



Frankfurt School
FS-UNEP Collaborating Centre
for Climate & Sustainable Energy Finance



MICRO-LOANS
FOR REDUCING THE VULNERABILITY
OF SMALL AGRICULTURAL PRODUCERS
TO CLIMATE RISKS

2015

A PERSPECTIVE FROM THE COLOMBIAN ANDES

Microfinance: A strategic ally in reducing the vulnerability of small agricultural producers

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Climate change is increasing the intensity and altering the patterns of precipitation, reducing groundwater reserves and producing frequent droughts and flooding in the Andes. Intense rains, combined with agricultural intensification, deforestation and overgrazing, are resulting in soil erosion and less fertile land (Pérez et al., 2010). Consequently, climate phenomena together with environmental degradation processes are weakening ecosystem services that are essential for agricultural activity, thus undermining the means for making a living available to small Andean agricultural producers.

In Colombia climate variations associated with the El Niño and La Niña phenomena have presented serious challenges for farmers, revealing their lack of capacities for managing risks and adapting to climate fluctuations and extreme events (Lau, Jarvis & Ramírez, 2011). Some farmers express their concern over climate change and emphasize the need to confront it proactively. Many have plans to invest in systems for increasing the productivity of their land¹ (Urquiza, 2012). However, such plans require the availability of financing to cover investment costs, and technical

assistance is crucial for the correct implementation of these systems.

Microfinance institutions (MFIs) have enormous potential for closing the gap in access to loans in rural areas, and catalysing the implementation of alternatives for reducing the vulnerability of small agricultural producers to climate change. Unlike commercial banks, MFIs specifically serve human groups that have limited economic resources and that tend to be more vulnerable. These institutions handle a high volume of transactions in small amounts, and are thus able to replicate multiple small-scale actions that translate into major changes (UNEP – ROLAC / FS – UNEP Centre, 2014).

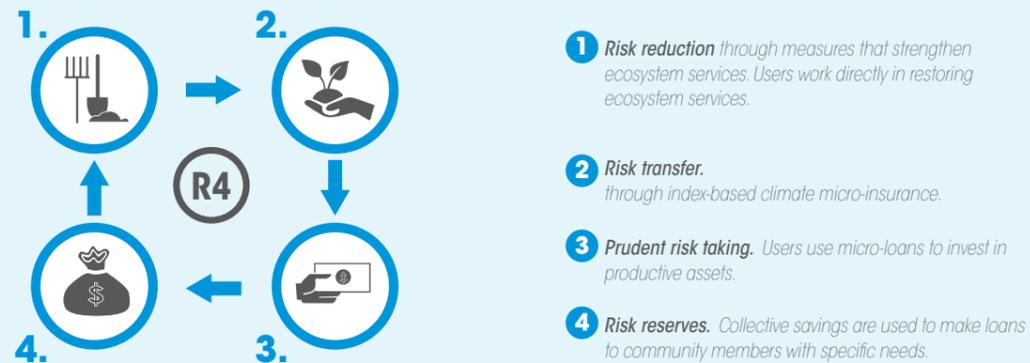
COVER:
Sugar cane producer
Villeta, Cundinamarca
PHOTO: Carlos Membreño

¹ Based on a study of the financial behaviour of rural inhabitants in Colombia, the Dominican Republic, Ecuador, Nicaragua and Peru. The field work was conducted during 2009 and 2010, and consisted of focal groups, 20 interviews in each country, and surveys of 600-745 farmers and rural micro-entrepreneurs in each country. The farmers had land plots measuring between 1 and 20 hectares..

Figure 1.

Microfinance and integrated risk management in Ethiopia and Senegal: Rural Resilience Initiative (R4) project

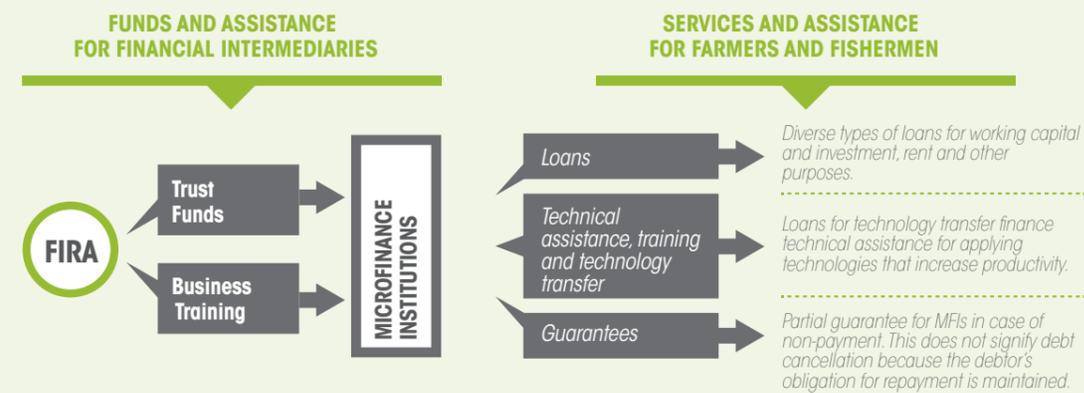
The Rural Resilience Initiative (R4) of the WFP and Oxfam America strengthens the food and income security of poor Ethiopian and Senegalese farmers through four risk management strategies:



Source: (World Food Programme and Oxfam America, 2014).

