

GREEN MICROFINANCE IN LATIN AMERICA AND THE CARIBBEAN

An Analysis of Opportunities

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ABSTRACT:

The inclusion of environmental criteria in microfinance products to promote sustainable activities, access to clean or more efficient use of energy or to reduce climatic and environmental risk for low-income households or microenterprises (i.e., green microfinance)—is a dynamic and growing market in LAC, with existing and forthcoming opportunities. However, client outreach, clear strategies and institutional buy-in are still limited. Better coordination and appropriate tools, products and strategies need to be developed to achieve the potential of a very promising green microfinance sector in LAC.

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CONTENTS

Acknowledgements	5
Abbreviations and Definitions	6
Regions Considered	9
Disclaimer	10
Executive Summary	12
1. Introduction	14
2. Context in Latin America and Caribbean	16
3. Green Business Opportunities	20
4. Green Microfinance in Latin America and Caribbean: Current Status	24
4.1 Environmental Strategy	24
4.2 Environmental Risk	25
4.3 Green Microcredits	26
4.4 Non-Financial Environmental Services	32
5. Green Microfinance Products in Latin America and Caribbean	33
5.1 Microcredit for Renewable Energies and Energy Efficiency	34
5.2 Microcredit for Environmentally Sustainable Practices and Climate Change Adaptation	42
5.3 Microinsurance for Climate Change and Environmental Threats	48
5.4 The Role of Non-Financial Services: Training, Technology, Partnerships	51
6. Opportunities and Future Perspectives for Green Microfinance in Latin America and Caribbean	54
6.1 Demand in the Near Future	54
6.2 Opportunities to Scale up Green Microfinance	58
6.3 Challenges	61
6.4 Market for Green Microfinance and Opportunities	64
References	65
Appendices	72
Appendix A: Detailed Methodology and Data Collection	
Appendix B: Details on the Latin America and Caribbean Context	
Appendix C: Green Microfinance Evolution	
Appendix D: Green Microfinance Dynamics	
Appendix E: Green Microfinance in Latin America and Caribbean and the Rest of the World	
Appendix F: International Support for Green Microfinance in Latin America and Caribbean	
Appendix G: Examples of Business Models for Green Microcredits	
Appendix H: Financial Non-Credit Green Microfinance Products	
Appendix I: Agricultural-Climatic Microinsurance in Latin America and Caribbean	
Appendix L: Market and Opportunities for Green Microfinance in Latin America and Caribbean	
Appendix M: Institutions Covered in the Study	

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ABBREVIATIONS AND DEFINITIONS

▪ Abbreviations

BOP: Bottom of the pyramid

CABEI: Central American Bank for Economic Integration

CC: Climate change

CCA: Climate change adaptation

EE: Energy Efficiency

ESP: Environmentally Sustainable Practices

FONDESIF: Fondo de Desarrollo del Sistema Financiero y Apoyo al Sector Productivo

GDP: Gross domestic product

GEF: Global Environment Facility

GHG: Green House gases

GLP: Gross loan portfolio

GMFD: Green microfinance dynamics

GMFDI: Green microfinance dynamics index

GWP: Global written premium

IDB: Inter-American Development Bank

IFI: Intermediary financial institution

IPCC: Intergovernmental Panel on Climate Change

LAC: Latin America and Caribbean

MFI: Microfinance institution

MIF: Multilateral Investment Fund

MIS: Management information system

MIV: Microfinance Investment Vehicle

MPCI: Multi-peril crop insurance

MSME: Micro, small and medium enterprise

NBFI: Non-bank financial institution

NDF: Nordic Development Fund

PAYG: Pay as you go

PES: Payments for environmental services

PPP: Purchasing power parity

PV: Photovoltaic

RE: Renewable energy

SHS: Solar home systems

UNDP: United Nations Development Program

▪ Definitions

Renewable energy: Energy derived from natural processes (such as solar, wind, geothermal, hydro and some forms of biomass) that are replenished at a faster rate than they are consumed (IEA).

Energy efficiency: the way of managing and restraining the growth in energy consumption. Something is more energy efficient if it delivers more services for the same energy input, or the same services for less energy input (IEA): efficient ovens, refrigerators, cook stoves, etc. are examples of EE technology. EE can but should not only use RE; it can simply use non-renewable energy more efficiently, reducing the cost for energy and the overall amount of pollution generated.

Climate change adaptation: Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC).

Climate change mitigation: Intervention to reduce the human forcing on the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhance greenhouse gas sinks (IPCC).

Green microcredits: Credits provided to low-income households or microenterprises excluded by the traditional formal financial sector to support use of or investment in RE or EE technologies, CC adaptation or mitigation, or any other activities which directly benefit the environment, such as waste management, recycling, agroforestry, organic production and commercialization, ecotourism, etc. To avoid classifying credits to SMEs as microcredits, the amount of credit should be comparable to the average amount of credit for other microcredits for similar use or investment in the same region, country or geographical area.

Environmental policy: Commitment of an institution to consider possible environmental issues in its activities, and include the environment in its activities, choices, or strategies, with the aim of reducing its environmental impact or promoting more environmentally friendly practices or products.

Environmental risk management: Set of tools, procedures and actions aimed at managing or reducing the environmental footprint of an institution or its clients.

REGIONS CONSIDERED

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama.

Caribbean: Dominican Republic, Haiti, Jamaica, Trinidad and Tobago.

South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Suriname, Uruguay and Venezuela.

Note: For the purpose of simplicity, we include Mexico in Central America for our regional subdivision. Hence every reference to Central America includes Mexico unless otherwise specified. In addition, the Caribbean region consists of only a few countries compared to the other two regions. Most of the MFIs in this region included in our dataset come first from the Dominican Republic and second from Haiti. Consequently, statistical data referring to Caribbean is mainly driven by values related to Dominican Republic, and comparison with other regions and generalizations about other Caribbean countries should be done carefully.

DISCLAIMER

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This study provides a preliminary analysis of the current status and near future opportunities for green microfinance in LAC, as it appeared at the end of 2015. This study is based on the most extensive existing database known at the end of 2015 on green microfinance in LAC, constructed by the authors, who gathered information and future projections on green microfinance from more than 550 MFIs in LAC in the period 2011-2015 (see Appendices A and M for more details). Although the data cannot be confirmed as representative we are confident that it can accurately represent the current landscape of green microfinance in LAC, as it appeared at the end of 2015.

It is important to recognize, however, that the information provided in this study is not intended to be an exact measure of absolute numbers of products, clients or institutions involved in green microfinance, but rather a first estimation. Indeed, green microfinance is still a young field and standards in reporting, terminology, definitions and indicators are not commonly used or accepted by microfinance institutions and supporting organizations. Reporting quality is still weak.

Both misunderstandings and error of reporting can sometimes become an issue, as the authors have observed while analyzing data. We minimized this potential problem by cross-checking information from all available sources, including various surveys, interviews, field visits, literature review, field presence in recent years, and previous experiences in green microfinance.

The aim of this study is to focus exclusively on microenterprises and low-income households and not on SMEs, which are purposely not considered or are excluded from data analysis whenever possible. It is important to recognize, however, that the distinction between micro and small enterprises is not well defined and changes from country to country. This fact introduces some uncertainty regarding what can be understood to be green microcredit. We pragmatically minimized this issue by looking at the volume of credits and including only those green microcredits with an average amount comparable to the average amount of credits for other microcredits for similar use or investment in the same region, country or geographical area. To establish a benchmark, we looked at the MIX Market data and other databases.

A technical statistical note: it is important to observe that we did not assess the significance of various data reported that should be interpreted as averages in the given sample, but in general they may not be representative of the population.

The percentages reported in the text are self-reported by MFIs that chose to respond to one of the surveys or applications. This self-selection implies that there could be a positive bias toward more green institutions (institutions already more engaged in environmental management and concerns may be more likely to respond to the surveys) or institutions could overestimate their actual green engagement for promotional purposes.

Another factor that could affect the accuracy of our results is that some MFIs finance green investment not as stand-alone products but as part of other credit products, and as such we were

unable to report on their actual outreach. In fact, only in a certain number of cases were we able to verify the actual results of green projects, outcomes and outreach.

Some of the high scores (percentages) for green engagement of MFIs in the Caribbean region are probably due to our small sample for that region and the fact that the vast majority of data come first from the Dominican Republic and second from Haiti, while other countries are underrepresented or absent.

In sectorial studies such as the present study, it is normal that larger and more international programs, which are more visible, receive more attention, and there is a risk that more local projects can be overlooked.

In our definition of MFIs, we include any intermediary financial institution that provides financial services to populations and sectors excluded by traditional formal financial sectors. In terms of legal status, MFIs can be banks, NGOs, cooperatives, specialized institutions, non-banking financial institutions (NBFIs), etc. Some of the institutions referred to as MFIs may not deal exclusively in microfinance activities, with only part of their portfolio dedicated to microfinance.

What is considered as green microfinance here does not represent a standard definition or complete vision of the sector but is what the research group was able to identify as green microfinance in LAC.

Executive Summary

Climate change and environmental degradation threaten low-income households and microenterprises in LAC. Reductions in crop productivity and increased costs of traditional fuels are perceived as major threats by MFIs in LAC. Moreover, while some countries show signs of market saturation, rural areas remain underserved by the microfinance industry.

The inclusion of environmental dimensions in microfinance practices and products, i.e., green microfinance, could transform these combined financial and environmental threats into market opportunities: it could increase yield, decrease vulnerability and support more rewarding value chains.

The present study highlights how green microfinance is a dynamic and growing market in LAC, with interesting opportunities, both for today and the future. Of the 553 MFIs analyzed, 183 institutions (26%) from 21 countries report that they have offered during the 2011-2015 period, they currently offer or are developing green products. A range of MFIs (with differing legal status, size, and age) are involved in green microfinance practices, suggesting that the environment can be an opportunity for the entire sector.

In 2015, 33 MFIs reported that they have specifically dedicated products for clean energy or energy efficiency (EE), such as solar home systems, efficient cook stoves and biodigesters, while 32 MFIs have products for environmentally sustainable practices (ESP) or climate change adaptation (CCA), such as diversification of income-generating activities, organic production, recycling and agroforestry. Another 51 MFIs support clients' green investments with non-dedicated credit products.

“Green” is not only products, however. In 2015, 52 MFIs in LAC claimed to have an environmental policy, 63 had environmental risk reduction procedures, and 43 provided environmental training to their clients. We identified 23 innovative agricultural and climatic insurance products; very few, however, are offered by MFIs and approximately 90% of MFI clients and portfolios are still not insured against weather/climate-related events.

The total LAC market for green microcredits in 2014 is estimated at approximately USD 90 million and 43,000 credits. However, most of the green GLP (gross loan portfolio) goes to non-energy related green activities, and only 8% of credits and 4% of GLP go to clean energy. On average 7% of the GLP of each MFI that provides green credits is dedicated to green activities: USD 1.56 million and 815 green credits per institution. However, regional outreach was still low 2015: less than 0.5% of the sector's GLP and credits have a green connotation. Clear institutional strategies and buy-in are still limited. Among the main challenges for green microfinance we find low public support, lack of dedicated funds, and perceived low client demand.

The potential market is quite important, however, with a number of MFIs engaged in green products or strategies and outreach, which have grown since 2012. In 2015 the trend was positive for the following few years, with an estimated market growth between 8% and 25% in volume and from 20% to 80% in number of credits per year. Indeed, MFIs view green microfinance first as a market opportunity and second as part of their institutional responsibility and social mission, good for public image, but also as a strategy for market diversification. Sound partnerships and alliances appear to

be key factors for successful green products. Dedicated funds to support green microcredits are needed to support scaling up the green sector, followed by dedicated subsidies and technical assistance.

Better coordination and appropriate tools, products and strategies need to be developed and successful business models should be explored to overcome the present challenges and achieve the potential of a very promising, dynamic green microfinance sector in LAC.

Table 1: Summary of findings on green product portfolios in Latin America and the Caribbean

MFIs with green products (2011-2015):	183
Total volume of green loans (2014):	USD 90 M
Total number of green loans (2014):	43,000
Forecasted growth after 2015 (annual):	+ 8% - + 25% volume + 20% - + 80% credits

Introduction

The importance of environmental issues in financial and economic activities is increasing worldwide. The newly established UN Sustainable Development Goals and the recent COP21 for Climate Change (CC) in Paris underline the interlinked nature of the environment, society and economy and highlight the importance of the triple bottom line in any financial transaction. In recent years this combination has emerged in the microfinance sector as well, and it currently goes by the name of green microfinance (EDM, 2015).

Worldwide, and in Latin America and Caribbean (LAC) in particular, microfinance institutions (MFIs) and their clients face growing threats from CC and environmental degradation. Increasing competition and market saturation in certain areas push MFIs to look at new markets and products and to reaffirm their social mission. Green microfinance aims to transform such issues into economic and social opportunities. However, lack of information on green microfinance experiences and opportunities presents a major challenge deterring MFIs, investors, and client engagement. The purpose of the present study is to help close this gap in the particular case of green microfinance in LAC and provide sound grounds for its further development.

From actual experiences and programs, green microfinance has emerged with a set of strategies, initiatives and products that aim to integrate the environmental dimension into MFI activities or activities financed for their clients (see Text Box 1 in Section 3 for a detailed definition of green microfinance). Green microfinance is increasingly attracting attention worldwide. For example, there are growing number of conferences and workshops dedicated to it.¹ The increased attention in forums reflects the rise in green microfinance practice. Worldwide, the number of MFIs that report having green microfinance initiatives has steadily grown since 2008. Among the MFIs reporting on their 2014 social performance worldwide² (Forcella and Schuite, 2015; MIX Market and e-MFP, 2015), 19% indicated they have green microcredit products, 34% have environmental risk reduction procedures, and 40% have environmental awareness-raising activities. Impact investors have growing interest in the environmental dimension of their investments. The number of microfinance investment vehicles (MIVs) that integrate environmental issues into investment decisions grew from 65% in 2012 to 79% in 2015 (Symbiotics). Audit and rating agencies have begun to include environmental dimensions in their assessments as well (e-MFP Green Training, 2015).

Despite this positive trend, green microfinance continues to play a minor role in the microfinance sector. MFI's average environmental performance level remains low compared to their social or

¹ Some of the major events held in 2015 on inclusive finance focused specifically on green microfinance: that year Foromic held an event dedicated to green microfinance (GreenForito2015); the annual conference of the NpM (the Netherlands platform for inclusive finance) was dedicated to Green Inclusive Finance, including green microfinance as one of the major actors (GreenNpM2015); and green microfinance was included in recent annual meetings of the European Microfinance Platform (eMFWeeks), etc. We counted at least five events in LAC dedicated to (or containing sections dedicated to) green microfinance in 2015 alone: in Brazil (GreenFGV2015), Chile (GreenForito2015), Colombia (GreenUNEPFS2015), Dominican Republic (GreenREDOMIF2015), Nicaragua (GreenREDCAMIF2015); and probably there are more.

² Around 1,100 MFIs in 2014 as reported in the MIX Market.

financial performance levels, even though it has slowly improved in recent years (e-MFP Green Training, 2015).

Systematic sectorial studies on green microfinance remain limited³, with no in-depth study yet completed or focused in particular on the entire LAC region.

There are various pilot projects and programs (at advanced or closing stage) on green microfinance in LAC, and the existing knowledge needs to be collected and shared to strengthen the sector in the coming years. This study is the first that attempts to meet this objective and to assess the present status of green microfinance in LAC and opportunities in the near future, to provide the broadest and most in-depth picture possible in terms of programs, products, outreach, challenges, and strategies.

Although we provide elements on various dimensions of green microfinance (See Text Box 1 in Section 3), the main focus of this paper is on financial products (including climatic and agricultural microinsurance), and specifically on green microcredits for renewable energy (RE) or energy efficiency (EE) or for environmentally sustainable practices (ESP) and climate change adaptation (CCA). We look at the entire ecosystem in terms of the institutional environment and supply of and demand for green microfinance, but our main focus is on MFIs: their demand for green products and their ability and willingness to provide these to their clients. The idea is that intermediary financial institutions are key links between clients, investors and the potential central actors to gather together suppliers, providers of additional services, and to attract the attention of the various other actors⁴. Moreover, green activities at the MFI level remain one of the least known elements.

³ *There are exceptions (Allet, 2014; Allet and Hudon, 2015; Forcella and Schuite, 2015) at the global level (Forcella, 2013; Forcella and Hudon, 2014), in Europe, (Forcella, Ramirez and Allet, 2015) and in Central America and Caribbean, although databases are limited. Some case studies exist as well, but the annual report by ClimateScope (ClimateScope) dedicates only a few paragraphs to green microfinance.*

⁴ *Because this publication is focused on the financial side of green microfinance, MFIs naturally figure as central actors. However, we do not claim that MFIs have a more important role than other actors. In the next sections we will also comment briefly on alternative models that do not require the presence of an MFI.*

Context in Latin America and Caribbean

In 2014, the total population of the LAC region was 626,270,167 (World Bank, 2015), with an average annual GDP growth of 3.4% from 2005 to 2014, with agriculture accounting for 5% of GDP in 2014⁵. LAC is primarily urban, with only 20.4% of the population living in rural areas, but accounting for a higher instance of poverty. 25% of the population lives on less than USD 1.25/day (World Bank 2015). Poverty in LAC fell from 41.6% in 2003 to 25.3% in 2012, with extreme poverty being reduced by half. Nevertheless, a large portion of the remaining poor have been trapped in chronic poverty, and those just above poverty line remain highly vulnerable (Vakis et al., 2015). In addition, LAC remains the region with the greatest inequalities (Gini coefficient of 0.52)⁶ in the world (IFAD, 2010), and is home to some of the most impoverished countries in the world⁷. The high level of informality stimulates an extremely dynamic microfinance market. At present microfinance services reach nearly 20 million people⁸ (compared to 1.8 million in 2001; Roa, 2015) with an estimated portfolio of approximately USD 40 billion (Trujillo and Navajas, 2015) shared among approximately 1000 regulated and 700 non-regulated financial intermediary institutions.

The enabling environment for microfinance (e.g., government support, regulation, etc.) is quite robust in LAC, with 11 countries appearing in the top 20 of the 2015 ‘Global Microscope’ study (EIU, 2015), and Peru and Colombia in first and second positions. In 2012, however, 250 million adults in the region still had no access to the formal financial sector (Demirguc-Kunt et al., 2012), and concerns about over-indebtedness and credit risk are highest in the LAC region (CSFI, 2014). Recently there was a major crisis in Nicaragua (Bastiaensen et al., 2013; Servet, 2015; ZED, 2015); worries have increased for microfinance performance in Peru (CSFI, 2014); market penetration appears relatively high in Bolivia, Peru, Guatemala, Uruguay and Paraguay (MIMOSA), and recent signs for concern have arisen in Mexico (Rozas, 2014) and the Dominican Republic (Afonso et al., 2015; ZED, 2015). There is a tendency toward increased competition and a supposedly deteriorating risk management culture.

With only 6% of the microfinance portfolio dedicated to agricultural credits in LAC, rural areas present the biggest challenge for outreach (Trujillo and Navajas, 2014). Only 8.6 million entrepreneurs out of a rural population of nearly 125 million people are reached by microcredits in rural areas (MIX Market).

⁵ *There are great disparities in 2014: 20.5% in Nicaragua and Paraguay and 3.5% in Mexico and Chile (World Bank, 2015).*

⁶ *Gini coefficient in 2012 ranged from 0.60 in Haiti to 0.575 in Honduras and 0.541 in Colombia (World Bank), to relatively lower rates of approximately 0.40 in Uruguay and El Salvador.*

⁷ *Ranking according to the United Nations Human Development Index of over 188 countries worldwide: Haiti (163), Honduras (131), Guatemala (128), Nicaragua (125), and Bolivia (119). Some LAC countries, however, do have relatively high human development ranking, such as Argentina (40) and Chile (42) (UNDP, 2015).*

⁸ *Peru is the country with the largest loan portfolio: 4 million active borrowers and USD 1 billion (MIX Market 2014 data). In terms of size, Colombia, Bolivia and Ecuador complete the top microfinance markets.*

Access to Energy

The electrification rate in LAC is high compared with other regions (see Appendix B). Urban electrification rates exceed 90% in almost all LAC countries⁹ while rural rates exceed 80% for many countries¹⁰. However, 23 million people in 2012 were without electricity (IEA, 2014), and grid expansion is forecasted to take decades (IFC, 2013) due to the prohibitive cost of reaching various remote regions that are difficult to access, such as in the Andes or Amazon rainforest.

Households without electricity rely on expensive and inefficient kerosene lamps for lighting (IFC, 2013) and expensive dry cell batteries to power electrical appliances. In 2012, 15% of the LAC population, roughly 68 million people, depended on traditional biomass¹¹ to use for cooking (see Appendix B). Cooking stoves used in rural areas are often quite primitive and have poor combustion efficiency (IFC, 2013), resulting in excessive biomass use and unsustainable forest management, contributing to high levels of deforestation. Many low-income households spend a large portion of their income on these inefficient and unhealthy energy sources (IFC, 2013). Clean energy products and customized financial mechanisms to purchase these products are key factors that need to be addressed in the region according to IFC. The bottom of the pyramid (BOP) market for energy is estimated to be USD 38 billion (PPP) in LAC (IDB, 2015).

In this scenario, the role of microfinance in the RE and EE sectors appears as follows:

The potential market for RE solutions is concentrated mainly in remote and widely dispersed rural areas. This represents a challenge for microfinance and RE technology suppliers located in urban areas, but also an opportunity for new markets, innovation and diversification.

The potential urban market for RE is less obvious, concentrated in areas that have unreliable power and frequent blackouts. Challenges for RE: it is needed in a timely manner and has yet to meet all the energy needs at a reasonable price; meanwhile investment in RE does show to be profitable in the medium term.

EE has a potential market in urban areas, but consumers often need to be made aware in order to stimulate a usually latent demand.

⁹ Except Haiti (44%).

¹⁰ Except in Haiti (8%), Nicaragua (50%), Argentina (61%), Panama (63%), Paraguay (65%), Bolivia (66%), Honduras (75%) and Guatemala (75%).

¹¹ Some countries have much higher dependency: Haiti (93%), Guatemala (64%), Nicaragua (54%), Honduras (51%), Paraguay (46%), Peru (36%) and Bolivia (25%).

Climate Change

With approximately 9% of the world's population and 6% of its GDP, LAC contributed 10% of the global greenhouse gases (GHG) emissions¹² in 2012 (World Bank, 2014) (see Appendix B). Net conversion of forests to other uses was the region's main source of GHG from 2001 to 2010, with LAC contributing 17% of global agricultural (crops and livestock) GHG emissions (FAOSTAT, 2015).

CC strongly affects LAC, with average temperatures increasing from 0.7°C to 1°C since the mid-1970s¹³, and temperature extremes expanding in Central America and most of tropical and subtropical South America. By 2100, CC projections suggest further increases in temperatures of +1.6°C to +6.7°C (IPCC, 2013) and significant shifts in annual rainfall, increasing in southeastern South America, Central America and central-southern Chile. CC projections suggest further major alterations in precipitation¹⁴ by 2100. Shrinking glaciers in recent decades and the resulting changes in stream flow expose rural activities and households to water shortages. The IPCC forecasts that the rural population in poor areas¹⁵ will be affected in the short term by a drop in agricultural productivity (IPCC, 2014). From 2001 to 2015, 98.2 million people were affected by either droughts, floods or storms, causing total economic losses of USD 75.3 billion, with a net increase in extreme events, affected population, and damages since 1971 (see Appendix B).

Deforestation, degradation of land and expansion of agriculture exacerbate the accelerating loss of productive land from CC and threaten the livelihoods of low-income households. Even if LAC remains the most forested and biodiverse of the developing regions (World Bank, 2015; UNEP, 2010), current deforestation rates in the region remain extremely high. LAC's forested areas were reduced by 5% from 2000 to 2013 (World Bank, 2015) and South America is the region experiencing the greatest reduction in natural forest in the world in the last 25 years¹⁶ (FAOSTAT, 2015). Mining, timber extraction, large plantations, and expansion of agriculture and pasture activities threaten LAC forests, biodiversity and clean water. Green microfinance could capitalize on the various environmental programs and policies developed in the region to support sustainable agriculture and CCA (see Appendix B):

Rural microfinance could take advantage of certification schemes (since LAC is the main producer of certified products) for organic or environmentally friendly production. A possible challenge is the potential bias of certifications toward larger producers (Potts et al., 2014).

Microfinance could take advantage of payments for ecosystem services (PESs)—which partially support additional investment costs, reward producers of green activities, and are quite widespread

¹² Brazil, Mexico, Venezuela and Argentina contributed up to 80% of total emissions in the region (ECLAC, 2014).

¹³ Except for a reduction of the Chilean coast (−1 °C).

¹⁴ For example, -22% in northeast Brazil and +25% in southeastern South America.

¹⁵ For example, in Central America, northeast Brazil, and parts of the Andean region.

¹⁶ From 2000 to 2013, Honduras and Nicaragua lost 24% and 18% of their forested area, respectively, while Cuba, the Dominican Republic and Uruguay increased their forested areas by approximately 30% (with internal differences).

in the region—through community-based conservation programs and protected areas. A possible challenge is the current lack of mutual understanding between the worlds of microfinance and conservation-environmental management.

The upcoming establishment of a Green Climate Fund¹⁷ of USD 100 billion per year is clearly an opportunity for the green microfinance market. However, it is not yet clear what investments will be eligible or what the privileged distribution channels will be. MFIs could be part of the “last miles delivery channels” for the BOP and MSMEs where CC effects are greatest.

¹⁷ www.greenclimate.fund/home

Green Business Opportunities

With a mature microfinance sector, significant biodiversity, and high exposure to CC, green microfinance could help transform threats from CC and environmental degradation, market saturation and risk of over-indebtedness into market and social opportunities. Development of green microfinance products and strategies could attract new clients to MFIs, securing their portfolio against risks related to climate or client health, allowing development of new markets, innovation and expansion into rural areas, where competition is lower and energy needs and the need for environmentally sustainable practices are higher. Well-designed green microfinance products could reduce client costs (cheaper energy, more resilient activities, etc.), increase client income (higher yield, better prices, etc.) and attract new funds to the MFIs.

TEXT BOX 1. GREEN MICROFINANCE AND ITS DIMENSIONS

Green microfinance attempts to induce changes in decision-making and behavior of microfinance clients and institutions-either passively (refusing to finance harmful activities) or actively (providing environmentally conditioned micro-financial and non-financial services)-in order to reduce clients' vulnerability to environmental stresses and/or mitigate the impact of their practices on the environment, help reduce financial risk, improve livelihood and/or conserve and restore natural resources (Huybrechs et al., 2015)

An MFI can engage in environmental conservation via three main motifs: responsibility, risk and opportunity. MFIs respond to environmental issues through three main elements (strategies, risk and opportunities) that together form the framework defining green microfinance at the operational level (e-MFP AGENv, 2014):

Strategies: MFIs, as part of a socially responsible financial sector, should be responsible for the activities they finance. With this objective, an MFI can develop environmental strategies such as integrating environmental concerns into its mission or vision, adopting a formal environmental policy, appointing a person to manage environmental issues, reporting on environmental performance, etc.

Risk: Risk can be divided into two sub-sections, active risk which stems activities of the institutions or their clients that could produce negative environmental impact; and passive risk, originates from the vulnerability of client livelihoods and microenterprises to environmental degradation and CC. This risk is transferred to the MFIs as additional credit, liquidity and operational risks. MFIs can define their objectives, strategies and responsibilities to address the internal environmental risk by establishing procedures to reduce their ecological footprint (paper, water and energy consumption; reducing or treating wastes; reducing carbon emissions, etc.), or they can reduce the environmental risks of activities they finance (external risk) by employing an exclusion list, conditioning access to subsequent loans for environmental risk reduction, or raising clients' awareness on mitigation solutions. MFIs can also assess and define procedures and strategies to manage the risk of environmental degradation or CC on client activities and the MFI portfolio by supporting more resilient investments, transferring residual risk through microinsurance, and deciding how, when and where to support client activities.

Opportunities: This refers to the possibility of supporting alternative technologies (such as RE or EE) or practices (such as sustainable agriculture) that could increase client income reduce their costs and risk exposure, eventually linking them to more rewarding green value chains, and support clients in addressing CC. Opportunities could be financial (loans or non-loans such as savings, insurance, etc.) or non-financial (dedicated training, environmental awareness raising, etc.) activities.

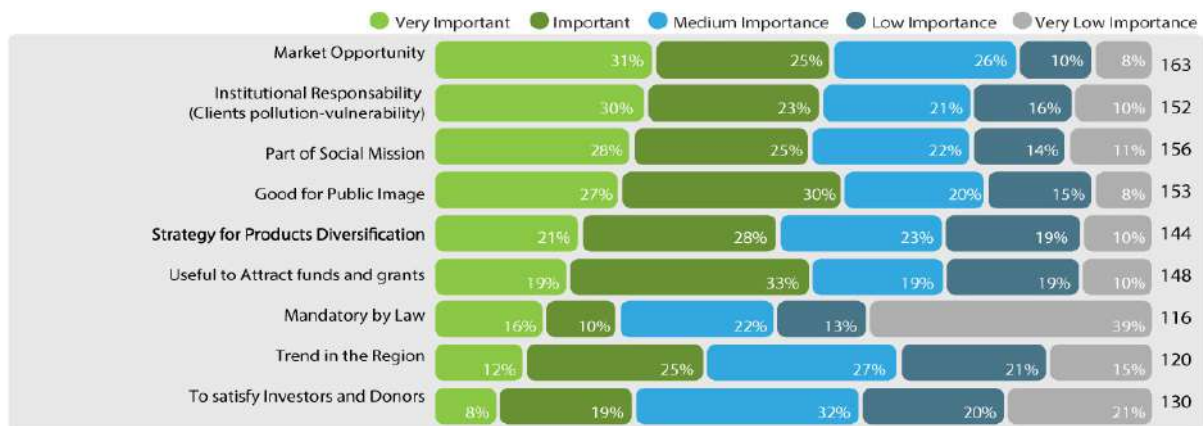
These three elements are clearly related. Institutional strategies provide the framework for environmental risk reduction procedures and the design of adapted products, while some of the products developed on the opportunity side also address environmental risk. An MFI can decide to engage in one, or part of one, of the above aspects, according to its needs and opportunities, or it take an integrated approach and become a green MFI. Others may simply decide that they still have other, more pressing priorities.

Green microfinance does not stand alone, but is transversal to other sectors such as food security, energy access, health, CC adaptation and mitigation, rural development, credit risk management social mission, etc.

