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Using Microfinance to Expand Access to Energy Services:

A Desk Study of Experiences in Latin America and the Caribbean



by April Allderdice, Jacob Winiecki,
and Ellen Morris

Citi Foundation



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ABBREVIATIONS

ADBI	Asian Development Bank Institute
ADEPE	Asociación para el Desarrollo de la Provincia Espartero
AfD	Agence française de Développement [French Agency for Development]
ANED	La Asociación Nacional Ecuatónica de Desarrollo
Banco ADEMI	Banco de Asociación para el Desarrollo de Microempresas
CNE	Comisión Nacional de Energía [National Energy Commission]
CO	carbon monoxide
DGDC	General Directorate of Community Development
ENERGÉTICA	Energía para el Desarrollo
ENSAND	Andean Solar SRL
FADES	Fundación para Alternativas de Desarrollo
FDL	Fondo de Desarrollo Local
FJN	Fundación José Nieborowski
FONDESIF	Fondo de Desarrollo del Sistema Financiero
FUNDESER	Fundación para el Desarrollo Socioeconómico Rural
FUNTEC	Fundación Tecnológica
GEF	Global Environment Facility
IBNORCA	Instituto Boliviano de Normalización y Calidad [Bolivian Institute of Normalization and Quality]
LAC	Latin America and the Caribbean
LPG	liquefied petroleum gas
MFI	microfinance institution
NGO	non-governmental organization
NRECA	La Asociación Nacional de Cooperativas Eléctricas Rurales
OECD	Organization for Economic Co-operation and Development
p.a.	per annum

PERZA	Nicaraguan Renewable Energy for Rural Zones Program Initiative
PLANER	National Rural Electrification Program
PRODESA	Fundación Para La Promoción y el Desarrollo
SME	small and medium enterprises
SGSA	Second Generation Special Account
SGP	Small Grants Program
USDA	United States Department of Agriculture
UNDP	United Nations Development Programme
USAID	US Agency for International Development
VAT	value-added tax
MOU	memorandum of understanding

EXECUTIVE SUMMARY

BACKGROUND

There is no question that microfinance and consumer lending can improve access to quality modern energy services for poor people. Such loans help offset the high upfront cost associated with cleaner technologies, such as biogas, micro hydro power, wind, solar, or liquefied petroleum gas (LPG). To date, an overwhelming majority of financial support for rural energy applications has been publicly funded. Although these programs are beneficial, increased access to loans for consumers is essential to engage the private sector, improve the investment climate for rural energy services, and leverage the outreach and impact. A deeper understanding of the business opportunities for small-scale lending for energy services, as well as the most effective way **microfinance institutions (MFIs) can respond to these opportunities**, will facilitate access to appropriate financial services.

Microfinance institutions have been very successful in expanding access to financial services in the Latin America and Caribbean region (LAC), reaching close to six million low-income households by the end of 2006.¹ The idea of microfinance as a means of offering finance options to low-income individuals spread to Latin America in the 1980s, mostly through non-governmental organizations (NGOs) outside the formal financial system. Many of these original NGOs experienced funding shortages in the early 1990s, due to a reliance on donor funding, and perforce transformed themselves into licensed financial institutions in order to access commercial funding and mobilize savings from their clients. This trend accelerated throughout the 1990s as the commercialization of microfinance grew rapidly in the region.²

From the start, microfinance in Latin America was seen as a business itself, possibly serving as a future branch of commercial banking.³ Latin America is now home to some of the most experienced, developed, and profitable MFIs in the world. As a result of this rapid commercialization, microfinance in Latin America can be characterized as urban rather than rural, focused on serving micro-enterprises rather than poor households, and fiercely competitive in smaller Central American countries but only marginally present in larger, more populous South American markets. These characteristics play an important role in the availability and commercial viability of loans for energy related activities in the region.

ENERGY SECTOR SCENARIO

Latin America and the Caribbean represent a large market for modern energy services, particularly in the region's rural areas and poor households. At present, over 45 million residents of Latin America still live without access to electricity and almost 83 million people in Latin America rely on traditional biomass for cooking. Access to electricity makes many health and education services possible, brings increased economic opportunities, and affords the ability to read or work into evening hours. Switching from traditional energy to modern energy services results in less time spent collecting fuelwood, improves air quality in kitchens and homes, and reduces deforestation rates. Research indicates that rural populations in Latin America already spend a significant amount of monthly income on energy.

1. Sergio Navajas and Luis Tejerina, "Microfinance in Latin America and the Caribbean: How Large is the Market?" Sustainable Development Department Best Practice Series (Washington, DC: Inter-American Development Bank, 2006).
2. Robert Peck Christen, with Tamara Cook, *Commercialization and Mission Drift: The Transformation of Microfinance in Latin America*, CGAP Occasional Paper No. 5 (Washington, DC: CGAP, 2001).
3. Stuart Rutherford, "Microfinance's Evolving Ideals: How They Were Formed and Why They're Changing," paper presented at ADBI's annual conference, "Microfinance in Asia: Poverty Impact and Outreach to the Poor," Tokyo, Dec. 5, 2003.

- As a region, electrification rates in LAC are 98 percent in urban areas and 65.6 percent in rural areas.⁴ Grid penetration varies throughout the region, but tends to be highest in Brazil and lowest in Central America.
- More than 23 percent of the Latin American and Caribbean populations—approximately 96 million people in the region—rely on traditional biomass for cooking and heating purposes.
- A study by Soluz showed that rural populations in the Dominican Republic spend between US\$ 6–10 per month on energy (kerosene, dry-cell batteries, and automotive batteries).⁵ Similar surveys undertaken in Honduras have shown the same results.

ENERGY LENDING

This research found several major trends in Latin American microfinance that impact the availability and financial viability of lending for energy-related activities in the region.

- Compared to Asia, microfinance interventions in the Latin America and Caribbean region are typically urban rather than rural. Because of this, many microfinance institutions in the region have insufficient capacity to service loans, and little incentive to promote loans, in off-grid rural areas where need for modern energy is high.
- Microfinance in LAC has generally targeted existing micro-enterprises. As a result, Latin American MFIs tend to serve middle-income populations rather than poor households which have the greatest need for modern energy services.
- Microfinance in Latin America and the Caribbean has focused on commercial sources of funding, which applies pressure to serve middle-income clients. In most cases, fewer MFIs are willing to dedicate resources to pilot non-financial products, such as energy. Rapid commercialization of microfinance in the region has also resulted in fewer MFIs focusing solely on social and poverty issues; these few tend to be the same institutions piloting energy lending for its many health, education, and social benefits to communities.
- MFIs in LAC have penetrated the small markets for micro-enterprise loans, but have only marginal presence in the larger markets where most of the region's poor live (Argentina, Brazil, Mexico, Uruguay, Venezuela). As of 2001, 90 percent of existing microfinance clients in LAC lives in those countries that represent only 31 percent of potential demand. This lower penetration in large countries leaves out the greater number of people in remote, rural areas that may need energy access.

Energy lending in the Latin America and Caribbean region can be broadly categorized based on the different partnerships established to deliver modern energy systems through credit schemes. Some energy-lending programs were stimulated by government and donor energy access programs that offer support to MFIs, energy companies, and consumers in the form of loan funds, subsidies, and equipment certification. Other energy-lending programs result from partnerships between energy companies and MFIs and/or NGOs interested in expanding access to modern energy. Finally, several energy companies in Latin America and the Caribbean have experimented with offering credit themselves, mainly in rural areas with low MFI capacity or presence.

4. International Energy Agency, *World Energy Outlook* (Paris: IEA, 2002), 377.

5. John Rogers, Richard Hansen, Shannon Graham et al., "Innovation in Rural Energy Delivery: Accelerating Energy Access through SMEs," (Chelmsford, Mass.: Navigant Consulting, Inc., and Soluz, Inc., 2006).

GOVERNMENT AND DONOR PROGRAMS

Government and donor programs are those energy-lending activities stimulated by a government electrification program or rural energy program with funding from development banks or the UNDP, such as these:

- ***Rural Electrification Project, Bolivia:*** In 1999, the government of Bolivia initiated its Rural Electrification Project with United Nations Development Programme (UNDP) and Global Environment Facility (GEF) funding to deliver electricity to 3,000 households with photovoltaic systems. A main component of this program was the establishment of a photovoltaic credit fund, whereby rural MFIs could access credit and subsidy resources to enable their clients to purchase 50-watt and 20 watt photovoltaic systems. The program accredited four energy companies to work with four different rural MFIs to promote and service the solar loans. By early 2004, the project had installed over 2,700 photovoltaic systems in rural Bolivia.
- ***Plan Sierra, Dominican Republic:*** A government-run development organization, Plan Sierra initiated a photovoltaic lending program in partnership with three rural MFIs, with funding from the French Agency for Development (Agence française de Développement, Afd). Plan Sierra operates a loan guarantee fund and subsidizes interest rates for participating MFIs. The program has had minimal success, funding just over 100 solar systems by 2005.
- ***UNDP Small Grants Program, Dominican Republic:*** The UNDP Small Grants Program provides revolving credit to community groups to finance individual household photovoltaic systems, offers technical assistance to rural photovoltaic dealers and installers, and sets a below-market interest rate for photovoltaic loans disbursed within each revolving fund. Through 2005, more than 1,000 photovoltaic systems were financed and installed through community revolving funds.
- ***Nicaraguan Renewable Energy for Rural Zones Program Initiative (PERZA), Nicaragua:*** In 2003, the World Bank and UNDP/GEF initiated a five-year off-grid rural electrification program in Nicaragua, called PERZA. A main component of the program is to demonstrate the effectiveness of microfinance and business development in enhancing rural electrification schemes. The PERZA project has partnered with energy companies and microfinance institutions that already serve clients in the project sites. Participating MFIs include Fondo de Desarrollo Local (FDL), Fundación para el Desarrollo Socioeconómico Rural (FUNDESER) Fundación para la Promoción y Desarrollo (PRODESA), and Fundación José Nieborowski (FJN). The Project Management Unit disburses funds to the MFIs, which then provide loans to households and businesses for connection to mini-grid electricity systems and loans for the purchase of individual household solar photovoltaic systems. As of November 2006, the participating energy companies working under the PERZA program had delivered over 1,500 solar home systems—roughly 25 percent of which were financed through MFIs by two-year microfinance loans.