Figure 2.

Loans, technical assistance and guarantees in Mexico: An initiative with demonstrated impact



The Trust Funds Instituted in Relation to Agriculture (FIRA) are four public trust funds administered by the Mexican government to facilitate access to finance through credit and discount operations and by granting credit guarantees to projects associated with agricultural, agroindustrial and fisheries activities in rural areas (FIRA, 2014).

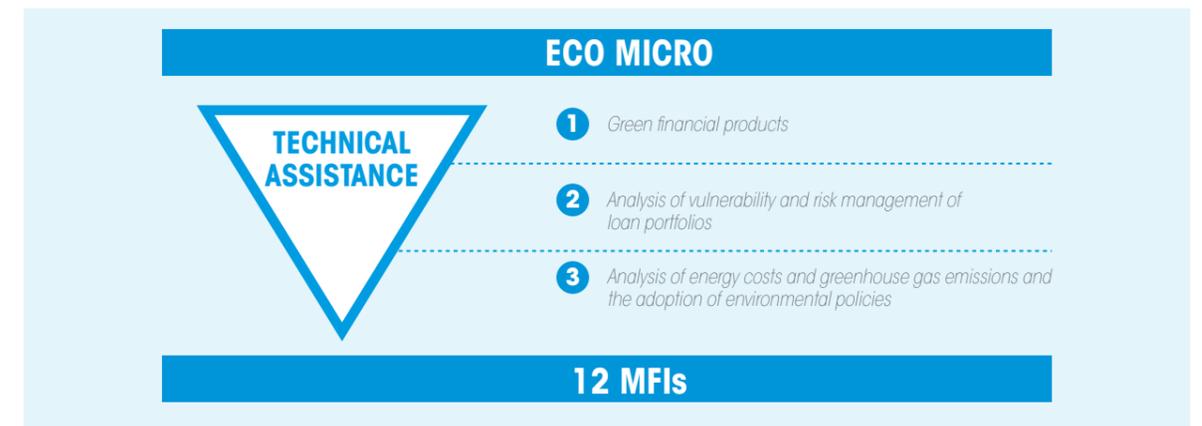
According to an experimental impact assessment, corn growers in Tlaxcala who received technical assistance and financing through FIRA's technological guarantees programme obtained yields of five metric tons per hectare, while those who did not participate in the programme obtained only 2.47 metric tons per hectare (Gamboa, 2013).

870,000 producers in the rural agro-food sector received FIRA financing in 2013 (FIRA, 2013)

Source: FIRA, 2014; developed by authors.

Figure 3.

12 MFIs reduce their own and their clients' vulnerability to climate change



EcoMicro is a programme financed by the Multilateral Investment Fund of the Inter-American Development Bank and the Nordic Development Fund. It provides technical assistance to 12 MFIs in Latin America and the Caribbean for developing "green" financial products that will enable their clients to access clean, renewable energy, increase efficiency in energy use and make investments aimed at adapting to climate change. This programme also assists MFIs in reducing the vulnerability of their loan portfolios to climate change (EcoMicro, 2015). As of August

2014, four MFIs in Latin America and the Caribbean were designing green financial products that facilitate the implementation of measures in the agricultural sector for climate change adaptation (Watson, 2014). EcoMicro was selected to receive a "2014 Lighthouse Activity Award" by "Momentum for Change," an initiative of the UN Climate Change Secretariat (EcoMicro, 2015).

Source: (EcoMicro, 2015); developed by authors.

Cacao dryer
Rionegro, Santander
Photo: Odin Ruz



Ecosystem-based adaptation

Ecosystem-based adaptation (EbA) consists of the use of biodiversity and ecosystem services as part of a broader strategy for helping people and communities to adapt to the adverse effects of climate change. This focus proposes the sustainable management, conservation and restoration of ecosystems as means for increasing the resilience of ecosystems and the human groups that depend on them (CBD, 2009).

EbA options reduce the risks of disasters, strengthen and maintain livelihoods, conserve biodiversity, capture carbon and contribute to the integrated management of water resources (IUCN, 2009). In addition, EbA measures are notable for being cost effective, and thus an accessible way of reducing poverty and vulnerability to climate risks in developing countries (IUCN, 2009).