In most cases, however, attaining such opportunities is not easy. MFIs must acquire new expertise, define new products and procedures, develop strategic partnerships with local energy providers or rural development organizations with access to dedicated Technical Assistance (TA) and funds, and convince management, loan officers, and clients of the new opportunities. Green microfinance also sometimes involves overcoming existing habits (how clients cook, heat, harvest, etc., and how to assess, disburse, follow-up MFI credits, etc.) and existing relationships among actors (supply chains and distributions, market agreements, etc.). No green microfinance product works in isolation; an appropriate ecosystem and sound partnerships and alliances are essential. Investors, MIVs, donors, consulting and supporting firms, microfinance networks, rural development agencies, local cooperatives or production groups, public regulation, energy suppliers, local markets, and MFIs all have a role to play in providing customized, cost-efficient, and less risky products and supporting an enabling environment for institutions and clients. All these actors have an interesting opportunity to participate. Impact investors can find their impact and return, international climate finance can find interesting delivery mechanisms to cover the “last miles,” local suppliers can find new rewarding markets, etc. MFIs are seen as key actors due to their proximity to clients and their ability to finance small investments keeping credit risk pretty low.

MFIs in LAC perceive green financial products (SurveyM2015) first as a market opportunity, and second as an institutional responsibility for reducing clients’ environmental impact along with their vulnerability to environmental degradation and CC. Green microfinance is also regarded as part of MFIs’ social mission and good for their public image (see Figure 1). If the first experience with green microfinance is successful, it could encourage an MFI to engage in more. For example, Te Creemos in Mexico, after successfully implementing an EE microcredit project with “EcoMicro” (see Appendix F), decided to change its entire business model to support delivery of green products. A number of MFIs mention (SurveyM2015) that green products offer interesting strategies for diversifying their offer and distinguishing themselves in a competitive and sometimes saturated urban market or for exploring new sectors, such as the rural sector, or positioning themselves as pioneers in their countries. Provision of green microcredits is also seen as part of a well-planned strategy to retain existing customers and attract new clients.

Figure 1: Perspectives of MFIs in LAC in 2015 on green financial products (SurveyM2015). The figures on the right indicate numbers of respondents per category.



In Peru, when Fondersurco implemented its RE project “Fondoenergia,” approximately 45% of the clients were new customers who were attracted by this innovative product. In Colombia, Crezcamos has developed a CCA product as part of the “MeBA” project (see Appendix F), which aims to grow its rural portfolio, learn more about clients’ agricultural activities, and reduce investment risk. Emprender in Bolivia reported that their microcredits for solar energy have opened a new market in rural areas, allowing them to develop new agricultural credit products. With such strategic positioning, MFIs hope to develop a better reputation and attract new and cheaper sources of financing. However, few MFIs perceive green products as a real trend in the region or to be in the interest of investors or donors.

Table 2: Major Climatic - Energy Threats Increasingly Affecting MFI Clients (2013)

	LAC	Central America	Caribbean	South America
Reduced crop productivity in rural areas	73.0%	65.7%	87.5%	76.4%
High/rising cost of traditional fuels	62.1%	82.1%	75.0%	45.4%
Unreliable energy	33.2%	35.1%	75.0%	29.3%
Observations	324	134	16	174

Table 2 shows the percentages of MFIs that indicated CC or energy issues are threats that increasingly affect them or their clients. Data source: reconfiguration of data collected in the 2013 ClimateScope survey, which in the last edition reported data on threats to MFI clients. Responses are from MFIs in LAC.

Almost all MFIs in LAC perceive that issues of environmental degradation, climate and energy (despite LAC’s high electrification rate) increasingly affect the institutions (ClimateScope, EcoMicro). Reduced crop productivity in rural areas is reported to be the major issue (Table 2) for their clients¹⁸. Relatively few MFIs perceive access to energy to be an issue (as it is in Africa), while unreliable energy service affects nearly one third of MFI clients, particularly in the Caribbean¹⁹ (75% of the MFIs). High and/or rising costs of traditional energy (diesel, gas, electricity, etc.) are believed to affect more than 60% of the MFIs, with much higher percentages in the Central American and Caribbean regions²⁰.

¹⁸ CC vulnerability/harvest loss has also been reported to be a major issue in other surveys. In the period 2012-2014, of 90 LAC institutions surveyed, on average 83% mentioned it as a significant threat (EcoMicro), while it was also rated as the greatest environmental threat in a survey conducted in Chile in late 2015 at Foromic with participating institutions (GreenForito2015). Loss of assets in urban areas due to environmental hazards is perceived as a lower risk (EcoMicro).

¹⁹ This trend was also confirmed by 90 LAC institutions in the period 2012-2014 (EcoMicro), where energy reliability was an issue for more than 85% of Caribbean MFIs.

²⁰ Similar trends were also observed by EcoMicro in the period 2012-2014 as well as in the survey of participants in GreenForito in 2015, although with fewer observations.

CC or environmental hazards affecting rural clients' production are seen as significant threats in many countries²¹, while, on average, energy issues related to costs and reliability are regarded as important but less so than CC-related threats (see Figure 2).

The Caribbean is the region where MFIs appear to be most affected by both climate and energy issues, while CC and environmental events are perceived as important threats by many MFIs in Central and South America, particularly in northern Central America and western South America. Similarly, energy issues have greater effect in Central and western South America²².

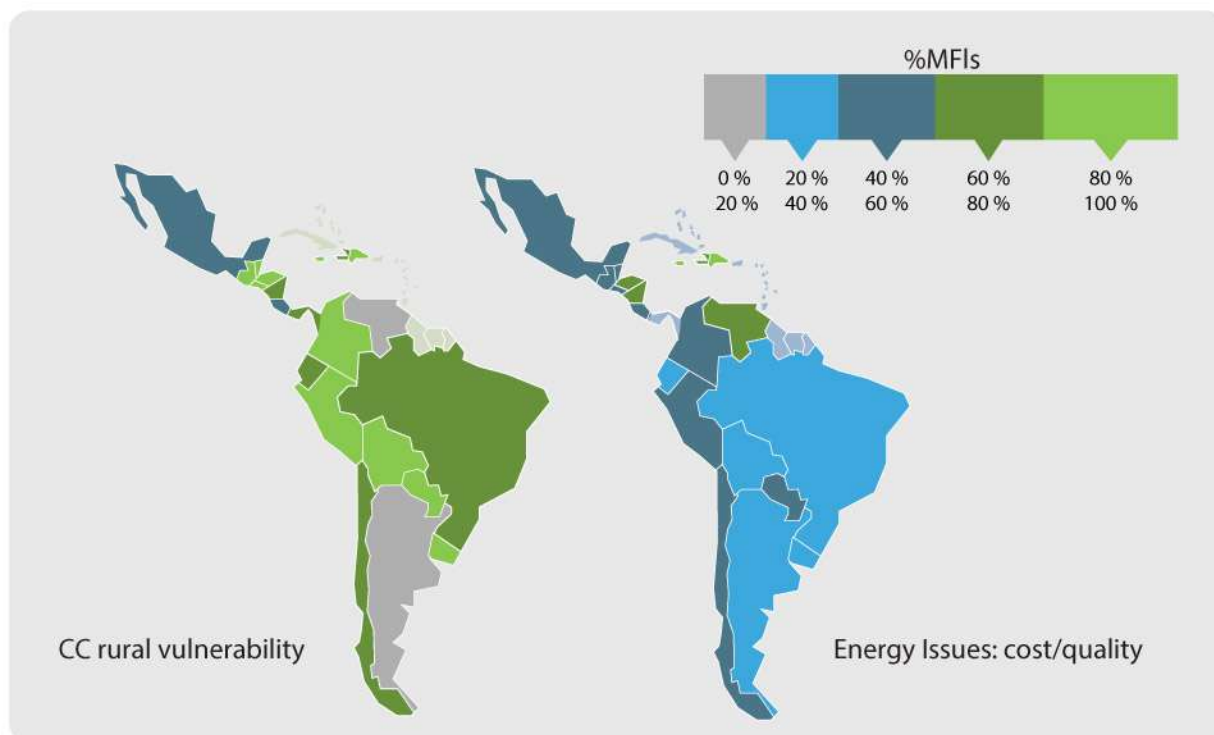
In 2015, the majority of MFIs confirmed that their clients are affected by environmental degradation or climatic events²³ (see Appendix L): 61% of MFIs in LAC: 67% in Central America, 80% in Caribbean and 55% in South America, with an average of 30.4% of their clients affected. These perceived threats indicate a (latent) demand for CCA and ESP products, and relevant but to a lesser degree demand for RE or EE products.

²¹ See, for example, a field study on CC vulnerability and rural microfinance in Brazil (Moser et al., 2016; Forcella et al., 2016).

²² These are perceived (not actual) threats (See Section 2), and hence Figure 2 is a valuable and rather unique source of information. MFI-perceived threats are important in decisions on where to invest resources. In some countries, such as Peru and Colombia, many MFIs perceived the El Niño event to be a major threat to their institutional and client activities.

²³ More than 174 MFIs in LAC (Source: SurveyM2015).

Figure 2: Map on left shows percentage of MFIs perceiving reduced crop productivity as a major threat affecting their clients due to weather conditions or CC. Map on right shows percentage of MFIs perceiving energy issues as threat to their clients. Source: ClimateScope2013



Green Microfinance in Latin America and Caribbean: Current Status

The purpose of this section, which contains the core information of the paper, is to provide a picture of the present status of green microfinance in LAC, with specific focus on green microcredits²⁴. See Figure 5 and Figure 6 and Table 4 and Table 5 for the most important information.

1.1.Environmental Strategy

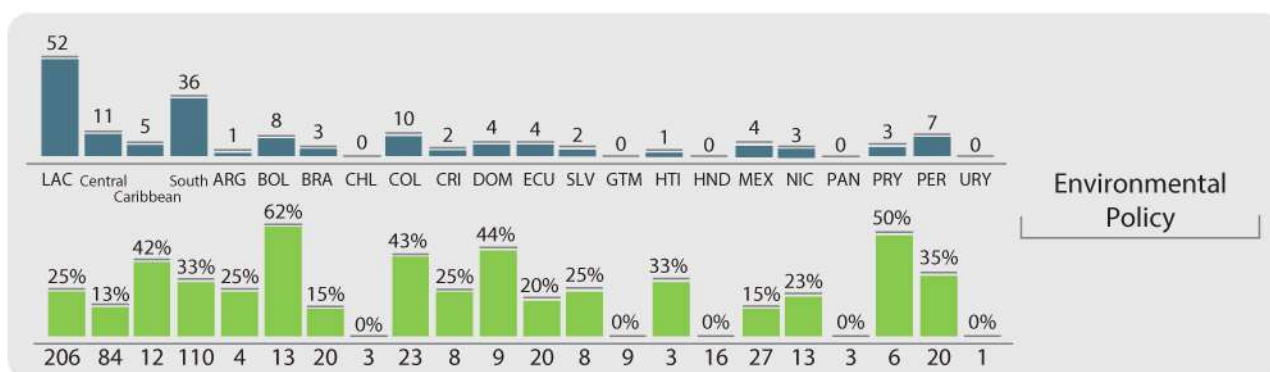
In 2015, 25% of the MFIs in LAC that responded to SurveyM2015 confirmed they have an environmental policy. More than two thirds of the respondents are located in South America, but the Caribbean region²⁵ has the highest percentage of MFIs with an environmental policy²⁶. Bolivia, Colombia, and Peru are the countries with the largest number of MFIs with an environmental strategy (Figure 3).

²⁴ In Appendix E we provide a quick comparison of green microfinance in LAC with the rest of the world.

²⁵ In the Caribbean, only MFIs in the Dominican Republic and Haiti responded to the survey (SurveyM2015).

²⁶ Development of environmental policy among MFIs in LAC was also confirmed by EcoMicro and eMFPMix.

Figure 3: Number and percentage of MFIs with a formal environmental policy in 2015 in LAC: by region (Central America, the Caribbean and South America) and by country. Total number of observations: 206. Source: SurveyM2015



On average these policies were established in 2011 (SurveyM2015)²⁷: so environmental policy is a quite new strategy, in general developed by the larger and more regulated MFIs (mostly banks or NBFIs). A fair number of smaller and less regulated institutions, however, also report having such a policy.²⁸

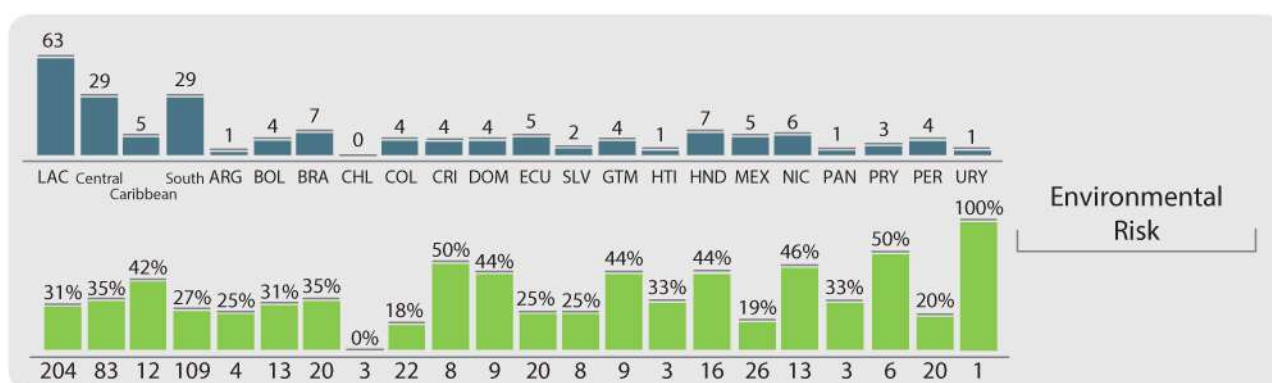
²⁷ MFIs in LAC affirming in 2015 they have an environmental policy (SurveyM2015), based on a sample of 51 MFIs.

²⁸ Details and level of engagement of environmental policies were not assessed.

1.2.Environmental Risk

In 2015, 31% of LAC MFIs responding to SurveyM2015 indicated that during the credit evaluation process, they assess the environmental risk of the activities to be financed (see Figure 4). The number of MFIs with environmental risk management procedures has increased in recent years (see Appendix C). MFIs with environmental risk assessment procedures are found in equal numbers in South and Central America, but the Caribbean region has the highest percentage²⁹. Distribution in terms of countries is quite homogeneous, with Brazil, Costa Rica, Nicaragua and Honduras showing higher concentrations (see Figure 4).

Figure 4: Number and percentage of MFIs in LAC in 2015 that assess environmental risk of financed activities by region (Central America, Caribbean and South America) and country. Total number observed is 204.
Source: SurveyM2015



Most MFIs with environmental risk assessment tools are NGOs; banks and NBFIs are also well represented in the percentages. In 2014, MFIs with environmental risk management procedures on average evaluated 6,252 loans with respect to their environmental risk, corresponding to approximately 50% of the credit per MFI (Table 3)³⁰.

²⁹ In the Caribbean, only MFIs in the Dominican Republic and Haiti responded to the survey (SurveyM2015).

³⁰ This result is from a restricted set of observations. Details on the MFIs' environmental risk management are not assessed. According to field experiences, actual environmental credit risk assessment often results with few cases of systematic and customized implementations.

Table 3: Number of Credits Evaluated for their Environmental Risk in 2014.

	LAC	Central America	Caribbean	South America
Average per MFI	6,252	6,457	3,002	6,632
Total	293,837	122,674	12,007	159,156
Observations	47	19	4	24
% of total approved loans per MFI	51%	40%	107%	50%
% of microfinance industry**	4.5%	8.6%	2.3%	3.5%
Observations	41	18	4	19

** Number of loans undergoing an environmental risk assessment compared with total number of credits by MFIs responding to the survey (SurveyM2015): a total of 6,484,753 in LAC (138 observations), with 1,424,302 in Central America (59 observations), 517,637 in Caribbean (7 observations), and 4,542,814 in South America (72 observations). These estimates are intended to show the extent of the survey and should not be taken as an exact percentage.

There is a wide range of performance on the part of MFIs that did not assess any loan applications in 2014, even if they claim to have an environmental risk management procedure. Meanwhile, in some MFIs, the total number of loans approved was less than the total number of loan applications assessed, indicating the effectiveness of environmental screening in credit disbursement decisions. However, the total number of loans assessed for environmental risk is less than 5% of the total outstanding credits in LAC.

For example, MiBanco in Peru uses the IFC exclusion list, while Integral SAC in El Salvador has tried to use the sector fact-sheets developed by FMO to assess the environmental risk of client activities. In Guatemala, ASDIR worked with REDCAMIF and Mission to develop a loan assessment tool that takes into account environmental criteria and health-related risks.

1.3.Green Microcredits

In this section, we provide the most complete and up-to-date perspective on all accumulated green microcredit activities³¹ in LAC from 2011 to 2015.

GREEN MICROCREDIT INITIATIVES IN THE PERIOD 2011-2015

Based on our information—meticulously collected from all available sources³², including a total of 553 MFIs in LAC in the period 2011-2015 (see Appendix A)—we estimate that 183 MFIs³³ (i.e.,

³¹ Here we consider all types of green microcredits (including for RE, EE, ESP, CCA). See section 5 for distinctions of the various possibilities.

³² (SurveyM2015), (EcoMicro), (eMFPMix), (ClimateScope): seven surveys of MFIs, MIX Market data, documents and program reports, data from major actors in green microfinance, interviews, etc. See Appendix A and M for details.

³³ This number includes MFIs that have disbursed green microcredits in the past (since 2011), but that are unable to provide these green products any longer, MFIs that are presently disbursing green microcredits (2015), as well as MFIs that do not yet provide green microcredits but are presently developing such products as part of a program or as part

33.1% of the MFIs assessed) have already provided, are providing, or are in the process of developing green microcredits. Our database provides the most extensive collection of MFIs with green products to date and presents a careful picture of current green microfinance dynamics in LAC and opportunities in the near future. Figure 5 shows the distribution of these MFIs by country.

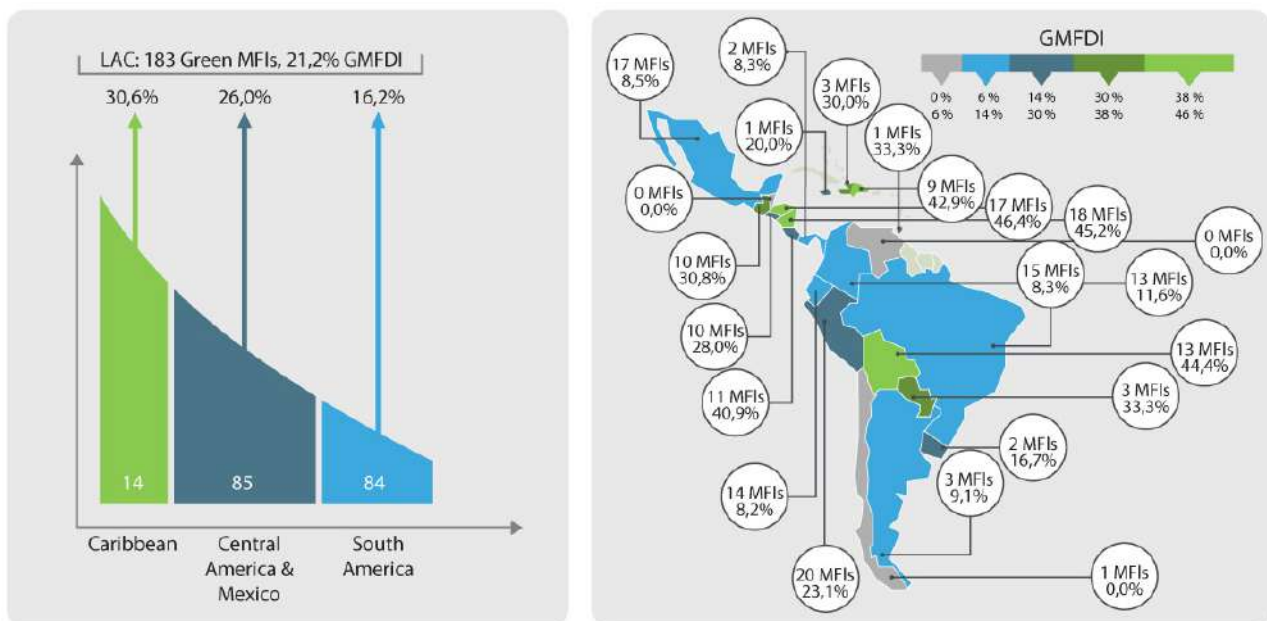
We have developed the Green Micro-Finance Dynamics Index (GMFDI), an index to assess the level of engagement in green microfinance. The GMFDI essentially measures the microfinance sector's level of engagement in green microfinance by country in terms of recent past, present and upcoming designs of green microcredits products compared with the country's potentiality measured in terms of numbers of MFIs. The index ranges from 0% (minimum value) to 100% (maximum value) (see Appendix D for a detailed definition). The average GMFDI score in LAC is 21.1%; scores by country are presented in Figure 5. It is essentially a summary of our study as it reports both the GMFDI and number of MFIs that have developed green microcredits in the last five years³⁴.

Central and South America have roughly the same number of MFIs with green products although the GMFDI is higher in Central America. The Caribbean region has the lowest number of MFIs with green products but the highest GMFDI. Honduras, Nicaragua, and Bolivia have the highest GMFDI, followed by the Dominican Republic and Costa Rica. Although Peru does not have a very high GMFDI, it has the highest number of MFIs with green products in LAC.

of their own strategy. Excluded were MFIs that reported they were planning to establish green products in the future but had not yet started this process and MFIs that explicitly declared they finance green investments with non-dedicated products. Non-financial products, environmental risk and strategy dimensions of green microfinance are explicitly not considered here.

³⁴ *To gain a preliminary view of the market, two factors must be calculated: 1) number of MFIs that have developed green microcredits and the number that are developing green microcredits: to provide a proxy for size of the green microfinance market; and 2) GMFDI: to provide a proxy for intensity of green microfinance market.*

Figure 5: MFIs with green microcredit products in the period 2011-2015: a) cake distribution by region plus GMFDI; b) map distribution of MFIs with green microcredits and GMFDI.



In LAC, MFIs with green microcredits were founded at about the same time and have similar legal status as standard MFIs, while their GLP is slightly larger and number of clients slightly smaller (i.e., average loan slightly larger) (see Table 4)³⁵.

Both large and small MFIs as well as MFIs providing small or large average loans are among the MFIs offering green microcredits. This result indicates that no particular characteristic favors an MFI for engaging in green microcredits, while green microfinance could be an opportunity available to the entire microfinance sector in LAC.

Larger MFIs are reasonably more exposed by their public reputation and have the resources and scale to carry out promotion and development of green strategies and products, while smaller institutions are somewhat more flexible and need to develop new tools to distinguish themselves in competitive markets.

³⁵ Comparison is made at the level of differences between the averages of features of the sample of MFIs with green microcredits (from sample of 183 MFIs) and sample of all MFIs in LAC (from a sample of 553 MFIs). At this level we did not explore the statistical significance of such differences.

Table 4: Feature of MFIs with Green Credit Products (2011 – 2015)

		LAC	Central America	Caribbean	South America
Year founded	Green MFI	1994	1994	1992	1994
	Microfinance	1994	1996	1993	1992
Legal Status	Green MFI				
	Bank	13.7%	9.0%	25.0%	16.7%
	NBFI	27.4%	32.1%	18.7%	24.4%
	NGO	42.3%	43.6%	41.7%	41.0%
	Coop	16.7%	15.4%	16.7%	17.9%
	Microfinance Industry				
	Bank	10.4%	6.6%	10.7%	13.2%
	NBFI	29.1%	42.1%	28.6%	19.9%
	USD	40.6%	37.6%	50.0%	41.7%
	Coop	19.9%	13.7%	10.7%	25.2%
GLP 2014 (USD)	Green MFI	131,297,405	26,074,095	48,587,535	239,838,662
	Microfinance Industry	121,761,028	42,231,068	43,891,095	189,081,772
GLP 2014 (USD)	Green MFI	53.201	12.929	61,279	91.100
	Microfinance Industry	67.787	46.875	36.744	88.163

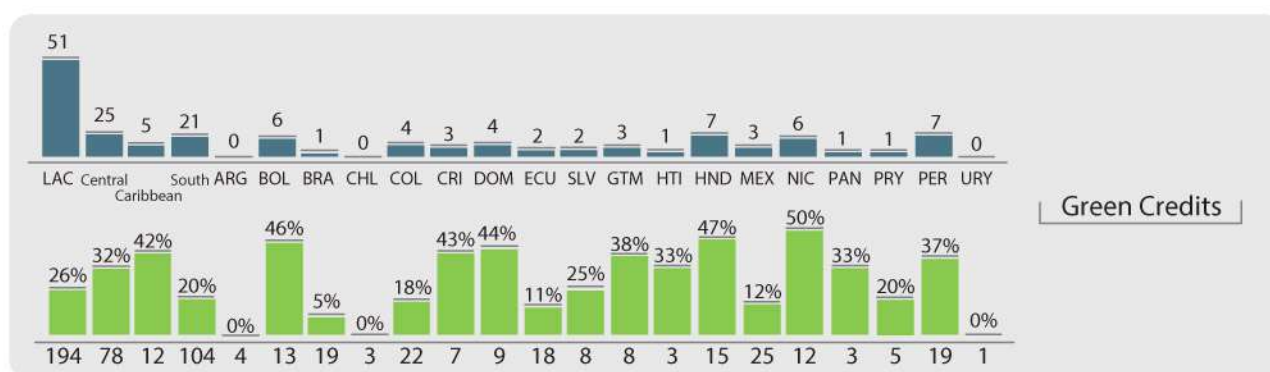
Source: Survey M2015

At the regional level, there are some features that support green microfinance. MFIs with green microcredits in Central America tend to be banks or NGOs and are smaller in size. In the Caribbean region, they tend to be banks and cooperatives, larger in size, and have a greater number of clients. In South America, however, MFIs with green microcredits are more likely to be NBFIs and have larger GLPs.

CURRENT PICTURE OF GREEN MICROCREDITS

Approximately 26% of the LAC MFIs (that responded to the SurveyM2015) stated they were specifically dedicated to green microcredits in 2015³⁶, as can be seen in Figure 6. South and Central America equally shared the majority of MFIs with green microcredits, with Central America having a higher percentage of MFIs disbursing green microcredits. The Caribbean has the highest percentage of MFIs with green microcredits³⁷. Bolivia, Honduras, Nicaragua, and Peru lead the sector in term of numbers and percentages. These statistics confirm the historical trends observed above. The number and percentage of MFIs that reported having green microcredits slowly increased from 2012 to 2014 (see Appendix C). An increasing percentage of MFIs in LAC indicate that their peers or competitors have green microcredits³⁸ (EcoMicro), providing additional evidence of this positive trend.

Figure 6: Number and percentage of MFIs in LAC with dedicated green microcredits in 2015, by region (Central America, the Caribbean and South America) and by country. Total number of observations: 194.



In 2014, the total portfolio for green microcredits reached approximately USD 90 million³⁹ with more than 43,000 clients. The average credit was less than USD 2,800⁴⁰ (Table 5)⁴¹. The actual green

³⁶ Percentage from a sample of 194 MFIs in LAC that responded to SurveyM2015.

³⁷ In the Caribbean, only MFIs in the Dominican Republic and Haiti responded to the survey.

³⁸ In 2012, 2013, and 2014, from samples of 47 MFIs, 23 MFIs and 20 MFIs in LAC, 32%, 44%, 50% respectively reported that they perceived that their peers or competitors had microcredits dedicated to RE, EE or CC adaptation (EcoMicro).

³⁹ The most recent year for which we have precise quantitative data on green microcredits.

⁴⁰ Total GLP in green microcredits and number of credits refer to the MFIs that reported (SurveyM2015) having green microcredits, and not total number of MFIs in LAC. They are the first estimate of the actual outreach of green microfinance in LAC, but they should not be understood as the exact actual total market for green microcredits in LAC. The exact definition of green microcredits in terms of activities financed and amount of credit strongly influence the number reported. Inclusion of small and medium enterprises (SMEs) or even a small fraction of bigger green loans can dramatically change the numbers. To calculate this estimate, we considered only institutions that also provide microcredits, and we retain only green loans with an average loan amount comparable to the average microcredit in the region or country. Green activities are defined in Text Box 1.

⁴¹ In Table 5 volume and number of credits is mainly from MFIs with specifically dedicated green microcredits. However, a few MFIs that also finance green activities with other standard non-dedicated loans reported on their credit volumes

portfolio for MFIs disbursing green microcredits was on average about USD 1.5 million with 800 clients per institution in 2014 (some MFIs had more than USD 10 million in green microcredits and more than 6,000 clients, while others had a green portfolio of under USD 100,000 and less than 100 clients). On average the MFIs' actual engagement with green microcredits accounted for just over 6% of their portfolio. Nevertheless, the total volume of green microcredits in 2014 represented less than 1% of the GLP and 1% of the microfinance clients in LAC⁴². In the following sections we will analyze the funded activities in detail.

Institutions that disbursed green microcredits in 2015 did not show specific features with respect to the standard MFI in LAC. On average, the year they were founded and their legal status are comparable to the average MFI in LAC, while number of clients is slightly less and GLP slightly larger (i.e., larger average loan) compared to the average MFI in LAC.

Table 5: Outreach of MFIs with Green Microcredits in 2014 in LAC.

	Average per MFI	Total	Observations
Volume of Green microcredits (USD):	USD 1,566,240	USD 90,841,936	58
Number of green microcredits:	815	43,186	53
% of GLP in green products: (volume – USD)	7.8%	0.75%	46
Green microcredits amount (USD):	6.5%	0.67%**	40
	2,780	-	50
<p>*Total volume of Green microcredits for MFIs green credits (58 observations) out of total GLPs of MFIs participating in the survey: USD 12,079,667,687 (148 observations); ** Total number of Green microcredits of MFIs with Green credits (53 observations) per total number of credits of MFIs participating in the survey (138 observations): 6,484,753.</p> <p>Source: SurveyM2015</p>			

and number in SurveyM2015, and so they are also included in Table 5. For this reason, the number of observations is higher in Table 5 than the number of MFIs with dedicated green microcredit as reported in Figure 6 (see section 5).

