during the group meetings
- **Appraisal and Processing:** MFI uses their standard procedures
- **Disbursement and Payment:** Client obtains cheque for the energy system from MFI and then pays energy provider.
- **Installation and Training:** Energy provider trains the client on use and maintenance of the equipment for solar lights. Loan officer trains clients on basic use and maintenance of LPG.
- For LPG systems, the distribution function was originally taken up by Faulu, who procured systems from the energy company and distributed during the weekly meetings. This model has been reviewed keeping in mind the inventory management overheads and currently MFI issues a payment voucher to the client who collects the product themselves from the LPG supplier
- **Repayment:** MFI follows its standard procedures
- **After Sales Service:** Energy provider gives 1 year warranty for solar panels, batteries and accessories and buy back facility. Client provides feedback on issues or problems to energy provider through loan officer.

Clients Served and Market Penetration

- 4,000 clients for energy loans between 2003-2006 with a total portfolio of US\$11,274,169 (as of 2005)
- Energy as % of total portfolio equals 1.56% as on Dec 2005
- Majority of clients take loans for LP Gas products (only 7 clients have taken a loan for solar)
- Clients primarily owners/managers of small and medium-size enterprises in low income urban areas
- More females obtained LPG loans and more males obtained for solar home system loans
- 75% of Faulu's energy loan clients reside in rural areas, while 25% reside in urban areas

Potential for Scale-Up

Strengths:

- Energy portfolio complements overall organization mission
- Strong and efficient management
- Subsidiary relationship with FHI allows pooling resources, sharing best practices and sharing costs associated with media and communication

Challenges:

- No separate tracking or information gathering for energy portfolio, making assessment difficult
- Limited potential for reaching low income populations due to focus on SME loans
- Internal loan appraisal processes are not fully geared to energy lending and time lag between application and installation due to central loan processing makes solar products not so attractive
- Limited distribution network of energy providers in rural areas adds to the delivery cost and time as Faulu staff who take up the marketing function are not fully trained to communicate the comparative costs and benefits of various energy products
- Limited understanding of the commercial potential and profitability of energy products at Faulu Kenya

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KENYA UNION OF SAVINGS & CREDIT CO-OPERATIVES (KUSCCO)

Nairobi, Kenya

Summary

- Established in 1973 as a registered association
- Functions as a national umbrella organization for savings and credit cooperatives (SACCOs), which account for 40% of Kenya's national savings
- Serves as technical advisor and provides wholesale credit to member SACCOs
- Membership of over 1,776 SACCOs, operating in every district of Kenya
- 5 regional and 6 sub-regional offices

Energy Loan Products and Characteristics (est. 1999)

- **Products:** Liquid Petroleum Gas (LPG), Solar, Biogas (trial stage)
- **Interest Rates:** LPG – Declining balance rate of 12-15% per annum
- **Repayment Period:** LPG – 6-18 months; Solar – 1-2.5 years; Biogas – 6-18 months
- **Average Cost:** LPG – US\$40-70 (Ksh 3,000-5,000); Solar – US\$ 425-1,785 (Ksh 30,000 – 125,000); Biogas – US\$ 1,285-2,140 (Ksh 90,000-150,000)
- **Loan size/ceiling:** 66.5% of system cost for LPG, Solar and Biogas

Energy Partners

- **LP Gas:** Kenol Kobil, Caltex
- **Solar:** Chloride Exide, Solagen Ltd., Davis and Shirtliff Ltd.
- **Biogas:** Sustainable Community Development (SCODE)

Energy Lending Model

- **Market Development:** KUSCCO conducts market research to identify needs and feasibility of energy loans. The energy company develops and markets the technology and trains KUSCCO staff in the technical details of its products.
- **Appraisal and Processing** SACCOs serve as the primary level MFI financing the energy services through direct loans to clients. Wholesale loans to SACCOs are processed by the central finance facility
- **Disbursement:** SACCO loans from KUSCCO for energy on-lending if necessary. KUSCCO issues check to energy companies on behalf of SACCOs to purchase energy equipment
- **Installation and Training:** For solar loans KUSCCO appoints and trains regional sub-contractors who install the systems as well as arrange basic user training under the supervision of KUSCCO. In case of LPG systems KUSCCO takes up a distribution function where in it collects information on energy needs from the SACCOs and purchases energy systems in bulk directly from the energy companies, distributes them to the SACCOs, which deliver the units to the clients.
- **Repayment:** SACCO recovers the loans on behalf of KUSCCO and KUSCCO monitors the repayment

- **After Sales Service:** Energy provider gives a warranty of 1.5 years for solar panels and 1 year for batteries and accessories and a buy back facility