EbA measures

Ecosystem-based adaptation includes diverse measures and technologies for managing natural resources. For example, infiltration pits, filter dams, fog catchers and efficient irrigation systems help to assure water supply when drought occurs. Contour trenches and drainage systems reduce the risk of flooding, while living fences or windbreak barriers, and soil restoration, through revegetation and reforestation techniques, prevent soil erosion. Some EbA measures, such as agroecology, pest management, family orchards, and agrosilvopastoral systems contribute directly to increasing agricultural yields and ensuring food supplies (UNEP – ROLAC / FS / UNEP Centre, 2013).

EbA at multiple scales

Ecosystem-based adaptation is applied at multiple scales in ecosystems ranging from family farms to regional landscapes. There are different EbA measures, intervention mechanisms and stakeholders for every scale. At the farm level, small agricultural producers may use micro-loans to invest in an agroforestry system or in an efficient irrigation system or to produce organic fertilizer. At the local level, a municipality may allocate public funds to reforest the higher-elevation areas in a basin, thus reducing surface runoff and diminishing the risk of landslides. Also at the local level, a community may build agricultural terraces to expand the land area for agricultural use and to avoid landslides. At the regional- landscape level, a State may establish a natural protected area to protect a basin's water catchment areas. Also, the State may establish a regulatory framework for

payment for environmental services, so that water users in the lower-elevation areas of a basin economically compensate the communities located at the higher-elevation areas for adopting practices that maintain water regulation and purification services. Lastly, in order to maintain ecosystem services it is vital that the State harmonize all human activities in a territory through an effective system of environmental impact assessment and an adequate process of land-use zoning.

Successful case:

Infiltration pits recharge aquifers in Mexico.

On the slopes of the Popocatepetl and Iztaccihuatl volcanoes in Mexico, the government, organized civil society and private business have installed the first rainwater harvesting field. With the construction of 162,500 infiltration pits, water can be harvested and infiltrated into the Mexico Basin aquifer (Cota, Marín & Balcazar, 2011).

Successful case:

Integrated management of natural grasslands in Peru reduces surface runoff

In Apurimac and Cusco, the Climate Change Adaptation Programme promotes integrated management of natural grasslands to reduce surface runoff and increase infiltration. These water securement systems make water available during the dry season and help to stabilize agricultural production (PACC, 2014).



The importance of markets and transportation and telecommunications infrastructure in an integrated adaptation strategy

EbA measures implemented both on farms and upstream allow small agricultural producers to obtain predictable, stable production despite severe weather. Nonetheless, in order to access financing, make sound production-related decisions and place their products on the market, small producers will need means of transportation, weather information systems, and telecommunications infrastructure. These services are the State's responsibility and are just as important as ecosystem services.

Family orchard

Gualmatan, Nariño

Photo: Odin Ruz

REGIONAL LANDSCAPES

LOCAL LANDSCAPES

FARMS AND HOMES

ECOSYSTEM-BASED ADAPTATION MEASURES APPLIED IN TERRITORIES

EbA measures are applied at all levels, from family farms to regional landscapes. In order to finance and implement these measures, national and regional authorities, communities and small agricultural producers use mechanisms that are appropriate for the scale and nature of each EbA measure.

THE STATE FACILITATES TRANSPORTATION, COMMUNICATION AND WEATHER INFORMATION SERVICES

Transportation and communication infrastructure and weather information systems allow small agricultural producers to access productive inputs and financing, make sound production-based decisions and place their products on the market.

Disorganized use of resources and alteration of natural habitats threaten biodiversity

Intense rains and temperature changes, coupled with loss of vegetation, increase the risk of erosion and landslides.

PRECIPITACION

EVAPOTRANSPIRACION

Droughts cause water scarcity and affect land productivity.

Extremos de calor y cambios bruscos en los patrones de precipitaciones reducen la disponibilidad de agua y ocasionan pérdidas en la productividad del terreno.

BIOLOGICAL CORRIDOR
Greater continuity in evolutionary and ecological processes and maintenance of genetic flow.

REFORESTATION AND SUSTAINABLE FOREST MANAGEMENT
Reduction in erosion from impact of rains.

AGRICULTURAL TERRACES
Reduced surface runoff, stabilization of slopes, greater infiltration, and an increase in soil moisture. An increase in land available for agriculture.

NATURAL PROTECTED AREA
Protection of fragile ecosystems against human disturbances.

INFILTRATION PITS
Recharging of aquifers at higher elevations contributes to water security at lower elevations during dry season.

DRIP IRRIGATION
Efficient water use.

AGROFORESTRY SYSTEM
Reduction in exposure to sun, wind and heavy rains; reduction in effects from extreme temperatures.

