

# **Green microfinance for the base of the pyramid market: A cooperative response to address the needs of vulnerable population and climate change impacts in rural areas of Peru**

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## **Introduction**

### *The Microfinance sector in Peru*

Peru has been globally prized as the country with the best business environment for the development of microfinances for seven consecutive years (2009- 2015) (BID, 2016). Historically, microfinances in the country are being developed since the early 80s with the fundamental role of the NGOs who started with the first credit systems based on trust and the consolidation of a social capital factor within the community (such as solidarity groups or community banks). Afterwards, other kind of institutions appeared, namely, Cajas Municipales, Cajas Rurales, EDYPYMES, Commercial banks and one of the most important figures: Cooperativas de Ahorro y Crédito (COOPAC), known also as Credit Unions.

Rural financial inclusion in Peru, however, has been a topic thoroughly developed among Non-Government Organizations (NGOs) and Cooperatives. The first one, regardless of their legal and political context and, the later, with a regulatory framework still under elaboration. Cooperatives had impacted on the population of the base of the pyramid, mainly with consumer credits and working capital for microenterprises. As a matter of fact, currently there are 168 COOPACs covering 21 out of 24 regions of Peru, comprising more than 1.5 million members; they represent a significant participation (2.29%) on the National Financial Services market and are responsible for more than 50% of the productive activity in peripheral and rural areas, serving a vast portion of the vulnerable population in the country. In this sense, COOPACs have assumed a firmly commitment with the integral development of its members, generating opportunities through an attractive supply of financial products based on social economy principles and a strong focus on entrepreneurial development.

### *About Green Microfinances: the concept*

Green Microfinance is still an emerging, largely un-researched and little practiced market. It targets the achievement of the triple bottom line results of financial, social and environmental sustainability, also called the three P's: Profit-People-Planet (European Microfinance Network, 2013). Although successful projects and programs have been carried out in Africa, Asia, the approach in Latin America and particularly in Peru the scenario is still uncertain. The sector is still struggling with more elementary issues, such as reaching sustainability, but some pioneers have discovered the green approach as a differentiation mechanism.

There is no clear definition for "Green Microfinance" at this stage, but there is a consensus about the fact that any green microfinance intervention implies developing initiatives related to the establishment of an environmental policy; programmes to reduce energy consumption within the institution; clients' environmental risk assessment; microcredits for environmentally friendly technologies such as renewable energies or energy efficiency; or even microcredits for environmentally friendly agricultural activities.

Among the various definitions about green microfinance, in 2013 The European Microfinance Network EMN published a study (EMN Study; 2013) in which it is outlined a very accurate definition for the concept from the view of the organizations in charge, based on the organizations' aim which is normally oriented to the assumption of an engagement to activities relating to "some sort of" environmental protection". In this sense, they adopt an actively support the environmental bottom line by providing green microcredits, training or offering technical assistance for the development of environmentally friendly activities. A number of organizations also look inside their own institution and declare to have, or plan to introduce objectives in terms of ecological footprint reduction or environmental awareness campaigns directed towards their own staff.

### *The Green Microfinance sector in Latin America*

The Multilateral Investment Fund (MIF), a member of the IDB Group, partnered with the Nordic Development Fund (NDF) to launch an innovative program to pilot green microfinance products for both mitigation and adaptation to climate change in Latin America and the Caribbean (BID, 2011).

The project which is known as the “Ecomicro Program,” and had a four year duration was the first to pilot microfinance products related to climate change products. The program is focused on providing training to microfinance institutions so that they could develop sustainable green finance instruments; adjust their risk management models to include climate change risk; and incorporate climate impact into their internal policies and operations (BID,2011).

The program seeks to increase access to clean energy, energy efficiency technology and adaptation products to micro, small and medium-sized companies which should be achieved throughout the provision of tools and know how to the institutions. The program is also for the establishment of favorable policies toward clean energy installations and CO2 emission reductions and demand for such technologies has began to trickle down to small firms.

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### *FONDESURCO: Green Microfinances from the COOPACs in Peru*

COOPACs are seen as a strategic actor to deploy the national strategy on climate change adaptation due to its intervention model based on Green Microfinances within the populations they serve which are, at the same time, responsible for polluting activities and the most vulnerable to the climate change effects. In this sense, COOPACs are now developing a diversified portfolio of financial services biased to promote the investment on the usage of products based on renewable energy, on community forestry initiatives, on familiar agriculture based on ecosystems, on the water management and even on local alternatives for recycling. This new approach means to achieve sustainable development objectives in vulnerable population, conducting the member’s micro investment decisions towards cleaner and green alternatives for private and over all productive usage.