Clients Served and Market Penetration

- KUSCCO member SACCOs offer energy lending in 43 of 72 districts in Kenya
- 520 member SACCOS are active borrowers of energy loans (as of June 2006)
- 9,300 energy loans disbursed from July 2005 – June 2006, valued at US\$ 1 million
- Units sold:
 - LP Gas – 25,000 units, valued at US\$ 1,625,000 (1999 – 2005)
 - Solar – 50 units, valued at US\$ 40,000 (2001 – 2005)
 - Biogas – 10 units, valued at US\$ 20,547 (as of 2005)

Potential for Scale-Up

Strengths:

- Strong and well-coordinated membership that represents interests of lower-income populations
- Model of energy-service delivery is commercially viable and profitable
- In-house technical expertise of energy products enhances client satisfaction
- External funding and technical assistance allows for scale up and risk-taking that would otherwise not occur

Challenges:

- Lengthy service delivery due to loan application process by SACCO and SACCO's subsequent application to KUSCCO
- Loan officers lack the necessary time and resources to promote energy products to clients.
- Poor understanding of energy as a major driver of income-generating activities
- Lack of equipment standardization, which can hinder the smooth flow of sales in the energy supply chain.
- Limited to no technical capacity of KUSCCO and participating SACCOs

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Summary

- Focuses on serving the financing needs of rural populations in Bolivia
- 1 of 4 MFIs participating in Bolivia's Rural Electrification Project, established by the government in 1999 and funded by UNDP and the Global Environment Facility (GEF)
- Target market consists of rural farmers who earn between US\$400 and US\$1,200 per year and spend an average of \$5.60-\$8.70 per month on purchase of batteries, candles, burners and kerosene for lighting

Energy Loan Products and Characteristics (est. 2004)

- **Products:** solar home systems of 50W and 20W with various accessories
- **Interest Rate:** 16%
- **Repayment Period:** 6 months to 3 years (dependent on loan guidelines and client creditworthiness)
- **Average Cost:** US\$630

Energy Partners

- Energy companies: Andean Solar SRL (ENSAND), APLITEC, ENERGÉTICA, and Enersol S.A.
- ENERGÉTICA, a non profit organization started in 1993 that provides technical assistance to end-users, government agencies, micro-enterprises, microfinance institutions and others interested in renewable energy.

Energy Lending Model

- **Market Development:**
 - UNDP/GEF resources channeled through a revolving fund established by a decentralized state institution, FONDESIF, that strengthens and diversifies the financial sector
 - These resources are then lent to FADES
- **Appraisal and Processing:** FADES evaluates and qualifies potential users of solar home systems
- **Disbursement:** Solar home systems first subsidized by UNDP or World Bank. Remaining balance is made available to clients through FADES.
- **Installation and Training:** Energy company or solar dealer installs the solar home system and conducts client training on proper use and maintenance.
- **Repayment:** FADES provides credit to farmers for the purchase of solar systems and distributes payment directly to the energy companies.
- **After Sales Service:** Energy company conducts maintenance visits quarterly with UNDP program and once per year with World Bank program. Energy company also provides equipment guarantees and repurchases equipment in case of loan default or return.
- **Communication and Feedback:** ENERGÉTICA ensures quality control for solar products and conducts program monitoring and evaluation.

Potential for Scale-Up

Strengths:

- Energy providers are technically savvy and offer robust energy systems customized for low income populations through local technicians
- Reported significant reduction in energy expenses among clients and recognized improvement in quality of life

Challenges:

- There is a need to build more internal capacity of FADES staff so that they feel a sense of ownership of the energy product rather than managed by the energy sector
- More specific target for rural market critical mass in order to expand access and remain competitive
- Product line expansion crucial in order to remain financially sustainable
- Increased funding necessary to pilot new products and innovations
- Development of flexible repayment methodology that meshes well with energy products
- Increased market research to better understand energy needs of clients

Contact

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Summary

- Founded in 1988 with a specific focus on supporting rural communities in gaining access to improved water and other infrastructure services
- Began offering consumer loans for energy in 1993 with the help of NGO Plan International and Fundación Solar
- Offers loans to community groups interested in investing in community electrification schemes as well as consumer loans for solar home systems
- 43 branches serving 669 local communities
- 55184 active clients
- Total loans disbursed as of Dec 2005: US \$ 43.92 million with a loan outstanding of US \$31.97 million