ORGANIC FERTILIZERS
Greater absorption and retention of moisture and nutrients in soil; increase in agricultural production.

PUBLIC POLICIES SUPPORT FOR EbA MEASURES



The State protects water harvesting areas, establishing a natural protected area. To protect biodiversity, the State connects two natural protected areas with an ecological corridor.



The State invests public resources and promotes sustainable forest concessions for reforesting eroded slopes.



The State establishes a legal framework for payment for environmental services.



The State facilitates microfinance by fostering availability of funds from second-tier banks, providing guarantees and offering unrestricted access to agro-climate and market information.



! THREAT / IMPACT
🌿 EbA MEASURE

MECHANISMS FOR FINANCING AND IMPLEMENTATION

- IP** Public Investment
- CF** Forestry Concessions
- TC** Community Work
- PSA** Payment for environmental services
- M** Microfinance

An enabling environment

The greatest challenges in the microfinance sector in providing services to small agricultural producers lie in the inherent risks in this sector and the high operating costs in addressing remote areas. These challenges can be overcome through the coordinated actions of a number of stakeholders and by taking advantage of information and communications technologies (ICTs).

Robust methodologies and information make it possible to understand and manage the main risks associated with small agricultural producers

The main risks confronting small agricultural producers are associated with (i) the volatility of the demand and prices of inputs and products on the market, and (ii) disturbances in productive processes, including climate-related threats. By granting loans to small producers, MFIs assume these risks partially or completely. An initial challenge for MFIs lies in determining how to estimate risks. Markets for small producers are typically scattered, and the level of integration in value chains is inadequate. Furthermore, systematized knowledge of traditional practices, soil conditions and agro-climate factors is limited. Accessing data that is accurate, systematized and updated in these dimensions is one of the major challenges for estimating risks in a reliable way.

It is only possible to minimize the major risks in a sustainable manner on the basis of a reliable, systematic estimate of such risks. Currently, unfavourable tendencies such as the appearance of pests or climate and market shocks discourage MFIs from providing services to the affected sectors. This is detrimental to even the most resilient clients, specifically those who have mechanisms for managing such risks. Clearly, the lack of systematized, detailed knowledge of clients and client segments ends up "penalizing" both resilient clients and vulnerable clients in high-risk situations. Thus, what is needed is information tailored to the needs of the financial sector, to make the focused, informed and balanced management of risks operational. This involves having sophisticated

data models that typically cannot be integrated when traditional methodologies for credit analysis are used. Data on price tendencies in different markets and crop vulnerability, as well as geo-referenced data on climate projections, soil characteristics, topography and ecosystems is available but not used.

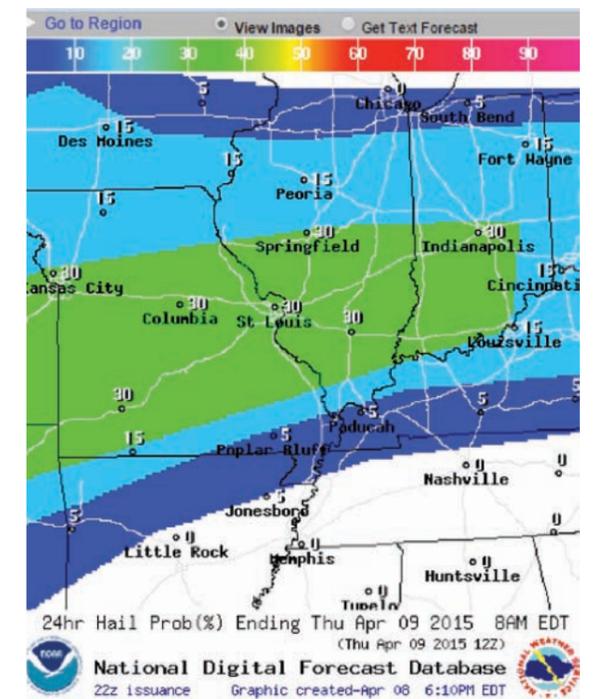
The challenge for the microfinance sector consists of accessing data in a sustained manner and at low cost, and processing and interpreting this data with support from information and communications technologies (ICTs), in order to obtain a precise understanding of clients and to provide them with services in line with their needs. After establishing risk levels and the factors generating such levels, MFIs can design loans that finance EbA measures for assuring ecosystem services and sustaining production systems. NGOs, municipalities and rural development projects may provide technical assistance on EbA technologies to small farmers, thus facilitating their correct implementation.

It is very important that the government promote and finance the generation of and unrestricted access to data regarding the market, climate and ecosystem services relevant for agriculture. As well, the government may propose incentive mechanisms for MFIs to adjust their interest rates in line with their clients' risk profiles, based on robust information on their levels of vulnerability.

Figure 5.