FONDESURCO, being one of them, and is devoted to deliver customized financial solutions to low-income people living in rural areas, focusing on vulnerable population in the most remote and less connected villages of Peru. Its products are carefully designed to cater its clients' needs and adapted to the specific context of their productive activities.

As an important institution within the communities FONDESURCO works with, its sustainability strategy impose an ethical commitment to deliver green microfinance products with a systematic approach to effectively allocate this resources and with the aim of helping the vulnerable communities to strength its capabilities for adaptability to climate change effects.

Creating market space in the rural territories of Peru has been the strategy deployed by FONDESURCO since its origins. Its systematic approach towards rural markets and the deep understanding of their clients livelihood were key information inherited by DESCO (Centre of Studies and Promotion of Development) NGO, who was in charge of the first attempt to design and deliver green financial products to the base of the pyramid population who had not yet been served by any financial institution. Therefore, the NGOs capacities and information regarding rural markets were thoroughly employed throughout the course of the green financial product development, which turned into an innovative sort of "product co-desing process" with the active participation of the community and the final consumer. As a result of this practice, the green financial product was effectively introduced into the rural market because the consumer was able to understand the benefits of the product since the very beginning- during the developing phase- and, by the time the product was released, the latent market had already became into a demand.

This paper describes an extended case study of the Cooperative FONDESURCO, a pilot project managed by a NGO back in the nineties (90's), which is now a formal Credit Union recognized by the Peruvian Superintendent of Financial Institutions, serving over 12,000.00 clients in four regions of southern Peru.

Using a qualitative methodology of an amplified case study related to the process of intervention on green microfinances, the case will be studied in light of an integral focus based on Green Microfinances, including the opportunities based on subsidiarity principles, green economic profitability incentives, as well as trust and social capital mechanisms. Finally, conclusions are derived from the analysis of the national and international context conveying to the practices and strategies deployed by the subject of study, FONDESURCO.

## **Methodology**

This article employs a qualitative methodology of an amplified case study related to the process of intervention on green microfinances performed by FONDESURCO, a pioneer COOPAC located in some of the most affected regions by climate change in Peru, with the aim of evincing the role of COOPACs as effective agents on the promotion and allocation of green microfinance services amidst the base of the pyramid market.

The case to be analyzed Cooperative FONDESURCO (Arequipa) will be studied in light of an integral focus based on Green Microfinances, including the opportunities based on subsidiarity principles, green economic profitability incentives, as well as trust and social capital mechanisms. In general terms, there are particular factors within the business model of COOPACs, such as social capital and social marketing, which may lead to an effective response of their customers to innovative products.

The descriptive analysis will be based on three main elements composing the intervention strategy of the organization; namely: the supply, the demand and the business model to provide the service. As for characterize the supply, the main products and services portfolio developed by FONDESURCO will be explained. When it comes to the demand, the average client profile will be described, highlighting its specific particularities as rural population, mostly farmers and small business owners. Finally, the business model analysis will describe the strategy by which the organization intervene in the objective population (targeted

market), the main channels by which they built the client relationship and the mechanisms used to effectively deliver the service.

*Results: Description of the components of study*

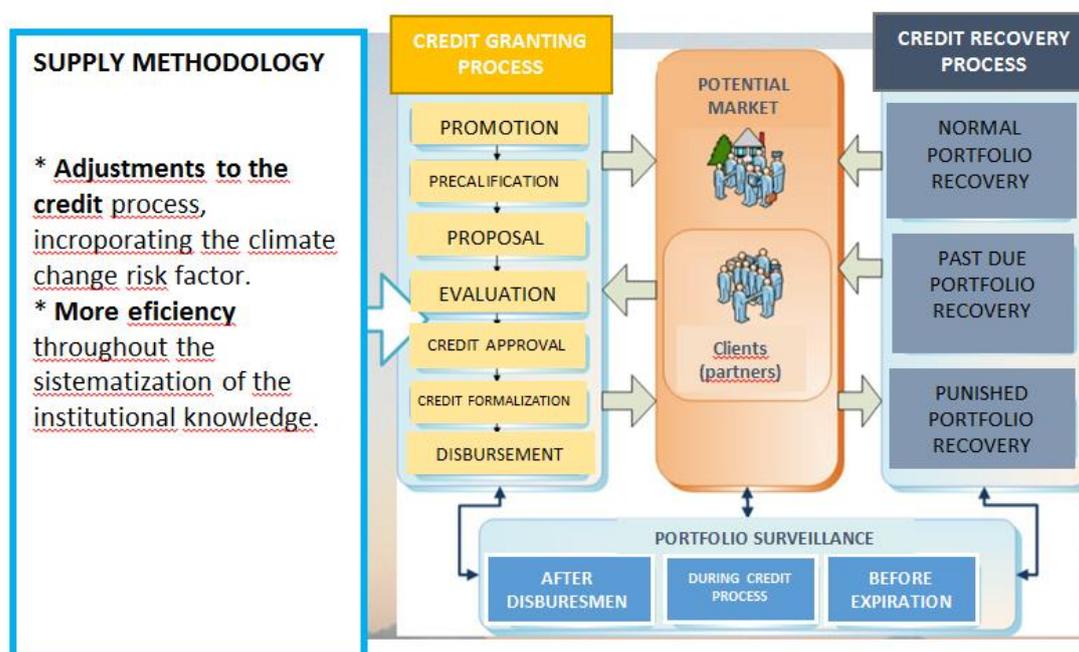
### **1. FONDESURCO, financial products and services**