MFIS PARTNERED WITH ENERGY COMPANIES

There are also energy-lending activities in Latin America and the Caribbean that have emerged independently of government programs. In Bolivia, Guatemala, and the Dominican Republic, direct partnerships between energy companies and MFIs have had some success in expanding access to modern energy services.

- ***Génesis Empresarial, Guatemala:*** Starting in 1993, the development NGO Plan International partnered with Fundación Solar and the microfinance institution, Génesis Empresarial, to sell photovoltaic lighting systems in the Verapaces region of Guatemala. Génesis Empresarial also offers loans to community groups interested in investing in community electrification schemes. With assistance from Génesis Empresarial, communities mobilize their own resources, apply for grant funding, and meet remaining investment needs for grid extension and connection through a community loan. At the end of 2005, Génesis Em-

presarial had serviced a total of 1,147 loans for community electrification and 140 loans for solar home systems. The solar systems are sold by a solar company based in Guatemala City and are installed by their local dealer, Fulano de Tal.

- ***Banco de Asociación para el Desarrollo de Microempresas (Banco ADEMI) and Local Small Photovoltaic Enterprises, Dominican Republic:*** In 1998, Banco ADEMI established a three-year photovoltaic lending program with support and funding from the United States Agency for International Development (USAID) which led to the financing and installation of 362 photovoltaic systems. Banco ADEMI worked with several experienced, small solar energy enterprises, such as Sistemas Solares Nordeste. Banco ADEMI found that lending for rural energy was difficult because its capacity was concentrated on urban-based clients. Therefore, the MFI ended up relying upon the solar installation companies to locate customers, market energy products, install solar systems, and assure regular payment collection.
- ***Cooperativa de los Servicios Asociación para el Desarrollo de la Provincia Espaillat (CO-OP ADEPE), partnered with Soluz Dominicana and Energía Solar Mocana, Dominican Republic:*** An unregulated rural credit cooperative, CO-OP ADEPE began financing photovoltaic systems in the early 1990s through its parent NGO Asociación para el Desarrollo de la Provincia Espaillat (ADEPE). Through 2005, CO-OP ADEPE financed over 400 photovoltaic systems without external subsidies or government financial support.⁶ CO-OP ADEPE has directly financed more than 200 photovoltaic systems that were sold and installed primarily by Soluz Dominicana at market rates with 18–24 month repayment periods. CO-OP ADEPE has also financed Energía Solar Mocana, owned by entrepreneur Rafael Cabrera, who purchased over 200 photovoltaic systems to rent to rural customers. This activity ended, however, when the Dominican government established a photovoltaic give-away program.
- ***Enersol S.A., partnered with Prodem, Cooperativa San Roquea, Cooperativa Buen Samaritana, and Emprender, Bolivia:*** A for-profit energy company, Enersol S.A. has experience with energy lending primarily through two donor-established government projects promoting solar energy. The first was sponsored by UNDP and the second received support from the World Bank. Through these programs, Enersol S.A. installed solar systems with a combination of consumer subsidies and consumer credit provided by Cooperativa San Roquea, Cooperativa Buen Samaritana, and Emprender. Prior to participating in the World Bank and UNDP programs, Enersol S.A. had partnered with the MFI Prodem to finance photovoltaic systems without customer subsidies. Prodem chose to not participate in the subsidized activities.

ENERGY NGO ACTIVITIES

The experiences of Fundación Solar, an NGO with a focus on rural energy access in Guatemala, demonstrates another possible partnership option in which an NGO provides training, coordination, and technical assistance to the MFIs, clients, and energy companies and dealers. Fundación Solar offers technical assistance for the design, installation, monitoring, and evaluation of modern energy systems. In doing so, Fundación Solar partners with a wide range of organizations interested in providing modern energy, including government institutions, private sector actors, other NGOs, MFIs, and savings associations. Among others, Fundación Solar has partnered with Génesis Empresarial and local savings associations to fund purchase of solar home systems through credit schemes. Installation and service of the solar systems is handled by local energy small and medium enterprises (SMEs) and rural installers.

ENERGY COMPANIES LENDING DIRECTLY

Several for-profit energy companies in Latin America and the Caribbean have experience offering innovative financing for modern energy services without third party microfinance. Energy companies in the region established their

6. Douglas Parkerson, "Assessing the Potential for Microfinance Institutions to Finance Solar Photovoltaic Systems in the Dominican Republic," Working Paper Series (Waltham, Mass.: Brandeis University, 2005).

own credit programs largely in response to sparse MFI presence in the rural areas they served.

- **Soluz, Inc., Honduras:** In the Dominican Republic and Honduras, Soluz found that the capacity of microfinance institutions in rural areas beyond the grid was very limited. Therefore, the company has offered short-term micro-loans directly to clients and has pioneered an innovative, unsubsidized micro-rental offer, which successfully reached poorer households that could not afford cash purchases or otherwise could not obtain or commit to a long term credit agreement. Soluz Honduras has now installed over 5,000 solar systems through its own credit and micro-rental plan.⁷
- **Tecnosol, Nicaragua:** In Nicaragua, the energy company Tecnosol has installed over 7,000 photovoltaic systems under various arrangements, including cash and third-party credit from MFIs. The company has also directly provided micro-loans for almost 200 modern energy systems (solar, wind, and hydroelectric) on a 3–6-month credit basis.⁸

MARKET FORCES

Relative to potential demand, microfinance institutions in Latin America do not demonstrate a strong portfolio of lending for energy related activities. Examination of market forces provides some insight into why relatively few MFI have experimented with energy lending in Latin America, and the obstacles and opportunities that face new entrants. These market forces include the internal capacity and incentives of the MFIs themselves, the policy environment, competition from commercial banks and other entities, and the availability of reliable energy suppliers serving MFI markets.

Impact of Market Forces on Energy Lending in Latin America and the Caribbean

MARKET FORCE	CURRENT STATUS IN LATIN AMERICA AND THE CARIBBEAN
MFI internal capacity	<p>- MFIs are not serving many markets where the largest potential number of energy loan clients is located.</p> <p>- Key trends in microfinance in Latin America have resulted in more MFIs choosing to focus on urban clients in the medium-poor income bracket, and a relative scarcity of financial services for rural clients, who tend to be the poorer clients. Additionally, access to microfinance in Latin America is dispersed more thinly in large countries (which have larger populations living in more remote areas) than in small countries.</p>
Regulatory environment	- The policy environment and regulatory framework in Latin America and the Caribbean is generally favorable to new business, but as with other regions, government energy-related programs can distort the market for both modern energy and micro-loans for energy-related services. Additionally, overly strict equipment standardization, or a general lack of standardization, as well as value-added tax (VAT) on equipment and accessories can affect the market for modern energy services.
Competition	Commercial banks and energy companies have designed innovative energy finance options themselves, creating competition for potential MFI entrants (unique to LAC).
Energy suppliers	The presence of few reliable energy suppliers in rural areas constrains the energy market and consequently energy lending.

OPPORTUNITIES AND OBSTACLES

This study examined the energy-lending experiences in Bolivia, Dominican Republic, Guatemala, and Nicaragua to better understand how MFIs and other stakeholders can address market challenges that constrain the expansion of lending for energy-related activities, as well as those opportunities to expand it.

7. Rogers et al., “Innovation in Rural Energy Delivery,” 2006.

8. E+Co website, www.eandco.net.

- ***Donor support can help stimulate energy-lending markets:*** Most of the energy-lending programs identified in the Latin America and Caribbean region received significant support from donor programs. This support tends to come in the form of a centrally located loan fund for MFIs, subsidies for energy systems, subsidized energy-loan interest rates, and energy company and product certification by a government body.
- ***Government programs can be disruptive:*** The energy financing programs of several MFIs and energy companies in Latin America and the Caribbean suffered from significant market distortion due to poorly planned government interventions in the energy sector. These disruptions primarily were politically motivated electricity-grid extension “promises” and government-sponsored technology give-away programs.
- ***Energy can be embedded in community infrastructure and regular business loans:*** This research also indicates that energy-lending products—particularly access to electrical grid connection and/or solar equipment—can be embedded in basic business loans to micro-enterprises and community improvement loans offered by Latin American and Caribbean MFIs.

RECOMMENDATIONS FOR REGIONAL REPLICATION AND SCALE-UP OF ENERGY LENDING

Adopt a strategic approach to serving rural and poorer households, using productive uses of energy as a cornerstone of market development. Latin American MFIs typically have less existing capacity in rural areas and may find that serving these areas is more expensive or requires new approaches. MFIs can market energy for productive uses, such as crop drying, irrigation, and agro-processing, as a catalyst for expanding presence in rural areas and to stimulate growth among depressed economic areas.

Develop a more effective working relationship with government and donor programs. Government and donor programs for rural electrification and energy access are a growing part of the energy landscape in Latin America. These programs can stimulate or destroy commercial markets for energy loans. MFIs and umbrella organizations must take a more proactive role in engaging with these programs, including World Bank and other donor-sponsored rural electrification programs, regional energy access initiatives, etc.