The US data.gov platform and Climate Data Initiative

In 2014 the US federal government launched the Climate Data Initiative, placing a formidable amount and variety of information and digital tools on climate available to the public. This information was divided into five topics: coastal flooding, vulnerability of ecosystems, resilience of food systems, human health and water. The initiative stimulates innovation and entrepreneurship in the private sector to support the country's readiness process for addressing climate change (Executive Office of the President, 2013) (DATA.GOV, 2015).



*The data.gov platform contains databases and tools, with **560 databases** under the "climate" classification, many of them georeferenced, and over **125 197** databases on agriculture, businesses, climate, consumption, ecosystems, education, energy, finances, health, local government, manufacturing, oceans, public security and research (DATA.GOV, 2015).*

Source: (NOAA, 2015)

ICTs reduce operating costs and expand financial inclusion in rural areas

The successful application of technological solutions could be key to achieving global financial inclusion. Information and communications technologies (ICTs) offer users greater security in transactions in comparison to using cash, and they also facilitate accessing accounts remotely. ICTs also significantly reduce service costs, and this translates into greater access for people with limited resources (Centre for Financial Inclusion, 2013).

Colombia is one of the countries where ICTs are contributing to financial inclusion. The financial sector in this country has significantly expanded its services to rural areas in recent years. In 2013 a total of 1,872,482 persons were included in the financial system for the first time, and the level of access to banking services in Colombia's adult population reached 71%. This progress is explained in part by the implementation of

models for agent banking and mobile banking. In fact, a favourable legal context for mobile banking was created in 2013 when Colombia's Commission on Regulation of Communications (CRC) issued a resolution establishing measures for the provision of mobile financial services that benefit users. The resolution specifies limits on fees for text messages and fees that telephone companies charge financial entities for the use of mobile banking. Consequently, service costs for consumers were reduced (Banca de las Oportunidades & Superintendencia Financiera de Colombia, 2014).

A proposal for a new law on financial inclusion called Pague Digital promises to make financial services even more accessible to users. If approved, the law will create a new type of financial entity called a Firm Specializing in Electronic Deposits and Payments and will permit clients to open digital payment and savings accounts. This

will facilitate the transfer of money with greater security and at more accessible prices (Economist Intelligence Unit, 2014). The Colombian government, in alliance with communication services providers, can continue to promote the use of ICTs in the microfinance sector.

Guarantees and insurance assist in managing residual risks

MFIs use funds borrowed from second-tier banks to grant micro-loans to their clients. They charge a higher interest rate with the expectation of obtaining earnings. When they grant loans to small farmers, MFIs assume a portion of production and market risks. Even when risk management mechanisms are implemented, there is considerable residual risk that must be minimized in order for MFIs to offer these micro-loans for large-scale implementation of EbA measures in rural areas. This residual risk is controlled through risk transfer mechanisms such as guarantees and insurance. Insurers will be motivated to participate to the degree that there are information tools and systems for measuring and monitoring risk. It is therefore important for the government to work toward generating these enabling conditions.

Many stakeholders work in a coordinated manner so that microfinance may catalyse investments in EbA measures

MFIs are excellent strategic allies for catalysing the implementation of EbA measures and increasing the resilience of small agricultural producers. Nonetheless, MFIs encounter serious obstacles in rural areas and in order to overcome them, it is necessary for multiple stakeholders, both public and private, to work together in a coordinated manner, from the international arena to the local level.