There is a lack of supply of financial products and services for socially and economically disadvantaged clients, especially for those living among rural and peripheral areas of the city. Cooperatives, however, took over the leadership their social role allows them to, regarding the granting of microcredits but limited to its boundaries of not having a formal license to deliver financial products or services. Despite the efforts, this leadership role has not been accompanied by economic incentives that any organization requires to generate returns and achieve self – sustainability; as their target public cannot afford market interest rates, neither can they absorb the costs of the risks related to delivering financial services in low-income population or base-of the-pyramid (BoP) market.

Amidst this context, FONDESURCO develops credit products to mitigate and adapt the effects of climate change in vulnerable areas and other more traditional products like guarantees, credit loans and working capital loans. Its balanced portfolio, including traditional products and environmentally friendly products act as a crossed subsidy to absorb the higher cost related to the risk involved with new product developments. Moreover, in the case of Green microfinance products, the entry costs are usually waived by an external institution, namely, International Cooperation or private social investors interested on allocate resources to fund and encourage green initiatives and pro-environmental related to agriculture, livestock or conservation in general terms.

In response of the good results and seizing the market opportunity of green microfinance on a global scale, since 2013, FONDESURCO developed a special methodology of assessment to identify potential clients that are likely to spend loans on green initiatives that results into mitigation or adaptation to climate change effects. (ECOBANKING, 2014)

## Supply Methodology of Green Microfinance products



Source: Fondesurco (2015) Cumbre mundial de Finanzas solidarias

The figure above describes the FONDESURCO process of supply of green microfinance products. As an experienced organization, it has managed its acquired knowledge and instilled it into the process to ensure efficiency in the credit granting sub-process which includes a climate risk factor- the effects of climate on the results of the production and flow of payments- during the client evaluation. Therefore, the risk is considerable lower when there is a certain measure of the potential cash flow of the client supporting his or her payment capacity. Also, it opens the possibility of adding an extra product, agribusiness insurance for instance, to prevent total loss of the farmer's investment on the cultivation.

Another interesting and innovative strategy where FONDESURCO employs its systematized knowledge is in collaborating with technology partners to assist them during the product design process of the transferable green technologies; this includes a wide variety of products from i.e. lanterns, to solar cells and efficient cook stoves, etc. In this scenario, FONDESURCO role is an advisor and, later, the responsible for technology transfer in terms of communication – creating awareness of the product benefits to the final consumers- and

offering a mean of payment to the potential client. The portfolio of green microfinance products will be described in details later in the results section.

## 2. Description of FONDESURCO clients profile

The mission of FONDESURCO is to deliver financial products amidst markets where there are not formal financial institutions offering credit services, focusing in rural and remote areas where vulnerable population do not have access to those services at a standard market rate or simply because they are not eligible. Rural markets do not offer many business incentives for entrepreneurs to risk their capitals, knowledgeable of this reality FONDESURCO's commitment is to leverage rural market by introducing financial products carefully designed to fit in these genuine contexts and offering solutions to their targeted clients. The figure below describes all the elements that are relevant to describe the rural markets where FONDESURCO works.

### Description of rural markets of FONDESURCO microfinance activities

<b>Variables</b>	<b>Description</b>
<b>Population agglomeration of the town</b>	Less than 10,000 people, including other small surrounding communities.
<b>Complex Geography</b>	Location and geographical dispersion
<b>Access to basic services</b>	Lack of electrical energy, internet, communication, etc.
<b>Resources</b>	Scarcity of specialized people on microfinance or finances in general.
<b>Credit eligibility</b>	Risk of the economic activity due to climate, prices, low productivity levels or profitability.
<b>Entry of new comers Competition</b>	Generates more risks due to the probability of over indebtedness.