Develop strong relationships with reliable energy partners and build internal technical capacity. A key finding of this overview of energy lending in Latin America has been that trends in energy lending appear to be driven by energy-focused organizations that have brought in MFIs to finance opportunities they developed. It is important for MFIs to co-ordinate with reliable and credible energy companies and explore the full spectrum of options in designing a strategic partnership that builds upon the core competencies of each stakeholder. There is an unmet demand among MFIs and energy enterprises for capacity building mechanisms and training opportunities to forge linkages between MFI and energy players.

Build awareness among MFI and clients of profit enhancing energy services. Research indicates that many clients across Latin America and the Caribbean are familiar with energy technologies, but may not be aware of the income-generating potential of energy applications. Like any other product, MFIs will need to invest in marketing and promotion of energy loan products. However, in the case of energy, loan officers and key management need to have basic knowledge of the technical options in order to adequately promote the products to clients.

Identify cross-selling opportunities. Latin American MFIs currently lend to a variety of businesses and activities that could offer a launching point for energy-related lending, such as household improvements, home building, telecommunications, and income-generating businesses based on energy (such as battery charging stations and wood and metal workshops). MFIs could identify cross-selling opportunities through energy audits of existing clients and learn from the cross-selling experiences of MFIs in other regions.

CHAPTER 1 • INTRODUCTION

BACKGROUND

The potential for MFIs to offer profitable loans for the purchase of energy services has not yet been realized because both the energy and microfinance fields lack experience and there are few documented successes to learn from. In order to better understand the current experience with energy lending in this emerging arena, the United States Agency for International Development and the Citi Foundation are funding a comprehensive study on the opportunities, barriers, costs, and impacts associated with MFI lending portfolios that have integrated energy into their products. The approach is to learn from detailed profiles of the business models, the clients, and the operations of selected MFIs that currently have energy lending programs.

This action research project, *Using Microfinance to Expand Access to Energy Services*, looks at energy lending offered by a select number of MFIs on three continents—Asia, Africa, and Latin America. The objective is to document the opportunities, challenges, costs, and effects of integrating energy products into a MFI's product mix, develop feedback for future expansions of these energy-lending products, and share the lessons learned with the industry at large. To achieve this goal, the Small Enterprise Education and Promotion (SEEP) Network and Sustainable Energy Solutions (SES) invited global MFIs to participate in an interactive, field research program. Four MFIs from Asia and two from Africa were selected to be studied from those MFIs which responded. Despite having invited over 40 MFIs and microfinance networks in the Latin American and Caribbean region, SEEP received no responses from this region.

As a result, the Latin American practitioner research team did not conduct the field research that the African and Asian teams did. Rather, it conducted a desk review to understand the current situation for energy lending in LAC, and reviewed a range of documented experiences to provide insight into successful strategies for energy lending in Latin America. Based on the availability of information, the majority of the experiences documented in this study came from four countries spanning the geographical breadth of the Latin America and Caribbean region: Bolivia, the Dominican Republic, Guatemala, and Nicaragua.

This research indicates that there is a largely untapped market for energy loans in Latin America and the Caribbean. However, the MFIs and energy companies profiled in this paper face major challenges in piloting and scaling up lending for energy-related activities. Unsuccessful energy-lending programs in this region largely result from an inability to adequately anticipate and address market obstacles. The presentation of negative case studies and a focus on the challenges to energy lending in the region is meant to highlight and illuminate the obstacles unique to the region and to identify successful strategies to overcome these challenges. As demonstrated by **Fundación para Alternativas de Desarrollo** in Bolivia, **Génesis Empresarial** in Guatemala, and others, MFIs can successfully pilot and scale up energy lending activities in the region by understanding and reacting to the many challenges presented in this paper.

RESEARCH METHODOLOGY

The practitioner team used a four-phase approach to develop the desk review. First, the team reviewed public information on microfinance and energy experiences to date. Second, the team investigated the market trends in energy and microfinance, including a comprehensive review of market forces at work in the two industries. Third, it developed a broad understanding of on-the-ground challenges to implementation by interviewing key actors in the region. Finally, the team identified the eight areas most critical for MFIs looking to enter the energy-lending market. Through the course of the research, data was collected from a wide range of primary and secondary sources, includ-

ing interviews with energy and microfinance practitioners; reviews of World Bank and UNDP project databases; and consultations with microfinance rating agencies, umbrella microfinance organizations, and energy-supporting organizations.

CHAPTER 2 • LATIN AMERICA AND THE CARIBBEAN REGION

2.1 ENERGY MARKET TRENDS

Over 45 million residents of Latin America still have no access to electricity and almost 83 million people rely on traditional biomass for cooking. Latin America represents a large market for modern energy services, particularly in rural areas and poor households. Compared to Africa and Asia, Latin America on average has higher rates of electrification and use of modern cooking fuels. However among the populations that do not have access to modern energy options, the challenges and the link to the cycle of poverty are similar.

2.1.1 Electricity

Areas without electricity tend to lack commercial and industrial activities, they have fewer micro-enterprises, and they bear additional burdens with respect to accessing health and education services. As of 2005, electrification rates in Latin America were 98 percent in urban areas and 65.6 percent in rural areas.⁹ Despite its relatively high rates of urban electrification, Latin America lags behind the Middle East, East Asia, and North Africa in rates of rural electrification.

Table 2.1 Electricity Access in 2005: Regional Aggregates

	POPULATION (in millions)	POPULATION WITHOUT ELECTRICITY (in millions)	POPULATION WITH ELECTRICITY (in millions)	ELECTRIFICATION RATE (%)	URBAN ELECTRIFICATION (%)	RURAL ELECTRIFICATION (%)
Africa	891	554	337	37.8	67.9	19.0
Asia	3,418	930	2,488	72.8	86.4	65.1
Middle East	186	41	145	78.1	86.7	61.8
Latin America	449	45	404	90.0	98.0	65.6
Developing countries	4,943	1,569	3,374	68.3	85.2	56.4
OECD* and transition countries	1,510	8	1,501	99.5	100.0	98.1
World	6,452	1,577	4,875	75.6	90.4	61.7

*OECD is the Organization for Economic Co-operation and Development. *Source: IEA, World Energy Outlook 2006.*

Grid penetration varies throughout the Latin America and Caribbean region, but tends to be highest in Brazil and lowest in Central America. The energy-lending programs detailed in this study are located in countries with medium-

9. IEA, *World Energy Outlook 2002*.

high electrification rates in urban areas and poor coverage in rural areas.¹⁰

- Over 70 percent of rural populations (575,000 households) are not connected to the grid in Bolivia.
- A full 2.9 million people—33 percent of the total population—do not have electricity in the Dominican Republic.
- In Guatemala, one-third of the population (3.8 million people) does not have access to electricity.
- In Nicaragua, roughly 89 percent of the rural population (over 400,000 households) does not have access to the electricity grid.

2.1.2 Cooking Fuel

Reliance on traditional biomass, such as fuelwood and animal dung, hinders household productivity because of the time spent finding and collecting scarce resources and cooking on inefficient stoves. Use of traditional biomass also creates daily exposure to harmful cooking fumes, including particulate matter, carbon monoxide (CO), and other noxious gases which cause high rates of respiratory illness particularly in women and children. Over 23 percent of the Latin America and Caribbean region's population—approximately 96 million people—rely on traditional biomass for cooking and heating purposes.

Table 2.2 Population Relying on Traditional Biomass for Cooking and Heating in Developing Countries (2000)

REGION	NUMBER OF PEOPLE (millions)	% OF TOTAL POPULATION
Sub-Saharan Africa	575	89
Indonesia	155	74
India	585	58
China	706	56
Rest of South Asia	128	41
Rest of East Asia	137	37
Latin America	96	23
North Africa/Middle East	8	0.05
Developing countries	2,390	52

Source: IEA, World Energy Outlook 2002.

2.1.3 Energy Expenditure

Rural populations in Latin America already spend a significant amount of their monthly incomes on energy. A study by Soluz showed that rural populations in the Dominican Republic already spend between US\$ 6–10 per month on inferior energy sources, mainly daily supplies of kerosene, dry-cell batteries, and automotive batteries (both purchasing and recharging).¹¹ Similar surveys by Soluz in Honduras demonstrated roughly the same results. As this report will later argue, this waste of wealth among the poorer populations indicates a market failure in the provision of modern energy, and a potential opening for microfinance services for energy.

10. Ibid.

11. Rogers et al., "Innovation in Rural Energy Delivery," 2006.

2.2 MICROFINANCE MARKET TRENDS

Through MFIs, financial services are now available to close to six million low-income households in Latin America and the Caribbean.¹² The region's MFIs have achieved greater financial scale than other regions and carry larger average balances per borrower; however, they reach fewer active borrowers than Asian and African MFIs. Over the past 10 years, the LAC microfinance institutions have experienced rapid growth and transformed from predominantly non-profit organizations and donor finance to regulated institutions and commercial finance. Possibly as a result of the rapid commercialization, microfinance in Latin America is more urban rather than rural, more likely to serve micro-enterprises than poor households, and fiercely competitive in smaller Central America countries and only marginally present in larger, more populous South America markets.

By the year 2000, many Latin America countries had at least one MFI succeed in reaching a large number of low-income micro-enterprises in a financially sustainable way. Other MFIs began to follow suit, transforming themselves into regulated commercial MFIs that could meet the growing funding needs. These rapidly expanding commercial MFIs focused on offering mainly credit services to as many clients as possible.