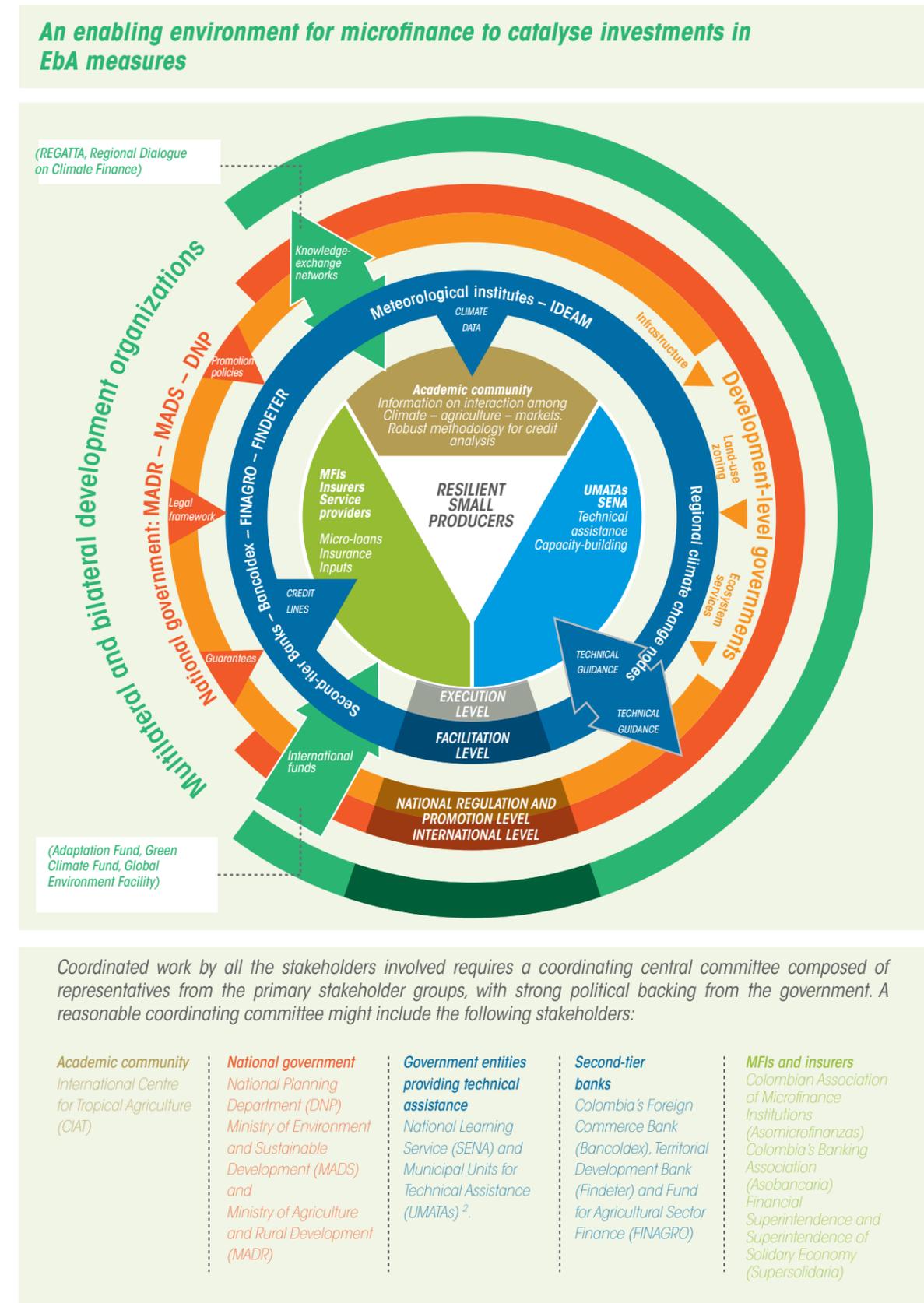
The national government is responsible for regulating the financial system. In addition it can promote microfinance and ecosystem-based adaptation through public policies, and it can facilitate the creation of credit lines for the rural sector in alliance with development banks. Within a national legal framework, governments at the department and municipal levels are responsible for

land-use zoning, infrastructure services and the implementation of projects that assure the provision of ecosystem services at regional and local levels (for example, soil conservation, reforestation and water securement projects). In terms of facilitation, regional climate change nodes provide orientation for decision-making associated with moving forward in adaptation processes at the local and department levels, in coordination with the national government and in line with the National Climate Change Adaptation Plan. Second-tier banks, for their part, can channel funds for MFIs through credit lines, while meteorological institutes can generate and disseminate climate data for informing better decisions on investments in family farms as well as regional landscapes.

At a more executive level, the various national and local stakeholders can join efforts to place EbA measures within the reach of small agricultural producers. The National Learning Service (SENA) and Municipal Units for Technical Assistance (UMATAs) provide technical assistance and capacity-building to small producers to facilitate implementation of EbA measures. MFIs, for their part, can finance EbA measures through micro-loans. In order to make sound credit decisions, MFIs should be able to assess the production and market risks of their clients. In this aspect, the academic community can develop a robust methodology for credit analysis based on agro-climate and market information. Also, the academic community can conduct studies on the interaction between climate and agriculture, to assist UMATAs in refining their technical assistance services.

Throughout this process, multilateral and bilateral development organizations provide funds and facilitate the exchange of knowledge with other countries, with the aim of orienting initiatives toward success.

Figure 6.



Source: Developed by authors.

2. UMATAs report to municipal governments, and may be convoked to attend meetings or workshops for coordination, training and joint learning by the Agriculture Secretariats at any department-level governorship.

Microfinance and ecosystem-based adaptation in national policies and programmes

Public policies are the primary mechanism for promoting any development process. There are various policy instruments that may serve as a framework for promoting microfinance as a strategic ally in catalysing ecosystem-based adaptation.

Fund for Agricultural Sector Finance (FINAGRO)

The Fund for Agricultural Sector Finance (FINAGRO) provides a package of services that contribute to the economic development of small rural producers in a comprehensive manner.