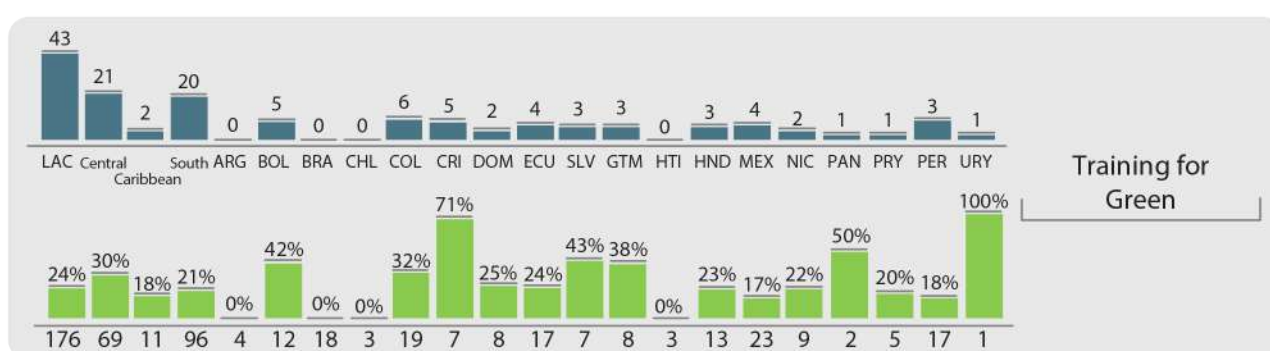
⁴² These are rough estimates of market size that do not claim to be exact (see Table 5). In our sample, volume and number of green microcredits represent total credits disbursed in 2014, and not the outstanding ones, and are restricted to MFIs that responded to SurveyM2015. These facts could inflate the already small percentage, which may be around three times smaller if compared to sector outreach provided in Section 2.

1.4. Non-Financial Environmental Services

For most stakeholders, green microfinance is a new topic, and sound expertise should be built and awareness raised. MFI clients need training in order to understand how to use new technologies or implement environmentally sustainable or more CC- adapted activities.

In 2015, 24% of the MFIs in LAC responding to SurveyM2015 reported that they provide some environmental training to their clients (see Figure 7). At the regional level, Central America appears to be more engaged in client training. At the country level, MFIs in Bolivia, Costa Rica and Colombia are more likely to provide such environmental training to their clients.

Figure 7: Number and percentage of MFIs in LAC that provided training to their clients on green technologies or sustainable practices in 2015: by region (Central America, the Caribbean and South America) and by country. Total number of observations: 176. Source: SurveyM2015



On average, in 2014 these MFIs spent USD 36,165 per institution on environmental training for their clients, for a total amount of USD 1,301,995,⁴³ mostly in Central America. For the majority of MFIs (58%), such training is linked directly to microcredits or other financial products, while the remaining MFIs (42%) also provide environmental training to their clients independent from their financial products.

On average, MFIs that provided green training in 2014 are similar to the average MFI in LAC in terms of the year they were founded and size, with slightly larger GLPs and slightly fewer clients (i.e., higher average loan). The most common legal status is NGO (almost 60% of the sample), although a significant percentage of banks offer this service.

A significant number of MFIs in LAC also claim to raise their clients' environmental awareness of their clients (see Appendix C).

⁴³ Taken from a sample of 36 MFIs of the 43 that confirmed having training activities on green technologies or environmental practices for their clients.

Green Microfinance Products in Latin America and Caribbean

Green microcredits can be divided into two main sub-groups, according to use of funds⁴⁴:

- Microcredits for RE or EE are dedicated to providing access to renewable energy technologies (e.g., solar panels, biogas digesters, solar water heaters, solar water pumps, etc.) and/or support for use of energy efficient devices (e.g., improved cook stoves, efficient refrigerators, house insulation, etc.). They can be for both productive and consumption use.
- Microcredits for ESP or CCA are dedicated to promoting environmentally friendly practices in both agriculture (e.g., organic agriculture, agroforestry, silvopastoral practices, etc.) and other businesses (e.g., recycling, solid waste management, ecotourism, etc.) and also to support customers in addressing CC and environmental risk (use of ecosystems to improve resiliency, adapted seeds and practices, access to water, diversification of income-generating activities, etc.).

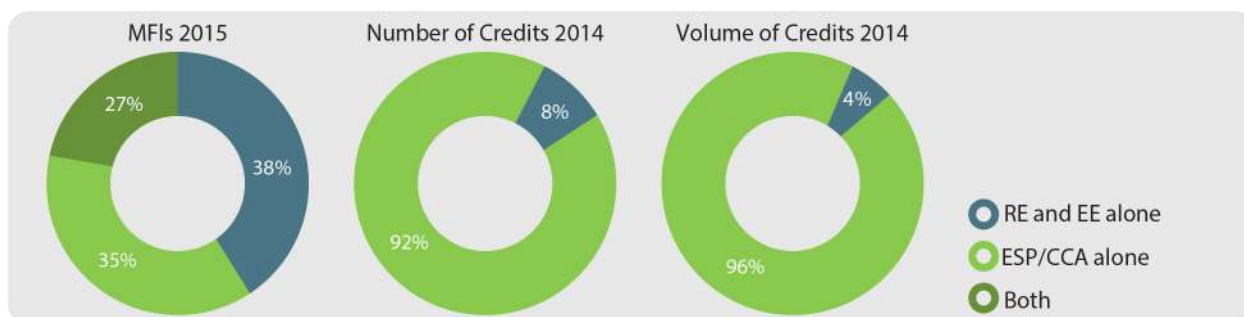
MFI's can finance these green investments in two main ways. The first is to develop a credit product especially designed for this objective (i.e., clean energy, CC adaptation, sustainable agriculture or other green activities) with defined conditions, a repayment period, etc. (we call this option “specifically dedicated credit products”) as part of the MFI’s strategy or part of local or international projects. The second is in those cases where the MFI does not design a specifically dedicated credit product but is aware that some of its clients use its credit products (i.e., working capital credits, productive credits, consumption loans, etc.) at least in part to finance green investments, such as to buy clean energy devices (i.e., solar home systems, or SHS, or efficient cookstoves, among others) or to finance environmentally friendly practices such as organic farming and agroforestry (we call this option “non-dedicated credit products.”) We will see that it is important to consider the second possibility in order to gain a clear picture of the green microfinance market.

In 2015, the number of MFIs that provided green microcredits for RE and EE products and for ESP and CCA is almost the same (see Figure 8), with nearly a quarter of the respondents providing both (SurveyM2015). In terms of total number of microcredits or volume disbursed in the region, however, the ESP / CCA category exceeds RE / EE in outreach (see Figure 8, 2014 data)⁴⁵. Although the two categories present similar results in terms of number of MFIs involved in green lending, numbers of clients reached for ESP or CCA exceeds those reached for RE or EE in LAC.

⁴⁴ *The target of these loans is not always easy to establish. We base our assessment on two facts: the institution providing the loan has microcredits products and the green loans provided have an amount comparable to the average microcredit of the institution. However, a more precise operational definition would be useful. If we broaden the definition, the numbers can change significantly (see discussion below in Section 5.1).*

⁴⁵ *Verification of the actual green component for ESP or CCA loans is more complicated than for RE or EE, where it is enough to check for a product purchase, and MFIs could also tend to identify as “green” some activities that actually belong to related categories, such as agricultural lending. Although we attempted to control this factor, the importance of ESP or CCA products over RE or EE products could be overestimated.*

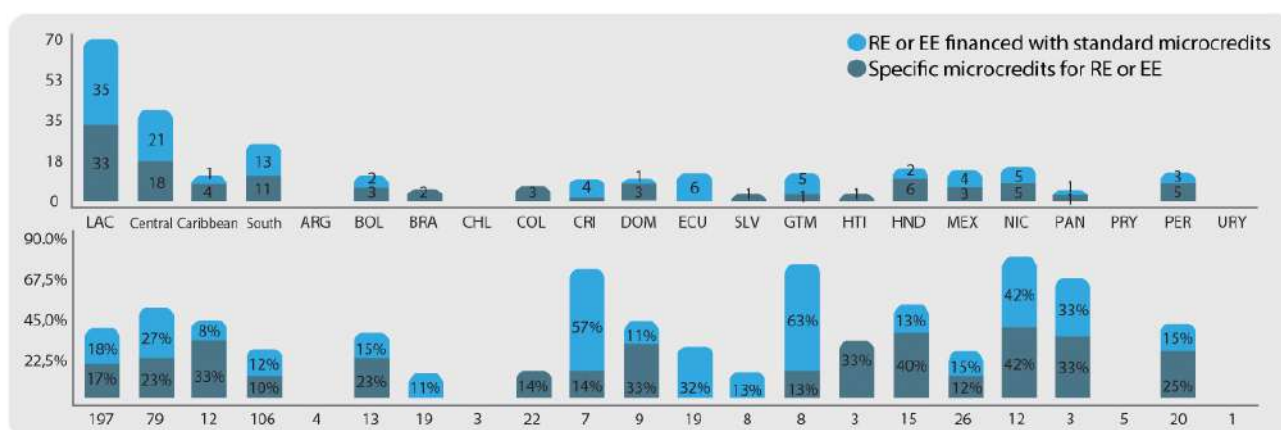
Figure 8: Distribution of green microcredits in 2015. Source: SurveyM2015



1.5. MICROCREDIT FOR RENEWABLE ENERGIES AND ENERGY EFFICIENCY

Almost 17% of LAC MFIs responding to SurveyM2015 indicated they had some specifically dedicated microcredits for RE or EE in 2015 (see Figure 9), while another 18% said they finance RE or EE as part of other non-dedicated products⁴⁶. It is important to take into account this indirect financing for RE and EE, since it appears to represent half of the potential offer in LAC. Central American countries report greater dynamics in RE and EE. MFIs in Bolivia, the Dominican Republic, Honduras, Nicaragua and Peru indicate they engaged more in RE or EE.

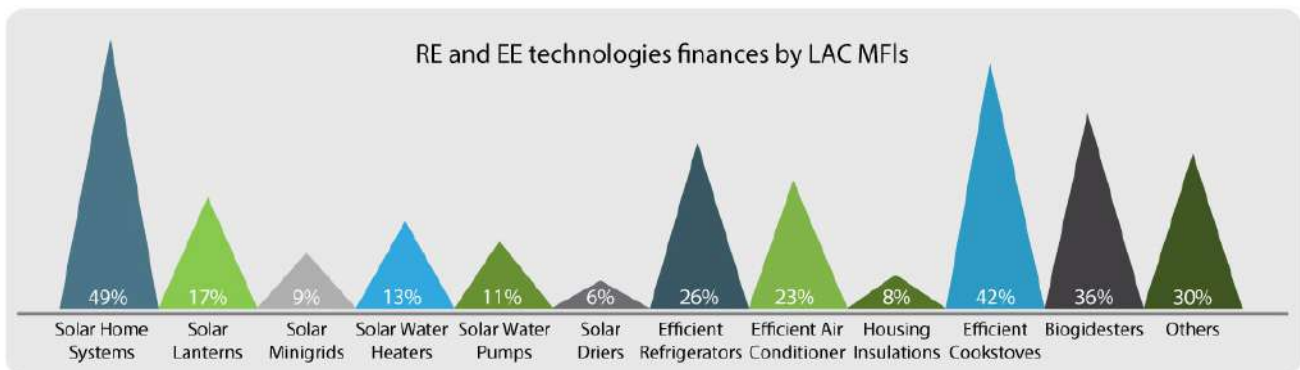
Figure 9: Number and percentage of MFIs that provide microcredits for RE or EE for specifically dedicated products or part of other microcredit products in 2015 in LAC. Source: SurveyM2015



⁴⁶ This result is also confirmed by the analysis of other past data: on average, around 22% of the MFIs in the period 2012-2014 reported in (Climate Scope) that they have RE or EE microcredits (sample: 268 institutions). The distinction between specifically dedicated loans for RE or EE and non-dedicated loans was not assessed.

The technologies receiving the most financing in 2015 were Solar Home Systems (financed by Banco FIE in Bolivia), followed by efficient cookstoves (financed by EDPYME Solidaridad in Peru), and biodigesters (financed by Contactar in Colombia) (see Figure 10). Approximately 25% of the MFIs with green products finance efficient refrigerators and air conditioners. One well-known example is Te Creemos in Mexico. Some technologies more related to income-generating activities or requiring greater investment (such as solar mini-grids, solar water pumps, or housing insulations) are of less interest to MFIs. Fondesurco and Caja Huancayo in Peru, for example, finance solar water heaters and solar driers. Among the “other” products we find LEDs, improved ovens, efficient motors, solar panels, and more.

Figure 10: Percentage of MFIs financing various RE or EE technologies with microcredits in LAC countries. Total number of observation: 53 institutions. Source: SurveyM2015.



On average, in 2015, 77% of the loans disbursed for RE or EE were dedicated to consumption use⁴⁷ (SurveyM2015). The difficulty in achieving productive use of RE or EE technologies was also confirmed by Climate Scope in an analysis of past datasets. Fostering consumption loans could cause some warnings, especially in highly competitive markets and with over-indebtedness as a significant risk in the sector. In the case of RE or EE, concern could be reduced if the products are well conceived. RE and EE solutions can indeed help reduce clients’ energy bill, who can then repay their loans from these energy savings without overburdening their finances.

It is interesting to compare the actual status in terms of delivery of RE or EE products (as described above) with potential demand in terms of what MFIs would like, if possible, to develop. This analysis could identify possible gaps at the levels of supply, funding or TA. It appears that in the period 2012-2014, the highest potential demand for RE and EE by MFIs was for development of EE microcredits for productive use. Approximately 45% of (EcoMicro) respondents asked for TA to develop such products and RE (for households needs); 42% of respondents⁴⁸ also asked for TA to develop such products. Such specific potential demand could be due to the fact that RE solutions for businesses can be relatively expensive and provide only medium-term return on investment, while smaller RE projects, such as small solar solutions, are more attractive for meeting basic needs in areas where there is no alternative, such as in certain rural areas. EE solutions would instead bring economic benefits to small businesses more quickly, for example, to urban populations already connected to

⁴⁷ In a small sample of 30 respondents.

⁴⁸ The percentage corresponds to MFIs applying to EcoMicro and confirming interest in developing microcredit for RE or EE. The percentage is the sum of the MFIs that expressed interest in developing such products for the years 2012 to 2014, out of all MFIs responding to the question.

the grid. However, high potential demand for EE solutions for productive use (EcoMicro) does not translate into actual microcredit provision⁴⁹. In fact, in 2013–2014, only 37% of MFIs (with green microcredits) provided microcredits for EE, compared to 55% of the MFIs (with green microcredits) that provided microcredits for RE for consumer purposes⁵⁰ (ClimateScope). Such differences between potential demand and actual delivery of RE and EE products highlight the existence of possible gaps between supply and demand and investment opportunities for interested actors.

Although the dynamics of and interest in RE and EE seem relatively high, actual outreach remains limited. RE or EE loans account for less than 8% of the total number of green microcredits disbursed and less than 4% of 2014 volume (SurveyM2015) (see Table 5 and Table 6 and Figure 8). On average, an MFI with green microcredits disbursed several hundred microcredits for approximately USD 100,000, with an average engagement of 1% to 2% of its total number and credit volume (see Table 6). Estimating average and total volumes and numbers of loans for RE or EE is a complex exercise and the numbers presented here should be interpreted as preliminary estimates rather than actual outreach⁵¹. If we include not only small loans but also relatively larger ones (to SMEs), the total volume of RE/EE loans disbursed in 2014 climbs to more than USD 15 million in our sample (SurveyM2015). Indeed, some larger institutions or banks, such as ProCredit (Bolivia), Banco Pichincha (Ecuador), Ademi (the Dominican Republic), and Bancolombia (Colombia) have specific lines of credits for RE or EE investments, although these lines tend to be directed more toward SMEs than microenterprises.

Table 6: Outreach of MFIs in LAC with RE or EE Credits in 2014.

	Average per MFI	Total	Observations
Volume of Loan in RE or EE:	101,977*	USD 3,569,178**	35
Number of Loan in RE or EE:	137	3,421	25
% of GLP in RE or EE products: (volume – USD)	1.8%	0.03%***	28
% of microcredits in RE or EE products: (number of Loans)	1.6%	0.05%****	19

* USD 80,236 for RE and USD 30,199 for EE.
 ** Estimated USD 2,808,242 for RE and USD 966,355 for EE.
 *** Total Volume or RE or EE Loans of MFIs with RE or EE credits (35 observations) of total GLP of MFIs participating in the survey is USD 12,079,667,687 (148 observations).
 **** Total number of RE or EE Loans of MFIs with RE or EE credits (25 observations) of total number of credits of MFIs. Participating in the survey (138 observations) is USD 6,484,753.
 Source: SurveyM2015

⁴⁹ The actual low outreach for EE solutions could also be due to the average higher loan amount needed for productive investments (SurveyM2015) (see Table 6).

⁵⁰ Percentage calculated as the average of MFIs reporting data for 2013 and 2014 in ClimateScope.

⁵¹ Some of the main issues are: definition of eligible technologies; definition of credits that could be classified as microcredit (in particular, average amount and target clients); difficulty of MFIs in reporting these loans; difficulty in a determining a representative sample of full population; and ability/willingness to distinguish between MFIs and other institutions providing RE or EE loans, etc.

Using data from previous surveys (ClimateScope), we obtain different estimated outreach for the period 2012-2013, which could be three times higher than the ones reported in Table 6. However, even introducing some RE or EE loans for small enterprises, average GLP per institution for RE or EE microcredits is more than USD 1.5 million and the number of credits for RE or EE disbursed per institution reaches 500 clients. The well-developed electric grid in urban areas coupled with the difficulties in accessing various rural areas (where energy needs remain quite unmet) could partially explain these observations. Analysis of data shows that existing investments for RE (and EE in particular) generally target higher loan amounts and even more for institutions that also have an SME finance sector.

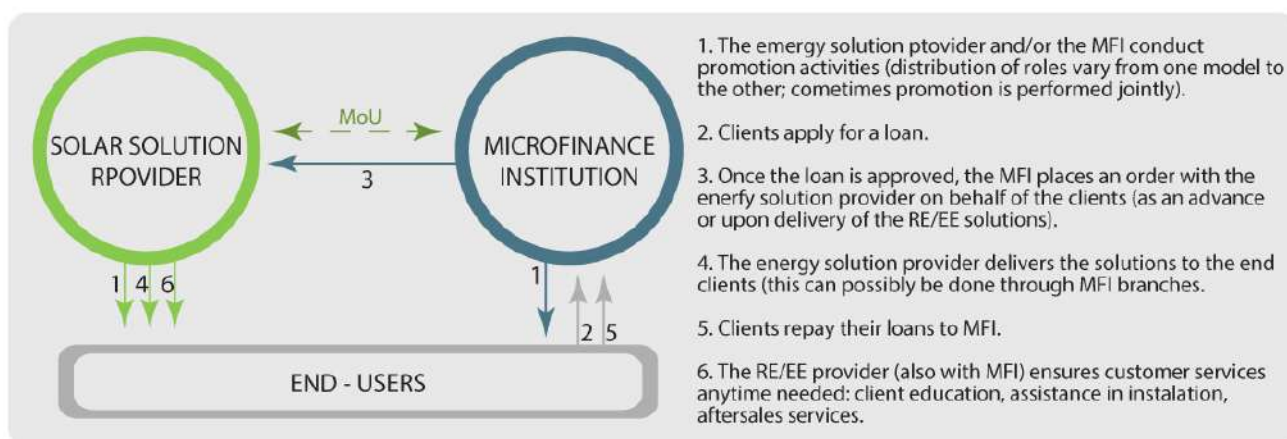
Compared with experiences in Asia, such as Grameen Shakti (Bangladesh), BRAC (Bangladesh), ESAF (India), or XacBank (Mongolia), that have reached between 70,000 and several million clients with RE or EE solutions, LAC does not yet accommodate.

MFIs with such extensive outreach in terms of volume and number of clients. Committed MFIs succeed in disbursing hundreds, or sometimes thousands, of loans. However, many LAC MFIs show interesting results; the dynamics of the sector are promising and interest is growing. The LAC region is host to some very interesting microfinance projects and programs dedicated to RE or EE products, including those supported by EcoMicro, ADA, EnDev (see Appendix F). However, many experiences seem to have been stimulated by pilots, international actors, and subsidies, while more sustainable models or those targeting medium term financial sustainability have only started to be implemented recently (within the last five to seven years), indicating the sector still appears to be quite supply driven. Fondesurco and Caja Huancayo, in an innovative program sponsored by ADA (Appui au Development Autonome, a Luxembourg-based NGO), provided almost 1000 loans and USD 500,000 over three years for solar driers or solar water heaters, among other technologies (see Appendix F). Emprender in Bolivia, since 2004, has reached 643 clients with SHSs and solar water heaters technologies. Integral SAC (in El Salvador) provided 345 loans for photovoltaic systems between 2011 and 2013, while Te Creemos in Mexico closed 2015 with almost USD 1 million in GLPs dedicated to financing efficient refrigerators as part of the IDB program EcoMicro (see Appendix F).

Business Models for RE and EE

To ensure sustainable development of RE and EE for BOP, technologies as well as financial tools need to be developed. To do so calls for intervention of mixed and potentially complementary expertise such as technology plus microcredits⁵². In addition, the two must be coordinated. Partnerships and alliances are often required (see more in Section 5.4).

Figure 11: Example of an RE/EE-financing business model involving an MFI and a clean technology provider.



In LAC, the main business model appears to be partnerships between MFIs and distributors of RE or EE solutions (see Figure 11). In this model, the MFI usually assumes the role of providing information on RE or EE solutions to their customers and arranging microcredits to facilitate investment in these solutions. The supplier has the role of delivering RE or EE equipment and ensuring after-sales services. Precise distribution of some activities—such as promotion, technical assistance, and customer education— may vary from one alliance to another.

In some cases, the MFI assumes the majority of roles, while in other cases the MFI only acts as the provider of credit, while the energy company handles all the other duties. However, in many cases the division of labor between the MFI and supply distributor is not well balanced, which undermines effectiveness and outreach. While an even distribution of duties, responsibilities, common objectives and synergic strategies seems to be a key factor for success, it also avoids having RE or EE microcredits become complex and costly activities for the MFI or the supplier.

The microcredit can be disbursed directly to the final clients, who then purchase the RE/EE technology, or it can be disbursed to the technology provider to assure appropriate investment of the money.

In some cases, customers prefer to be free to choose their own suppliers, as has occurred in Caja Arequipa, Peru. In other cases, customers prefer equipment and providers recommended by the MFI. The context should be analyzed before identifying the most suitable business model:

⁵² By microcredits we mean any kind of financial facility that would allow the final user to purchase the RE or EE technology. Participation of an MFI is not mandatory.

- **Contract with a distributor:** The advantage for the MFI is that it has better control of the use of green microcredit and can ensure that customers have access to quality equipment. The disadvantage can be that in case of problems with the equipment, customers will put the responsibility directly on the MFI. This model works best when: (a) customers are in isolated rural areas where they do not have easy access to equipment for RE or EE; (b) there is an abundance of low-quality equipment on the market and customers trust their MFI to select quality equipment; and (c) the contract with distributors provides additional services to customers that they would not otherwise have (such as home delivery, longer warranty, better pricing, etc.).
- **Free choice for customer:** The advantage here is that the MFI does not put its reputation and responsibility at risk. The disadvantage is that it cannot guarantee that the credit will be invested in quality equipment for RE or EE. This model is most appropriate when: (a) customers are in urban or peri-urban areas where there is easy access to a varying range of equipment and suppliers; and (b) the contract with distributors does not provide any special advantage for customers.

In Appendix G, we provide some detailed examples of actual business models for existing products and alliances in LAC.

The structure of incentives and pricing can vary among business models. Fondesurco in Peru, for example, finances up to the 80% of the cost of the RE/EE technology, with the client contributing the remaining 20%. Contactar in Colombia, which offers microcredits for efficient cookstoves and other RE-EE technologies, can finance up to 100% of the product. The microcredits for RE/EE offered by Fondesurco have the same interest rates as similar loans, while in some cases Contactar can provide a preferred interest rate. Fondesurco motivates loan officers with targets to disburse one to two technologies per month and it attempts to have a softer policy for loan officers who do not meet their other objectives if they provide the required green microcredits. Contactar, on the other hand, rather than fix targets for loan officers, focuses more on training.

While business models with greater MFI engagement in RE-EE products increase MFI project ownership and control, they sometimes have the challenge of reaching sufficient volume to cover internal costs. Leaving the majority of RE-EE roles to the technology company can, in principle, reduce costs, although it can also reduce the MFI's green engagement. Likewise, the MFI faces the challenge of finding a partner/provider able to reach the BOP for promotion and customer services.

Te Creemos in Mexico claims that its strong partnership with local provider Criotec is the key to their success. Mobile technology supports the providers with loan disbursement, and an innovative statistical tool (psychometric credit scoring) can be used to evaluate client repayment ability. When the loan is approved, half the amount is immediately transferred to the provider and the remaining half is transferred when the technology is installed (using photographic evidence). This business model requires considerable training but few staff.

Green microfinance is often about multi-actors with different expertise and languages. Facilitators play a fundamental role in the interactions between the MFIs and technologies suppliers, and between international scientific understanding of CC and actual issues facing households and microenterprises on energy costs, agricultural productivity and extreme weather events.

The “high price” of the RE/EE solution is often viewed as the reason for low uptake. The direct experience on the part of many MFIs shows, however, that actually it is not so much the absolute price that matters, but whether clients perceive added value and benefits by investing in the RE / EE solution. Competence in the selection of equipment, and not only its cost, matters. In Thivillon (2014), it is shown how many actors in Haiti understood that the limited outreach of the improved stove “Recho Mirak” was due to its high price. A more detailed analysis, however, showed that households also used other improved stoves that were as expensive as (or even more than) the Recho Mirak stoves. Demand for Recho Mirak was low because customers found that the quality/price ratio was not good enough. The main criteria used by customers for selecting a cookstove were speed of cooking, solidity of materials, ease of use, cleanliness, and overall aesthetics (modernity).

By contrast, Enersol in Bolivia had the pleasant surprise of finding that the number of rural customers able to invest in solar systems was higher than what the initial market study indicated, even though there were no subsidies on the price of photovoltaic systems. In fact, many rural customers who were initially identified as “unable to pay” for this type of product sought and found means to invest in it because they were convinced of the products’ usefulness in their lives (Allderdice et al., 2007). The perceived quality of a product is extremely important, especially in terms of warranty and quality of technology. A survey conducted with customers in Fondesurco’s pilot program revealed that the main reasons customers gave for buying RE or EE technology were: (1) availability of equipment in the area (40% of customers); (2) possibility of getting a loan (30% of customers); and (3) the price of RE or EE products (15% of clients) (Casal Ribeiro, 2012).

Unfortunately, in general it is not easy for the MFI to select good quality equipment. Technical support plays an important role here in helping the MFI mitigate these risks and promote reliable solutions to their customers. Certifications that would help microfinance identify good quality equipment are still lacking. At the supplier level it is not easy to find a reliable provider that is motivated and has sufficient capacity to work with BOP clients.

Alternative models

In LAC, we also found alternative models for financing RE or EE technologies, in which financial institutions are not involved or play only a minor role:

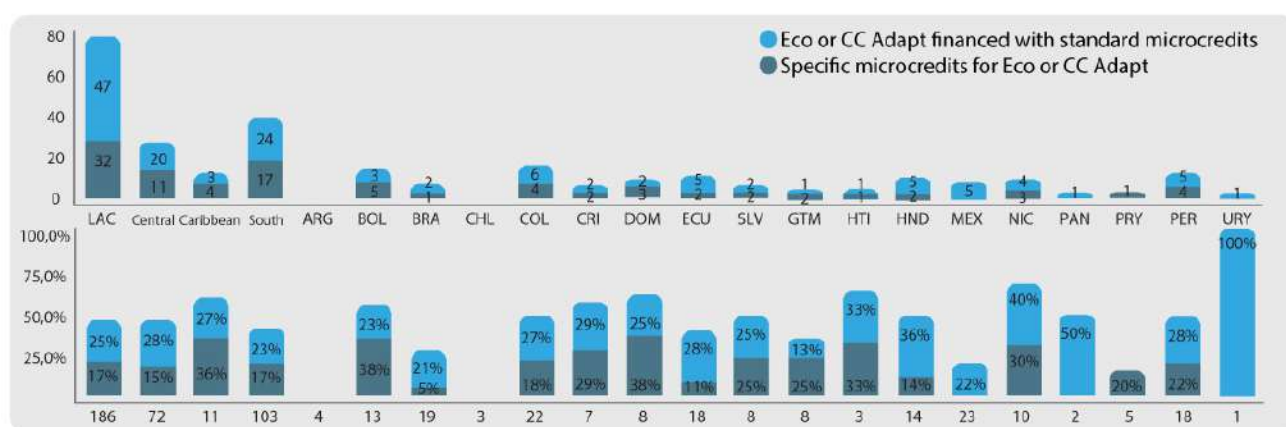
“**Pay-As-You-Go**” (PAYG) is an interesting model; the same technology provider offers the technology for RE or EE and a financial solution with a progressive payment plan for the RE or EE (energy as a service, or leasing), without partnering with a financial institution (Winiiecki and Kumar, 2014; Arc Finance, 2014). Examples of companies that use the model to promote solar energy include: Soluz in Honduras and the Dominican Republic, Kingo in Guatemala, and Lumeter in Peru. PAYG is even more developed in the African continent and India. Such models have the potential to reach scale. For example, Kingo has placed nearly 8,000 solar devices in Guatemala, but there can be some challenges in reaching the “last mile” for delivering solutions to the client, providing after-sales services and recovering the RE solution in case of payment failure. Lack of financial resources to pre-finance the technologies is also a critical challenge for this model.

Green remittances offer another interesting RE-financing model. Pilot programs have been developed in Haiti and Dominican Republic. Klere Ayiti is an innovative remittances initiative to send solar lighting kits to family and friends from the Haitian diaspora, where MFIs do not play relevant role. Key private-sector players include Sogexpress (a leading Haitian money transfer and payment services company) and Western Union Company. Senders from abroad use a dedicated online platform to pre- order the solar lighting system, next they obtain an identification number and then they complete the payment through a Western Union Agent. Within a day of receiving the payment, Sogexpress calls the sender's family in Haiti to schedule delivery of the solar kit. This initiative was supported by the Multilateral Investment Fund (MIF) and USAID, with technical assistance from Arc Finance. From 2012 to 2015, Sogexpress sold more than 43,000 solar lanterns. The green remittances model can also be found in Bolivia, where emigrants living in Spain can direct part of their remittances toward the purchase of solar water heaters through a platform managed by the NGO Gaia in partnership with Banco FIE and Energéica (the technology provider). To date, a total of USD 200,000 sales has been made (SWHBolivia). Anecdotal observations in Haiti show that clients from these remittance programs are different from standard microfinance clients, and green remittances can be regarded as a complementary—rather than competing—model for green microfinance.