Energy Loan Products and Characteristics

- **Products:** Solar Home Systems (SHS) for community groups, individuals and micro-enterprises; National Grid Connection
- **Model:** National Grid Connections – loans are given to community groups used for purchase of electric equipment, accessories, suppliers, and work labor and enterprise development services.
- **Interest rates:** 24-30% and loans amortize between 2-4 years
- **Loan size:** US\$ 400-1,000 per family
- **Guarantee:** Community solidarity groups, which are smaller groups, guarantee for grid connections

Energy Partner

- **Solar:** Lending done in partnership with Fundación Solar—an NGO supporting energy and environment initiatives
- **National Grid Connection:** Lending done as part of the Community Infrastructure Lending Program (CILP) with financial support from Central American Bank for Economic Integration (BCIE)

Energy Lending Model

- **Market Development:**
 - **Solar Panels:** Fundación Solar promotes modern energy and renewable energy options in seven communities through a program called electrificación para el progreso. USDA created the fund and MFIs are partners in financing.
 - **Grid Connections:** Genesis identifies and supports communities in planning, organization and registration as well as implementation and administration of the projects. With Genesis' support community prepares a feasibility study on electrical energy, obtains grant subsidy from the partnering Government Program and awards the construction contracts to competent parties based on the quotes.
- **Appraisal and Processing:**
 - **Solar:** MFI uses standard loan processing
 - **Grid loans:** Loan officer identifies and discusses extensively with community groups and shortlists interested and well functioning groups. He then explains the idea of solidarity groups and assesses

individual household payment capacity. Loan sanction is a two step process and finalized by a head office level committee which includes the executive director and regional director

- **Installation and Training:**
 - **Solar:** Fundacion Solar is responsible for the technical training on proper use and management of energy systems as well as the monitoring and evaluation of the modern energy systems
 - **Grid:** Community awards contracts for construction work to competent firms with comprehensive technical assistance from Genesis in all stages of planning and implementation
- **Disbursement and Payment::**
 - **Solar:** NA
 - **Grid connections:** Check is paid to the community and not the borrower solidarity groups, who deposit it in their account set up for the purpose which makes them eligible to receive a subsidy from the related government ministry
- **Repayment and Follow up:** Loan officer follows up once a month. Solidarity group heads collect payment from member households and repays to Genesis' nearest bank account. Repayment starts irrespective of work progress on infrastructure building
- **After Sales Service:** Monitoring and evaluation of systems by Fundacion Solar

Clients Served and Market Penetration

- Total loans disbursed are 1,147 for community electrification of which 14 loans are for solar home systems
- Total loan amount disbursed: 27,871,000 Quetzal (US\$3.7million) for community electrification; 294,000 Quetzal (US\$39 thousand) for solar home systems
- Clients primarily constitute of small and micro entrepreneurs like market vendors, artisans and seamstresses.
- Loans given to rural community based associations with a legal identity or individuals

Potential for Scale-Up

Strengths:

- Target groups are economically active and have capacity as well as willingness to pay

Challenges:

- Infrastructure projects are fully community owned and managed however energy lending it is initiated by Genesis and its technical assistance is a strong component in the continuity of the program.
- Critical rural mass not yet targeted in order to expand access and remain competitive
- Presently programs are managed or driven by the energy sector, especially for the solar loans. There is a need to build more internal capacities of staff so that staff feels ownership and mastery of the energy product
- Energy loans are very expensive and do not make it attractive for energy lenders to partner and repayments do not mesh with the energy products well.
- Non-profits in the area have programs for giving away energy products that ultimately has a disruptive effect on the market. Thus there is a need to build synergy with such programs

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**APPENDIX 2 • COMPARISON OF ENERGY
LENDING BY THE MFIS IN THE STUDY**

	SEWA BANK (India)	SEEDS (Sri Lanka)	NUBL (Nepal)	AMRET (Cambodia)	FAULU KENYA (Kenya)	KUSCCO (Kenya)	FADES (Bolivia)	GENESIS (Guatemala)
Energy products	Solar home systems, solar lantern, improved cookstove, sarai cooker	Solar home systems, grid connection, village hydro schemes	Domestic biogas digesters	Energy product/ technology selected by clients—mainly battery charging and diesel generators	Solar home systems, LPG burner/cylinder, biogas digester	Solar systems, LPG burner and cylinder, biogas digester	Solar home systems	Solar home systems, grid connections
Energy partner/s	SELCO	World Bank RERED, Central electricity board and 11 solar companies	No formal partners	Not a partnership approach	Kenol Kobil, Total, BP, Shell, Caltex, Chloride Exide	Kenol, Kobil, Caltex, Chloride Exide, Solagen Ltd, Davis and Shirtiff, SCODE	Fundación Solar	Andean Solar SRL (ENSAND), APLITEC, Energética, and Enersol S.A
Purpose	Productive and consumption	Consumption mainly, some development of community infrastructure	Consumption	Productive	Consumption	Consumption	Consumption	Consumption and development of community infrastructure
Business model	Credit and technical assistance	Grant, credit, and technical assistance	Grant for price subsidization and credit	Pure credit	Credit and technical assistance	On-lending, credit, and distribution	Not available	Grant, credit, and technical assistance
Number of energy loans disbursed (as of early 2007)	- 28 solar home systems - 66 solar lanterns - 630 sarai cookers	- 58,000 solar home systems - 3,692 grid connections - 14 village grids	- 65 biogas digesters	707 business loans with energy components. (Of these, 101 are battery-charging enterprises.)	- 15 solar - 4,000 LPG (Biogas has yet to be disbursed.)	- 75 solar - 25,000 LPG - 20 biogas	Not available	- 14 solar - 1,133 community infrastructure