FINAGRO provides agricultural credit lines for MFIs overseen by Colombia's Financial Superintendence or Superintendence of Solidary Economy, through a rediscount portfolio. Investment loans may be used for planting and maintaining a number of crops, for purchasing livestock and retaining heifers, for acquiring machinery and equipment, for conditioning land and for buying production infrastructure.

In terms of financial risk management, FINAGRO permits loan restructuring, refinancing or consolidation (FINAGRO, 2014a). In addition, when loan beneficiaries do not provide suitable guarantees, FINAGRO issues complementary guarantees³ at the MFI's request. Finally, FINAGRO provides incentives for obtaining agricultural insurance, subsidizing 60%⁴ of premium costs. In other words, producers only pay 40%, plus the added value tax (FINAGRO, 2014b).

Technical assistance is a fundamental service for assuring the correct implementation of measures that contribute to strengthening rural agricultural production systems, including EbA measures. Through the Economic Incentive for Direct Rural Technical Assistance (IAT), FINAGRO co-finances the technical assistance provided by municipal public services (FINAGRO, 2014b).

Finally, through the Incentive for Rural Capitalization (ICR), FINAGRO economically compensates, with government resources, small and medium-sized producers that carry out a new project or investment aimed at improving the competitiveness and sustainability of agricultural production or reducing risks in a long-lasting manner.⁵

Investments eligible for the ICR include works for land conditioning and water management (for example, irrigation and drainage equipment and systems, works for flood control, recovery of lands, etc.), infrastructure for production (for example, sheds, greenhouses, warehouses, etc.), investment in biotechnology, in machinery, equipment and systems for silvopastoral production, to mention a few (FINAGRO, 2014a).

The package of services offered by FINAGRO to MFIs and small producers contributes significantly to catalysing the implementation of EbA measures in Colombia. It is particularly worth mentioning that the Agricultural Sector Strategy for Adaptation to Climate Phenomena proposes, in its draft version, to use the ICR and the Agricultural Guarantees Fund to co-finance the adoption of climate change adaptation measures.

Agricultural Sector Strategy for Adaptation to Climate Phenomena

The National Planning Department (DNP) and the Ministry of Agriculture and Rural Development (MADR)⁶ began the work of formulating the Agricultural Sector Strategy for Adaptation to Climate Phenomena in 2011 (Hernández, 2013).

The draft version of the strategy (February 2014) proposes three lines of action for addressing a series of challenges. In its second line of action, the strategy proposes applying technological packages for water and soil management, including irrigation and drainage systems, as well as agroforestry and silvopastoral systems. In terms of financial mechanisms, the draft strategy proposes that MADR and FINAGRO allocate resources from the Economic Incentive for Rural Technical Assistance for implementing sub-sector-based adaptation plans, and that they design and develop an Incentive for Rural Capitalization (ICR) for the adoption of technological packages. Lastly, the strategy proposes that FINAGRO and Banco Agrario move ahead with brigades for disseminating guarantees from the Agricultural Fund for Guarantees (MADR, 2014). Clearly, the strategy recognizes and emphasizes the importance of ecosystem services at the different scales of territory, including at the farm level, and emphasizes the need for using innovative financial mechanisms for moving forward with large-scale adaptive processes. In

Table 1.

Policy instruments that may be used to promote microfinance and ecosystem-based adaptation in Colombia.

Policy instrument	Current/Potential	Entity in charge of instrument	Description of instrument	Instrument's importance for promoting microfinance for EbA
Agricultural Sector Strategy for Adaptation to Climate Phenomena	Potential	DNP and MADR	Guiding framework for climate change adaptation in the agricultural sector at national level in Colombia.	Proposes that FINAGRO design an Incentive for Rural Capitalization (ICR) for the adoption of technological packages toward climate change adaptation.
Fund for Agricultural Sector Finance	Current	FINAGRO	Provision of funds and guarantees for micro-loans and insurance, as well as co-financing for technical assistance.	Offers MFIs and small producers a complete package of services that reduce risks and costs of rural micro-loans.
National Plan for Climate Change Adaptation (PNACC)	Current	MADS, DNP, UNGRD* and IDEAM	Serves as a guiding framework for sectors and territories to move forward with climate change adaptation processes in Colombia.	PNACC's Steering Committee can encourage department-level governments to promote EbA measures financed through micro-loans.
Site-Specific Agriculture Initiative (AEPS)	Current	MADR and CIAT	Promotes a type of agriculture that considers climate and soil, through research processes in the territory, and that uses a platform for disseminating information.	Generates and disseminates valuable information on climate and soil conditions in territories. MFIs need this information in order to carry out adequate credit analysis.

Sources: (MADR, 2014); (FINAGRO, 2014a); (FINAGRO, 2014b); (Clima y Sector Agropecuario Colombiano, publication pending); (Departamento Nacional de Planeación, 2012); and developed by authors.

this sense, MFIs will be an ideal ally for financing EbA measures at the farm level, and thus implementing the second line of action.