1.6. Microcredit for Environmentally Sustainable Practices and Climate Change Adaptation

Non-energy green microcredits, which we call Microcredits for ESP or CCA at the beginning of Section 5, are often neglected in the discussion of green microfinance. In LAC, however, there are some interesting programs and initiatives on this topic and their potential outreach and demand appears to be significant.

Figure 12: Number and percentage in 2015 of MFIs in LAC that provide microcredits for ESP or CCA for explicitly dedicated products or as part of other microcredit products. Source: SurveyM2015.



Products by region (Central America, the Caribbean and South America) and by country. Total number of observations: 186.

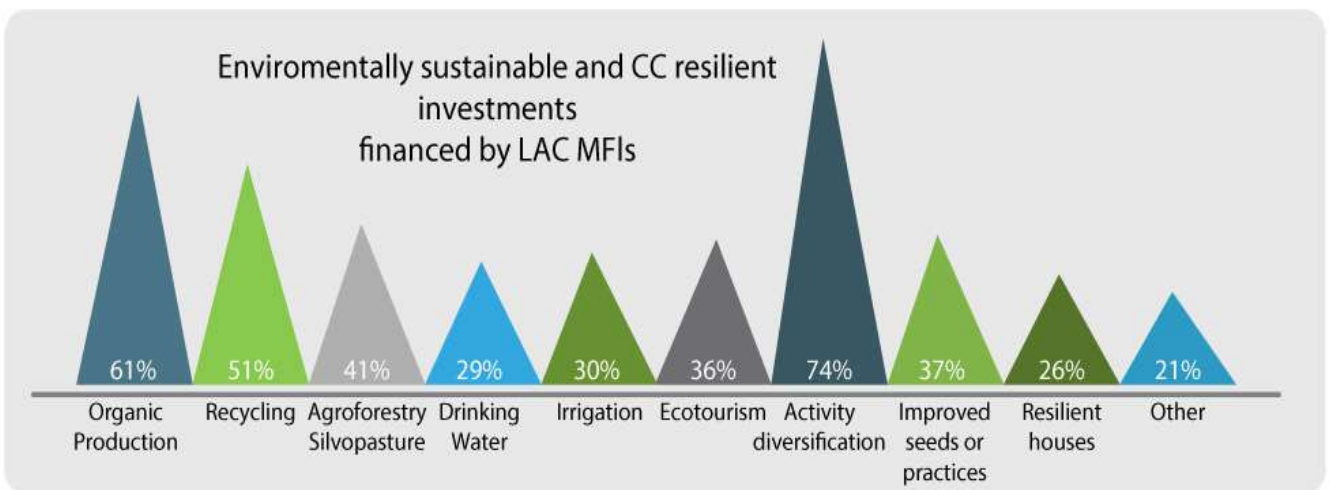
In 2015, approximately 17% of the MFIs in LAC responding to the (SurveyM2015) indicated that they have specifically dedicated ESP or CCA microcredits, similar to the case of RE or EE products (see Figure 12). In addition, in the case of ESP or CCA, the number of MFIs that finance such activities with non-dedicated credits or through other standard products is significant, accounting for 25% of the respondents (more than in the cases of RE or EE). Examples could be MFIs that have some clients who are farm-holders that grow organic products and use agroforestry methodologies, such as coffee growers⁵³. In the case of ESP or CCA microcredits, South America seems to be the most dynamic region, with Central America also contributing an important number of institutions, while the Caribbean seems to have relevant engagement in terms of MFI percentages. Bolivia, Colombia, Nicaragua and Peru show the most important activity, with Honduras and the Dominican Republic scoring high as well.

In terms of products financed, diversification of income-generating activities—such as CCA strategy for the MFI Fondo de Desarrollo Local (FDL) in Nicaragua, organic farming on coffee plantations by Fincafe in Bolivia, Cocaocal in Honduras, Aldea Global in Nicaragua, and Norandino in Peru—is the most financed activity in this category (see Figure 13). Even if income diversification is one of the most important strategies for coping with complex phenomena and reduction in productivity (such as CC), it is difficult to assess how many of these products are actually for CCA (besides those

⁵³ However, this can also be due to an oversized view, rather than strict definition, of what “green” or CC adaptation mean.

belonging to specific products or programs). Organic farming is an interesting environmentally friendly investment that offers the opportunity to participate in more rewarding green value chains. However, sometimes it is difficult to assess the real green value of organic products that are not certified.

Figure 13: Percentage of MFIs financing ESP or CCA activities in LAC countries. Total number of observations from 76 institutions providing ESP and CCA micro credits in 2015. Source: SurveyM2015



In order of importance, the next categories are recycling and waste management (e.g., Banco Fie in Bolivia in agroforestry or silvopasture, promoted by large programs such as Proyecto CAMBio and MeBA) (see Appendix F), improved seeds and practices, and ecotourism. Other activities are pursued as well, such as access to water and healthy housing by Emprender in Bolivia. In the “others” category we find land restoration, seed banks, green houses, hydroponic agriculture, local vegetable gardens, ecological pulper, and pisciculture, etc.

Some environmentally sustainable practices, such as recycling or waste management, are also supported by institutions targeting SMEs in the same region, as in the case of ProCredit Bolivia (Banco los Andes) and Banco Pichincha in Ecuador. Interesting forestry initiatives exist as well. Fundechh in Argentina supports microenterprises involved in the sustainable wood industry with dedicated trainings and credits, targeting 300 micro and small entrepreneurs. The Forestry Investment Program provides support for community-based forestry in Mexico with a credit-related component managed by the MFI Findeca. It supported 60 community forestry enterprises with 4,900 beneficiaries.

Together these initiatives form a vast network of opportunities for ESP or CCA microcredits. However, it is important to keep in mind that additionality and quality of investment in ESP or CCA products can be difficult to assess⁵⁴.

⁵⁴ This group of practices—such as organic farming, agroforestry etc.—is very heterogeneous and easy to attribute to environmental improvements. Income diversifications or adapted seeds and access to irrigation water, however, are more difficult to attribute to a CCA strategy because they could merely represent risk management reduction strategies. Field analysis often shows that the notion of green is broadly applied to certain sets of agricultural credits.

In LAC, microcredits for ESP or CCA appear to have greater outreach than RE or EE in terms of number of clients. On average, in 2014 there were 800 per MFI with green microcredits with a total volume of nearly USD 1.5 million per MFI with green microcredits (see Table 7)⁵⁵. Such microcredits represented more than 6% of the total number of credits and GLP per MFIs with green microcredits that year. However, the overall outreach of the sector is less than 0.5% of the total number of credits financed by the LAC microfinance sector⁵⁶ (see Table 7). This could also be due to the fact that the majority of MFIs regard harvest loss and reductions in crop productivity as major environmental or climatic issues (see Section 3).

Table 7: Outreach of MFIs with ESP and CCA credits in 2014 in LAC.

	Average per MFI	Total	Observations
Volume of Loans for ESP or CCA:	USD 1,646,656	USD 87,272,758	55
Number of Loans for ESP or CCA:	828	39,765	49
% of GLP for ESP or CCA credits: (volume – USD)	7.9%	0.72%*	39
% of microcredits for ESP or CCA: (number of Loans)	6.2%	0.61%**	37

Total volume of ESP and CCA Loans by MFIs with ESP or CCA credits (55 observations) of total GLP of MFIs participating in the survey was USD 12,079,667,687 (148 observations).
 ** Total Number of ESP or CCA Loans MFIs with ESP or CCA credits (49 observations) or total number of credits of MFIs participating in the survey (138 observations) was USD 6,484,753.

Source: Survey M2015

⁵⁵ As in previous similar tables, the numbers provided here, particularly concerning total number of loans or total volume and percentage with respect to the microfinance sector in LAC, should not be interpreted as a precise number, but rather as an estimate for providing a preliminary view on the size of the present market for ESP and CC Adapt products.

⁵⁶ Unfortunately, previous surveys have focused more on the RE and EE sector, while microcredits related to ESP and CCA have received less attention in literature, conferences, and reports, making consistency checks difficult.

Institutions that provide ESP and CCA products are quite different from each other and the number of green credits per MFI runs from less than 50 to more than 5,000. Some institutions are well known; an example of an integrated approach with good outreach and rural sector targeting is the case of FDL in Nicaragua. It is the preeminent MFI in Central America, with more than 12% of its GLP in ESP and CCA microcredits in 2014. These were mainly in agroforestry, with more than 6,000 credits and USD 9,000,000 disbursed. We can also highlight interesting local initiatives, such as Fincafe in Bolivia, a small NGO with hundreds of clients that collaborates with coffee producers for sustainable coffee production. Approximately 85% of coffee producers involved with this initiative qualified for organic certification, and six project cooperatives reached close to 100 families (e-mfp 2015). Even if these initiatives may be small and difficult to scale within the institutions, they could reach scale and be replicated and adapted for other cooperatives dealing with related commodities.

The market for ESP and CCA products is particularly important for the microfinance sector, which, having oversaturated some urban areas, would like to expand and diversify in the rural and agricultural sectors and at the same time reduce its credit risk. Demand for ESP and CCA is highest for MFIs interested in developing green products. According to EcoMicro, 46% of MFIs⁵⁷ in the period 2012-2014 requested TA to develop CCA products.

Environmentally friendly initiatives, sustainable agriculture and CCA are supported by innovative international programs in LAC, such as EcoMicro, MeBA and Proyecto CAMBio (see Appendix F), which contribute to the creation of know-how, expertise and promotion of new initiatives.

Business Models for ESP and CCA

ESP or CCA microcredits, like microcredits for RE or EE, are characterized by alliances and cooperation between various institutions (see more in Section 5.4). While in the case of RE or EE, green products form part of the provision of new clean technologies, ESP and CCA green products foster new and more sustainable practices, and precise definitions are more difficult to establish. However, for RE or EE solutions, some existing models can be distinguished by the roles or engagement of the different institutions participating in the development and distribution of these products.

Dedicated environmental training for clients is often required and can be provided externally by specialized institution or in-house by the MFI. An example of external provision is the alliance of FDL–Nitlapan in Nicaragua for disbursement of green credits for agroforestry and silvopasture. FDL conducts the client financial evaluation while the NGO Nitlapan, which specializes in rural development, assesses client potential and their needs concerning CCA and green investments. It then provides specialized customized training to enable clients to manage the new practices. A similar strategy is employed by EDPYME Solidaridad in Peru, thanks to strategic alliances with national public institutions. MFI Genesis in Guatemala provides an example of the second strategy for microcredits supporting biodiversity. Likewise, Contactar in Colombia offers an example of

⁵⁷ The percentage corresponds to the MFIs requesting EcoMicro to establish their interest in developing green microcredit. The percentage is the sum of the MFIs responding to the question on interest in developing these products for the years 2012–2014.

microcredits for CCA, providing both dedicated training to clients without support from external institutions, while building on their long experience in providing training.

The decision on which strategy to use depends on numerous factors that must be carefully assessed during product development phase. Managing in-house or outsourcing environmental training for clients is a question of strategies and possibilities.

Although establishment of partnerships offers the advantage of assuring the provision of professional training and support in domains unfamiliar to MFIs, it presents the challenge of aligning objectives and coordinating activities between the two institutions.

While in-house provision of environmental training has the advantage of increasing MFI product ownership and is easier to implement, it risks undermining the MFI's reputation if there are unsatisfactory results, it can be very expensive, and it limits the MFI's possibility of acquiring new expertise.

Other characteristics that distinguish existing business models are the presence or absence of a value chain strategy that supports the supply of adapted products like adapted seeds, water tanks, etc., and potential and more rewarding markets for green products, like organic or agroforestry production. This would link clients with collectors, cooperatives or other institutions that could purchase and promote their products. Support for green certification programs is a related strategy.

As in the case of RE/EE (where some investment costs could in principle be counterbalanced by the use of carbon credit off-set markets), ESP and CCA products could receive support from PES programs in the region that reward ecosystem conservation with international, community, or public funds (see Appendices B and F).

In Appendix G we provide detailed examples of actual business models for existing products and alliances in LAC.

Appropriate tools are needed to assess the impact of ESP and CCA microcredits on customers and the environment in order to evaluate successful strategies. When in-depth field analysis is conducted (Forcella and Huybrechs, 2016; Forcella and Lucheschi, 2016), reality often appears to be quite complex and the impact on clients of a green product is nuanced and affected by multiple factors. Field analysis confirms this along with the need for a clear environmental strategy on provision of credit that includes the green added value as an element in decision-making.

Sound decision-making on clients targeted by ESP or CCA microcredit is important for assuring more financially and environmentally sustainable products. Sometimes MFIs' choice of clients can be biased, and green products can be used to support clients they have known for a long time (to ensure project compliance), rather than working with clients with greater needs for adaptation or more potential for reaching better environmental outcomes and economic rewards. This could also lead to trade-offs in terms of the social and environmental bottom line and the question of whether such projects actually reduce barriers to environmentally friendly financing.

According to a study on the business model used by Proyecto CAMBio (BCIE, 2015) and 12 MFIs, it was found that the greatest achievement for IFIs and MSMEs has been the recognition/discovery of green markets. The terms 'green' and 'green opportunities' are often obscure or misunderstood,

and gaining this knowledge can unlock the true potential of IFIs and MSMEs to support environmentally friendly and economically rewarding activities.

Alternative models

Some institutions are exploring interesting alternative models in which natural capital—such as forest cover, planted trees or agroforestry systems—plays the role of non-conventional guarantees since credit becomes conditional on their preservation (Mandel et al., 2009). This idea has been included in several preliminary project proposals in Ecuador (ITTO 2014) and Bolivia⁵⁸.

Presently the outreach of this model is rather limited, however, and some pilot programs were launched but then terminated prematurely (Salinas Argote and Stortelder, 2015) due to issues of program governance and increased competition from subsidized credits for agriculture.

⁵⁸ *Private communication with Advanced Conservation Strategies.*

1.7. Microinsurance for Climate Change and Environmental Threats

Along with other non-credit financial products for green microfinance (see Appendix H), climatic and agricultural microinsurance can play an important role in protecting the rural investments of smallholder farmers against weather hazard, environmental degradation, and CC. It can also foster implementation of higher return on investments, innovation and product diversification (see Appendix I). In 2014 in LAC, total agricultural insurance premiums accounted for 0.37% of the agricultural GDPs⁵⁹ (Iturrioz, 2014), which is a higher penetration rate than in Africa (0.08%) but lower than in Asia (0.55%). Only 24% of the crop area, 19% of the forested area and 28% of the aquaculture are insured; and coverage for livestock is even lower (1.3%). Agricultural insurance is available in 18 LAC countries through almost 80 insurance companies and 15 reinsurers.

The main type of policies sold are for multiperil crop insurance (MPCI), crop-named perils, and index-based insurance⁶⁰. In 2013, total premiums amounted to USD 1.3 billion, of which nearly 60% was transferred to reinsurers, suggesting that the insurance companies are small and exposed to high systemic risk. The regional market is concentrated in a few countries: Brazil, Argentina and Mexico account for approximately 90% of the global written premium (GWP). The market's sustained growth over the last decade seems to have been driven mainly by the high prices of agriculture commodities, the increasing CC risk perceived by private and public actors (see section 3) and increased government support. Governments play an important role in market development. In 2013, total government expenditures in agricultural insurance amounted to USD 630 million, accounting for nearly 50% of total GWP, concentrated in a few countries (Brazil and Mexico alone account for 90%).

Compared to the risk at stake, development of agriculture and catastrophic insurance markets remains limited, which is even more true for the microinsurance sector. In 2013, the GWPs of some form of agriculture microinsurance were USD 372 million, covering nearly 2.2 million people (Micro Insurance Centre, 2015) through 100 insurance companies in LAC. In addition, some form of property non-agriculture catastrophic insurance was provided to roughly 1.2 million people, almost entirely as indemnity-based insurance (99.9%)⁶¹.

In 2015, 85% of MFIs in LAC reported that their clients did not have any form of agricultural or catastrophic insurance⁶², and more than 90% of MFIs had no insurance coverage against weather-related risks (see Figure 14).

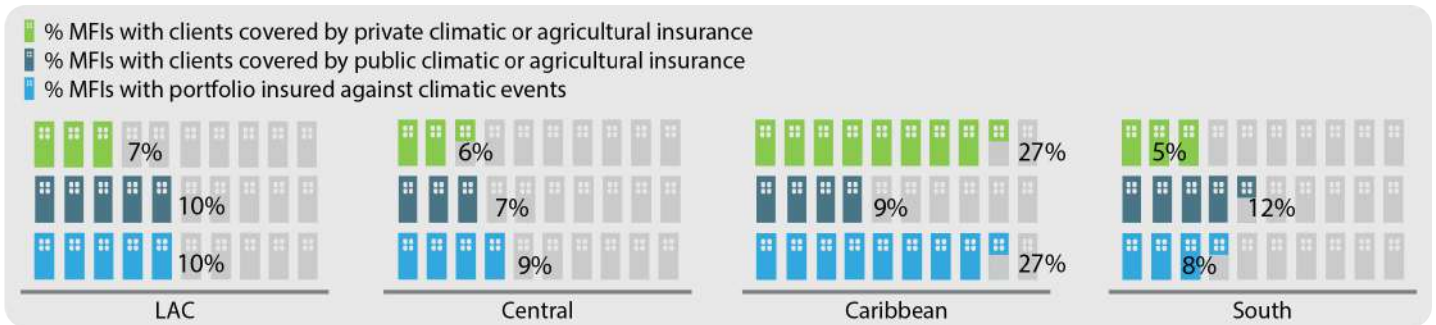
⁵⁹ *The ratio between total premiums and GDP is a proxy of the level of penetration.*

⁶⁰ *Most index-based insurance initiatives are still under feasibility study or in pilot phase.*

⁶¹ *The remaining 0.01% was index-based insurance.*

⁶² *Of a sample of 178 MFIs (SurveyM2015).*

Figure 14: Agricultural and climatic insurance in 2015 for clients and MFIs in LAC and the sub-regions (Central America, the Caribbean, and South America), of a sample of 176 MFIs in LAC, 70 in Central America, 11 in the Caribbean, and 95 in South America. Source: SurveyM2015.



Despite the small absolute numbers, Caribbean MFIs stand out in terms of insurance coverage for both clients (37%) and institutions (27%), confirming the positive potential for green microfinance in the region⁶³.

In 2013, it was estimated that only 17% (10 institutions) of the MFIs surveyed (ClimateScope) offered agriculture microinsurance. Yet the potential demand appears to be great because many MFI clients are affected by harvest lost or reduced crop productivity (see Section 3 and Appendix L). The potential demand by the MFIs requesting TA to develop green products (in this case, crop microinsurance) increased in the last years, rising from 13% (six MFIs) in 2012 to 30% (seven MFIs) in 2013 and then to 48% (11 MFIs) in 2014 (EcoMicro). This potential demand remains unmet as it awaits the development of adapted and efficient products.

Examples of microinsurance can be found in Agrobanco in Peru, which offers an agricultural insurance product developed by La Positiva Seguros and in support of agroforestry; in Fokoze in Haiti, which worked in partnership with MiCRO and Swiss Re (reinsurance companies) and various donors⁶⁴. In the Dominican Republic, Banco ADOPEM will issue insurance products with Swiss Re in USAID’s Climate Index Insurance Program, with the REDDOM foundation. In general, most programs offering microinsurance against agricultural and climate risks are implemented without direct participation on the part of MFIs, which maintain a marginal role. We estimate that around one third of the programs analyzed (23 programs) involve (or plan to involve) MFIs.

Index-based insurance, which pays benefits based on a predetermined index (i.e., rainfall level) without requiring the traditional services of insurance claims assessors (Barnett et al., 2008) has been the most promoted solution (see Appendix I). Table A7 in Appendix I provides an overview of the main index-based insurance projects and programs that have been carried out in the region. Most of these initiatives, however, are closed or still in a feasibility study or pilot phase. Various issues are at stake. In general, the most successful programs appear to be at the macro level in which the government is the insured (the best example is Mexico) and the beneficiaries are the smallholder farmers.

⁶³ In the Caribbean region, data covers only MFIs in Dominican Republic and Haiti since they were the only countries that responded to the survey (SurveyM2015).

⁶⁴ The product was terminated at the end of 2012.

Data quality is key to product development. However, available satellite-based data is more appropriate for macro and meso programs than for micro programs, mainly because of the potential high basis risk.

MFIs can help to scale down macro programs to micro programs and meet the needs of the low-income rural population more efficiently and sustainably. From limited experience, it appears that the client drop-out rate can be dramatically reduced if insurance is bundled with credit. MFIs can indeed play different roles in index-based insurance programs:

- Be the insured.
- Contribute to product distribution at the household level.
- Contribute to a timely distribution of payouts.
- Bundle loan products with the insurance product.

1.8. The role of non-financial services: training, technology, partnerships=

Green microfinance is perceived by MFIs and clients as new in terms of innovation, strategy and social impacts. Expertise should be built and awareness raised both at the institutional and client levels. Partnerships and alliances among various actors and institutions are thus key strategies in implementing green microfinance initiatives. Among the MFIs that confirmed having green products in 2015 (both for RE or EE, ESP or CCA, or other non-credit green financial products) in SurveyM2015, the majority (67%) indicated they had active partnerships with various organizations, while the remaining 33% stated they work alone⁶⁵ (SurveyM2015).

Among the privileged partners⁶⁶ there are local enterprises (see Figure 19), such as EnerSol for the MFI Emprender, Servicios Integrales de Energía S.A. for Banco FIE (both in Bolivia), and Criotec for the MFI Te Creemos in Mexico, supporting the importance of local partnerships; international NGOs, such as ADA for the MFIs Fondesurco and Caja Huancayo in Peru; local NGOs, such as Gaia in Bolivia working with Banco FIE; or the full set of consulting firms for the EcoMicro project, which show the importance of building local and inside expertise-awareness for MFIs and clients. In the public sector, there is Fondesif for the MFI Emprender, which manages the state's role in support of green initiatives; and donors, such as the IDB for MFIs participating in EcoMicro and supporting grants to develop green innovations. Among other organizations we find the CABEI (regional development bank) that supported Proyecto CAMBio in Central America, cooperatives, and other international organizations (SurveyM2015). Some institutions started to work with MFIs network (see Appendix F) as interested actors able to coordinate project implementation and reach scale at the regional level. Examples of these environmentally engaged microfinance networks include Redcamif in Central America and the Caribbean, and Copeme in Peru.

Figure 15: Organizations partnering with MFIs for the provision of green microfinance products in 2015 from a total observation of 150 MFIs. Percentages here refer to a total of 60 MFIs that reported having green financial products in 2015. Source: SurveyM2015.



⁶⁵ Precise numbers should be reviewed carefully, given that some institutions that claimed to work alone in the provision of green products could have actually received indirect or direct support in the past. In figure 15 the total number of percentage do not add up to 100% because MFIs could have more than one partner at time.

⁶⁶ Each organization's exact name should be considered carefully, because MFIs may be unfamiliar with an organization's institutional status.

Multi-stakeholder partnerships appear to be particularly important for filling the various expertise gaps, funding needs, and defining adapted synergies. Some examples highlight the leverage role played by partnerships (see Appendix G).

Among the MFIs in SurveyM2015 that provide green microfinance products to their clients (with dedicated loans or as part of their standard loan offer), only 35% reported providing (either directly or indirectly through partners) incentives to promote their green products in 2015, while 29% said they did not provide any incentive but are planning to introduce such incentives in the near future. Approximately 36% reported that they did not provide incentives in 2015 and do not plan to in the near future (see Figure 16⁶⁷).

In terms of the MFIs that provided incentives, the majority offered dedicated training to clients or reduced interest rates as well as environmental awareness-raising. Incentives to loan officers to disburse green credits are provided by only a few MFIs, and even fewer institutions offer rewards to clients that implement environmentally friendly investments. Examples of incentives used in programs implemented in LAC can be found in Appendices F and G.

Figure 16: Incentives used by MFIs (or their partners) that provided green microfinance products in 2015 (total observation of 168 MFIs). The percentage here refers to 88 MFIs that reported having green financial products in 2015. Source: SurveyM2015.



In 2015, 56% of MFIs in LAC received external support to design and implement their green credits products, while the remaining 44% decided on their own that they wanted to implement green products and developed it with their own resources⁶⁸.

However, the role of external TA for green microfinance remains strong (see Appendices F and G). MFIs involved in financing RE or EE that benefited from technical support mention this support as crucial for them. The possibility of having access to technical support and specialist expertise is also an essential factor for various MFIs in the decision to offer microcredit for RE or EE. MFIs also

⁶⁷ In figure 16 total of percentages add up to more than 100% because MFIs could have more than one incentive.

⁶⁸ This is an important percentage that should be carefully investigated. It comes from a limited number of observations (138 respondents) and the percent- ages refer to the 48 MFIs among them with green products in 2015 (SurveyM2015).

view CC is an extremely complex issue – and it tends to intimidate and overwhelm them. Often, external consultants are required, for example, to examine how CC could impact their portfolio (see Appendices F and G). Information from field analysis, however, indicates that multi-stakeholder projects face the challenge of appropriate program governance and alignment of objectives among the different stakeholders.

1.9. Demand in the Near Future

In recent years, MFIs' interest in engaging in green microfinance practices has grown substantially. During the period 2012-2014, 78 different institutions throughout LAC applied to the EcoMicro project (see Appendix F) to receive TA for developing green microcredit products dedicated to EE, RE or CCA. So, for every five MFIs in LAC, at least one has become interested in engaging with green microfinance. This represents a potential demand of the 20% of MFIs in LAC⁶⁹ with almost double this potential demand in the Caribbean⁷⁰ (see Figure 17).

Figure 17: Number of institutions that applied to EcoMicro in the three years from 2012 - 2014 as a percentage of the average number of MFIs reporting to the MIX Market in the same period in LAC and per region. Source: EcoMicro.



A considerable number of institutions in 2015 confirmed their intention to engage in some dimension of green microfinance in the near future (SurveyM2015) (see Figure 18). Even if exact numbers are likely to be overestimates, potential for and interest in green microfinance is clearly high. Development of environmental policies and environmental risk assessment tools appear to be

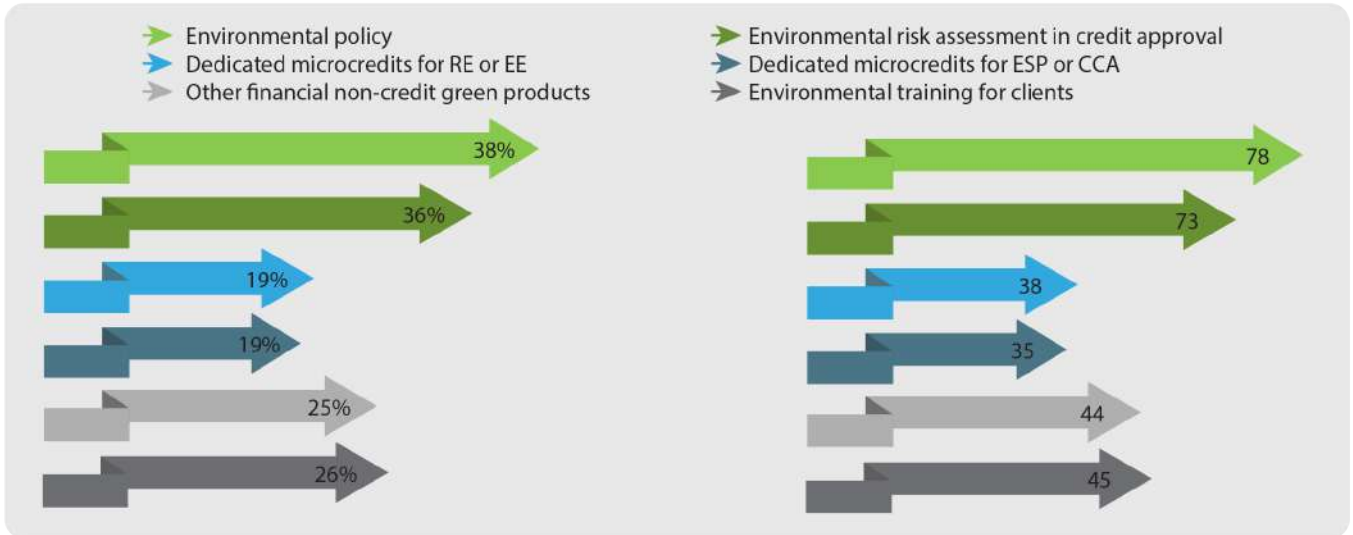
⁶⁹ This percentage and the ones in Figure 17 show the ratio between the sum of all institutions (without repetitions) that applied to EcoMicro from 2012 through 2014, over the average of the number of MFIs that reported to the MIX market in those years. This is a proxy for the green microfinance demand since it was the MFIs that requested development of green microfinance products over the ones that could have asked (measured as number of MFIs reporting in the MIX Market).

⁷⁰ In %, even if the number of MFIs is much lower.

priorities for MFIs, although the number and percentage of MFIs that plan to develop actual green microcredits for RE and EE or ESP and CCA is lower (probably due to the greater effort required).

Figure 18: Percentages (left) and numbers (right) of institutions that did not have any green microfinance products or strategy in 2015 but that indicated they have plans to develop one within one year's time.

Source: SurveyM2015.



In terms of outreach, as of October 2015, MFIs in LAC already offering green microcredits estimated that their green aggregated portfolio could surpass USD 100 million and reach more than 60,000 clients by the end of 2016, with an average green portfolio per MFI of approximately USD 2 million and close to 1,200 clients (see Table 8).

Table 8: Estimated outreach of green microcredits in LAC by end of 2016.

	Average per Institution	Total	Observations
Volume of green Loans	USD 1,954,101	USD 105,521,478	54
Volume of Loans in RE / EE	USD 194,137*	USD 16,471,207**	38
Volume of Loans in ESP / CCA	USD 1,894,793	USD 89,055,271	47
Number of green Loans	1,233	61,645	50
Number of Loans in RE / EE	155#	13,739##	27
Number of Loans in ESP / CCA	1,114	47,907	44

* USD 127,615 of which is estimated for RE and USD 78,995 for EE; Te Creemos excluded from calculation of averages.
 ** USD 4,849,378 of which is estimated for RE and USD 11,621,828 for EE. The majority of EE are due to the growth.
 # Te Creemos excluded from calculation of average.
 ## Te Creemos contributes close to 9,000 Loans.

Source: SurveyM2015

These data, compared with previous years (see Figure 19 and Figure 20⁷¹), show that green microcredits for both RE/EE or ESP/CCA investments have grown and are forecasted to continue growing in terms of GLP and number of credits (SurveyM2015).