Table 2.3 Microfinance Institutions in Latin America and the Caribbean, 2005 and 2001

TYPE OF INSTITUTION	NUMBER OF INSTITUTIONS	PORTFOLIO (US\$ MILLIONS)	BORROWERS	AVERAGE LOAN (US\$)
Data from 2005 (23 countries)				
Regulated MFIs	98	4,407	3,851,765	1,144
Downscaled* banks and finance institutions	31	1,810	1,233,873	1,467
Greenfields**	30	1,005	738,671	1,361
Upgrades***	37	1,592	1,879,221	847
Non-regulated MFIs	238	1,030	2,100,951	490
All MFIs (2005)	336	5,437	5,952,716	913
Data from mid-2001 (17 countries)				
Regulated MFIs	60	901	936,936	962
Downscaled banks and finance institutions	21	343	365,171	939
Upgrades	39	558	571,765	976
Non-regulated MFIs	124	288	869,509	332
All MFIs (2001)	184	1,189	1,806,445	659

* Downscaled: Regulated financial institutions that added microfinance as a new line of business.

** Greenfields: MFIs that have operated as regulated financial institutions since their inception.

*** Upgrades: NGOs that transformed themselves into regulated financial institutions.

Source: Navajas and Tejerina, Microfinance in Latin America and the Caribbean," 2006.

Latin America is home to some of the most experienced, developed, and profitable MFIs in the world. Latin American and Caribbean MFIs show return-on-assets more than two times the world average and typically serve twice the number of borrowers per loan officer. However, the average portfolio-at-risk rate for the region's MFIs is typically higher than for MFIs elsewhere in the world.¹³ On average, Latin American MFIs show a higher return than those

12. Navajas and Tejerina, "Microfinance in Latin America and the Caribbean," 2006.

13. Navajas and Tejerina, "Microfinance in Latin America and the Caribbean," 2006.

in Asia. Latin America MFIs are also further advanced in attracting external funding through savings deposits, with registered institutions on average in the region having roughly double the deposit-loan ratio for Asia.¹⁴ Latin America and Caribbean MFIs' average gross loan portfolio figure is almost 75 percent greater than the average for Asian MFIs.¹⁵

Formal MFIs in Latin America tend to focus on urban areas, while unregulated credit cooperatives tend to dominate the rural markets. Moneylenders continue to operate in rural markets, charging from 10–20 percent interest *per day*, which translates to an annual percentage rate of more than 4,000 percent. Lending to the poor is largely concentrated in village bank loans which have a smaller loan size as compared to individual and solidarity group loans. Village and solidarity-group lending dominate in the rural areas. Rural clients comprise a small portion (14 percent) of the total microfinance client base in the region.

Latin American MFIs have penetrated the markets in the smaller countries for micro-enterprise loans, but have only marginal presence in the larger countries where most of the region's poor live (Argentina, Brazil, Mexico, Uruguay and Venezuela).¹⁶ Four countries—Brazil, Mexico, Argentina and Venezuela—hold 16 million (60 percent) of the region's low income households, and only 1 percent of that market has been penetrated by microfinance.¹⁷

2.3 ANALYSIS OF ENERGY AND FINANCE SECTORS

An examination of market forces provides some insight into why there are relatively few MFI experiences with energy lending in Latin America, and into the obstacles and opportunities that face new entrants into what certainly is a huge market for energy lending. These market forces include the internal capacity and incentives of the MFIs themselves, the policy environment, competition from commercial banks and other entities, and the availability of reliable energy suppliers serving MFI markets.

2.3.1 Market Forces

Microfinance institutions are not present in markets where the largest number of potential energy loan clients is located. Generally, MFIs in LAC are focused on urban clients in the medium-poor income bracket, and offer relatively few financial services to rural clients, who tend to be poor. Additionally access to microfinance is more difficult and scarce in large countries (with their larger, more remotely dispersed populations) than in small countries. As a result, the majority of the 40 million households without access to electricity, and the 20 million households without access to modern cooking fuel, are probably not clients of microfinance institutions.

Given this situation, energy may be a launching point for MFIs that wish to reach new markets with sizeable numbers of unbanked clients. However, these MFIs will need to adopt strategies to overcome their lack of experience, small capacity, and need for new products to enter these new markets. For example, in the Dominican Republic, Banco ADEMI had trouble servicing solar loans because their mainly rural energy clients lived too far from its established capacity in urban areas. The strategy that Banco ADEMI successfully employed was to outsource loan collection to photovoltaic entrepreneurs.

The policy environment in Latin America and the Caribbean is generally favorable to new business, but some government programs can distort energy markets. As a region, Latin America and the Caribbean have a policy and regula-

14. Alvaro Ramirez, "The Microfinance Experiences in Latin America and the Caribbean," paper presented at "Modalities of Microfinance Delivery" workshop, LAEBA Research Conference on Microfinance in Latin America and Asia, Asia Development Bank Institute, Manila, the Philippines, 4–8 October 2004.

15. Microfinance Information eXchange (MIX), "Benchmarking Latin American Microfinance," (Washington, DC: 2003).

16. Ramirez, "The Microfinance Experiences in Latin America and the Caribbean," 2004.

17. Nancy Barry, "Development of Capital Markets for Microfinance," presentation at the 7th Inter-American Forum on Microenterprise, Cartagena, Colombia, 8–10 Sept 2004.

Box 2.1 Soluz: Innovations in Extending Affordable Energy Services to the Rural Areas of the Dominican Republic

In areas without existing rural finance options, clients may require other financing options for the provision of modern energy services. Experiences of the energy company Soluz in both the Dominican Republic and Honduras demonstrate the limitations of third-party finance for energy in rural areas with low microfinance capacity. Soluz found that many commercial banks and MFIs were not well positioned to serve dispersed rural clients. In response, Soluz offered an option in which the sales of energy systems were directly financed by the energy SMEs with short-term micro-loans. It also pioneered an innovative unsubsidized micro-rental offer for clients who could not afford cash purchases or otherwise could not obtain or commit to a long-term loan.* Soluz has found that the micro-rental model avoids some of the complexities associated with third-party microfinance, including high collateral requirements and long financial commitment on the part of the client and high risk for the MFI. In the micro-rental model, risk is minimized because the equipment itself acts as collateral.

* Rogers et al., “Innovation in Rural Energy Delivery,” 2006.

tory environment favorable to foreign direct investment and business development. With a few exceptions, most of the region has at least partially privatized infrastructure services, including electricity production and distribution, and offers incentives for private investment in the energy sector. In most LAC countries, the microfinance sector enjoys a favorable regulation framework that governs mobilization of savings, encourages competition, and promotes transparency.

2.3.2 Government Intervention

In 2003–2004, the Dominican Republic government instituted a poorly conceived program in Espaillat province, giving away 300 solar home systems free of charge. This program has expanded to other provinces with 2,000 systems given away in 2004, 10,000 systems in 2005–2006, and another 10,000 systems planned for 2007–2008.¹⁸ This government program all but destroyed the market for solar loans¹⁹ and dampened the rental market of photovoltaic entrepreneur Soluz Dominicana that was financed by CO-OP ADEPE. Soluz had to repossess 1,500 of its 2,000 rented solar systems and then sell them as second-hand equipment to meet payment obligations to international lenders.²⁰

2.3.3 Commercial Banks and Energy Companies

MFIs are not the only supplier of loans for the purchase of modern energy in Latin America and the Caribbean. Commercial banks and energy companies have created innovative energy finance options, creating competition for potential MFI entrants. Some commercial banks in Latin America and the Caribbean have offered energy-related loans. For example, in Guatemala, commercial banks and local savings and loan co-operatives have worked with the Fundación Solar to offer loans for local grid connections, and mini-grid development. In some cases, these banks offer better interest rates than local MFIs. Energy companies as well have experimented with offering credit themselves for modern energy, as a substitute for energy loans that could be provided by MFIs.

In the Dominican Republic and Honduras, both Soluz Dominicana and Soluz Honduras, subsidiaries of the energy company Soluz, Inc., offer micro-rental financing options to rural clients. These two enterprises combined have installed over 5,000 solar systems through company-run credit and micro-rental options. Additionally, Soluz Hon-

18. Communication with Richard Hansen, Soluz, Inc., July 19, 2007.

19. Parkerson, “Assessing the Potential for Microfinance Institutions to Finance Solar Photovoltaic Systems,” 2005.

20. Bleviss et al., “Financing Barriers for Clean Energy Investments in Latin America and the Caribbean,” (Arlington, VA: IDB and David Gardiner & Assoc., 2006).

duras has financed over 1,300 energy systems without a third-party MFI²¹ to fill the void when MFIs were unable or unwilling to provide energy-related microfinance products.

Many countries in Latin America have very few energy companies that are active in rural areas. Like most microfinance institutions in the Latin American and Caribbean region, energy companies in the region tend to focus on serving urban populations. Without microfinance products to increase affordability, the market for cash sales is less than one-tenth of the population in most countries in the region. However, the efforts of a number of pioneering energy enterprises, such as Enersol S.A., Soluz, and Tecnosol, have been backed in part by enterprise finance from groups such as E+Co and others. Over the past ten years, as a result, a significant network of technically competent energy companies has been established with the interest and the capacity to extend into rural areas.

21. Rogers et al., "Innovation in Rural Energy Delivery," 2006.

CHAPTER 3 • OVERVIEW OF ENERGY LENDING IN LATIN AMERICA AND THE CARIBBEAN

Energy lending in the Latin America and Caribbean region can be broadly categorized as coming from government or donor programs or partnerships among energy companies, MFIs, and NGOs. Government and donor energy-lending programs include government electrification programs or rural energy programs funded by development banks or UNDP. Other energy-lending reviewed in this study tends to be initiated by an energy company, MFI, MFI parent NGO, or an NGO whose mission is energy access. Energy companies and related distributors and installers play an increasingly important role in the development and success of energy lending in the Latin America and Caribbean region; in many cases, they pave the way for MFIs and NGOs.