	SEWA BANK (India)	SEEDS (Sri Lanka)	NUBL (Nepal)	AMRET (Cambodia)	FAULU KENYA (Kenya)	KUSCCO (Kenya)	FADES (Bolivia)	GENESIS (Guatemala)
Highlights	<ul style="list-style-type: none"> - One-stop shop with doorstep delivery of loan and energy system - High technical capacity within MFI - Strong energy partner with common vision - 15-day product trial for prospective clients 	<ul style="list-style-type: none"> - Separate energy department - Doorstep services - Market credibility and awareness of MFI and energy program - Wide geographical outreach - Strong energy stakeholders with decentralized sales and service network 	<ul style="list-style-type: none"> - Well established decentralized network of energy providers - Biogas technology is proven and locally manufactured - Biogas complements MFI's large number of livestock loans 	<ul style="list-style-type: none"> - Large MFI client base and strong rural branch network - Flexible financing - Market credibility - Excellent portfolio quality - Strong data management and tracking systems 	<ul style="list-style-type: none"> - Strong management support for energy and high portfolio quality - Energy complements MFI mission focused on well-being of clients - Ability to leverage external funding and support through parent NGO 	<ul style="list-style-type: none"> - Strong and well-coordinated membership of almost 3,000 savings and credit co-operatives - Commercial viability and profitability of energy products - Separate unit within KUSCCO for energy lending and dedicated energy technician from KUSCCO - External support for energy product development and scale up 	<ul style="list-style-type: none"> - Energy providers are technically savvy and offer robust energy systems customized for low income populations through local technicians - Reported significant reduction in energy expenses among clients and recognized improvement in quality of life 	<ul style="list-style-type: none"> - Economically active energy clients with good repayment capacity

SEWA BANK (India)	SEEDS (Sri Lanka)	NUBL (Nepal)	AMRET (Cambodia)	FAULU KENYA (Kenya)	KUSCCO (Kenya)	FADES (Bolivia)	GENESIS (Guatemala)
<ul style="list-style-type: none"> - Interest rebate to regularly paying clients could distort market - MFIs incur marketing costs for energy products purchased without credit - Low client awareness of modern energy services in Gujarat - Lack of existing energy sales and service network in rural areas of Gujarat 	<ul style="list-style-type: none"> - Dependency on loan subsidies and grant support - Lack of energy-specific data monitoring and analysis - Weak portfolio quality for the solar loans due to remotely located clients 	<ul style="list-style-type: none"> - Lack of coordination between MFIs and biogas companies - MFIs unwilling to dedicate resources to marketing energy - Strict loan eligibility requirements and high loan collateral - Lack of coordination and standardization of energy loan procedures across MFIs branches 	<ul style="list-style-type: none"> - Lack of MFI collaboration with energy stakeholders - Lack of knowledge and intervention on energy products - Limited energy product options and suppliers 	<ul style="list-style-type: none"> - Lack of energy-specific data management - Limited potential for reaching lower income populations due to focus on micro-enterprises - Lengthy energy loan processing - Limited distribution of energy companies and service providers - Low technical capacity of MFI and limited understanding of modern energy 	<ul style="list-style-type: none"> - Lengthy service delivery - Limited loan officer motivating energy products - Poor understanding of energy as a major driver of income generating activities - Lack of LPG equipment standardization - Limited technical capacity of KUSCCO and participating credit co-operatives 	<ul style="list-style-type: none"> - Need for building inter-national capacity of FADES staff - More specific target for rural market critical mass in order to expand access and remain competitive - Increased funding necessary to pilot new products and innovations - Need for cash flow-based repayment scheduling - Need for better market research to understand energy needs of clients 	<ul style="list-style-type: none"> - Program continuation needs a strong element of technical assistance from Genesis - Critical rural mass not yet targeted in order to expand access and remain competitive - Need to build more internal capacities of staff so that staff feels the ownership - Energy loans are very expensive and do not make it attractive for energy lenders to partner - Non-profits give away programs in the region distorts energy market