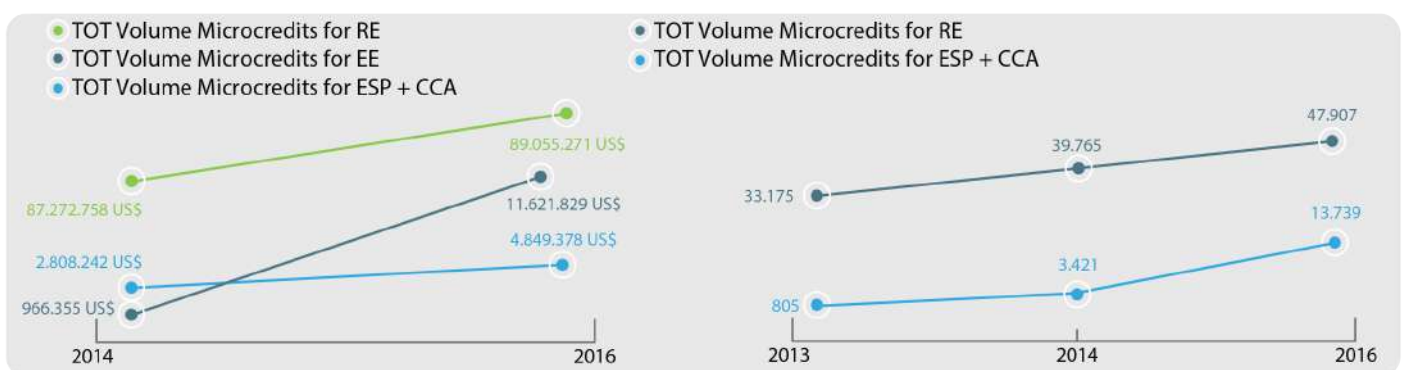
ESP and CCA microcredits are forecasted to account for the majority of LAC’s green portfolio, although RE and EE are forecasted to gain size. However, the EE sector has grown considerably through a single actor, Te Creemos, which is now working to scale up the green offer of EE technologies following its successful pilot project with EcoMicro.

Figure 19: Evolution of average green portfolio per MFI with green microcredits in volume and number of credits for RE, EE, or ESP plus CCA in 2015. Source: SurveyM2015.



Many green products in the region are still pilot projects supported by international assistance. Nevertheless, it is interesting to note that approximately 60%⁷² of MFIs in LAC regard the green products they provided in 2015 to be part of their standard credit offer (SurveyM2015). This fact supports an ongoing consolidation phase of green products supply parallel to various pilot programs presently underway in LAC.

Figure 20: Evolution of total green portfolio in LAC for MFIs that reported having green microcredits for RE, EE, or ESP plus CCA, in 2015, in volume and number of credits. Source: SurveyM2015.



MFIs planning to engage in development and provision of green microcredits for RE, EE or CCA expect to see on average a potential target market for these products of 33% of the portfolio,

⁷¹ In figures 19 and 20 the forecast for the 2016 EE portfolio of Te Creemos (in Mexico) is excluded because it is a big outsider in terms of growth (see Table 8).

⁷² From a sample of 139 respondents.

corresponding to approximately 15,200 green microcredits and USD 24,590,000 per MFI, (i.e., a global target market for RE, EE and CCA products in LAC of approximately USD 1.9 billion and 1.2 million clients.)⁷³ Considering a 20% take-up rate, we estimate that the actual potential market for RE, EE or CCA microcredits in LAC could be approximately 3,000 clients and USD 5 million per MFI, reaching USD 400 million and 200,000 clients in LAC (EcoMicro).⁷⁴

⁷³ Such estimates are obtained from target market reports provided by 78 different MFIs that applied to the EcoMicro project from 2012 to 2014 (EcoMicro). They are the average of the reports from the three-year period 2012-2014. The exact numbers are somewhat imprecise (based on a subsample of the total population and unverified) but should provide a proxy of what the MFIs in LAC considers to be potential target population.

⁷⁴ Based on 78 MFIs responding to EcoMicro. The full category of ESP and CCA was not explicitly assessed by EcoMicro, and only EE, RE and CC adaptation loans were taken into account.

1.10. Opportunities to Scale Up Green Microfinance

In 2015, 75% of MFIs with a green microfinance product indicated that their objective is to grow their green portfolio to reach more clients, while 25% claimed it was not an institutional priority⁷⁵ (SurveyM2015).

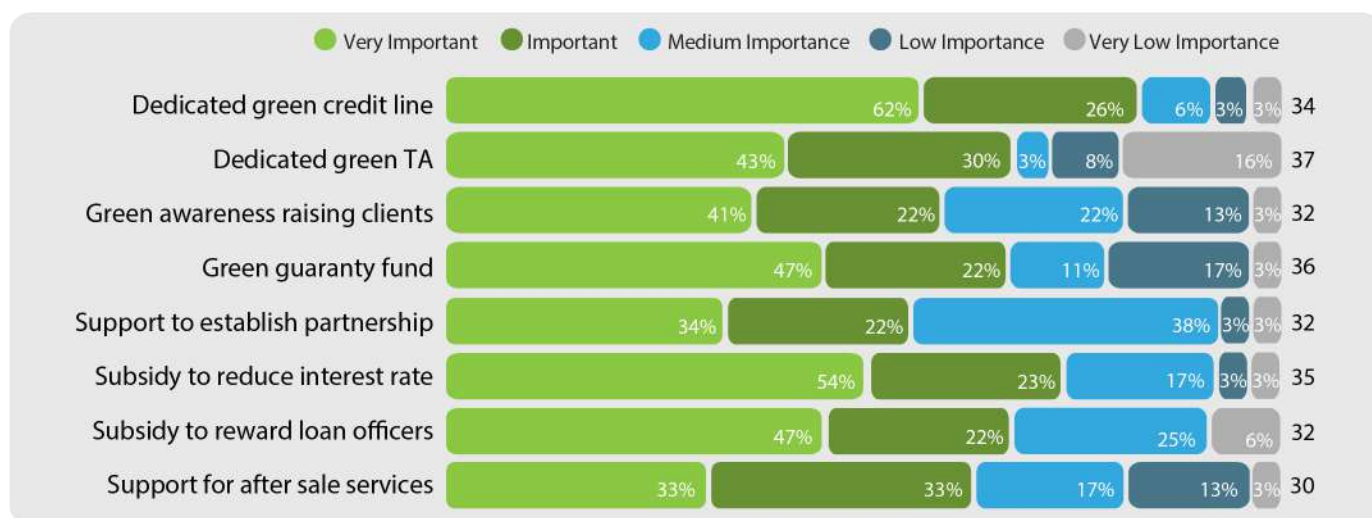
The MFIs that would like to expand their green financial offer indicated that the most important support needed to reach this objective is two-fold: first to have access to specific credit lines by investors dedicated to support green microcredits and second to have dedicated subsidies to reduce interest rates for green microcredits (see Figure 21). Specific funds dedicated to green microfinance are presently lacking, and MFIs that have successfully implemented pilot programs find it difficult to obtain the right financial resources to scale up projects and capitalize on their experience.

Subsidies are always a delicate topic and sometimes are known to waste the market. However, some successful examples of green MFIs in LAC (e.g., Te Creemos in Mexico for EE and FLD in Nicaragua for sustainable agriculture and adaptation to CC) received subsidies to establish and strengthen their products offer. Solar water heaters financed by Te Creemos, for example, were subsidized at the level of 40% by CONAVI (Comisión Nacional de Vivienda), while FDL received subsidies from the GEF as part of Proyecto CAMBIO, allowing it to reward clients and reduce the interest rate (Forcella, 2012). In these cases, subsidies have apparently been successful. Today Te Creemos is targeting USD 9 million for EE in 2016, while FLD has a consolidated green portfolio for sustainable agricultural practices with more than 6,000 clients.

There is agreement that subsidies could help development of the sector but they should be directed more toward supporting TA for MFIs or training for clients, value chains, etc. rather than reducing interest rates.

Recent experiences have shown, however, that financial support alone cannot foster development of the green microfinance sector. More holistic and integrated support is required.

Figure 21: External supports needed to expand the green microfinance offer of MFIs that had green microfinance products in 2015. The percentage from a sample of 38 institutions, total number of respondents per category is reported on the right. Source: SurveyM2015.



⁷⁵ Percentage refers to a set of 51 MFI respondents with green microfinance products in 2015 (SurveyM2015).

Dedicated TA to support development of green microfinance is among the major external supports that MFIs confirmed they need to scale up their green microfinance products (see Figure 21). Subsidies to provide incentives to loan officers to disburse green microcredits or implement other green strategies are also highly valued, along with the possibility of accessing a green guarantee fund to mitigate the risk of such products. Support for after-sale services, development of partnerships (with clean energy suppliers, for example, or other services to increase clients' environmental awareness) are valued as well, although to a lesser degree. Less than 100 institutions stated that in absence of external support, they could manage to expand their green portfolio autonomously. Although this number represents a small portion of respondents, it shows the buy-in of some institutions and a certain level of expertise in MFIs interested in green microfinance.

If dedicated and tailored external support is provided, these MFIs asserted (in SurveyM2015) that within three years they should be able to reach approximately 5,157 clients with USD 3,110,171 per MFI.⁷⁶

In a sample of 169 MFIs in LAC, 44% believe that the provision of financial and non-financial green products can become financially sustainable within two to three years, while 45% are unsure, and only 11% believe that green microfinance will need subsidies for more than three years (SurveyM2015). On the other hand, international actors believe that the time needed for the green microfinance sector in the region to become financially sustainable is somewhat longer, around five to seven years. Financial sustainability of green products could happen faster if appropriate environmental regulations are established at the national level.

At the practical level, however, profitability of green microcredits seems less obvious to MFIs. For example, several projects found that actual demand was not as high as expected, and every RE or EE microcredit required considerable effort and brought little income (interest on small credit). In general, this lack of profitability seems to be due to faulty selection of RE or EE products, as well as to a non-adapted distribution of duties between MFI and partner organizations.

A similar picture can be drawn for ESP and CCA products. It is important to recognize that financial sustainability for green microfinance also depends on the maturity of other key actors and not only the MFIs.

According to the MFIs, financial sustainability is possible with several products, among them solar energy, sustainable or organic agriculture, CCA, and access to water. There is an obvious need to customize green products for the different MFIs, target clients, regions, and strategies rather than attempting to develop a "product fits all" to reach scale. The right balance between standardization and customization needs to be found to support scalable investments.

Some microfinance networks in LAC contend that they could play a supporting role in the scaling up of green microfinance through coordinating the various strategies and members and promoting clients' environmental awareness. In conjunction with the COPEME network in Peru, ADA recently set up a "green unit." Their recent market study identified 22 MFIs in Peru that could potentially develop green microfinance in the future.

⁷⁶ From 36 and 38 observations, respectively (SurveyM2015).

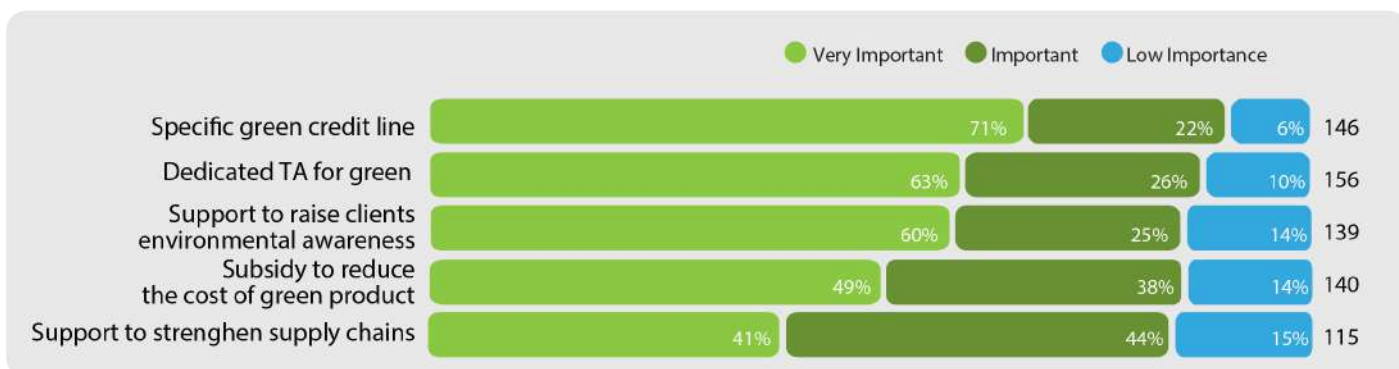
Investors claim that green microfinance is a new sector for them and they would need to better understand the scale, risk and return of such investment. Sustainable division of roles are needed between implementing organizations as well as well- defined business models.

Most actors see an opportunity and a necessity in green microfinance, although there is the need for a mix of strategies and patient capital.

The presence of a dynamic market for pilot projects in green microfinance is very positive for the sector, although pilots and projects—compared with long term strategies—also have some drawbacks. Pressure to comply with a number of deadlines might adversely affect some decision-making by the MFI toward commitments it was uncomfortable with in the first place, or lead to the rollout of pilot projects when the time is not right for them. Fear of experimenting and failing appears to be a factor in the conservative way in which some funds and tools are used. When guarantees are offered, they are not fully used; when selecting customers, MFIs go to known and trusted customers, which can limit opportunities to use green microfinance to ‘explore new markets.’

In addition to expansion of already existing green products, there is a considerable market still available for MFIs that have never developed a green product or for those that have already developed one and now want to develop a new product.

Figure 22: Types of external support needed for an MFI to develop its first green microfinance product, or for an MFI that already had a green microfinance product in 2015 to develop another new green product. Percentages from a sample of 156 institutions. Source: SurveyM2015.



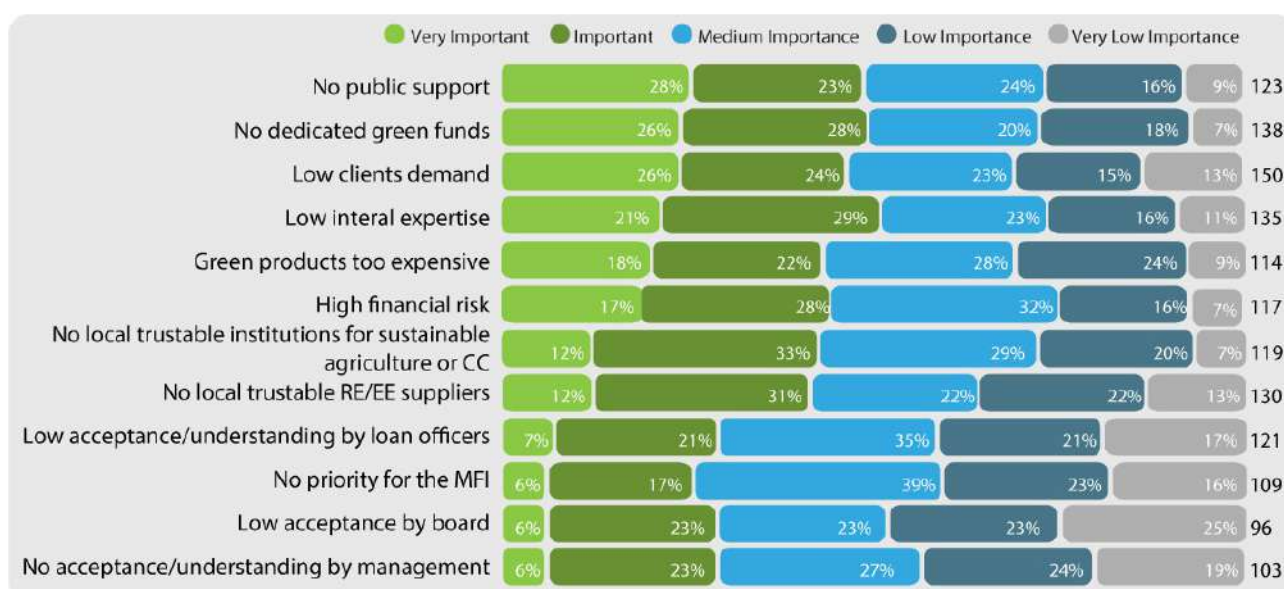
Similar to the case of already existing green products, the most relevant strategies to support new green MFIs or products (as indicated in Survey M2015) are: first, a specific green credit line; and second, dedicated TA, underlying the need for additional financial and human capital (see Figure 22). In the case of new products, however, support for raising client environmental awareness is stated as a decisive strategy, manifesting the need to create or stimulate a still latent demand for green products. Subsidies, even if relevant, do not receive high scores.

Most MFIs and local/international actors believe that it is extremely important to showcase successful cases to provide concrete examples rather than abstract environmental issues and to build business models on short-term economic return for clients (e.g., reduce costs, increase resilience to CC, etc.) and MFIs (e.g., tapping new markets, attracting new clients, etc.).

1.11. Challenges

Even if opportunities for green microfinance in LAC look promising, once the right strategies and procedures are established, several other challenges still need to be overcome to enable green microfinance to flourish in LAC (SurveyM2015). The main challenges at stake as observed by the MFIs include: little public support for green products and initiatives, no adapted funding solutions aimed at supporting green products, and scant client demand for green products. Other major challenges are limited expertise among MFI staff on RE/EE or sustainable practices and CC and the perceived high cost for green products, since they are new products that would require an important MFI investment in terms of human-financial capital. High financial risk is also mentioned, due to the new market or product and related risk of reputation for the MFI (see Figure 23). The difficulty in identifying trustworthy local RE/EE suppliers or institutions specializing in sustainable agriculture or CC, is perceived as a significant challenge, but it does not score among the highest. Internal challenges—such as poor acceptance of green products by loan officers, boards, managers, or difficulty of integrating green strategy into institutional priorities—are perceived as minor challenge.

Figure 23: Challenges perceived by MFIs in 2015 to provide green financial products to their clients. Percentages from a sample of 150 institutions; total number of respondents per category is reported on the right. Source: SurveyM2015.



Some of these challenges remain while others have evolved. In the period 2012-2014, MFIs reported that principal challenges in developing sustainable green financial products were the minimal expertise on the part of local firms and consultants, limited development of needed supply chains, low client demand and environmental awareness (ClimateScope)⁷⁷, (EcoMicro)⁷⁸. Other lesser

⁷⁷ In a sample of 294 MFIs in 2013, 79.5% stated firms and consultants had little local expertise on green products, 66.3% reduced the development of supply chains for RE/EE and after-sales service, 54% found low client demand for green products due to the lack of environmental awareness. 32.2% perceived green products as too expensive, 19.7% too risky, and 19.2% stated that government subsidies for RE/EE wasted the market for such products.

⁷⁸ A sample of 94 MFIs averaged for three years from 2012-2014, reported that 55% claimed there was minimal local expertise in firms and consultant on green products, 40% observed low client demand for green products due to lack of environmental awareness, and 32% observed insufficient development of supply chains for RE/EE and after-sale services. Approximately 28% noted lack of information and technical know-how for CC adaptation, 20% perceived green

challenges perceived by MFIs included: internal reluctance by loan officers, cost, existence of government subsidies and lack of internal expertise.

MFIs that engage in green microfinance often face a double challenge: how to target the rural market (where many of them have no expertise) with a new product they know little about. There is limited knowledge on existing green products and their possible economic benefits for institutions and clients, and in certain regions, public subsidies for energy distort the energy cost and reduce demand. While designing their green strategies and products, Bancamia in Colombia and Banco Pichincha in Ecuador perceived public subsidies for energy as a challenge for entering the market and attracting clients. MFIs also have to deal with other pressing issues and have difficulty prioritizing green products before identifying a sound business case and long-term interest on the part of suppliers and investors.

Lack of internal and local expertise makes it difficult to correctly price products and define economic, environmental and health benefits. Clear certification procedures that could support the case for cost reduction, increase income, and improve environmental-health benefits are still lacking. It is important that MFIs be able to trust and understand the quality of new clean practices and technologies, because by selling a new product to their clients, they increase the credit risk if the new product does not perform well; an MFI also risks its image. In fact, there are multiple examples of MFIs that started disbursing green products using local, non-standardized technology, but these technologies did not have adequate guarantees and they readily broke down. At the beginning of a green project, the technology risk can be relatively high because it is not always easy to find RE / EE equipment that is well adapted to the needs of target customers.

Overcoming preexisting habits at the client and institutional levels can be a long process; the importance of the cultural dimension is indeed recognized by many actors. It is fundamental for an MFI to have a committed management that clearly understands the potential of green products. Some MFIs contend that there are no clear market studies on the actual opportunities by country or by region.

Partnerships between MFIs and energy suppliers are sometimes hampered by the MFI's inability to meet the energy company's need to sell a specific number of technologies to make the investment sustainable. That was the case with Contactar's first experience in green microfinance before it found the right partner and became a reference for green microfinance in Colombia.

Field observations show that credit officers do not easily disburse the green microcredits, even if there is demand by clients. They often disburse smaller credits than needed and require longer audits of clients. After some years of green lending, a saturation point may be reached because only a few families in a specific area prove to be eligible for the green products. Evolution in institutional strategy is hence required, but costly in term of time and effort.

If green credits are restricted by specific conditions, some MFI clients could be tempted to look for condition-free credits from other institutions, as was the case with Banco Pichincha in Ecuador at

products as too expensive, 12% indicated loan officer reluctance, 11% thought government subsidies for RE/EE wasted the market for such products, and 4% found green products too risky.

the beginning of its green strategies for MSMEs. To avoid this risk, sound relations with clients and a discernible interest in green products should be established.

Data management and knowledge of client activities and risk is fundamental, but MFIs demonstrated this in very few cases. High staff turnover depleted loan officers' knowledge of clients and products, making it difficult to establish efficient and effective products. Centralizing information could be an interesting strategy. Use of adapted software as CEUS in MeBA (see Appendix F) to assess climatic, environmental and market risk could improve efficiency and shift the clients' knowledge from the "loan officer's head" to centralized databases. In the case of sustainable agriculture or CCA, sound monitoring and evaluation systems are clearly needed, but adapted indicators are still in development phase.⁷⁹

MFIs find it difficult to report, monitor and assess green investments and strategy. The definition of best practices, reporting standards and benchmarks could support the sector at various levels, including MFIs, investors and clients. As concluded in e-MFP AGENvMIX (2015), important gaps persist in green microfinance between usefulness of an indicator and an MFI's capacity to track it; MFIs do not always have sufficient incentives to track indicators even when they have the capacity to do so.

Providing the external support needed by MFIs as described in the previous section could overcome various challenges outlined here. In the medium long term, public regulation and social participation should complement private initiatives.

⁷⁹ The "adaptation index" by MeBA is an interesting initiative in the region.

1.12. Market for Green Microfinance and Opportunities

We will conclude with a quick market analysis for green microfinance in terms of institutional environment, supply, demand and opportunities as perceived by MFIs in LAC in 2015 based on SurveyM2015 (see Appendix H for details).

At the demand level:

- Only a few MFIs believe their clients have activities that pollute the local environment;
- Most MFIs believe, however, that their clients are affected by environmental degradation or climatic events.

At the supply level:

- Only a few investors or donors question MFIs about their about environmental management or specific green engagement;
- The private sector is still the great missing player;
- Boards and executives are however potentially interested in green products.

At the environmental level:

- The enabling environment for green activities is still weak, in terms of regulation or public intervention.

At the opportunity level:

- Most MFIs reportedly recognize potential opportunities to finance MSMEs involved in environmentally friendly activities, primarily due to the positive dynamics generated by local and international programs.

We conclude that a latent demand exists on the part of clients that needs to be awakened with customized products to reduce vulnerability, take advantage of green market opportunities and stimulate client willingness to pay for these products. MFIs need to gain a better understanding of green microfinance opportunities. Private investors should be brave and capitalize on the present green experience and dynamics in the region, while the public sector should provide adapted regulations and incentives.

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Appendices

▪ Appendix A: Detailed Methodology and Data Collection

The present study is the first of its kind up to now and it aims to assess the present development and potentialities of GMF in LAC. To reach this objective we applied a mixed method approach, as we analyse primary and secondary data of qualitative and quantitative nature. The data analysed for the study is the largest ever exploited up to date and it is based on the following sources (see more details below):

- an in-depth literature review of all the known sources for GMF in LAC: publicly available documents as well as project-specific documents shared by IDB and other actors;
- six surveys on GMF addressed to MFIs that have been previously conducted in the region in the period 2012-2015 by various actors and institutions (see more details below);
- three new surveys that we designed and conducted in the period October-November 2015 especially for this study addressing respectively MFIs, networks, international actors involved in MF;
- an in-depth analysis of the data contained in the MIX Market;
- one-on-one interviews with key actors in the region and in the sector of green (micro)finance;
- two focus group discussions with MFIs involved in GMF programmes;
- and field visits to Colombia, Ecuador and Peru with interviews to MFIs representatives, clients, regulators, supervisors, insurance companies, rating agencies, investors, providers of green technologies, and other key factors such as network representatives or technical service providers.

In addition, we count on more than 20 years of accumulated academic and practitioner knowledge and experience on GMF, and more than 4 years of investigations, since 2011, of specific GMF programmes in the region, with field presence in Brazil, El Salvador, Guatemala, and Nicaragua.

Details on data sources and methodology

The decision to conduct a new survey on MFIs, on top of the previously existing ones, was motivated by the necessity to collect more detailed information on products, challenges, strategies and opportunities and to obtain sound and up to date data concerning the second half of 2015 and projections for the future. This survey (referred in the main text as “SurveyM2015”) has been *sent to more than 500 institutions*⁸⁰, after cleaning the data and consistency checks, we received and

⁸⁰ *The group of MFIs, and their contacts, to whom we addressed the survey, was obtained gathering together all the known name and addresses of MFIs in LAC as present in: MIX Market, ClimateScope, EcoMicro, and any other sources available to the authors or suggested by actors involved in MF: together they form one of the largest existing list of MFIs and contacts in LAC.*

retained responses by 206 MFIs from 18 countries⁸¹: 84 from Central America and Mexico, 12 from the Caribbean region⁸², and 110 from South America. It is a unique source of up-to-date data on GMF.

The data collected with this extensive survey provide an aggregate and quantitative view of the sector and it constitutes the framework for our present study. To strengthen, interpret and contextualize our results and to provide historical trends, we analyzed and compared it with previous surveys and datasets, and we performed various consistency checks. In details, the other sources of data coming from surveys are:

1. Three rounds of applications to the EcoMicro programme, for the years 2012, 2013, and 2014. They gathered relevant data on green MF demand and challenges among MFIs in LA C. After cleaning the surveys we maintained 94 responses, from 78 organizations (so m e organizations applied more than one year): 47 in 2012; 23 in 2013, and 24 in 2014. The information from this dataset are referred to as “EcoMicro” in the main text.
2. Two surveys on GMF run for the ClimateScope report for the year 2013 and 2014⁸³. After cleaning and consistency checks we count 364 respondents in 2013 and 172 respondents in 2014. In the main text we refer to the data from these survey as “ClimateScope”;
3. A survey conducted by the Mix Market and the e-MFP Action Group Microfinance and Environment (MIX-AG e-MFP 2015) on indicators for environmental management of MFIs. It was run in summer 2015 and sent to MFIs all over the developing world, targeting MFIs that were known to be engaged in some environmental strategies or having green products. Out of the 87 complete and clean responses, 24 respondents were from LAC;
4. The data gathered by MIX Market, over seven green MF indicators, over the period 2012–2014⁸⁴. The data has been collected for 289 MFIs that report on their environmental responsibility: 127 from Central America and Mexico, 13 from the Caribbean region, and 149 from South America.

On top of these surveys, the results of the analysis were compared to an analysis done by two of the authors, on a dataset of 53 MFIs in 8 countries in Central America and Caribbean, coming from a survey run by the NGO ADA in 2014⁸⁵.

⁸¹ Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay.

⁸² It is important to remark that only MFIs from Dominican Republic (9 MFIs) and Haiti (3 MFIs) answered to the survey “SurveyM2015” among countries belonging to the Caribbean. Hence the data presented in the main text concerning 2015 are highly driven by the environmental engagement and performance of this two countries and more in particular Dominican Republic, and probably not representative of other Caribbean countries.

⁸³ At the period of data analysis the data for ClimateScope for 2015 was not available yet.

⁸⁴ At the period of data collection, data for 2015 were partial or not available yet.

⁸⁵ Data and sources were not used directly, but only the results presented in the publicly available publication.

The information on GMF presented in all the above sources were completed with additional data and information from other sources and/or coming from private or publicly available documents, or with information collected directly in interviews or private communications with main actors involved in MF in LAC.

All in all, **the analysis presented in this study is based on** the composition of the dataset and information collected in the sources presented above and it forms a unique database for GMF coming from **553 institutions providing microloans to LAC population**: 227 in Central America plus Mexico, 36 in the Caribbean, and 290 in South American countries, **over the period 2011- 2015**.

The other two surveys we designed and run in the period October-November 2015 aimed at a more qualitative understanding of the field complementing the information provided by MFIs with opinion and information from other actors involved in MF in LAC: motivations, potentialities, strategies, lessons learnt:

- One of the surveys was submitted to MF networks in LAC: we received answers from 11 **MF networks** in Bolivia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Mexico and Peru.
- The other survey was submitted to various actors active in LAC (among which international organizations, investors, international NGOs, consulting companies, banks, etc.). From this survey, we received answers from **23 international actors**.

We further complemented the analysis with in-depth one-on-one interviews with MF institutions managers, loan officers, investors, representatives of international organizations, clients, etc. done remotely (by telephone or skype) or in the field. We interviewed in total 53 key actors: 17 remote interviews and 36 interviews in the field.

Moreover 2 focus group discussions have been organized in the field with: the **5 MFIs that participated to the programme MeBA**, during the annual meeting of the project in Bogota, Colombia in October 2015; and **10 of the 12 MFIs that participate to the programme EcoMicro**, during the meeting Foromic in October 2015 in Santiago, Chile.

All this information has been complemented by **field visits in Colombia, Ecuador and Peru, for 2 weeks in the period October-November 2015**.

Reference in the text

In the main text when we provide statistical information we refer to the various data and sources used to obtain the result stated. The main sources are presented in the text above and they are referred to in the main text as “(SurveyM2015)”: our main source, and “(EcoMicro)”, “(ClimateScope)” and “(eMFPMix)”. A summary of the sources content is provided here below:

- SurveyM2015: survey on GMF run by the authors in October-November 2015 to more than 500 MFIs in LAC: answered by 206 MFIs from 18 countries.

- EcoMicro: three rounds of applications to the EcoMicro GMF programme, for the year 2012, 2013, and 2014: in total 94 reliable application from 78 different financial intermediary institutions.
- ClimateScope: two surveys on GMF run for the publication ClimateScope report for the year 2013 and 2014: with 364 respondents in 2013 and 172 respondents in 2014.
- eMFPMix: survey conducted in summer 2015 by the Mix Market and the e-MFP Action Group Microfinance and Environment targeting MFIs that were known to be engaged in some environmental strategies or having green products: 87 responses worldwide and 24 respondents were from LAC.