It should be noted that this report does not list all energy lending experiences in the Latin America and Caribbean region, but rather focuses on analyzing a few models that offer instructive lessons for other MFIs in the region. Additionally, it is likely that many Latin American MFIs have energy-related loans embedded in their loan portfolios which they do not extract or track as specific energy loans per se. They could be part of a business or enterprise loan (as for a bakery), part of a housing improvement loan, or simply not tracked.

3.1 GOVERNMENT AND DONOR PROGRAMS

Several energy-lending programs identified in the Latin America and Caribbean region received significant support from donor energy-access programs, particularly in early stages of development. This government and donor support varies across the region, but tends to include one or more of the following: large subsidies for the interest rate or consumer cost of energy systems, centrally located funds available to MFIs as loans to on-lend for energy, a loan guarantee fund, and certification of energy systems and companies by a government body.

Nicaraguan Renewable Energy for Rural Zones Program Initiative, Nicaragua: In 2003, the World Bank and UNDP/GEF initiated a five-year US\$ 4 million off-grid rural electrification program in Nicaragua (PERZA). The project's main objectives are to support the provision of electricity services in rural Nicaragua through government policy implementation, innovative public/private off-grid electricity delivery mechanisms, and effective microfinance and business development that enhances rural electrification schemes. The PERZA project is a major component of the Comisión Nacional de Energía's (CNE) National Rural Electrification Program (PLANER), which aims to achieve rural electrification rates of 70 percent by 2005 and 90 percent by 2012.²²

Given the remote location of most of Nicaragua's poor, CNE's strategy focuses on developing a diverse set of off-grid technologies, which match real demand, rather than more costly grid extension. Recognizing that many rural poor people cannot afford the high up-front costs of most off-grid technologies, the PERZA project has partnered with energy companies and microfinance institutions in the pilot project sites and nearby communities to enable local micro and small businesses to take advantage of the rural electrification opportunities provided. The Project Management Unit disburses funds from a Second Generation Special Account (SGSA) to the MFIs, which then provides loans to clients of the mini-grid sub-projects and national solar program to finance household and business connections. Participating

22. Nicaraguan Renewable Energy for Rural Zones Program Initiative, Joint World Bank-UNDP/GEF Project Proposal, April 2003.

MFIs include FDL (Fondo de Desarrollo Local), PRODESA (Fundación Para La Promoción y el Desarrollo), and FJN (Fundación José Nieborowski).

Through the PERZA program, participating energy companies and participating MFIs offer these basic products:²³ a loan of about US\$ 40–\$50 for an individual household hookup to a central mini-grid system in population centers, a consumer subsidy of about US\$ 110 channeled through participating energy companies for an individual solar home system hookup for households in remote, peripheral communities, and a loan from participating MFIs to finance the purchase of solar home systems or solar systems for productive uses.

As of November 2006, energy companies participating in the PERZA program delivered and installed over 1,500 solar home systems to un-electrified households, bringing electricity to 7,500 people.²⁴ Local microfinance intermediaries have been able to finance more than 25 percent of these systems with two-year micro-loans. Consumer financing for solar home systems includes a down payment of 5–10 percent of the system cost with monthly payments extended over three years.

Plan Sierra, Dominican Republic: Plan Sierra, a government-run development organization, initiated a solar program with a microfinance component in the Dominican Republic with funding from the French Agency for Development (Afd). Through this program, Afd provides a loan guarantee fund and the three participating MFIs—Mamoncito, San Jose, and General Directorate of Community Development (DGDC)—contribute actual loan funds. Plan Sierra subsidizes the interest rate at 21 percent (market rate is 36 percent) and participating MFIs offer solar loans for a 36-month term. As of 2005, the program had disbursed 104 loans for solar systems, of which 71 were financed through Mamoncito, totaling US\$ 28,500.

UNDP Small Grants Program, Dominican Republic: The UNDP/GEF Small Grants Program (SGP) has had some experience in distributing solar systems in the Dominican Republic through community managed cooperative credit schemes. In this program, SGP provides a revolving credit fund to community groups to finance individual household solar systems, offers technical assistance to rural solar dealers and installers, and trains two community members as solar technicians. Community organizations choose a solar contractor for the project and set their own interest rates and loan terms, which usually require members to contribute 12–18 percent of the solar system's cost as down payment. Through 2005, the program distributed just over 1,000 solar systems through the community-managed revolving funds.²⁵

Bolivian Rural Electrification Project: In 1999, over 71 percent of Bolivia's rural population (575,000 households) did not have access to grid electricity.²⁶ Recognizing the important role access to electricity can play in poverty reduction, the Bolivian government kicked off a rural electrification plan which aimed to bring electricity to 200,000 rural homes by 2004, mainly through renewable energy sources. In 2000, the UNDP/GEF supported this plan with US\$ 8.2 million specifically to deliver electricity from renewable sources (solar photovoltaic and micro hydro power) to 3,400 dispersed rural households (3,000 solar systems and 400 micro hydro-electric systems). A main component of this program was the establishment of a solar credit fund within Fondo de Desarrollo del Sistema Financiero (FONDESIF).²⁷ Through this model of service delivery, MFIs promote solar systems in and around the project area, evaluate creditworthiness of interested clients, and disburse payment directly to energy companies certified by Instituto Boliviano de Normalización y Calidad (IBNORCA, the Bolivian Institute of Normalization and Quality).

23. Ibid.

24. Britt Gwinner et al., "From Financial Exclusion to Inclusion: Increasing the Availability of Credit to the Urban Poor in Latin America," (Washington, DC: World Bank, 2006).

25. Parkerson, "Assessing the Potential for Microfinance Institutions to Finance Solar Photovoltaic Systems," 2005.

26. United Nations Development Programme/Global Environment Facility Project, "Bolivian Plan of Rural Electrification," 2004, UNDP/GEF website, <http://www.pnud-energia.org.bo/veea>

27. FONDESIF is a state institution that supports development of the microfinance sector, whereby rural finance institutions can access credit and subsidy resources so their clients can purchase solar home systems.

Box 3.1 Lending Model of Proyecto Inti K'anchay ("Light of the Sun") in Bolivia

In 1996, ENERGÉTICA (a non-profit organization focused on technical assistance for renewable energy system), partnered with solar dealers and installers and Fundación para Alternativas de Desarrollo (FADES, a microfinance institution focused on serving the financing needs of rural populations). In this model, the clients are rural farmers, who earn between US \$400 and \$1,200 per year and spend an average of \$5.60–8.70 per month to purchase batteries, candles, burners, and kerosene for lighting. The energy company or solar dealers install the systems, provide equipment guarantees, and repurchase the equipment in case of loan default or return. The MFI provides credit to farmers to purchase solar systems and distributes payment directly to the energy companies. ENERGETICA complements the roles of both the energy company and MFI by promoting renewable energy and solar credit options, ensuring quality control for the solar products and conducting program monitoring and evaluation. The loan repayment terms had to be adjusted in the first year of pilot operations to better match the seasonal harvest incomes of the region.

The target for this project is to install 15,000 solar systems. After two years of operation, the program has installed over 500 household solar systems. A survey of participating clients in 2001 revealed that most had seen their energy expenses significantly reduced, with some clients substituting solar energy for almost all kerosene, diesel, candles, and battery usage. On average, the solar systems reduced the consumption of batteries 56%. Respondents recognized an improvement in scholastic performance due to extended illumination hours and greater comfort in early morning and late evening cooking.

Source: Miguel H. Fernandez Fuentes, "Electrificación Rural con Sistemas Fotovoltaicos: El Proyecto Inti K'anchay" (La Paz, Bolivia: ENERGÉTICA, 2001).

Upon receipt of payment, the certified energy companies and dealers install the solar systems and train clients on basic use and maintenance.

The project provides technical assistance to energy companies and trains loan officers in the basics of the solar technologies. Participating energy companies include Andean Solar SRL (ENSAND), APLITEC, ENERGÉTICA, and Enersol S.A. Via the project, clients can access solar systems of 50-watt and 20-watt sizes with various accessories at an interest rate of 16 percent and loan repayment periods ranging from 6 months to 3 years, depending on the MFI's internal loan guidelines and client's creditworthiness. MFIs participating in the program include Fundación para Alternativas de Desarrollo (FADES), EMPRENDER, SARTAWI Foundation, and La Asociación Nacional Ecueménica de Desarrollo (ANED). As of August 2005, the project had installed over 2,800 solar systems.²⁸

3.2 ENERGY LENDING AMONG ENERGY COMPANIES, NGOS, AND MFIS

Many of the energy-lending experiences in Latin America and the Caribbean were established through partnerships between an energy company and MFIs or an energy company and NGOs, or financed through loans from the energy company itself. The following examples offer insights into the various partnership options used by energy companies and MFIs in lending for energy-related needs in the Latin America and Caribbean region.

In Guatemala, Bolivia, and the Dominican Republic, partnerships between energy companies and MFIs have had some success in expanding access to modern energy services.