National Plan for Climate Change Adaptation (PNACC)

The National Plan for Climate Change Adaptation (PNACC) is aimed at reducing the risks and socioeconomic impacts associated with climate variability and climate change in Colombia. The PNACC presents its conceptual foundations, as well as inputs for formulating road maps and protocols for measuring climate risk. Adaptation measures are identified and prioritized for their implementation in sectors and territories. Thus, the PNACC is an adaptation process, not a prescriptive document, and consequently, in order to

promote ecosystem-based adaptation measures through microfinance, it is important to participate in the PNACC process at the sector and territory levels, in coordination with its Steering Committee.⁷

La iniciativa Agricultura Específica por Sitio (AEPS)

Agricultura Específica por Sitio (AEPS) es una iniciativa ejecutada en el marco del Convenio de Cooperación Técnica y Científica entre el Ministerio de Agricultura y Desarrollo Rural (MADR) y el Centro Internacional de Agricultura Site-Specific Agriculture (AEPS) is an initiative carried out in the framework of an Agreement on Technical and Scientific Cooperation between the Ministry of Agriculture and Rural Development (MADR) and

3. Small producers may cover up to 80% of the loan value with guarantees from the Agricultural Guarantees Fund.

4. If a producer has a loan based on FINAGRO's conditions, or if the agricultural activity insured corresponds to a list of potential export products, the subsidy may be as high as 80%.

5. In the case of small producers, the ICR is equivalent to up to 40% of the investment amount.

6. The process was led by the DNP and MADR, but there was active participation by the Ministry of Environment and Sustainable Development (MADS), Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), Colombian Corporation for Agricultural Research (CORPOICA), International Centre for Tropical Agriculture (CIAT), National Administrative Statistics Department (DANE), German Federal Enterprise for International Cooperation (GIZ), and the National Council of Agricultural Secretariats (CONSA).

7. The Steering Committee is composed of MADS, DNP, the National Unit for Managing Disaster Risk (UNGRD) and IDEAM.

Microfinance for Ecosystem-based Adaptation (MEbA) project

the International Centre for Tropical Agriculture (CIAT). AEPS consists of analysing a large number of productive experiences of farmers with the aim of obtaining robust conclusions on the crops to plant and the cultural practices to apply in line with the climate and soil conditions in each zone. To this end, zones with similar climate and soil are identified. In addition, the most successful agricultural practices in each type of zone are analysed on the basis of a sample of hundreds of land plots. All of this data is entered into the AEPS Platform, a database and software programme for entering, analysing and reporting information on the best adapted agricultural practices. Producers' associations access the platform, analyse and validate the information, and organize workshops with technicians and farmers who can become empowered to use the tools (aclimatecolombia, 2015); (Clima y Sector Agropecuario Colombiano, publication pending).

The Site-Specific Agriculture (AEPS) Initiative has a series of strengths: (i) availability of agro-climate and soil information specific to the territory; (ii) a digital platform that centralizes and disseminates information; (iii) a high-level research team led by CIAT; and (iv) producers' participation through their associations. Nevertheless, the initiative does not have a financing mechanism for the large-scale implementation of climate-smart practices. MFIs with training for applying a robust methodology for credit analysis, while considering agro-climate information, may be a new and highly valuable ally for MADR. This would lead to more ambitious and larger-scale implementation of EbA measures.

The MEbA project's mission is to offer options for sustainable management of ecosystems and their services through microfinance products and services. The central objective is to increase climate change resilience among the Andean population in Colombia and Peru, consisting primarily of small agricultural producers.

The project is focused on integrating a better understanding of climate risk into microfinance credit methodology. Risk information does not only assist MFIs in improving their risk management, but it is also valuable information for clients. Farmers are presented with options for ecosystem-based adaptation that will assist them in decreasing climate and production risks through improved agricultural practices, income diversification and maintenance of the ecosystem services that support their activities. This leads to greater stability in farmers' economic flow, and consequently, financial risk for MFIs is diminished (UNEP – ROLAC / FS – UNEP Centre, 2014).

The MEbA project is financed by Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and is implemented by UNEP, with assistance from the Frankfurt School – UNEP Collaborating Centre for Climate and Sustainable Energy Finance. In alliance with three Colombian MFIs (Crezcamos, Bancamía and Contactar) and two Peruvian MFIs (Solidaridad and Fondesurco), the MEbA project is piloting EbA practices and credit methodology, in anticipation of scaling up this model through many other MFIs in the future.



Diversified crops

Rionegro, Santander

Photo: Jacinto Buenfil

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Cacao fruit

Santander

Photo: Carlos Membreño

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