It is difficult to argue for representativeness of the data, products, clients, strategies discussed in this paper. The numbers presented in this study should not be interpreted as an absolute measure of GMF in LAC, but rather as a first estimation. However, we are confident that the data set over which the study is based is large enough to provide an accurate picture of what the market is doing and its opportunities.

■ Appendix B: Details on the LAC context

Energy

We provide here in Table A1 and A2 some data on the level of access to electricity and use of biomass in LAC and compared to other regions.

Table A1				
Regions	Population	Electrification Rate		
		Total	Urban	Rural
LAC	23	95%	99%	82%
Sub-Saharan	621	32%	59%	16%
Developing	620	83%	95%	74%

Source: IEA, World Energy Outlook 2014 (data 2012)

Table A2		
Regions	Population depending on traditional use of biomass	
	Total population (millions)	% of Total population
LAC	68	15%
Sub-Saharan	727	80%
Developing	1875	51%

Source: IEA, World Energy Outlook 2014 (data 2012)

Climate Change

Climate change is the modification of the long-term average and variability of weather and climatic features. It usually entails an increase in the average temperature of the land surface, changes in the rainfall patterns, rise in the sea level, and reduction of the cryosphere. These modifications lead, in turn, to changes in the types and patterns of intensity and frequency of extreme weather events. The main drivers of climate change are greenhouse gas (GHG) emissions, of which fossil fuels are a major source (IPCC, 2013), originating from energy use, transport, change of land use (among which deforestation), etc.

In the framework of CC the concept of CC adaptation and mitigation are very important, and we refer the reader to their definition in the section “definitions and abbreviations”.

In Tables A3 provides information for the GHG in LAC compared to other regions, while Table A4 provides some data on extremes events in LAC.

Table A3 Total GHG emissions including land-use change and forestry (2012)		
Regions/Country	MtCO ₂ e	% Of world GHG emission
LAC	4,561.0	10%
Africa and MENA	3,529.2	8%
Asia	23,296.9	50%
China	10,684.3	23%
United States	5,822.9	13%
European Union	4,122.6	9%
Other	4,716.4	10%
Total (World)	46,049.0	1.0%

Source: CAIT, 2015

Table A4 Frequency and impact of natural disasters in Latin America and Caribbean			
	1971 - 1985	1986 - 2000	2001 - 2015 (Octubre)
Droughts			
N. of events	21	41	53
Total population affected (mln)	29.6	17.5	45.8
Total economic damage (bln US\$)	3.87	2.69	8.98
Floods			
N. of events	112	251	390
Total population affected (mln)	18.5	19.8	31.9
Total economic damage (bln US\$)	7.87	11.13	19.3
Storm			
N. of events	64	175	256
Total population affected (mln)	6	12.3	20.5
Total economic damage (bln US\$)	2.38	27.44	47.0

Source: EM-DAT.
"Storm" includes tropical storms, hurricanes, and connective storms

The storms have been increasing, particularly in Caribbean Countries and Central America, both in terms of frequency (+338% from 1971-1985 to 2001-2015) and impact (+269% and +1481% from 1971-1985 to 2001-2015 in terms of affected population and economic damage, respectively). In these two sub-regions, the frequency and impact of flood events also seem to have been increasing (+350%, +417%, and +505% from 1971-1985 to 2001-2015 in terms of frequency, affected population and economic damage, respectively). Concerning drought shocks, South America and Central America seem to be the sub-regions where the frequency and impact have been increasing the most (+200%, +57% and + 132% from 1971-1985 to 2001- 2015 in terms of frequency, affected population and economic damage, respectively).

Forestry-Biodiversity

The pace of forest and biodiversity losses, as well as the extent of remaining biodiversity and forest resources, in LAC have attracted a lot of attention for all sorts of environmental programmes, interventions and policies; supported by national, regional and global actors.

These include, for example:

- Certification schemes for organic or environmentally-friendly production (e.g. Rainforest Alliance and Bird-friendly (Potts et al. 2014))
- Carbon markets (e.g. Clean Development Programme and REDD+ (Hamrick & Goldstein 2015))
- Payments for Ecosystem Services (e.g. the Regional Integrated Silvopastoral Ecosystem Management Programme (in Nicaragua, Costa Rica and Colombia) (Pagiola et al. 2007); Socio Bosque in Ecuador (de Koning et al. 2011); or the national programme ‘Pagos por Servicios Ambientales’ in Costa Rica (Fletcher and Breitling 2012))
- Protected areas and biological corridors (e.g. the United Nations Biosphere Reserves, or the Meso-American Biological corridor (Ervine 2010; Ruiz-Mallén et al. 2015))
- Community-based conservation efforts (e.g. by communities in the Bolivian Amazon and in Mexico (Ruiz-Mallén et al. 2015) or in the Nicaraguan Bosawás biosphere reserve (Dressler et al. 2010), etc.)

Private and Public Finance for CC adaptation and mitigation, and nature conservation

When discussing the current state and future perspective of GMF, a key point is of course the availability of funding; especially the types of funding which are directly aimed at mitigating CC, conserving the environment and adapting to CC. Indeed, one of the reasons that MFIs and development finance institutions are turning to GMF is for the prospects of new, concessional funding opportunities. On the other hand, climate finance and conservation funds are also in search and need of appropriate channels and policies to reach a large part of the population; including financing micro, small and medium enterprises.

Global climate finance flows is reported to be of 391 billion USD for 2014, with a mix of public and private fundings, by (Buchner et al., 2015). The bulk of these flows went to mitigation efforts such as renewable energy projects, a large part of the funding (212 billion USD) remained in the country of origin; and most funds were spent in East Asia and Pacific (119 billion USD) and Western Europe (93 billion USD). LAC accounts for 28 billion USD. Even though these funds have increased in the last few years, they are estimated to be still largely insufficient to cope with the CC adaptation and mitigation needs.

Following the COP21 the Green Climate Fund – to which developed countries have pledged to contribute 100 billion USD per year by 2020 in order to support climate mitigation and adaptation in developing countries - there is the expectation for a further increase in climate finance that could be beneficial for GMF as well. Overall, the 100 billion USD would comprise a combination of public and private money – although there is little clarity about what the distribution will be, what will be considered eligible as a climate investment, and the extent to which it would be a reshuffling of other climate funds and development assistance (Atteridge, 2015).

On the other hand, the pledge of 100 billion USD, and the open door to also include private finance in the balance, reveals perspectives in terms of the mobilization of private funds for CC adaptation and mitigation through support programmes and leveraging and open the door to the contribution to CC adaptation and mitigation by MSMEs.

The Green Climate Fund is still in its infancy, but there are several other multi- and bi-lateral climate funds which are already more advanced in terms of pilots, grants and credits (see Table A5). For instance, the World Bank (in collaboration with the regional Development Banks) manages the Climate Investment Funds, which consist of a Clean Technology Fund (5,3 billion USD), a Forest Investment Programme (785 million USD), a Pilot Programme for Climate Resilience (1,2 billion USD) and a Scaling Up Renewable Energy Programme (796 million USD). They each have part of their portfolio specifically dedicated to supporting private sector investments in renewable energy, sustainable forestry and adaptation. Additionally, in 2014, LAC attracted 103 million USD by selling carbon credits on voluntary carbon certification markets (Hamrick & Goldstein 2015). LAC also attracted 59% of approved REDD+ funds (Reducing Emissions for Deforestation and Degradation – a UN programme aiming at the payment of developing countries for proven reductions in emissions); especially for pilots in the Amazon region and Mexico (Canales Trujillo et al. 2014).

Table A5 List of climate funds and their amount of investments in LAC

Funds	Million dollars investment in LAC, as reported by climate funds update in December 2015
Clean Technology Fund (CTF)	815,7
Amazon Fund	509,9
Germany's International Climate Initiative	255,3
Pilot Programme for Climate and Resilience (PPCR)	186,0
Global Environmental Facility (GEF4)	168,8
Global Environmental Facility (GEF5)	146,7
Forest Investment Program (FIP)	137,9
Adaptation Fund (AF)	84,4
UK's International Climate Fund	74,8
Norway's International Climate and Forest Initiative	73,5
Special Climate Change Fund (SCCF)	53,6
Forest Carbon Partnership Facility (FCPF)	34,4
Global Climate Change Alliance (GCCA)	30,3
UNREDD Program	27,3
MDG Achievement Fund	24,4
Adaptation for Smallholder Agriculture Programme (ASAP)	18
Strategic Priority on Adaptation (SPA) (from GEF4)	13,2
Least Developed Country Fund (LDCF)	11,1
Global Environmental Facility (GEF6)	9,9
Scaling-Up Renewable Energy Program for Low Income Countries	9,7
TOTAL	2.684,9
<i>Source: climatefundsupdate.org</i>	

The carbon certification markets are an example of an increasingly popular approach to environmental governance, namely ‘Payments for Ecosystem Services’ (PES). The main idea of this approach is that people that are, in the absence of direct incentives, poorly motivated to protect or reproduce natural resources on their property, will become motivated if they receive direct payments from Ecosystem Service buyers that at least cover their opportunity costs of using the land. Thus, there is a conditional payment going from an ‘ecosystem services’ buyer to a provider. E.g. for carbon (by people wanting to offset their plane journey), for biodiversity (by the Global Environment Facility) or for water (by a local community). Recently, microfinance has been explored as one of the possible ways to pool and distribute the benefits from payments for ecosystem services (Cranford & Mourato 2014; Huybrechs et al. 2015; Parker et al. 2012).

There is a clear presence and increase in funding for climate mitigation and adaptation. In the main text, we see that there are a great number of projects which are directly related to such funds (e.g. Proyecto CAMBio with finance from Global Environment Facility; MEbA and the German Climate Initiative; Arbolivia and Norandino working with carbon credits; further support of Ecomicro participants (in Bolivia) and of forestry in Mexico by the Pilot Programme for Climate Resilience, etc.). Nevertheless, we should also stress that there are some heavy barriers for MFIs (and development banks) to access such financial sources, due to definition of nation policies, different languages and lack of mutual understanding between MF sector and natural conservation sector, etc.

Certified productions are clearly on the rise globally, and LAC is a leader in production hereof.

Table A6 Compliant production as percent of global production (revised 16 labels)		
Production	2008	2012
Coffee	15%	40%
Cocoa	3%	22%
Palm Oil	2%	15%
Tea	6%	12%

Source: Potts et al. 2014, page 90

There is for sure an interesting role to play for MF in facilitating the production of such certified products and support the access of smallholder farmers to better price and income. However existing market constraints for ‘financing’ organic production, are in general part of more general limitations, and in particular the existence of market for such products and the possibility of producers to access to these markets. Credit alone cannot unlock the full potential for this more financially and environmentally rewarding value chains. Although to the extent that the market already exists, MF could support producers to actually engage with it.

■ Appendix C: Green Microfinance evolution

Using the data from the MIX Market it is possible to observe the evolution in the last years of the number and percentage of MFIs in LAC, and per region, that engaged in some of the dimensions of green MF⁸⁶.

Environmental risk management

In (Figure A 1) we observe that the number and percentage of MFIs declaring to have environmental risk assessment procedures slowly increased between 2012 and 2014, in LAC and in the various sub-regions.

Figure A 1: number and percentage of MFIs that declare to evaluate the environmental risk of the activities they finance: trend from 2012 to 2014 in LAC and per region. Source: The Mix Market.



Green microcredits

Using the data from the MIX Market it is possible to observe a slow positive evolution in the number and percentage of MFIs declaring to have green microcredits between 2012 and 2014 in LAC and in the various sub-regions (Figure A 2).

⁸⁶ For Figures A1 A2 and A3 the percentages presented are with respect to the MFIs that reported in the MIX Market about their environmental performance in 2012, 2013, 2014: 259, 284 and 286 respectively in LAC. A minor part of the data has been adapted to satisfy consistency checks.

Figure A 2: Number and percentage of MFIs that claim to have green microcredits from 2012 to 2014 in LAC and per region. Source: The Mix Market.



Environmental awareness raising

Using data from the MIX Market we observe that around 38% of the MFIs in LAC introduced in the past years environmental training among their non-financial services (Figure A 3), a percentage that remain almost constant in the period 2012-2014 and in the various regions.

Figure A 3: Number and percentage of MFIs that claim to provide environmental awareness raising sessions to their clients from 2012 to 2014 in LAC and per region. Source: The Mix Market.



▪ Appendix D: Green Microfinance Dynamics

In this appendix, we provide a detailed definition of the: Green Micro-Finance Dynamics Index (GMFDI), used in section 4.3 in the main text.

The subsection 4.3 aims to provide the most complete as possible picture of green microcredit products in LAC. To reach this objective we define the concept of **Green Micro-Finance Dynamics (GMFD)** as the set of all green microcredit activities in LAC cumulated in the last five years per country and per MFI. GMFD aims to be a proxy of the present or recent past experience in GMF for the MF sector in a country, and to be used by interested institutions to assess the level of development and opportunities for GMF in LAC. To obtain a quantitative proxy for this notion we need to obtain an estimation of the total number of MFIs that had disbursed green microcredits in the period 2011-2015, or that are presently developing a green microcredit product. To reach this aim we meticulously collected information from all available sources as per Appendix A. In total, we have been able to collect information for 553 MFIs in LAC in the period 2011-2015, and we estimated that among these institutions 33,1%: i.e. 183 MFIs have provided, are providing or are under the process of developing green microcredits in the period 2011- 2015. This information, as presented per country in Figure 5 in section 4.3 should provide a picture of the potential “market size” for green microfinance. Only green microcredits products are retained, while the other dimensions of GMF are explicitly not considered at this stage. The rationality is that green microcredits usually required a higher level of engagement by MFIs and it is easier to verify if an MFI is active in that. Moreover, we also included MFIs that had green microcredits but that do not provide them anymore, or MFIs do not have disbursed yet green microcredits, while they are actually developing these products in 2015. The rationale is that having provided green microcredit in the past contributes towards generating g experience in these new products and it manifests an actual interest by MFIs, as being presently in the products development phase.

On top of this information we believe that it is interesting to know the actual engagement of the MF sector in GMF, in the region and per country. While for the large dataset of 553 MFIs we were not able to collect information on outreach in term of number of credits or credit volume⁸⁷, we defined for it an index: The **Green Micro-Finance Dynamics Index (GMFDI)**: that aims to estimate the level of engagement in GMF in a given region. The index, used in section 4.3 and reported per country in Figure 5, is defined as follow. Among the 183 MFIs with green microcredits identified in the period 2011-2015, we identify a subset of MFIs for which information about their green products is surer⁸⁸: we counted in total 117 MFIs. We define them as the “Green plus” MFIs. The GMFDI is hence defined as the number of Green plus MFIs in a region, or country over the total number of MFIs in the same region or country in our full dataset.

⁸⁷ This information is reported in section 4 and 5 for a subset of MFIs responding to (SurveyM2015), concerning their outreach in 2014.

⁸⁸ Because this information is reported consistently in various data sources, or because the MFI provides more details about its green activities (kind of loans, amount, numbers, etc.) instead of simply answering “yes” or “no” to a survey question, or because the MFI is part of known programmes.

The GMFDI is a number that runs between 0% to 100% and gives an estimation of the actual green microfinance dynamics in that region or country⁸⁹. The higher the value of the GMFDI the higher the engagement in green microcredits is weighted with the level of engagement of MFIs and with respect to the total number of MFIs that could have engaged in green microcredits.

The GMFDI provides a vision of the intensity of green microfinance in a region, while the actual number of MFIs that developed green microcredits in the period 2011-2015 provides a picture of the actual size of the sector. Both numbers should be used together and not in isolation, to gain a first understanding of the green microfinance market in a given region.

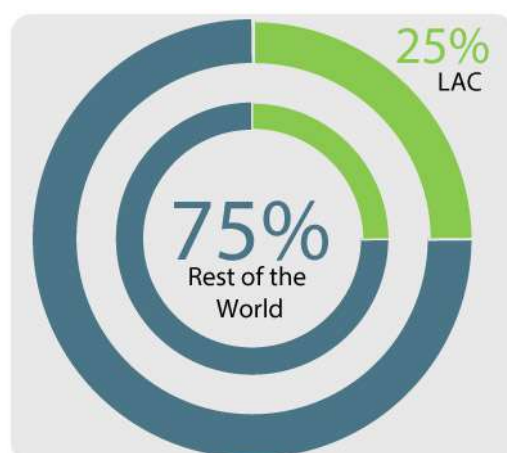
⁸⁹ *That should not be confused with: the % of MFIs disbursing green microcredits: because it is a cumulated notion of past, present and forthcoming products and because we do not have the full population of MFIs; neither with a measure of outreach of green micro credits in term of actual number of green microcredits disbursed or volume.*

▪ Appendix E: green microfinance in LAC and in the rest of the world

For many reasons it is quite difficult to compare the development of GMF in LAC with what happens in the rest of the world⁹⁰. However, a quick look at the MIX Market data for 2014 shows **that one quarter of MFIs worldwide that report to have green microcredits are located in LAC** (Figure A 4), supporting the relative importance of the green market dynamics in LAC⁹¹. However, **the percentage of MFIs with green microcredits⁹² is less in LAC with respect to the rest of the world: around 16% compared to 19% for the group of all other countries** (MIXMarket).

In previous studies (Allet and Hudon, 2015; Forcella and Hudon, 2014) the importance of certain institutional characteristics to influence the MFIs engagement in GMF has been underlined: larger, older and more regulated MFIs (such as banks) appeared to have an overall better environmental performance⁹³. In our study **in LAC, banks seem to be more likely to have environmental policies, environmental risk management and green microcredits, while NGOs stand out as the major providers of non-financial green services. Moreover the founding age of the MFI does not seem to play a particular role in its environmental engagement, while the size of an MFI seems to positively influence only the likelihood to have environmental policies. Larger GLP and fewer clients somehow seem to improve the green opportunities of an MFI: both for green credits and non-financial services⁹⁴.**

Figure A 4: % of MFIs with green microcredits in LAC and other developing countries, with respect to the total number of MFIs declaring to have green micro credits in 2014 worldwide.
Source: MIXMarket.



⁹⁰ In particular, to the best of our knowledge, a study similar to the present one has not been done, so far, in other regions of the world and we hence have to rely on partial data or on older studies.

⁹¹ However absolute number follows the relative importance of the LAC MF sector: i.e. 28% of the total MFIs reporting in the MIX Market.

⁹² With respect to the number of MFIs that report about their social performance.

⁹³ This result refers to data collected worldwide in 2011 and in Europe in 2013.

⁹⁴ However such observations are based only on difference between average values in our sample and no statistical tests were performed at this level so we cannot claim for the significance of such differences. More over comparison with (Allet and Hudon, 2015; Forcella and Hudon, 2014), remain anecdotal, because measurement methodology is different and the two metrics were not adapted.

A previous study on Central America and the Caribbean done in 2014 (Forcella, Ramirez and Allet, 2015) has underlined the less straightforward role of the various institutional characteristics in influencing their environmental performance. The same study underlined the relatively high engagement of MFIs in Central American in GMF and the particular role that GMF could play in the Caribbean. These results confirm what we have observed in LAC in section 4 in the main text.

At the level of characteristics influencing GMF, while it seems interesting to underline some of the characteristics observed above, we feel more confident in using the GMFDI in Table 4 to support the hypothesis that MFIs with different characteristics in terms of outreach, legal status, and maturity could have a role to play in the provision of green products according to their own strategy, opportunities, and capacities⁹⁵.

⁹⁵ *Indeed a part from the legal status, as bank that seems to have a positive influence in all dimensions and in the various regional sub samples, all the other characteristics have various influences in the various regions, and in absolute value are the NGOs that stand out as the bigger group of MFIs with green micro credits.*

▪ Appendix F: International support for green microfinance in LAC

International actors have been pushing and are presently pushing the environmental dimension in the MF sector in LAC, supporting green microfinance with dedicated projects and programmes. These international initiatives raise the topic of green microfinance and generate awareness, and moreover contribute towards building capacities and expertise. Such intense dynamics plus the expertise of the MF sector in LAC and its need for innovation, diversification and expansion in the rural area, could point toward the possibility for a systemic change. However up to now experiences are in the majority in the pilot phase, while some have tried to move forward to the scale up phase.

EE/RE Initiatives

Among the most well-known international projects fostering microfinance for RE and EE, or RE and EE initiatives that could support the development of green microfinance we find: EcoMicro, Accessing Green Energy through Inclusive Finance, and EnDev.

EcoMicro by FOMIN-IDB is paving the way for green microfinance in LAC both for products in the sector RE and EE but also for the category ESP or CCA. With **12 MFIs supported since 2012**, and phase *two recently* approved and operative for the next five years, it has the potentiality to support the ecosystem for RE/EE micro credits in LAC (Box 1). Other initiatives such as Climate Investment Fund, or forthcoming fund for LAC, were presently planning to capitalize on this experience.

EcoMicro has chosen to provide only TA and not dedicated funds, with the aim to *stimulate the internal commitment of the MFI*, as they need to look for funding to support the green product, and to financial *sustainability at medium term*. One of EcoMicro's roles is to work as “translator” to adapt the macro international discourse on CC towards the local micro reality of needs and opportunities for micro enterprises. A much-needed role to increase the uptake of GMF. Unfortunately, of the 12 projects (7 dedicated more to RE or EE, and 5 dedicated more to CC adaptation) only 2 are completed (at the end of 2015) and other 2 in advance phase, while the other 8 are in the starting phase. Hence data is not yet available to provide an evaluation of the program or its outreach (Box 1 and 3).

EcoMicro	
Objective: turning climate change risks into business opportunities	
Technical assistance programme to support MFIs to develop RE, EE or CC a daptation products	
Funded by	IDB-FOMIN and Nordic Development Fund
Implementing Institutions	12 MFIs, consultancy companies and providers of technical appliances. Other 20 MIFs in the next 5 years.
Investment	7 million USD for TA (phase 1): Max 400.000 USD of TA per project, with 30% counterpart by participating MFIs. Line of credits not provided.
Focus on micro credits but also considering the reduction of the institutions' environmental footprint and portfolio environmental risk assessment. 3 different competitive rounds: 121 applications from institutions located in 19 different countries. 12 MFIs selected	
RE and EE sector	
Te Creemos (Mexico): EE solutions (efficient refrigerators) for clients cost saving: 860.000 USD of green GLP at end October 2015.	
Caja Arequipa (Peru): RE and EE solutions: initial target 166 micro-small entrepreneurs. Aim to reduce clients cost and improve their competitiveness.	
Bancamia (Colombia): EE for urban and peri-urban small businesses, to improve clients competitiveness and reduce electricity cost.	
Integral SAC (El Salvador): EE and or RE technologies.	
Access (Jamaica): EE or RE to reduce energy cost for clients and improve their competitiveness: first pilot with 100 clients	
Fundación Paraguaya (Paraguay): efficient cookstoves for peri-urban clients to improve clients' health and productivity	
Fundación Coomeva: RE and EE to reduce cost and improve competitiveness	
Box 1: EcoMicro: RE and EE progra	

One precursor program in the region was the “green energy” project implemented by the ADA, that aimed to foster the use of RE and EE in Peru. It increased the awareness in the topic of MF for RE or EE, and it has a catalyzing effect on the region. Recently ADA strategy evolved towards targeting the MF network as a potential author of systemic change in the RE and EE market (Box 2).

Accessing Green Energy through Inclusive Finance - ADA's strategy and experience

Technical support to MFIs in Peru for RE and EE

Actors	ADA in partnership with EnDEV / GIZ Peru and MicroEnergy International, provided TA to two Peruvian MFIs: Caja Huancayo and Fondesurco.
Products	Green microloans for investment in solar water heaters, solar dryers e.g for coffee beans, and oven with low wood consumption
Outreach	The programme started in 2010. By the end of 2014, around Euros 550.000 in microloans had been granted to nearly 950 households and microbusinesses

New strategy - working with network

In 2014, ADA decided to slightly change its strategy: instead of providing direct support to MFIs, it opted for partnering with the Peruvian network of microfinance, COPEME, in order to achieve greater outreach and transfer technical assistance competences at the local level. ADA and COPEME have been working on developing a service platform that connects MFIs, beneficiaries and clean energy providers, and can offer technical support to all these actors. The new strategy will thus address the technical needs of all actors in the clean energy value-chain, from sales and distribution, to loans and maintenance services.

Box 2: sources ADA (2015). «Accessing Green Energy through Inclusive Finance» brochure and ADA activity report 2014.

An interesting initiative that is operating worldwide and also in LAC is EnDev: ***Energising Development***. It aims to “promote sustainable access to modern energy services that meet the needs of the poor” (EnDev). EnDev claim to focus on creating a sustainable and replicable business model. The programme, a multi-donor partnership, financed and governed by the governments of the Netherlands, Germany, Norway, Australia, the United Kingdom and Switzerland, started in 2005 and it is estimated that it will run until 2019. EnDev operated in LAC in Bolivia, Honduras, Nicaragua and Peru with the following main pillars: grid extension, hydropower, solar energy (SHS and pico PV), and modern cooking energies (improved cookstoves and ovens). Outreach is important (by June 2015): access to electricity had been provided to 441.000 people (Bolivia), 44.000 (Honduras), 80.000 (Nicaragua), and 387.000 (Peru); access to modern cooking energy had been provided to: 391.000 people (Bolivia), 78.000 (Honduras), 1.000 (Nicaragua), and 991.000 (Peru); access to modern energy services had been provided to: 2.800 social institutions and 11.800 SMEs (Bolivia), 233 social institutions and 487 SMEs (Honduras), 264 social institutions and 457 SMEs (Nicaragua), and 5.376 social institutions and 10.548 SMEs (Peru). The programme (2009) is now operating a result-based facility since the beginning of its second phase for which participant firms receive payment, aimed at covering the cost of market development only after a verification of their actual sales achieved is conducted. Unfortunately, MF has only played until now a marginal role and only in Bolivia and Peru. The direct engagement of MFIs is presently less than 1% of the project in

LAC. Nevertheless, EnDev also looks to understand how MFIs can contribute to market expansion and the sustainability of the initiative overtime.

In Peru, EnDev supports MFIs through: technical assistance, a result-based financing mechanism that pays a fee for every technology financed, and a grant fund (FASERT, Fondo de Acceso Sostenible a Energía Renovables Térmicas), that supports projects that can include microfinance components (3 MFIs are currently supported with this fund).

ESP and CCA initiatives

Among the most well-known international projects fostering microfinance for environmentally sustainable initiatives, sustainable agriculture and CC adaptation we find: EcoMicro, Proyecto CAMBio, and MeBA. In the boxes below, we present a summary of these projects.

EcoMicro presented above also has a dimension dedicated to CC adaptation with projects supported as presented in Box 3.

EcoMicro
Looking for turning climate change risks into business opportunities
CC Adaptation sector
Diaconía (Bolivia): aims to reduce smallholder farmer client’s vulnerability to CC in the department of La Paz and stabilize clients' income. Pilot’s goal: 300 clients.
FDL (Nicaragua): credit for diversification of agricultural activities, plus training for clients, plus micro insurance (designed but not active yet). By Nov 2015 reached 224 with 480.000 USD. Aiming for 800 in three years
Fundación Sur Futuro (Dominican Republic): consolidation of exiting green products: ex. credit plus training for clients for irrigations to cope with droughts, solar panels, and specific green products to reduce CC vulnerability in rural areas. Pilot goal: 220 clients.
Financiera El Comercio (Paraguay): want to increase the resilience of small rural farmers to the effects of CC mixing short and long-term CC adaptation investments and the development of a risk module that examines the climatic risks
Sembrar Sartawi (Bolivia): aims to develop a microinsurance for CC plus credits and training products to help smallholder farmers cope with CC.
Box 3: EcoMicro: CC adaptation. For the projects related to RE or EE, or the general structure of the programme, look at Box 1.

Proyecto CAMBio was one of the first initiatives worldwide to support sustainable agriculture thanks to the use of green microfinance, and the first large scale programme linking PES with green microfinance, as explained in Box 4.

Proyecto CAMBio Central-American Markets for Biodiversity	
Funded by	Global Environment Facility (GEF); Central-American Bank for Economic Integration (CABEI)
Implementing Institutions	United Nations Development Programme (UNDP); CABEI; 28 Intermediary Financial Institutions (IFIs)
Period	2008 – 2013
Countries and MFIs*	Guatemala: AYNLA, ADICLA, ASDIR, FONDESOL and Fundación Génesis Nicaragua: FDL and Coop. 20 de Abril Honduras: Credit and Saving Cooperatives Intibucana and Celbenha El Salvador: Rural Credit Institutions Nueva Concepción, Sonsonate and Zacatecoluca; Costa Rica: Coopealianza and the Credit Cooperative Quezada
<p>Proyecto CAMBio focused on a combination of concessional credit lines to IFIs to provide loans for investments and free technical assistance to clients, economic incentives (PES) and warranties with the aim of reducing barriers for financial institutions to support biodiversity-friendly agriculture and livestock production. PES are paid at the fulfillment of established environmental targets: 14% of the loan principal to clients and 6% to IFIs. The rural economic activities financed are: agroforestry (79% of all activities supported), sustainable fisheries, eco-tourism, silvopastoral practices, etc. A second phase (2016-2019) focusing on more value chain financing has been under discussion.</p>	
Main results**:	Tot number of loans: 12.107 credits, benefitting around 25.000 farmers and MSMEs Tot amount of loans: 56.439.376 USD Tot cost training: 2.304.522 USD Tot beneficiaries of training: 885 members of 15 IFIs and 26.316 MSEM Tot cost of PES: 1.458.709 USD Tot beneficiaries of the PES: 3.371
<p>Box 4: *The project targeted also SME and not only micro enterprises, a number of credits went up to 1.000.000 USD, and the 28 IFIs include some large commercial banks (e.g. BANPRO and LAFISE). However, 84% of credits went to micro enterprises, and 93% was less than 5.000 USD. Nevertheless, in terms of GLP, only 13% was for loans smaller than 5.000 USD. ** These numbers include MSMEs and not just the MF component for which we do not have exact disaggregate data. The project also has access to 550.000 USD of guarantees, but hardly any use was made of these.</p>	

MeBA project support CC adaptation thanks to appropriate investments in ecosystem management as presented in Box 5.