Génesis Empresarial. Guatemala: Génesis Empresarial was founded in 1998 by Fundación Tecnológica (FUNTEC) to focus specifically on helping rural communities gain access to cleaner water. Starting in 1993, Plan International partnered with Fundación Solar (both NGOs) to provide technical assistance to small and medium energy enterprises to install more than 1,000 solar lighting systems in the Verapaces region of Guatemala, using consumer loans provided by Génesis Empresarial. The solar systems are sold by a solar company based in Guatemala City and are

28. UNDP/GEF, "Bolivian Plan of Rural Electrification," 2004.

installed by their local dealer, Fulano de Tal. Génesis Empresarial also offers loans to community groups interested in investing in community electrification schemes. With assistance from Génesis Empresarial, communities mobilize their own resources, apply for grant funding, and meet remaining investment needs for grid extension and connection through a community loan at 24–28 percent interest through Génesis. At the end of 2005, Génesis Empresarial had extended a total of 1,147 loans for community electrification, valued at US\$ 3.7 million, and 14 loans for solar home systems, valued at \$ 39,000.²⁹

Banco de Asociación para el Desarrollo de Microempresas (Banco ADEMI) and Local Small Photovoltaic Enterprises, Dominican Republic: A member of Women's World Banking, Banco ADEMI is a regulated development bank in the Dominican Republic. Banco ADEMI was approached by USAID in 1998 to offer third-party microfinance for the purchase of solar systems of varying sizes in partnership with local energy companies and installers. The project was funded with US \$400,000 from USAID and Banco ADEMI with a timeframe of 36 months. The project offered a standard solar system consisting of one 50-watt panel, two 6-volt batteries, a charge controller, voltage regulator, and up to six lights. The standard cost was about \$750 financed at 15 percent interest p.a. over a maximum of 36 months. Banco ADEMI worked with several small, experienced solar energy enterprises, such as Sistemas Solares Nordeste. Banco ADEMI found that lending for rural energy was difficult because it primarily serviced urban clients and had little capacity in rural areas. Therefore, the MFI ended up relying upon the solar installation enterprises to locate customers, market energy products, install solar systems, and assure regular payment collection. Within three years, the project had financed and installed 362 solar systems in 12 provinces, totaling more than \$279,000 in loans.³⁰

Cooperativa de los Servicios Asociación para el Desarrollo de la Provincia Espaillat (CO-OP ADEPE) partnered with Soluz Dominicana and Energia Solar Mocana, Dominican Republic: An unregulated rural credit cooperative, CO-OP ADEPE began financing solar systems in the early 1990s through its parent NGO, Asociación para el Desarrollo de la Provincia Espaillat (ADEPE). Through 2005, CO-OP ADEPE has financed over 400 solar systems without external subsidies or government financial support.³¹ CO-OP ADEPE has directly financed over 200 solar systems sold and installed primarily by Soluz Dominicana at market rates over 18–24-month repayment periods. CO-OP ADEPE has also financed Energia Solar Mocana, owned by entrepreneur Rafael Cabrera, who purchased over 200 solar systems which he rented to rural customers. This activity ended once the Dominican Government established a solar system give-way program.

3.2.1 Enersol S.A.: Partnering with Prodem, Cooperativa San Roquea, Cooperativa Buen Samaritana, and Emprender, Bolivia

The following is excerpted from a formal interview with Eduardo Lozada, founder of Enersol S.A., and provides a view on the linkages between energy and microfinance from the perspective of the energy company. In this case, Enersol S.A. is the energy equipment and installation service company.

- ***Working with government projects and linking with MFIs:*** Enersol S.A. is a Bolivian energy company focused on the distribution and installation of solar products, backup power, and energy for telecommunications. To date, Enersol has sold over 30,000 solar systems in Bolivia, with the majority of these systems sold on a cash basis by the company. Enersol offers robust energy systems customized for low-income populations through local dealers that maintain a variety of energy services in addition to solar in rural areas. After selling solar systems for many years on the open market, Enersol recently developed partnerships with several Bolivian MFIs to offer lending options to increase the affordability of its products. Enersol S.A. has also taken advantage of energy lending provided primarily through two donor-established government

29. Ana Carolina Palma Cajas and Robert Foster, "Guatemalan Photovoltaic Project Development for Rural Uses," paper presented at ISES Solar World Congress, Adelaide, Australia, 25–30 November 2001.

30. Parkerson, "Assessing the Potential for Microfinance Institutions to Finance Solar Photovoltaic Systems," 2005.

31. Ibid.

projects to promote solar energy—the first sponsored by UNDP and the second supported by the World Bank. Each program offers important lessons for other energy companies and MFIs interested in financing solar products in Latin America.

- **Value proposition:** The UNDP-government project offered a subsidy of US\$ 284 on a 50-watt solar system with a normal market cost of \$650. Through the World Bank-government project, clients were offered a subsidy of \$450 on a 50-watt solar system with a normal market cost of \$730. In both projects, the remaining balance after the subsidy was made available to rural and poorer clients through loans from participating MFIs and savings associations. As the energy equipment/service company, both projects required that Enersol install the systems, offer client training on proper system use, and conduct maintenance visits (quarterly for the UNDP project and annually for the World Bank project).
- **Engagement strategy:** Enersol S.A. learned about the UNDP and World Bank projects through public solicitations organized by the government of Bolivia. The two projects varied in terms of the energy equipment/service company targeted: one project favored larger multi-national companies while the other was more democratic, offering more opportunity for small and medium enterprises to participate. The projects also differed in the level of technical requirements. For example, the solar batteries on the market and used by Enersol at the time did not meet the strict technical requirements of one project and thus did not qualify for the subsidy. Enersol and other participating energy companies were forced to import batteries that met these requirements at additional cost.
- **Disruptive impacts:** Prior to the start of the UNDP and World Bank projects, Enersol was already in a partnership with Prodem, a Bolivian MFI, to finance solar home systems on a commercial basis without customer subsidies. This effort was financed by the Solar Development Group, a solar business development service and investment fund developed by the World Bank-International Finance Corporation and major foundations. When approached by Enersol regarding the government projects, Prodem decided against participating. From Prodem's perspective, any government participation in the programs would distort the market, making it difficult to market solar products and collect energy loan payments from rural and poorer clients who were accustomed to government "give-away" programs. The use of subsidies in both donor programs may have also hurt the market for commercially sold solar systems. For example, Enersol found that many rural households would decide against investing in a modern energy system at full price if they knew that a neighbor or relative had purchased the same system at a subsidized rate: basically, they preferred to wait for the next program to come to their part of the country before making a purchase.
- **Assessing client demand:** Enersol and partner MFIs used several tools for identifying and assessing demand for solar systems in the regions covered by both programs. For example, Enersol found it helpful to hire local distributors and retailers to train poor and remote clients in the proper use and maintenance of equipment. In assessing potential demand, Enersol and partner MFIs use published World Bank reports on household energy expenditures.
- **Affordability:** Enersol found the number of rural clients able to afford the solar systems was larger than its initial market research indicated, even when subsidies were not offered. In effect, many rural clients who fall outside of what market research determines to be the "ability to pay" may actually find a way to invest in a solar system if they can be convinced of its usefulness in their lives. Enersol found the main determining factor to be whether or not a household or business can mobilize the required US\$ 50 down payment. Enersol also found that some remote clients in Bolivia, particularly those clients living within the Altiplano, can only afford a solar system with heavy subsidies.
- **Knowledge of systems:** With both programs, Enersol found that even though most rural communities in Bolivia are aware of solar technologies, the company sometimes needs to introduce intense marketing,

promotion, and training to stimulate measurable demand. Although time consuming and resource intensive, training poor and remote clients to properly use and maintain systems is essential. Enersol found that a successful strategy can be to train local distributors and retailers.

- **Previous banking history:** With the World Bank program, Enersol partnered with two savings cooperatives to serve previously unbanked clients. The savings co-operatives engaged in the World Bank solar loan program were able to use the energy loans as a launching point to offer further financial services in previously unserved rural communities.
- **Markets with critical mass:** As in most developing countries, urbanization is on the rise in Bolivia, making it even more difficult to achieve economies of scale in markets in rural areas. Enersol found that it is important to set a target for critical mass in rural markets with various strategies, including having a single distributor or retailer offer a number of products in addition to solar in order to break even.
- **Partnering with MFIs:** Enersol established a partnership to provide the energy product with an MFI to provide the microfinance product. Prior to participating in the World Bank and UNDP programs, Enersol had mixed success partnering with Prodem to finance solar systems in rural Bolivia. Prodem's unwillingness to engage in government and donor projects forced Enersol to pursue other financing agencies with the interest and capacity to finance solar systems in rural areas. With the UNDP program, Enersol found it difficult to find urban-based MFIs interested in making the investments necessary to serve previously unbanked rural clients, such as purchasing motorbikes for loan officers and establishing rural payment collection schemes. In order to participate, Enersol had to engage Cooperativa San Roquea, Cooperativa Buen Samaritana, and Emprender, other MFIs and savings associations unfamiliar with energy lending and more limited in their rural outreach, compared to Prodem.
- **Competition:** Enersol faces competition mainly from large multi-national energy companies. It competes by providing high quality solar systems that are customized to the needs of low-income and rural households and offering financing options from several partner MFIs and savings co-operatives.