**APPENDIX 3 • DECISION-MAKING
FRAMEWORK AND GUIDE FOR MFIS
CONSIDERING ENERGY LENDING**

I. VISION AND ORGANIZATIONAL STRATEGY

1. What is the long term vision of the MFI and how does energy lending fit into this vision?
2. Is the MFI's institutional commitment to promoting modern energy products and services part of its larger vision?
3. Does the MFI believe in providing in-depth financial services or only basic financial services?
4. Does the MFI have a vision to service a certain percentage of its client base with energy services? If so, what percentage does it envision reaching in the next 5 years?
5. Is the MFI ready to go beyond its traditional client base and service remotely located clients with limited energy options compared to clients who live closer to the grid?

II. ENGAGEMENT STRATEGIES

1. Is there a vision alignment between the MFI and energy company(s), and MFI and government or donor program(s)?
2. Who benefits from the partnership? Are the benefits skewed or does each partner have equal stakes?
3. Is it possible to outline with the energy partner(s) defined roles and responsibilities (e.g., through a Memorandum of Understanding)?
4. In case of lending for community infrastructure (e.g., micro hydro projects and local electricity grids), how strong are the community organizations and is there a history of successful community initiatives in the region?
5. Is the MFI aware of the overarching policy framework for expanding energy access in the region?
6. How well defined are the key project indicators for the community project where MFI will be partner?
7. Are MFIs partners in the development process with local banks or do they face competition with local banks?
8. Is there a strong case for MFIs to move into a space where banks already exist and have the capacity to offer credit at affordable terms?

III. BUSINESS MODEL

1. What do the clients of the MFIs need and what is the appropriate business model for energy lending? Is it sustainable on market-based terms or does it require some subsidies and grants for continuation?
2. Can the energy company supply the product that is needed by the client and can they offer the service and maintenance that is essential to a successful lending program?
3. What is the market potential for energy lending? Does the MFI have an overall sense of the demand for energy services in the area? If not, is it possible for the MFI and/or energy company to invest in market research and demand assessment?
4. Does the MFI have the capacity needed to manage the key functions that need to be undertaken as part of energy lending? Can it obtain technical assistance or funding to build required capacity? (These functions include financing, risk assessment, market development, process and portfolio monitoring, and even

stock and inventory management, distribution, energy product quality or warranty monitoring.)

5. Is the MFI willing, and have the technical capacity and resources, to take up some or all of the finance functions plus market activities in-house? If not, is it possible to develop a clear strategy for collaboration with local organizations or commissioned agents, for example?
6. How does involvement in energy lending affect the overall business targets of the MFI? Will it need to offer its loan officers additional skills and training and time for market development?
7. What is the potential for energy lending for productive purposes within the region? Is it possible to spur growth in this area? Do productive energy loans have the potential to form a significant portion of MFI portfolio?
8. Is there a business case for having a separate administration and management unit for energy lending? If so, what are the functions that this unit needs to assume? Is it possible to estimate a break-even point for this administrative unit based on the chosen business model?

IV. RISKS AND REWARDS

1. Does the MFI have internal capacities (such as product development mechanisms, tracking and monitoring and systems, etc.) for managing an energy loan portfolio?
2. Is the energy technology proven and robust enough to meet client demands to become part of the new business line?
3. Is there a risk of higher rate of default if a client has consumption loans and enterprise loans? What is the possibility that clients can become over-indebted?
4. Is there a potential to integrate energy loans as part of enterprise loans and recover them based on business cash flows?
5. Does the MFI have institutional structures in place to absorb the risks of innovative product development and market building?
6. How reliable is the energy supplier? Does it have the capacity to service the existing client demand in the area (after-sale service, maintenance, client instruction on operation, warranties honored)?
7. Does the MFI need to hedge its risk with limited liability insurance? Buy-back agreements?

V. SCALE UP AND MARKET PENETRATION

1. What are the specific conditions (like availability of reliable energy partner, market development infrastructure, client-staff relationship, political stability, competition etc.), which make this model viable? Is it possible to have a similar mix of conditions across other branch locations and in other regions?
2. Is it possible for the MFI to attract funding from market sources in the absence of Government or donor subsidies in order to grow?
3. Does the MFI have sophisticated tracking systems and management capability to handle growth and expansion in energy lending?
4. Is it likely that the energy lending will be part of the core business of the MFI with support from management? Or will it be a small niche dependent on a single champion at the MFI?