MeBA Microfinance for Ecosystem-Based Adaptation	
Funded by	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany
Implementing Institutions	United Nations Environment Programme; Frankfurt School of Finance and Management.
Period	2012 – 2017
Countries and MFIs	Colombia: Bancamia, Contactar, Crezcamos Peru: EDPYME Solidaridad and Fondesurco
<p>MeBA is a TA program that assists MFIs in the development and implementation of financial products which are aimed at the adoption of ecosystem-based adaptation (EbA) practices: policies and measures that take into account the role of ecosystem services in reducing the vulnerability of society to CC, in a multi-sectoral and multiscale approach (Vignola et al. 2009), increase the capacity within MFIs to deal with risks related to CC, and improve awareness-raising among clients</p>	
Main outputs	Design of 40 EbA products: strategy, benefits and financing; Inclusion of climatic risks in the loan appraisal process, thanks to the development of the software: “CEUS” that assesses climatic risks, quality productions, clients' cash flow, etc; Design of a “EbA index” to track progress in clients’ adaptation capacities.
Main results by January 2016, source: http://unepmeba.org/en	Total EbA loans disbursed: 3.299 Total volume of EbA loans disbursed: 4.596.900 USD Small farmers who received awareness-raising or training on EbA: 4.110 Main activities financed (among others): Solar dehydrators: 1.362 loans Organic agriculture: 432 loans Organic fertilizers: 393 loans Aquaculture: 264 loans Crop rotation: 167 loans Beekeeping: 132 loans Silvopastoral systems: 101 loans and agroecology (81), soil conditioning (77), greenhouses (78), rainwater reservoirs (60), efficient biomass stoves (55), etc.
Objectives	25.000 loans and 20 million USD disbursed in EbA activities
Box 5: MeBA project.	

Moreover, donors and international organizations a decade ago started the Ecobanking project with the aim to support financial institutions in their quest to deal with environmental and social risks, and to improve their green lending. The platform established working as a knowledge center, conferences are organized and consultancy services on issues of green lending are provided. They also established the 'Environmental Management Commitment Index'; a tool through which financial institutions can evaluate their commitment to environmental guidelines, and where they can compare themselves to a regional benchmark.

▪ **Appendix G: Example of Business Models for Green Microcredits**

Here we provide some examples of business models for existing products.

RE and EE

Two-hands models with support from a third organization for promotion:

Experience of the MFI Emprender, Bolivia:

- Promotion activities done by FONDESIF⁹⁶, who also subsidizes the price of solar home systems;
- Emprender provides microloans;
- Enersol, the photovoltaic systems company, installs the technologies and ensures client education and after-sales services.

Experience of Banco FIE, Bolivia:

- Banco FIE is in charge of the promotion of the solar water heaters, together with Gaia⁹⁷;
- Banco FIE manages the appraisal and disbursement of RE loans;
- The company Servicios Integrales de Energía S.A. (SIE) is in charge of delivering, installing and maintaining the solutions, as well as educating clients on proper use and maintenance.

Two-hands model with technical skills internalized at MFI level: Experience of MFI Fondesurco, Peru:

- ADA, local university, and MEI⁹⁸ provided support to select partners for RE or EE solution providers;
- Fondesurco hired an Energy Technical Advisor to provide technical support to the MFI staff, to clients, and to coordinate with partner providers. It moreover provides dedicated microcredits for water heaters, solar dryers, efficient ovens, etc.

Two-hands model with majority of RE-EE duties internalized by the technology company.

⁹⁶ *i.e. Fondo de Desarrollo del Sistema Financiero y Apoyo al Sector Productivo: a public institution with objective to support the development of MF sector in Bolivia.*

⁹⁷ *An environmental NGO.*

⁹⁸ *MicroEnergy International: consulting firm specialized in RE and EE products, based in Berlin.*

Experience MFI Te Creemos, Mexico:

- Criotec, local provider of EE technologies (efficient refrigerators), take care of all marketing and technical part: the clients selection, promotions of the energy savings, after-sales services etc.;
- Te Creemos provides the credit analysis and loans disbursement.

Similar model is opted also for example by EDPYME Solidaridad, in Peru, for the provision of improved cookstoves, where Caritas, make all the process of awareness raising, training to local providers, etc.

ESP and CCA

TA programmes without dedicated funds:

These are programmes like EcoMicro and MeBA (see Boxes 3 and 5) in which an international organization provides funds for TA for the MFIs, while the MFIs need to look for (sometimes also supported by the international organization) appropriate funding for the credit provision.

Experience FDL with EcoMicro, Nicaragua:

- EcoMicro finance consultancy firms, chosen by the MFI to support FDL in developing the product;
- FDL provides a credit aimed to diversification of agricultural activities and support more CC adapted practices for small farm holders. The credit is provided with reduced interest rate.
- Nitlapan, rural development institution, provides training to clients to establish agricultural techniques more adapted to climate change
- Insurance company provides⁹⁹ micro-insurance to cover climatic risk for the adapted investment.

Experience Contactar, in Colombia and EDPYME Solidaridad, in Peru with MeBA:

- Frankfurt School - UNEP provide training and TA to MFIs to develop EbA products;
- Contactar/EDPYME Solidaridad use the software “CEUS” to assess clients’ production, resiliency to climatic shocks, and their cash flows; and they provide a credit product to finance a subsample of EbA activities;
- Awareness raising and dedicated training is provided by the MFI employees for Contactar, experts in clients training, while EDPYME Solidaridad has a strategic alliance with public national institutions (e.g. Agrorural) with the objective to improve rural production and regularly provide

⁹⁹ Unfortunately the programme is presently running without microinsurance, partly because there have been issues with the authorization to use the satellite and meteorological stations data. The micro insurance part is forecasted to be introduced by next year.

trainings to smallholders. EDPYME Solidaridad participates in the training, presents the MFI to potential clients and assesses the credit risk.

Contactar is an example of an in-house project in which the training to clients is provided directly by the MFI, while EDPYME Solidaridad and FDL are examples of partnership strategy, in which the training is provided by public national institutions.

Programmes with dedicated funds:

These are programmes that consist of a full package: credit line plus TA to MFIs and training to clients, plus possibly dedicated subsidies. The main example is Proyecto CAMBio (Box 4).

- CABEI provides a dedicated line of credits to the MFIs, a low interest rate, and it checks that the environmentally friendly investment has been correctly done;
- UNDP provides TA to the MFIs;
- GEF provides subsidies up to 30% of the credits to MFIs: 10% to training for clients, 14% for clients that correctly implemented the biodiversity friendly investments (a PES provided to the community), 6% to MFI for each successful loan;
- The green credits: FDL designed a specific microcredit product (majority dedicated to agroforestry for coffee and silvopasture for cattle raising and milk) with reduced interest rate (3- 6% less than similar non-green credits), longer period (maximum 3 years compared to 2 years for similar non-green credits) training to clients per every credit and PES for successful clients. Credits were individual microcredits; Genesis did not design a specific product (to reduce high transaction cost), it provides no subsidization of interest rate, and it financed mainly agroforestry in coffee and cardamom. The three programme components: credit, training to clients and PES, were managed separately and disconnected in timing, contents and geographic areas. Credits were group microcredits.
- Training to clients: for FDL it was provided by the rural development center Nitlapan for every credit disbarred by FDL; for Genesis the training to clients was provided by an internal department by in-house technicians.

FDL is an example of partnership strategy (with Nitlapan providing the training to clients) and products customization, while Genesis is an example of in-house strategy, with the MFI directly providing the training to clients, and products standardization.

The *model without dedicated funding has the advantage of engaging the MFIs directly and increasing ownership*. Indeed, the MFI receives cheap or free TA and a full set of additional non-financial services for developing innovative green products, but it needs to look for additional funds or engage part of its own resources to disburse the dedicated green credits. On the other hand, *the absence of dedicated funding facilities could hamper the acceptance by MFIs and clients* that still do not see the business case for it, *or the possibility to scale up the project*. The *models with dedicated funding have the advantage of providing a full integrated package and incentives that can increase the uptake by MFIs and clients*, however they can *hamper sustainability at medium*

term, although they do push MFIs and clients to engage in green opportunities even if they do not see the business case for it.

Some institutions tried to implement a cross-subsidization strategy using return from some activities to finance the green portfolio, like Idepro in Bolivia with a strategy of financing sustainable value chains, or El Comercio, in Paraguay, that mixes profitable short term investments (like adapted seeds) to invest in longer term infrastructure investments, like greenhouses.

Details on partnerships

Various green microfinance projects are the results of complex partnerships and alliances with various institutions. In these multi-stakeholders partnerships, various actors play crucial role in the success of the projects. Below we provide some illustrative examples.

Important role of donors is highlighted for example by the case of EnDEV and GIZ Peru that have financed the “Energy Inclusion Initiative” (see Box 2) making it possible for ADA and MEI to provide TA required for developing RE and EE products for the MFIs Fondesurco and Caja Huancayo in Peru. Similarly, by the GEF that use d grants to finance the 30% subsidies that allowed the developmentnt of Proyecto CAMBio in Central America (see Box 4), or UNEP that supported the implementation of MeBA (see Box 5), or NDF that financed the FOMIN-IDB for the implementation EcoMicro (see Boxes 1 and 3).

Indeed, the ***GMF landscape in LAC is very much characterized by international projects, supported by international funders.***

The ***role of the public agency*** is well explained by the example of the MFI Emprender in Bolivia, who, for a programme that lasted between 2004 and 2009, received support from Fondesif¹⁰⁰, which organized activities to promote clean energy solutions, provided a subsidy on the cost of solar home systems (250 USD out of a total cost of 520 USD), and provided a credit line to

Emprender with a preferential interest rate (5% annual).

The importance of ***partnerships with local NGOs*** is clearly illustrated by the Nitlapan-FDL partnership in Nicaragua, a historical partnership that has lasted the last 20 years, and has allowed the MFI FDL to provide dedicated training to its clients for a relevant part of its agricultural portfolio. The training is paid by clients for its established credit lines or supported by donors for pilot projects. This allowed FDL to successfully implement Proyecto CAMBio, reaching more than 1.000 clients with agroforestry microcredits and between one and five visits with dedicated training on sustainable agriculture per each credit all along the first year after credit disbursement; or reach almost 300 clients with dedicated CC adaptation training during the implementation of the EcoMicro project.

The importance of strong partnership with local enterprises is well illustrated by the case of Te Creemos - Criotec, that have been able to complement each others expertise and align their objectives, thus fostering possibilities to scale, as well as the integration of green strategies inside

¹⁰⁰ *Fondesif: Fondo de Desarrollo del Sistema Financiero y de Apoyo al Sector Productivo. It is a decentralized public entity that aims to strengthen the MF and rural finance sector in Bolivia.*

the core of the MFI. However, additional non-financial services and trainings were fundamental: training was provided to 380 sellers with the objective to reach by the end of 2015 around 1.200 clients (about 3 per seller). Moreover, 3 full time staff were dedicated to work with the providers. The case illustrates the time and investment (in terms of training costs) required in order to scale.

It is important to note that local suppliers are not always interested in working with MF or the BOP market (scale and sustainability is a reason), and do not always have the ability to deliver the equipment to rural areas or to ensure after-sales services there.

Some innovative partnerships exist as well, as in the case of Emprender, that received a 0% credit line from KIVA (*crowdfunding platform for microfinance*) to finance its green portfolio (1 million USD since 2009) and this allowed for a reduction in risk and costs.

More examples on partnerships can be found in the Boxes in Appendix F.

Role of incentives: some further examples

Various incentives are implemented in the development of pilot programmes for green microfinance. In this appendix and in Appendix F we have described some of these incentives and how they were combined in programmes such as EcoMicro, Proyecto CAMBio, MeBA, among other MFI schemes.

Other examples of reduced interest rates can be seen in: Emprender in Bolivia that provides 16% annual interest rate compared to the standard rate of 32%, thanks to a cheap credit line for clean energy provided by Fondesif. This was similar to what FDL did in Nicaragua under Proyecto CAMBio, or Banco FIE, in Bolivia, amongst others. While for example the RE and EE microcredits of Fondesurco, in Peru, do not have subsidized interest rates, and neither does Genesis, in Guatemala. However, both of these have subsidies to disburse loans for agroforestry practices. In addition, Fondesurco provides some incentives to loan officers that provide green credits and EnDev in Peru is also planning to provide similar incentives to loan officers.

Moreover, as seen in Appendix F, EnDev also has a result-based financing facility for MFIs that is currently financing efficient cookstoves for Manuela Ramos, Adea Huaylas, and Caritas Cusco con Solidaridad.

▪ Appendix H: financial non-credit green microfinance products

There are *various financial non-credit products that are part of green microfinance*, such as: *green savings*, which are dedicated savings in which the savings are used to support environmentally friendly practices; *green microleasing*, in which for example the RE solution is leased to the clients with various business models (among which one possibility is PAYG that was discussed in section 5.2); *green remittances* (that we briefly discussed too in section 5.2), and *climatic and agricultural micro-insurance* to protect rural investments of smallholder farmers (see section 5.3).

These interesting *financial non-credit products are unfortunately much less diffused among MFIs in LAC*: of the 179 MFIs which responded to (SurveyM2015), we found *only 15 institutions that declared they had non-loans green financial products*, i.e. around 8%. Among them, *only 4 MFIs declared they had traditional agricultural micro-insurance for climatic events, while 2 declared they had an index climatic insurance, 4 MFIs declared they had micro savings that are somehow invested in green activities, and only one institution declared to have some sort of green remittances. Outreach is still very limited* with MFIs generally being engaged in activities that provide on average only some hundreds of products, with a couple of exceptions that provide more than 500 products.

▪ Appendix I: Agricultural-climatic micro-insurance in LAC

Proper risk transfer mechanisms against natural hazards are important for both the MFIs and their clients. Among other reasons, *natural hazards prevent the MFIs from taking advantage of portfolio diversification effects in areas of high exposure to climate risks*, such as rural areas, while clients are unable to use traditional risk-coping strategies due to the covariant dimension of natural shocks. Hence, smallholder farmers and low-income people can only transfer weather-related risks using small, inefficient and incomplete insurance markets. Similarly to other regions, *the main barriers are the high transaction costs* of serving low-income and dispersed clients, problems of *asymmetric information* and the *covariance of weather-related risks*. *The development of the climatic or agricultural micro insurance market is still limited and uneven across the region.*

Some governments support the development of agricultural and catastrophic insurance markets through different mechanisms: product research and development; legal and regulatory framework; agricultural insurance premium subsidies; public sector reinsurers; and provision of catastrophe reinsurers.

Several initiatives at the meso and micro level are emerging in the region, and they would need the support of MFIs to reach out to rural areas. But only few MFIs, apart from the national development banks in the region, have a sufficiently broad network in the rural areas. Many experts do expect that the urban saturated markets and the decreasing margins will provide incentives to the MFIs to move towards rural areas.

Microinsurance index based projects in LAC

Since the late 90s, the low-income population has had limited access to agricultural and catastrophic insurance, and this has prompted governments and international organizations to find alternative solutions to overcome the existing barriers. *Index-based insurance has been the most promoted solution.* Index-based insurances pay out benefits on the basis of a predetermined index (e.g. rainfall level) without requiring the traditional services of insurance claims assessors (Barnett et. al. 2008). In principle, they have the advantage, among others, of reducing costs and avoiding moral hazards. However, their actual implementation resulted to be more challenging than expected. The first initiative was implemented in 1998 in Nicaragua and since then many others have followed. Table A7 provides a review of the main projects and programmes in index-based insurance that have been carried out throughout the region. *However, most of these initiatives are closed or still in a feasibility study or pilot phase.* Indeed, the implementation and scalability of this innovative insurance mechanism suffers from several issues, with basis risk (low correlation with actual losses) being the most significant.

In general, *the most successful programs seem to be at the macro level, whereby the government is the insured* (the most outstanding example is Mexico) and the beneficiaries are the smallholder farmers. This type of scheme can easily reach scale because the payment of the premium is fully supported by the government budget and the geographical coverage is sufficiently wide to dramatically reduce the associated maximum probable loss.

However, given the relatively small size of insurance companies in LAC, a coinsurance (pool) agreement is often advisable.

In order to be effective, the index-based insurance programs at macro level need some basic conditions to be put in place. First, the *index operator should be an independent third-party* that provides timely information about the index realizations to all the stakeholders involved, and in particular to the insurance and reinsurance companies. Second, there must be a payment mechanism that allows the affected clients to *receive the payouts in a timely fashion*. These basic conditions are not always present in LACs.

These problems are exacerbated when the program is scaled down to the meso (MFIs, producers' associations, etc.) or micro level (household or farmer). For example, at the micro level, according to the experience of Fundación PROFIN in Bolivia, it seems that:

- Clients pay less attention to the price of the insurance if they are properly attended to, informed, receive technical assistance and have trust in the institution and the product;
- A continuous *marketing campaign* over time can increase the chances of getting more new clients on board;
- As farmers take time to appreciate the value of insurance, over the first years, providing partial indemnity to affected farmers even though the payout of the index insurance product was not triggered, can discourage the clients to abandon the program;
- Farmers are also very concerned about their transaction costs - using direct sale agents and mobile banking can reduce such costs;
- There is a need to discourage competition between government and private initiatives in terms of programmes and visions.

The *data quality is key to the development of the product*. The lack of (access to) long-term and reliable weather data is one of the main constraints in LACs. However, the currently available satellite-based data and the innovations in weather simulation models, especially for complex natural disasters, offer good solutions to such problems. The data provided by traditional weather stations is in this case used to test the reliability of the satellite-based index. The experience in LACs suggests that the available satellite-based data is however more appropriate for macro and meso programs than for micro programs, mainly because of the potential high basis risk.

In general, suggestions maybe made towards establishing new weather station to have greater coverage, however, the installation and maintenance of those stations is very costly and government budgets in LAC countries might not have the resources to make up for such costs. Area Yield Index is somewhat preferable in case of traditional weather risks but only if data on historical yields are available for homogeneous areas. Again, however, this type of data is barely available in LAC countries and if available, it is for an overly aggregated level over non- homogeneous areas. The other issue, in comparison with other areas in the world, is that several LAC countries are affected

by complex natural disasters such as hurricanes and tropical storms that lead to different types of shocks, and excessive rainfall may be just one of the many different possible negative outcomes.

Table A7 main projects and programs in index-based insurance

Country	Name	Level	Starting year	Risk covered	Index	Status	Results/Perspectives
Argentina	Feasibility Study for the Design and Implementation of Cotton Index Insurance - Chaco.	Macro	2011	Losses of cotton crops (cotton)	AY	Feasibility Study	Expected pilot in 2015/2016: potentially 1,100 small and medium cotton growers.
Argentina	NDVI Pasture index-based insurance for Livestock Producers in South West Buenos Aires Province.	Macro	2011	Losses of cattle	NDVI	Feasibility Study	No pilot yet. Signed cooperation agreement between Ministry, Superintendencia and Insurance Companies Association.
Bolivia	Design of agricultural insurance based on climatic indexes (In the frame of the Universal Agricultural Insurance "Pachamama" program).	Macro	2013	Losses of crops	(?)	Feasibility Study	(?)
Bolivia	"Apoyo a la gestión financiera de riesgos climáticos y reducción de la vulnerabilidad al cambio climático del sector productivo agrícola" (IADB).	Macro	2014	Losses of crops	(?)	Feasibility Study	(?)
Bolivia	Vida Agrícola.	Micro	2010	Losses of crops (potatoes and maize)	AY	Pilot / Active	In 2014: 1,090 households and 2,400 hectares insured in one department. Distributed by MFIs and other DFIs. Development of a microcredit product bundled with insurance. Planned expansion in other two departments.
Dominican Republic	Climate Index Insurance program: USAID.	Micro	2013	Livestock losses	NDVI	Feasibility Study	Expected pilot in 2015/2016: potential 1,200 farmers. Local MFI as supplier (likely bundled to credit).
Brazil	Index insurance for farm families in Rio Grande Du Sul	Macro	2001	Losses of crops (maize)	AY	(?)	In seven years (2001-2008) a total of 194,100 families growing maize were insured. No recent information.
Dominican Republic	Macro-level agriculture index-based insurance on the Hurricane Trajectory Index (HTI) and on the El Niño Southern Oscillation (ENSO) indicator.	Macro	2012	Losses of crops	NDVI	Feasibility Study	
Haiti	Kore W. Catastrophe insurance for microfinance clients (Fonkoze).	Meso / Micro	2008	Disaster losses	Earthquake, Rainfall or Wind	Micro: Closed Meso: Active	In 2012: 60,000 borrowers insured; MI insured. The indemnity-based component covering borrowers was discontinued the end of 2012. The index-based component covering the institution continues.
Haiti	SYFAAH (Agricultural credit and crop insurance for Haiti).	Micro	2013	Losses of crops (Rice)	AY	Pilot	In 2014: 249 farmers insured. Not bundled with credit.
Jamaica, St. Lucia, Granada, Belize and Guyana	"Climate Risk Adaption and Insurance in the Caribbean" Programme	Meso / Micro	2011	Property losses Loan losses	Wind speed or Rainfall (four trigger levels)	Active	The Livelihood Protection Policy (micro-level product for families) is currently available in Jamaica and St. Lucia. Distributed by credit unions. Future expected development from January 2016 in Belize and Dominican Republic. Results in mid-2015: TSI of \$300.5k, 447 active policies, 1,800 policy units. The Loan Portfolio Cover (meso-level product for lending institutions) is not introduced yet. Plans to start in St. Lucia in 2016. Problems: regulatory framework, small size of the islands.
Mexico	Parametric agricultural insurance (Seguro Agrícola Paramétrico)	Macro	2003	Losses of crops (Several)	Rainfall	Active	In 2014: 1.1 million hectares insured in 12 States; 5 crops.
Mexico	Satellite-based livestock insurance (Seguro Pecuario Satelital)	Macro	2007	Losses of Livestock	NDVI	Active	In 2014: 2.3 million animals insured in 8 States.
Nicaragua	Index insurance program for peanut (and rice) producers	Micro	2005	Losses of crops (peanut)	Rainfall	Active	In 2015 only one insurance company seems to be offering the product covering both peanut and rice. Results are limited.
Nicaragua	Microinsurance component of a green finance product for smallholder farmers' adaptation to climate change (in the frame of the EcoMicro programme)	Micro	2013	Losses of crops (maiz and beans)	Rainfall	Closed	Only feasibility study. Problems: difficulties in obtaining access to information and low potential demand due to high premium.
Peru	Insurance for the adaptation to climate change	Meso	2004	Losses caused by extreme events of El Niño	Sea temperature	Closed	Problems: sold to one MFI for two years but no more interest; low demand because of high premium. The insurance company plans to relaunch a revised product in 2017.
Peru	Catastrophic agriculture insurance program	Micro	2009	Losses of crops	AY	Active	Problems: sold to one MFI for two years but no more interest; low demand because of high premium. The insurance company plans to relaunch a revised product in 2017.
Regional Level	Catastrophic Microinsurance Regional Project (IADB)	Micro	2014				Only technical assistance.
Sixteen Caribbean Countries and one of Central America (Nicaragua)	Caribbean Catastrophe Risk Insurance Facility (CCRIF) SPC (Segregated Portfolio Company)	Macro	2007	Natural disaster damages	Tropical cyclone, earthquake and excess rainfall	Active	Results: Since 2007, 13 payouts totaling US\$ 38 million to 8 member governments. In 2014-2015, issued 36 tropical cyclone, earthquake, and excess rainfall policies to 15 countries. In 2015, CCRIF and COSEFIN (the Council of Ministers of Finance of Central America, Panama and Dominican Republic) signed a MoU to provide catastrophic insurance to Central America countries.
Uruguay	NDVI Pasture index-based insurance for Livestock Producers in Uruguay	Macro	2011	Losses of cattle (breeding cows)	NDVI	Feasibility Study	Expected pilot in Spring/Summer 2016: 300 households and 15,000 cows.
Uruguay	Innovaciones en Seguros de & dice pan el Sector Hortícola de la Zona Sur del Uruguay	Micro	2013	Losses of crops (horticulture)	Pilot	Feasibility Study	The pilot was carried out from Jan to Apr 2014 covering an expected 700 farmers. In 2015 the Gov't launched an index based insurance for Maize producers only.
Dominican Republic	Meso-level area yield index insurance for the national federation of cocoa growers	Meso	2012	Losses of crops (cocoa)		Feasibility Study	
Jamaica	Weather insurance for the coffee sector in the Blue Montouains region	Macro/ Meso/ Micro	2011	Losses of crops (coffee)	Wind (simulated)	Feasibility Study	

Note: NDVI (Normalized Difference Vegetation Index); AY (Area-Yield).

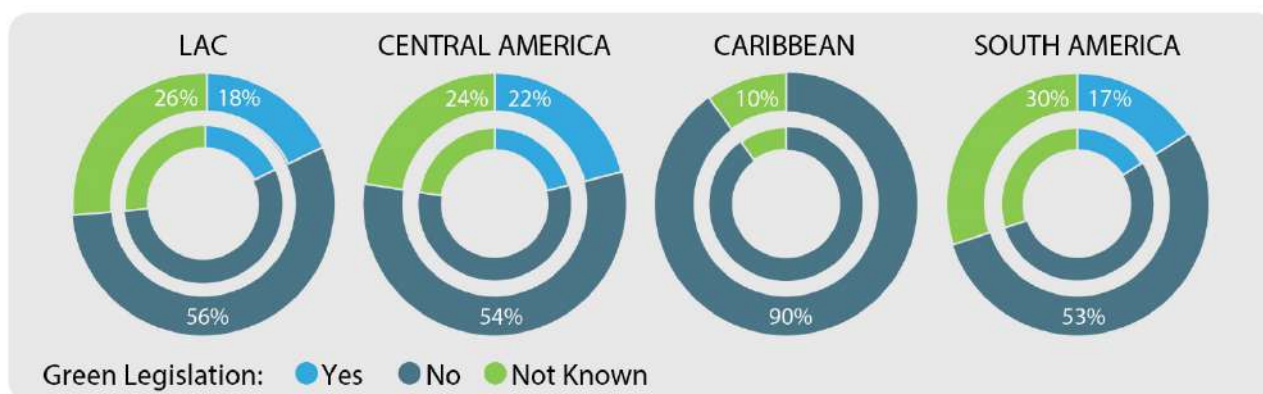
▪ Appendix L: Market for Green Microfinance in Latin America and Caribbean and Opportunities

Environment for Green Microfinance

MFIs in LAC still perceive a weak enabling environment for green activities, with few MFIs having to comply with local environmental regulations. These regulations refer to obligations in assessing the environmental impacts of activities financed or in assessing the direct environmental impact of MFIs (Figure A 5). In addition, an even smaller number of MFIs know about public programmes that aim to promote green products (such as RE/RR or ESP or CCA) for poor households or micro enterprises in their area of operation (Figure A 6).

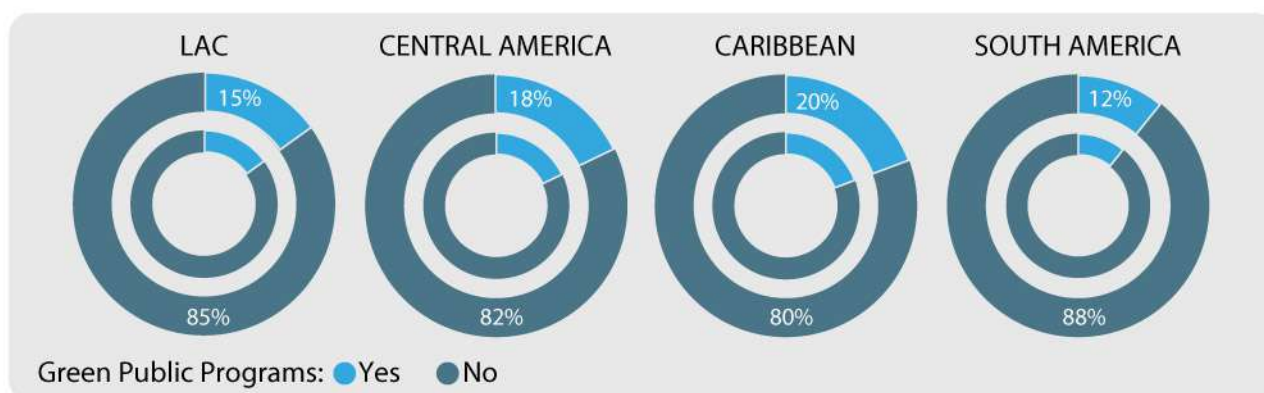
However, 82% of the MFIs in LAC¹⁰¹ believe that public intervention in the green sector could be beneficial to support the institution to develop green products, while the remaining MFIs deem public intervention to be unfair competition due to the too low interest rate they provide for such products. Some MFIs feel that public cooperation is often bureaucratic and has some form of political orientation.

*Figure A 5: % of MFIs that declared in 2015 that there exists a law in their region of operation that requires the assessment of environmental impact of MFIs or its clients' activities. Over a sample of 171 MFIs in LAC (68 in Central America, 10 in Caribbean, 93 in South America).
Source: SurveyM2015.*



¹⁰¹ Over a sample of 150 MFIs in 2015 (SurveyM2015).

Figure A 6: % of MFIs that declared in 2015 that they know of the existence of public programmes aiming to support green initiatives (RE/EE or ESP-CCA or others such as climatic insurance) in the region where they operate. In a sample of 170 MFIs in LAC (67 in Central America, 10 in Caribbean, 93 in South America). Source: SurveyM2015.



We have often heard that public intervention in energy could crowd out MFIs, for example, due to highly subsidized prices. Beyond the public - private discourse, the effect of public intervention should be contextualized and assessed with specific examples. However, it is interesting that MFIs would, on average, welcome a well-structured public intervention to support the sector.

Microfinance Networks could in principle play an important role in supporting green microfinance (e.g. See Box 2 in Appendix F). Indeed, various microfinance networks in LAC believe that it is a good moment for them to become engaged in green practices as they believe they have a relevant role to play due to their proximity to MFIs, in addition to: the possibilities they have to support product standardization, reach scale economy, and support continuous green training, etc. However, networks also underline that to play such a role they would need some external support to better understand the topic, implement adequate green training for their members, and be able to identify relevant actors-partners that could support green practices among their members.

Some networks such as REDCOM, in Costa Rica, declare that their objective is to become a green network, while others, for example, KATALYSIS, in Central America, declared that they are already engaged in developing green initiatives.