3.2.2 Fundación Solar: Developing Lending Options for Solar and Community Electrification in Guatemala

The experiences of Fundación Solar, an NGO in Guatemala with a focus on rural energy access, demonstrate another possible partnership option where an NGO plays an integral role. In this partnership, Fundación Solar provides technical assistance to energy SMEs and MFIs on the design, installation, monitoring, and evaluation of modern energy systems. In turn, the SMEs are responsible for installing and maintaining the system and after-sale service. This example offers important lessons from the perspective of an energy-focused NGO in the development of strategic partnerships, the design of energy financing products, and the roll-out and scale up of energy lending programs. This information in this section came from communications with Hugo Arriaza of National Rural Electric Cooperative Association (NRECA) International³² and Marta Ramirez of Fundación Solar.³³

- **Working with MFIs:** Since 1993, Fundación Solar, an NGO energy service company registered as a private development organization, has provided technical expertise to promote renewable energy and environmental projects in Guatemala.³⁴ Fundación Solar partners with a wide range of organizations with an interest in the provision of modern energy, including government institutions, private sector actors, other NGOs, MFIs, and savings associations. As a technical company, Fundación Solar has little capacity to offer credit for

32. Interview with Hugo Arriaza, NRECA Internacional, June 2007.

33. Communication with Marta Ramirez, Fundación Solar, July 2007.

34. Fundación Solar website, <http://www.fundacionsolar.org.gt/Ingles/somos.html>.

purchasing energy systems and thus establishes strategic partnerships with banks and MFIs. Several commercial banks and MFIs in Guatemala have gained experience in energy lending through their partnerships with Fundación Solar.

- **Value proposition:** Fundación Solar promotes modern energy (conventional electricity connection and renewable sources of energy) in seven communities through a program called “Electrification para el Progreso.” Program clients include municipalities, community groups, private companies and micro-enterprises, co-operatives, government agencies, and non-governmental organizations.
- **Subsidy:** The United States Department of Agriculture (USDA) established a seed fund for expanding access to modern energy. Housed within La Asociación Nacional de Cooperativas Eléctricas Rurales (NRECA), this financial mechanism facilitates grid connection or renewable energy mainly for productive uses. The fund can finance up to 60 percent of community electrification schemes with the remainder to be covered by credit from banks or MFIs.
- **Technical assistance:** Fundación Solar provides technical advice, planning, and implementation services for the various energy upgrades, including energy for irrigation and solar home systems. Fundación Solar also implements micro hydro mini-grids by creating local co-operatives for system management and repayment.
- **Engagement strategy:** Fundación Solar established energy financing partnerships through interviews different MFIs and banks. Fundación Solar is responsible for providing technical training to rural energy companies and clients on the proper use and management of energy systems.
- **Disruptive impacts:** The program has experienced some market distortions based on technology donations. For example, past NGO give-away programs and heavy government subsidies have negatively impacted the commercial market for modern energy systems
- **Partnering with MFI:** Fundación Solar found that the individual energy options offered through the Electrification para el Progreso program needed to be accompanied by financing options uniquely designed for each product and target client. Fundación Solar has developed projects that include an energy equipment/service company to assure a sound delivery of energy products and an MFI to facilitate payment plans (for cost recovery) to make the energy products more affordable. In some cases, such as community electrification products, commercial banks were better suited than MFIs to offer financing. Fundación Solar approached Genesis Empresarial, but found the MFI’s interest rate (around 30 percent p.a.) to be too expensive for community systems. It then approached commercial banks that offered 15–18 percent annual interest as partners to finance the products. However, Fundación Solar has since partnered with Genesis Empresarial and local savings associations for the provision of solar home systems.
- **Competition:** Fundación Solar does face some competition from NGOs interested in donating energy systems in Guatemala. Through the Zacapa project, solar home systems were donated by Plan International with technical training provided by Fundación Solar. After five years, Fundación Solar found that 45 percent of the donated systems were not working.³⁵ Experience has shown that these “give-away” programs may be able to meet the immediate energy needs of a select few program participants, but in the medium and long term they tend to distort the commercial market for modern energy.

35. D. Alvarez, S. Santos, and J. Vadillo, “Domestic Photovoltaic Illumination Project Evaluation Stage 1: Zacapa,” (Guatemala: Fundación Solar, 1999).

3.3 ENERGY COMPANIES THAT LEND DIRECTLY

Several for-profit energy companies in Latin America and the Caribbean have experimented with offering innovative financing for modern energy services without third-party microfinance. Some energy companies in the region have established their own credit programs largely in response to low MFI presence in the rural areas.

Soluz, Honduras. In the Dominican Republic and Honduras, Soluz, Inc., found that the capacity of microfinance institutions in rural areas beyond the grid was very limited. In response, the company began offering short term micro-loans directly to clients and has pioneered an innovative, unsubsidized micro-rental offer which has successfully reached poorer households that could not afford cash purchases or obtain or commit to a long term credit agreement. Soluz Honduras has now installed over 5,000 solar systems through company-provided credit and micro-rental plan.³⁶

Tecnosol, Nicaragua. In Nicaragua, the energy company Tecnosol has installed over 7,000 photovoltaic systems under various arrangements, including cash and third-party credit from MFIs. The company has also directly provided micro-loans for almost 200 modern energy systems (solar, wind, and hydro-electric) on a three-to-six-month credit basis.³⁷

By offering credit and micro-rental options, Soluz and Tecnosol were able to reach energy customers otherwise unserved by MFIs, mainly in rural areas. However, these examples are rare in the Latin America and Caribbean region because most modern energy companies and subsidiaries—particularly those focused on rural areas—are small and limited in financial resources necessary to offer credit and rental themselves. The experiences of Soluz and Tecnosol also highlight obstacles that may be unique to energy company credit and micro-rental models without third-party MFI participation. These challenges include difficulties establishing appropriate loan terms, logistical issues and high costs associated with collecting monthly credit and rental payments, selection of clients and analysis of cash flow by energy company employees with less training than microfinance loan officers, and problems with rental equipment maintenance and theft.

36. Rogers et al., “Innovation in Rural Energy Delivery,” 2006.

37. E+Co website, www.eandco.net.

CHAPTER 4 • KEY FINDINGS AND RECOMMENDATIONS

Following is an overview of challenges and solutions found to be the most crucial in expanding energy lending. Recommendations are designated for individual MFIs as well as for supporting institutions that aim to strengthen MFIs' ability to enable energy access for the poor. The recommendations start at the strategic level of the decision to prioritize energy lending, and then move through tactical recommendations for implementing energy lending programs. Not every recommendation will be appropriate for every MFI; however, any MFI interested in energy will benefit by considering how to tailor these recommendations to expand or create an energy-lending portfolio.

1. Adopt a strategic approach to serving rural and poorer households using productive uses of energy as a cornerstone of market development.

Box 4.1 Serving Rural and Poorer Households and Financing Productive Uses of Energy

KEY BENEFITS TO MFIS

- Great potential exists to reach more clients.
- MFIs can advance their social mission of reaching poor and remote markets.
- Energy can be a catalyst for reaching currently underserved markets.
- Loans for productive energy activities can jumpstart economic development in communities with low micro-enterprise activity.
- Well thought-out loans for large productive energy equipment can be a low risk proposition for some MFIs
- Productive energy can become a business, in and of itself, with an entrepreneur "renting" a piece of equipment or motor to community members for multiple purposes.

RISKS AND CONCERNS THAT MFIS MAY FACE

- New markets may require new business models that initially are not as profitable as MFI core businesses.
- MFIs may lack funding for innovation in new models for reaching poorest clients and highly dispersed populations.
- Pilots may stress core business or negatively impact financial results.
- Partnerships with NGOs may not work.
- Large loans may require disproportionate amount of staff time.
- This type of lending may be too great a change in methodology for some MFIs.

Key trends in microfinance in Latin America and the Caribbean have resulted in a general density of MFIs serving urban clients in the medium-poor income bracket, and a relative scarcity of financial services extended to rural and poorer clients. Reaching these markets is a challenge for both the MFI and the energy company partner. Latin American MFIs typically have less existing capacity in rural areas and may find that serving these areas is more expensive or requires new approaches. Latin American MFIs may be unaware of domestic consumer energy spending patterns due to their focus on enterprises rather than poor households. Latin American MFIs will need to build a presence where many remote populations live, especially in the large Latin American countries that house the largest, and more remote populations.

These MFIs may not be aware of the larger investments needed to create economic anchors in such communities. For example, off-grid agricultural communities may require modern pumps for irrigation or motor power to grind or dry crops before delivery to market. Such energy investments can improve yields and allow a community of farmers to capture a larger share of the value that is ultimately added to the products they produce.

Latin American MFIs have several options with respect to these rural and remote communities. First, they can become more savvy in identifying opportunities for productive uses of energy in current or potential client communities, and even make such an assessment standard practice in exploring new markets. Second, MFIs can seek out enterprise development or energy-focused NGOs that are working in these sectors and follow them to the communities where there will be good market development potential. Third, they can work with their energy company partners to develop, add, and finance new products, such as refrigeration, solar water pumps, crop dryers or diesel-powered grinders.

Where MFIs are able to provide the loans for energy services, they can go a step further by being aware of the energy efficiency characteristics of the energy products. By advising clients to consider energy efficient and renewable energy-based products, MFIs can help clients manage high fuel prices and help clients increase their incomes.

Recommendations for MFIs. MFIs should consider making a strategic decision to grow their portfolio of rural and poorer clients by financing productive uses of energy. Key steps for MFIs include:

- Directing innovations in product design (both financial and technical with an energy company partner) toward rural or “poorest of the poor” market segments;
- Developing clientele strategies, practices and approaches that target these rural or poorest of the poor market segments;
- Bundling product portfolios to make rural loan officers more cost effective;
- Assessing the role of rural and poor clients vis-à-vis the social mission of the institution;
- Finding energy and enterprise development NGOs who can be partners in identifying opportunities to lend for increased productive activities;
- Building additional internal capacity to identify key enterprises in un-electrified areas where a targeted energy investment can fuel economic growth that cascades through the community; and
- Adding some key energy products for commercial use to the standard loan portfolio.