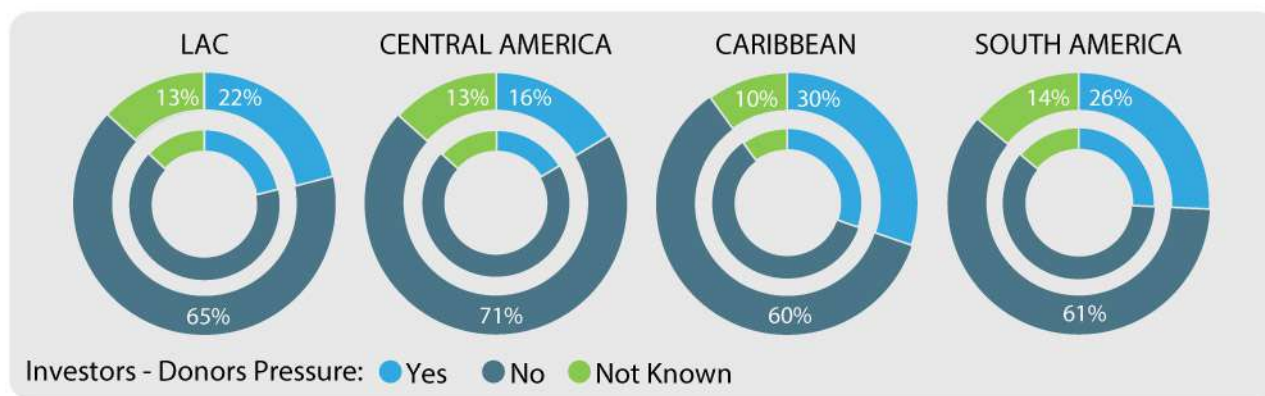
Some actors believe that there is the need for a more holistic and coordinated strategy to support green microfinance and that, in particular, initiatives are still too focused on MFIs. The public sector has a very limited engagement in the topic, and this has consequently caused MFIs to be still too passive, with small and isolated initiatives. The general undertone is that existing regulation is still not supportive enough for green microfinance, and that subsidies are sometimes counterproductive. A potential priority to foster growth in the sector is to promote coordination amongst the various initiatives. Additionally, local and international NGOs or social initiatives are playing a role to support the new sector. However, there is also the feeling that sometimes green is more of a trend than a real need, and thus, there is the need to work on increasing environmental awareness and education.

Data is still missing to clearly show that green investments are not only a product but also opportunities for various actors.

Funds supply

Even if the number of MIVs that introduce environmental criteria into their investment decisions has grown (Symbiotics), MFIs in LAC declared that only a few investors or donors ask them about environmental management or specific green engagements (Figure A 7). Instead, the large majority of MFIs declared that environmental protection is an important current trend (Figure A 8).

Figure A 7: % of MFIs that have investors or donors that put as precondition for support that the institution manages environmental risk. Declared in 2015, over a sample of 172 MFIs in LAC (68 in Central America, 10 in Caribbean, 94 in South America). Source:SurveyM2015.



Investors are often interested in green microfinance, which is considered to be good for innovation and impact, but is often not very familiar with the issue, actors or products, waiting for MFI responses. The direct engagement by investors or MIVs is still limited and the private sector is still the large missing player, however, an important part of initiatives does receive public or international support.

There is the feeling that the technology providers sector is still not mature enough, with large providers unable to respond to the retail demand in rural areas and smaller suppliers lacking the right

Figure A 8: % of MFIs whose board of directors or the executive directors consider that the environmental protection is an important trend-topic. Declared in 2015, over a sample of 172 MFIs in LAC (68 in Central America, 10 in Caribbean, 94 in South America). Source:SurveyM2015.



management capacities. Where there is expertise, there is still not the required coordination to match suppliers and MFIs' objectives.

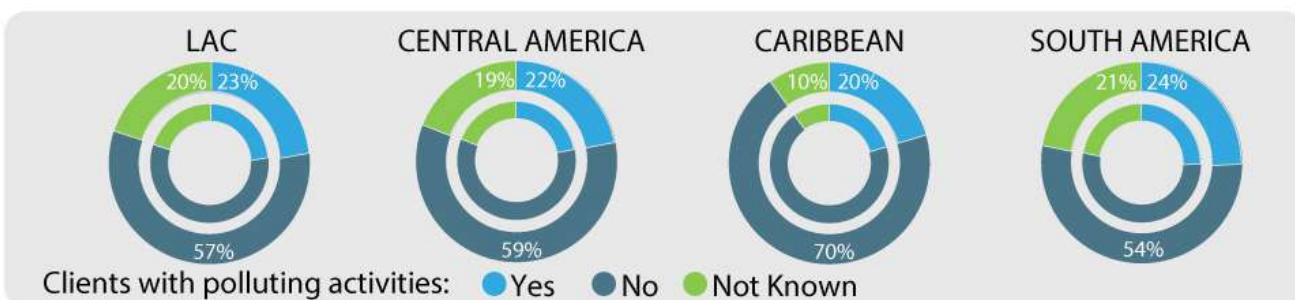
Another sentiment is that MFI level demand for green products is increasing, but there are obstacles in finding the right TA, suppliers or financial resources, and in prioritizing green strategies. Some investors find that there is more demand by SMEs, for bigger and more expensive technologies, rather than from micro enterprises and poor households only. At the LAC level, there is the perception that, at the moment, there is still no relevant engagement in investment, but on the other hand, there is a lot of TA.

It is recommended that more investments be made in coordination, awareness and communicate successful-innovative models to crowd in the investors sectors.

Demand

Few MFIs believe that their clients have activities that pollute the local environment (such as water pollution, deforestation or use of chemicals, etc.) (Figure A 9). However, among these, it is estimated that on average 25,5% of their clients conduct environmentally polluting activities¹⁰², while This percentage varies between 2% to 90% according to MFI.

Figure A 9: % of MFIs that declared to have clients involved in activities that pollute the environment. Declared in 2015 (SurveyM2015), over a sample of 172 MFIs in LAC: respectively 68 in Central America, 10 in Caribbean, and 94 in South America.

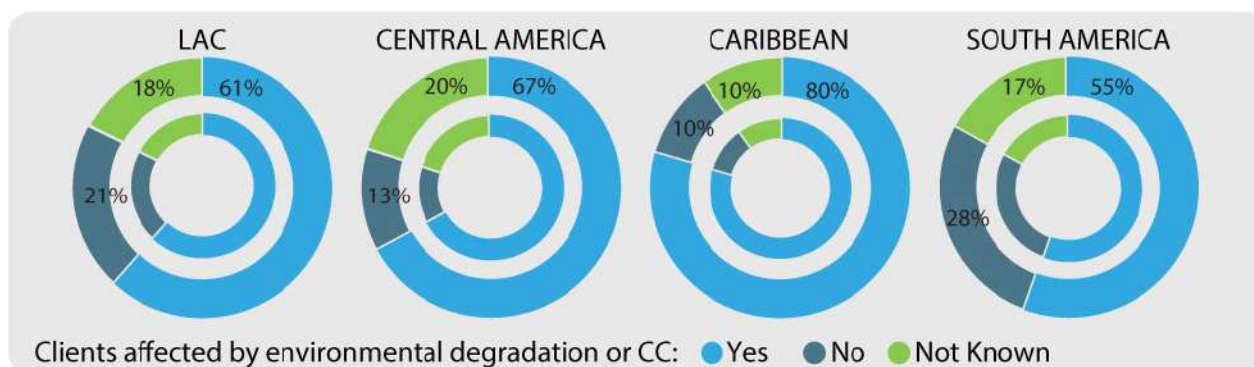


On the contrary, a large majority of MFIs believe that their clients are affected by environmental degradation or climatic events (such as lack of wood, polluted water, or droughts, floods, etc.) (see Figure A 10). Among them, MFIs declared to have on average 30,4% of their clients affected by environmentally degradation or CC¹⁰³, while this percentage varies between 1% to 95% depending on the MFI.

¹⁰² Among the 37 MFIs that declared to have clients with polluting activities.

¹⁰³ Among the 81 MFIs that declared to have clients affected by environmental degradation or CC.

Figure A 10: % of MFIs that declared to have clients affected by environmental degradation or climatic events. Declared in 2015, over a sample of 174 MFIs in LAC: respectively 70 in Central America, 10 in Caribbean, and 94 in South America. Source: SurveyM2015.



The way clients perceive the demand for green products is mixed according to regions and products. For many actors, demand remains low at the client level, mainly due to low environmental awareness. Some believe that products are still not adequate enough to satisfy demand, while others deem that demand is high within the agricultural and forestry sectors, but that these are difficult sectors, per se, for MFIs.

The view is that there exists a latent demand by clients. There is the need for adapted products to transform the latent demand into effective demand, and thus increase the willingness to pay for these products. Where cost of energy is higher, natural resources more scarce, or effect of CC more important, demand is growing faster.

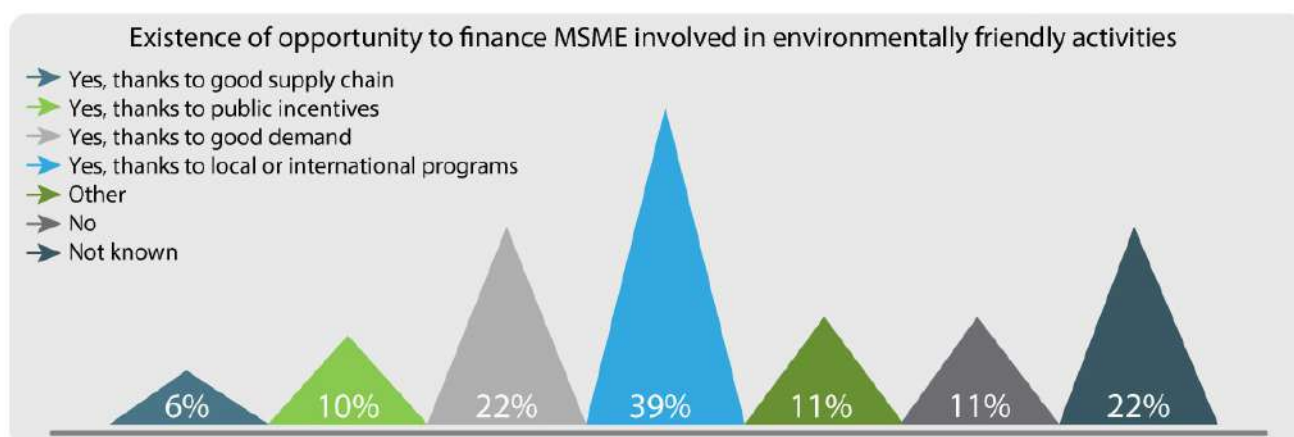
What, again, appears clear, is that supply is not able to match, understand demand or develop the right tools. For example, the MFI Contactar, in Colombia, estimates that around 80% of its clients would need products to improve their agricultural productivity and their decrease climatic vulnerability (like MeBA). Currently, however, only 4% of clients are receiving these products.

Opportunities

The great majority of MFIs declare that they see potential opportunities to finance MSMEs involved in environmentally friendly activities, particularly thanks to local or international programmes dedicated to support these activities, as well as the latent demand for them. However, very few MFIs see supporting supply chains or public incentives that could at present help them to take advantage of such opportunities (Figure A 11¹⁰⁴).

¹⁰⁴ In figure A11 percentages do not sum to 100% because an MFI could provide more than one answer.

*Figure A 11: Opinion of MFIs in LAC about the opportunity to finance micro small and medium enterprise involved in green activities. Declared in 2015, over a sample of 172 MFIs in LAC.
Source: SurveyM2015*



Various actors believe that the microfinance sector in LACs is more mature than in other regions, and that these MFIs have a significant level of institutional capacity and client outreach, and good experience in innovation. Several actors also believe that there is the need for products diversification, and that it could be a favourable moment for the development of green products.

It is not until farming and conservation agriculture has grown importantly in LACs (Kassam etc.), in particular in Brazil and Argentina, and reaches the point that it could support a microfinance engagement in sustainable agriculture, while some countries like Uruguay that have done a major shift toward renewable energies (today around 95% of electricity come from renewable energies) could make the example for a systematic change.

Due to the average high level of electrification actors see rural enterprises, more directly exposed to CC, and the high level of biodiversity, as the most tangible opportunity together with adapted RE technologies for remote rural areas. Sometime green microfinance is seen by some actors as more advanced in Asia, in term of size, while the case for RE or EE is more evident for both Asian and African regions (see Appendix B).

▪ **Appendix M: Institutions covered in the study**

In this appendix we list all the institutions that has been covered in the study (cumulated coverage for all the surveys and database available, as per Appendix A) and the institutions that have kindly shared some of their expertise with us dedicating us the time of an interview or a field visit, and enlightened us with their experience in the field.

MFIs - 553 in total

Argentina (22)

Alternativa 3, Avanzar, BMM Córdoba, CFA, Columbia Microcréditos, Cordial Microfinanzas, Emprenda, Entre Todos, FIE Gran Poder, FPVS, OMLA, Progresar, Pro Mujer – ARG, Contigo Microfinanzas, Sagrada Familia, Mutual UC y D, Fundación para el Desarrollo Regional, CEFAM, Grameen Chaco, Fundación para el Desarrollo del Centro Chaqueño, Intihuaca - BMM Argentina, Techo.

Belize (1)

LICU.

Bolivia (27)

AgroCapital, ANED, Banco FIE, BancoSol, CIDRE, Coop Fatima, Coop Jesús Nazare0, CRECER, Diaconía, EcoFuturo FFP - BANCO PYME ECOFUTURO, Emprender, Fassil FFP, FONCRESOL, FONDECO, Fortaleza FFP, FUBODE, Asociación de Servicios Financieros Cafetaleros FINCAFE, FUNBODEM, IDEPRO, IMPRO, PDAI, Porvenir, ProCredit – BOL Banco Los Andes, PRODEM FFP, Pro Mujer – BOL, Banco Solidario S.A., IFD Sembrar Sartawi.

Brazil (48)

Accion Brasil, Acredite, Agencia do Crédito, Amazoncred, ANDE, ASCOOB CENTRAL, Associacao Crédito Solidario Orte Ordeste SC, BANCO DE MICROCREDITO EXCELSIOR, Banco da Familia, Banco do Emprendedor, Banco do Planalto Norte, Banco do Vale, Banco Popular da Mulher, BANCRI, Casa do Microcrédito, CEADe - Centro Ecuménico de Apoio ao Desenvolvimento, CEAPE BA - CENTRO DE APOIO AOS PEQUENOS EMPREENDIMIENTOS DA BAHIA, CEAPE MA, CEAPE PE - CENTRO DE APOIO AOS PEQUENOS EMPREENDIMIENTOS DE PERNAMBUCO, CEAPE PI, Caixa, Agroamigo, CrediAmigo / Banco do Nordeste, CREDIOESTE, Credisol, Banco Palmas, Crédito Solidario do Povo, Cresol Central, Extremo Oeste Agencia de Crédito, ICC BluSol - Instituição Comunitária de Crédito Blumenau Solidariedade, ICC Conquista Solidaria, ICC MAU-CE, ICC Portosol, Instituto Estrella, Instituto Finsol, Lander, Empresta Capital, Santander Microcrédito, Sao Paulo Confia, Profomento, Juriti Microfinanças, Desenhahia, Desenvolve - Agência de Fomento de Alagoas, Centro de Apoio aos Pequenos Emprendedores de Segipe, FUNDO ROTATIVO DA AÇÃO DA CIDADANIA, Instituição Comunitária de Crédito Central, Instituição de Crédito Solidario de Maringá, SOCIALCRED.

Chile (7)

BancoEstado, BanDesarrollo Microempresas, BanIgualdad, Emprende Microfinanzas, Fondo Esperanza, CORPORACION W.W.B. (FINAM), Oriencoop.

Colombia (43)

Actuar Quindío, Actuar Tolima, AYW, Bancamia, Bancolombia Microfinanzas, COMERCIA COOP, Comultrasan, Confiar, Contactar, Coomultagro, COOSERFIN, COOTREGUA, Crezcamos, FiMSA, FMSD, Fomentamos, Fundación Amanecer, FUNDESAN, FUNDESMAG, Interactuar, Microempresas de Antioquia (de Colombia), Fundación Ecopetrol para el Desarrollo del Magdalena Medio, FUNDACION INDUFRIAL, Ecofin S.A., Procredit Colombia, Fundación de la mujer - FMM Bucaramanga, Corporación Acción por Bolívar Actuar Famiempresas, AGAPE, Fundación Coomeva, Fundación Mundo Mujer - FMM Popayán, Alcaraván, Banco Caja Social – BCSC, BanCompartir – FinAmerica, CORPORACIÓN ACCIÓN POR CALDAS ACTUAR MICROEMPRESAS - Actuar Caldas, FUNDACION MARIO SANTO DOMINGO, Opportunity International Colombia, ASOCIACIÓN ONG AVANSAR, EXPRESS MICROFINANZAS SAS, COFINCAFE, Bancoldex, Eclof, OLC, WWB Cali (Banco).

Costa Rica (22)

ACORDE (ASOCIACION COSTARRICENSE PARA ORGANIZACIONES DE DESARROLLO, ADAPTE, ADESTRA, ADRI, APACOOOP, APIAGOL, ASPROA, ASOPROSANRAMON, CREDIMUJER, EDESA, FIDERPAC, FOMIC, FUDECOSUR Fundación para el Desarrollo de las Comunidades del Sur, CEMPRODECA, Coopenae, Fundación Mujer, FUNDEBASE -Fundación para el Desarrollo de Base, Fundación Fundecooperación para el Desarrollo Sostenible FUNDECOOPERACION, Coopealianza R.L., FUNDECO, Cooperativa de ahorro y crédito de ciudad Quezada, FUNDECOCA.

Dominican Republic (18)

ALNAP - Asociación La Nacional de Ahorros y Prestamos, ASPIRE, Banco ADEMI, Banco ADOPEM, CDD, ECLOF – DOM, FDD - Fundación Dominicana de Desarrollo, FIME – Visión Fund, FONDESA, Fundación Esperanza, Fundación Sur Futuro, MUDE – DOM, IDDI, Banco de Ahorro y Crédito Unión, ADEPE, Fondo de Inversiones para el desarrollo de la microempresa (WVI), FONDAGRO FONDO COOPERATIVO PARA EL DESARROLLO AGROEMPRESARIAL, PYME BHD.

Ecuador (61)

Banco Solidario, CACMU Cooperativa de Ahorro y Crédito Mujeres Unidas, CACPE Yantzaza, CCC, CEPESIU, CESOL ACJ, COAC 4 de Octubre, COAC Ambato, COAC Atuntaqui, COAC Chone, COAC Esperanza y Progreso del Valle, COAC Fernando Daquilema, COAC Fondivida, COAC Huaycopungo, COAC Jardín Azuayo, COAC Kullki Wasi, COAC La Benefica, COAC La Merced, COAC Luz del Valle, COAC Minga, COAC Mushuc Runa, COAC Padre Vicente, COAC Pallatanga, COAC Rio Bamba, COAC Sac Aiet, COAC San Antonio, COAC San Jose, COAC Santa

Anita, (BAN)CODESARROLLO, COOPROGRESO, Banco Pichincha –Microfinanzas, DECOF, Banco D-Miro, ECLOF – ECU, FACES, FED, FINCA-ECU, FODEMI – VisionFund, Fundación Alternativa, Fundación Espoir, INSOTEC, ProCredit – ECU, UCADE Ambato, COAC Guaranda, Coop 29 de Octubre, CACPE PASTAZA, FINANCOOP, COAC Chibuleo, Banco Grameen, COAC Artesanos, Coac Sumac Llacta Ltda., COAC Nieva Huancavilca, Fundación de Ayuda Microempresarial – FUNDAMIC, Cooperativa de Ahorro y Crédito de la Pequeña, Empresa Cacpe Zamora, COAC San Gabriel, Cooperativa Maquita Cushunchic Ltda - COAC MCCH, UCADE Latacunga, COAC INDIGENA SAC LTDA., FASCA, Coop Virgen del Cisne, UCADE Santo Domingo.

El Salvador (25)

ACCOVI, AMC de R.L., ASEI, Asociación El Bálsamo, BANCOFIT, Caja Olocuilta, CCAMETRO ENLACE, FADEMYPE - Fundación para el Autodesarrollo de la Micro y pequeña empresa, FINCA – SLV, FUNSALDE, Micredito, ADEL Sonsonate, PADECOMSMCREDITO, ProCredit – SLV, Apoyo Integral - FUSAI, CREDICAMPO. S.C. DE R.L. DE C.V. - Fundación CAMPO, FUNDAGEO, Mi Banco, FOMENTA S.C. DE R.L. DE C.V., Asociación ADEL Chalatenango NGO, Banco Izalquenho de los Trabajadores, Caja de crédito Rural de Nueva Concepción, Caja de crédito rural de Zacatecoluca, Caja de Crédito de San Pedro Onualco.

Guatemala (26)

ADICLA, AGUDESAS, ASDIR, Asociación Raíz, Asociación SHARE, Asociación CHITO IWIB, XUKUJE R- Asociación Ayúdense y Nosotros les Ayudaremos (AYNLA) , Banrural Guatemala, CARE – GTM, CDRO, CRY SOL, FAFIDESS-FUNDACION DE ASESORIA FINANCIERA A INSTITUCIONES DE DESARROLLO Y SERVICIO SOCIAL , FAPE -Fundación de Asistencia para la Pequeña Empresa, FIACG, FINCA – GTM, FONDESOL - fondo para el Desarrollo Solidario, Friendship Bridge, Fundación MICROS, FUNDEA - Fundación para El Desarrollo Empresarial y Agrícola, FUNDEMIX - Fundación de Desarrollo de Mixco, Compartamos – GTM, Xeiprojuve, FUNDESPE, G & T Continental, ASOCIACION DE MUJERES EN DESARROLLO –MUDE, Genesis Empresarial, Cooperativa COOPEDEL Responsabilidad Limitada.

Haití (10)

ACME - Action Pour La Coopération avec La Micro Entreprise S.A, CEC / Le Levier

FINCA – HTI, Fondespoir, Fonkoze, Foundation Aidha Haití, IDM(MicroFinance), MCN- Micro Crédito National, Palmis, SOGESOL.

Honduras (28)

ADICH - Asociación para el Desarrollo Integral Comunitario de Honduras, Banco Popular, Banco del País, CACIL - Cooperativa de Ahorro y Crédito Intibucana LTDA, CCICH, Credisol Honduras - Fondo para el Desarrollo Local de Honduras, OPDF, FAMA OPDF, FHA - FUNDACIONHORIZONTES DE AMISTAD, FINCA – HND, FINSOL, Fundación Adelante, Instituto Hondureño de Estudios y Desarrollo Integral de la Comunidad (INHDEI), FUNDAHMICRO, FUNDEVI - Fundación para el Desarrollo de la Vivienda Social, Urbana y Rural, FUNED -OPDF VisionFund, FUNHDE, HDH OPDF - Fundación Microfinanciera Hermandad de

Honduras, ODEF Financiera, AHSETFIN, PILARH OPDF, BANCO HONDUREÑO DEL CAFE S.A. (Bancafe), ProCredit – HND, Microfinanciera Prisma (Honduras SA), World Relief de Honduras, ADRA , IDH – INSTITUTO PARA EL DESARROLLO HONDUREÑO, Asociación de Desarrollo Pespirense "ADEPES", COCAFAL.

Jamaica (5)

JNSBL, Access Financial Services, Nation Growth MFI, Sure Finance Services Ltd, Micro Credit Ltd.

Mexico (82)

ALSOL - CONTIGO SA DE CV SOFOM ENR, Alternativa 19 del Sur, AMEXTRA – Sofinco Apoyo Eco0mico, APROS, ASP Financiera, ATEMEXPA, Avance - AVANCE Y FORTALECIMIENTO INTEGRAL, S.A. DE C.V. SOFOM ENR, Caja Depac Poblana, Caja Popular Mexicana, COCDEP, Compartamos Banco, CONSER, Conserva, CONSUR, Crece Safsa, CrediAvance, CrediClub, CrediComun, CrediConfia, Crédito Real, CREDITUYO, ASESORIA FINANCIERA DE MEXICO, S.A. DE C.V. SOFOM ENR, Don Apoyo, Finacen, FinAmigo, Financiera Independencia, FINCA – MEX, FinComun, Forjadores de Negocios – banco, Visión Fund Mexico, FINCRECEMOS, IAMSA, Invirtiendo, Mas Kapital, Oportunidad Microfinanzas, Podemos Progresar, Prestamos para Crecer, Pretmex, Progreseemos, Pro Mujer – MEX, SemiSol, Caja Popular Río Presidio, SOLFI, Solución Asea, Soluciones Reales, Cibanco, Te Creemos, FORTALEZA a Mi Futuro SA de CV SOFOM, UPS, Cege Capital, S.A.P.I. de C.V., ProApoyo, RENTAMIGO SA DE CV SOFOM ENR, Fincontigo, CENTRO DE DESARROLLO COMUNITARIO CENTEOTL, A.C., Grameen de la Frontera So0ra, CONSULTORA INTEGRAL DE AGRONEGOCIOS SA DE CV SOFOM ENR (FINANCIERA CIA), Consejo de Asistencia al Microempendedor, S.A. de C.V., S.F.P. – CAME, Siempre Creciendo, CAJA SOLIDARIA GUACHINANGO, Caja Zongolica, ADMIC, Impulso para el Desarrollo de Mexico, ALFIN, Apoyo Integral México, CONSOL NEGOCIOS SA DE CV SOFOM ENR, Emprendamos, Finserca, Grupo Finclusion Provident, impulso Rio la Venta SA de CV., UNIDOS POR EL PROGRESO DE SAYULA SC DE AP DE RL DE CV, IMPULSARTE PARA CRECER SA DE CV SOFOM ENR, Sociedad Enlace, SOFIPA, SUFIRMA, SERVICIOS FINANCIEROS ALTERNATIVOS SA DE CV SFP – SEFIA, Fundación Hábitat y Vivienda, A.C. – FUNHAVI, ASP Integra Opciones , Bienestar, Préstamos y ahorro, DECA, UNICREICH - Unión de Crédito Interestatal Chiapas.

Nicaragua (31)

ACODEP, ADIM - Asociación Alternativa para el Desarrollo Integral de las Mujeres, AFODENIC - Asociación para el Fomento al Desarrollo de Nicaragua, ASODENIC, ASODERI, Caritas Esteli, CEPRODEL - Centro de Promoción del Desarrollo Local - Fundación Prodel, Coop 20 de Abril, Coop Avances, Cooperativa Armonía, Cooperativa Iaguei, Cooperativa La Unión, FDL, Cooperativa de Ahorro y Crédito Financiera Moderna, Financiera Fama, FINDE, FINCA – NIC, FUDEMI, Fundación 4i-2000, Fundación León 2000, FUNDENUSE, FUNDESER, MiCredito, PRESTANIC, ProCredit – NIC, PRODESA, FINANCIAS CAPITAL, Asociación Pana Pana, Aldea Global, CrediFactor, Pro Mujer – NIC.

Panama (12)

Coop Juan XXIII, Financia Credit, CEGEL, Microserfin, Banco Delta, G&T Continental, CEPAS, Financiero Empresarial, MiBanco, Cooperativa Juan Pablo I, CFE Panama, ProCaja - Asociación para el Desarrollo de las Cajas Rurales.

Paraguay (9)

Banco Familiar, Crédito Agrícola De Habilitación, Coop Universitaria, Fundación Paraguaya, Interfisa Financiera – banco, Microsol, Coop. Medalla Milagrosa Ltda., Financiera El Comercio – FIELCO, Visión Banco.

Peru (65)

ADEA Andahuaylas, ADRA – PER, Alternativa Microfinanzas, AMA, ASIDME, Asociación Arariwa, CMAC Arequipa, CMAC Cusco, CMAC Huancayo, CMAC Ica, CMAC Maynas, CMAC Paita, CMAC Pisco, CMAC Piura, CMAC Sullana, CMAC Tacna, CMAC Trujillo, CMCP Lima, COOPAC Chiquinquirá, COOPAC León XIII, COOPAC Los Andes, COOPAC San Cristóbal, COOPAC San Martín, COOPAC Santa María, COOPAC Santo Cristo, COOPAC Santo Domingo, COOPAC Tocache, CRAC Credinka, CRAC Los Andes, CRAC Nuestra Gente, CRAC Profinanzas, CRAC Señor de Luren, CRAC Sipan, Crediscotia, EDAPROSPO, EDPYME Acceso Crediticio, EDPYME Alternativa, EDPYME Credivision, EDPYME Efectiva, EDPYME Nueva Visión - Financiera Nueva Visión, Financiera Proempresa, EDPYME Pro Negocios, EDPYME Raíz, EDPYME Solidaridad, Financiera Confianza, Financiera Crear, Financiera Edyficar, FINCA – PER, FONDESURCO, FOVIDA, IDESI Lambayeque, IDESPA, Manuela Ramos, Mentors – PER, MiBanco, ONG ALTERNATIVA, Microcrédito para el Desarrollo, Popular SAFI, COOPERATIVA DE AHORRO Y CREDITO Coopac NORANDINO LTDA. - COOPAC Norandino, INSTITUTO DE DESARROLLO REGIONAL CESAR VALLEJO - IDER CV, Compartamos Financiera, CAC Santo Domingo de Guzmán, IDESI Región Grau, PRISMA.

Suriname (1)

De Schakel.

Trinidad & Tobago (3)

MIPED, NEDCO, HOPE TT.

Uruguay (6)

COFAC, Microfin Uruguay, Cooperativa Acac, Republica Microfinanzas, FUCAC, FUNDASOL.

Venezuela (3)

BanGente, MiBanco Venezuela.

Microfinance Network -11 in total

ASOFIN, FINRURAL, ASOCIACION REDCOM, Red Financiera Rural, Asociación de Organizaciones de Microfinanzas El Salvador, Red de Instituciones de Microfinanzas de Guatemala, REDIMIF, Asociación Gremial de Entidades de Microfinanzas "AGREMIF", ProDesarrollo, Finanzas y Microempresa A.C., Asomif Peru, COPEME, KATALYSIS RED MICROFINANCIERA DE CENTROAMERICA - Red KATALYSIS.

International and local Actors

ADA, Frankfurt School of Finance & Management, Blueorchard finance, Climate and Clean Air Coalition, Clarmondial, Sicirec Bolivia Ltda, ResponsAbility Investments AG, Planet Rating, Enclude, Center for Microfinance and Financial Inclusion Studies, Finance in Motion - eco.business Fund, Achieve Consulting Group, EMPRESTA Capital, InnovacionAL, ME SOLshare Ltd., AFI, ANALISTAS FINANCIEROS INTERNACIONALES, HIVOS, CABEI, ALTERFIN, IDB-Multilateral Investment Fund, Rabobank rural Fund, Ecobanking, Banco hipotecario, Advanced conservation, OikoCredit, FMO, Airbolivia, CordAid, UNEP, MicroEnergy International, Microfinaza Rating, Fondazione Giordano Dell'Amore (FGDA), CERISE, European Microfinance Platform (e-MFP), Rabook Bank, Entrepreneurs du Monde, Bloomberg, Symbiotics, Symbiotics, MIX Market, Superintendencia de Banca, Seguros y AFP, Caja los Andes, Microrate Peru, EnDev, La Positiva, Dirección General de Cambio Climático, Desertificación y Recursos Hídricos (Ministerio del Ambiente), Microsol International, Entelin, Nitlapan, Advanced Conservation Strategies, Climate Index Insurance program USAID, Climate Risk Adaptation and Insurance in the Caribbean.