Recommendations for supporting institutions: Supporting institutions can help create a strategic shift towards addressing rural and poorer households. Key steps for them include:

- Providing seed funding for research and pilot tests to support MFIs and their energy company partners in targeting new markets, including more rural, remote, and low-income clients;
- Engaging larger development agencies (e.g., UNDP, World Bank) already involved in energy for productive uses to discover potential entry points for MFIs and their energy company partners;
- Monitoring and keeping the MFI community apprised of government regulations relating to key energy investments, including VAT and other taxes, subsidy and tax-incentive programs, and co-financing opportunities; and
- Advocating for low VAT and other government support for energy investments so that energy companies can reduce product costs.

2. Develop more effective working relationships with government and donor programs.

Box 4.2 Coordination with Government and Donor Energy Programs

KEY BENEFITS TO MFIS

- MFIs can benefit from capacity building and technical assistance that usually accompanies government and donor-led programs.
- Government and NGOs can assist with marketing and promotion of MFI and its energy lending activities.
- MFI clients benefit from energy subsidies otherwise only available to wealthier population segments.
- Minimize potential market distortions.

RISKS AND CONCERNS THAT MFIS MAY FACE

- Some microfinance institutions do not wish to participate in government programs for fear of “corrupting” an essentially market-driven approach.
- Working with government programs can be time-consuming and bureaucratic.

Government and donor programs for rural electrification and energy access are a growing part of the energy landscape in Latin America. These programs can offer benefits ranging from consumer subsidies to technical quality and quality assurance. For example, in the Dominican Republic, the co-operative Mamoncito found that most rural clients would not be able to afford solar—even with a microfinance loan—without subsidized interest rates. Despite their good intentions, these same government and donor programs can also create severe disruptions and distortions in the market for energy products and services.

Currently MFI associations are not taking a pro-active role in engaging with these programs, including World Bank and donor-sponsored rural electrification programs, regional energy access initiatives, etc. Many of these programs in Bolivia, the Dominican Republic, Nicaragua, and Honduras have explicitly incorporated MFIs in their implementation plan, but in many cases, the MFIs have not taken the initiative to participate in the design of these programs. This is a problem because often MFIs face market constraints that do not occur to policy planners. For example in Nicaragua, MFIs requested that they be able to offer the energy subsidy to all of their clients, even those outside the project area. The World Bank and Nicaraguan government planning team agreed to the demand, which facilitated greater development of the MFI’s energy portfolios. On the other hand, Banco ADEMI in the Dominican Republic found that a government-led technology “give-away” program dried up the commercial market for modern energy and loans for energy-related activities. MFIs need to keep abreast of government-initiated energy programs, co-ordinate dialogues between MFIs and program planners, and advocate for sensible policies.

Recommendations for MFIs: MFIs should look for opportunities to improve the way they engage with government and donor-led energy programs. Key steps for MFIs include:

- Being aware of existing grid penetration and future grid extension plans in areas of operation; and
- Identifying donor and NGO energy programs and engaging at the local level to understand the programs’ potential linkages with microfinance.

Recommendations for supporting institutions: Supporting institutions can help improve the way MFIs are incorporated into government and donor energy programs. Key steps for supporting institutions include:

- Encouraging the participation of umbrella microfinance organizations as a stakeholder group in the design of energy access and electrification programs; and
- Encouraging national utilities to explore possible partnerships with MFIs.

3. Develop strong relationships with reliable energy partners and build internal technical capacity.

Box 4.3 Strategic Partnerships With Energy Companies and Internal Capacity Building

KEY BENEFITS TO MFIS

- Minimize administration costs and staff time dedicated to energy lending
- Reach more clients with flexible loan payment methodology

RISKS AND CONCERNS THAT MFIS MAY FACE

- MFI takes on responsibilities beyond natural capacity, possibly lowering product quality and damaging reputation

Several experiences in Latin America highlight successful strategies for partnerships between energy partners—either NGOs or for-profit energy companies—and microfinance institutions. A key finding of this review of energy lending in Latin America has been that trends in energy lending appear to be driven primarily by energy companies, and in some cases by energy-focused NGOs, that have brought in MFIs to finance opportunities they developed. In the case of Soluz in the Dominican Republic and Honduras, the energy company has provided its own lending program to finance the energy systems.

As seen by the variety of global experiences detailed in this report, successful partnerships can take different forms. The full spectrum of partnership options between MFIs and energy companies should be considered in devising an approach to energy lending. In some special instances, it may make sense for an MFI to establish a separate energy division that employs dedicated full-time technical staff, holds an inventory of energy products, and trains clients on the use and maintenance of products without an external energy partner. In most cases, an energy company would play a key role in the partnership, with responsibility for product installation and maintenance, while the MFI would make loans and handle loan payment collection. In some cases, the energy company may even handle the microfinance directly.

The cornerstone of an alliance with the energy company partner is a written agreement, sometimes in the form of a memorandum of understanding (MOU), to clarify a number of issues, such as marketing activities and responsibilities, client training, after-sale service, product buy-back (in cases of loan default), and training of loan officers. Agreements should be developed based on an understanding of the strengths and weaknesses, incentives, and motivations of both the MFI and energy company.

Recommendations for MFIs: MFIs should carefully manage how they partner with energy companies. Key steps for MFIs include:

- Understanding the range of partnership approaches by visiting MFIs and other institutions that have had successful energy partnerships;
- Working with energy-partners to find ways to reduce the risk surrounding energy investments;
- Being flexible in piloting energy lending models; and
- Investing in internal capacity so that staff feel ownership and mastery of the energy product.

Recommendations for supporting institutions: Supporting institutions can help MFIs to enter into successful alliances with energy companies. Key steps for supporting institutions include:

- Creating innovation funds to support partnership development between MFIs and energy companies as well as efforts by MFIs and energy company partners to tailor energy products and energy financial services to serve poorer clients and productive applications;
- Creating training opportunities to forge linkages between MFIs and energy companies or energy NGOs;
- Supporting MFI technical training; and
- Enabling visits by MFI leadership to observe successful partnerships in other countries.

4. Build awareness among MFI and clients of profit-enhancing energy services.

Box 4.4 Build Awareness Between MFI and Clients

KEY BENEFITS TO MFIS

Awareness can unlock latent demand for modern energy and improve loan officers' ability to market energy products.

RISKS AND CONCERNS THAT MFIS MAY FACE

Over-direction of clients to a particular solution for which they do not feel ownership.

As indicated by experienced energy companies in Bolivia, Guatemala, Honduras, Nicaragua, and the Dominican Republic, end-users across Latin America often are familiar with energy technologies, including solar systems. However, they may not be aware of the income-generating potential of energy applications. This lack of awareness among MFI staff can also prove to be a challenge in scaling up energy-lending activities.

MFIs frequently categorize household energy products, such as solar electric systems, solar water heaters, biogas, improved stoves, LPG, household solar water pumps, or grid connections, as purely “consumer credit” or “luxury assets,” without taking into consideration the impact modern energy can have on income and livelihood. Some MFIs will not lend for this category of product, and others will require collateral or charge high interest rates for such investments.

Like any other product, MFIs will need to sufficiently invest in marketing and promotion of energy loan products. However, in the case of energy, lending officers and key management staff need to have minimal knowledge of the technical options in order to adequately promote the products to clients.

Recommendations for MFIs: MFIs should build awareness among their staff and clients of the profit potential of energy technologies. Key steps for MFIs include:

- Initiating market awareness activities through targeted pamphlets, radio shows, promotional displays in MFI branches, field demonstrations, etc.;
- Relying on energy companies and support institutions, whenever possible, for awareness building that is beyond the technical knowledge of MFI staff; and
- Targeting highly visible businesses and institutions, such as market vendors, community centers, etc., as the initial clients for energy-loans to build word-of-mouth promotion and demonstration of products.

Recommendations for supporting institutions: Supporting institutions can help MFIs educate their clients about the profit impacts of energy services. Key steps for supporting institutions include:

- Connecting MFIs to energy access NGOs and programs; and
- Developing standard materials that will help NGOs build awareness among clients.

5. Identify cross-selling opportunities.

Box 4.5 Cross-Sell Energy with Other Products

KEY BENEFITS TO MFIS

- Opportunity to deepen lending relationship with existing client base
- Improve quality of existing business loan portfolio through good energy choices

RISKS AND CONCERNS THAT MFIS MAY FACE

- Too great a focus on cross selling may result in overlooking other opportunities

Latin American MFIs currently lend for a variety of businesses and activities that may offer launching points for energy-related lending. For example, many MFIs in the region lend for the construction of new housing, the purchase of a home, or for household upgrades and modifications. These MFIs could incorporate improved energy services into these housing loans by providing energy products as an add-on or separate option under the home loans category. Potential energy loans include solar electric systems, solar water heaters, biogas digesters, improved cookstoves, LPG starter kits, household solar water pumps, and grid connections.

Many MFIs in the region also offer loan products for mobile phones and other telecommunications services. The use of these products is accompanied by sometimes significant energy expenditures, either through the purchase and charging of car batteries or connection to the electricity grid. There is an opportunity for MFIs to cross-sell these communication products with improved energy services as a “ready-to-use” package which could include a small solar system.

MFIs are also currently lending for energy-related or energy-intensive businesses that could benefit from improved energy services. These businesses include restaurants, bakeries, workshops, light industry, and night vendors.

Recommendations for MFIs: MFIs should consider opportunities to cross sell energy with existing loan categories. Key steps for MFIs include:

- Learning from cross-selling experiences of MFIs in Asia, Africa, and other Latin American and Caribbean countries; and
- Conducting an audit of energy services (current energy sources, uses, costs, future needs, etc.) from a sample group of existing clients.

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