Own elaboration based on Servicios financieros y cambio climático. En Cumbre Mundial de finanzas Solidarias (FONDESURCO, 2015)

FONDESURCO clients are entrepreneurs living in rural areas of the following regions located in the south of Peru: Arequipa, Moquegua, Ayacucho and Puno. Last two regions are

top in the list of the most impoverished towns of the country. Moreover, client`s monthly income is below the minimum wage income (MWI), currently 250USD, meaning that any person living with 8USD per day or below can apply for any product of FONDESURCO portfolio. In terms of gender, 47% of the total historic database of clients are women, experiencing an increase in its figures, starting from 9% for the year 2001.

Since the main activity in rural areas of Peru is agriculture and livestock, nearly 85% of the clients are farmers or people developing activities related to agriculture and livestock only and 75% of them had access to financial services for the first time ever since FONDESURCO started its activities locally. The profile of the average FONDESURCO client is a farmer, 49 years old, who owns one point fourth hectare (1,4 ha) of land, monthly income is 220USD and lives or develops his/her daily activities in a rural town with limited access to the main city, at least 6 hours away from the capital of the district- commuting time measured using public transportation only.

Nowadays, FONDESURCO attends over 12,000.00 clients with a network of 21 local agencies. It has developed a market in rural and remote areas, given that 95% of its clients live in this areas and the remaining are in peripheral areas.

### Agencies and offices of Fondesurco



Source: Official website of FONDESURCO <http://www.fondesurco.org.pe/>

The previous figure shows the area of influence of FONDESURCO in the south of Peru. Taking into consideration the last period of evaluation, from December 2014 until November 2015, FONDESURCO has disbursed 14660 credits up to 10,169,385.00 PEN, approximately 3 million USD with an average allocation of 205USD per client.

### **3. Business Model and strategy deployment**

FONDESURCO pretend to be the first microfinance organization reaching rural markets, granting them credits and, throughout a continuous improvement in the products and processes, achieving their loyalty. FONDESURCO thought works out using market innovation - to create and develop new markets; product innovation based on the rural logic y and the particular client's need; and process innovation to facilitate the credit access.

Fondesurco's business model responds to a basic mechanism for grant credits to small farmers and small-business owners. In this sense it activates credits starting from 300 soles (88 USD aprox, exchange rate 3.4PEN per 1 USD), this has implied the develop of the Rapid Information Service (SIR), an strategical and easy information system to keep their clients informed, clarify their doubts, solve their request and keep them up to date. The SIR takes only three minutes to let the client know if he or she is pre-qualified or not; still, in the most vulnerable rural areas, a phone call to the office headquarter is enough to start the process of application.

#### *The green microfinance portfolio*

Supported by the technical assistance from local NGO DESCO (Centre of Studies and Promotion of Development), CEDER and some national social programs, FONDESURCO has developed diverse solutions towards mitigation and adaptation to the climate change effects in vulnerable zones. Remarkable initiatives in this matter refer to the usage of improved seeds,

efficient water resource management, organic fertilizers for the land, solar heating machines, efficient usage of firewood to cook, productive uses of the energy to generate value added to the productive process, among others. FONDESURCO though has prioritized financing rural small business owners and farmers who decided to implement these micro eco-friendly investments. In this sense, since 2013, FONDESURCO has included in the evaluation application process, the inclusion of a mandatory format which makes possible to identify if the clients will use the credit in the prioritized activities.

The green microfinance services portfolio has been realized due to technical and financial support given by fundamental partners, while the role of the national government is still nule. FONDESURCO has, as partners, global and national organizations with great impact in the financial and environmental fields, which have been financing the initiative, so the clients could access to credit at a low interest rate and very reasonable payment conditions. The main contributors are the following:

**Contributors to Green Microfinances in Peru**

Organization	Country/Region
ADA	Luxemburg
BID	America
Ceder	Peru
Global Partnership	US
Impact Finance Fund	US
Micro World Groupe plaNet Finance	France
Symbiotics	Canada
Triple Jump	Netherlands
ABACO	Peru
Banco de Crédito del Perú	Peru
Banco de la Nación	Peru
BlueOrchad Finance	Switzerland

Cordaid	Netherlands
Desco	Perú
El Taller	Peru
Fortalecer	Argentina
Grameen Foundation	Bangladesh
Incofin Investment Management	Belgium
MicroVest	US
Rabobank	Netherlands
Triodos Bank	Netherlands
ResponsAbility	Peru
The Shelby Cullom Davis Charitable Fund	US
Cooperativa Artesanal de Sibayo LTDA	Peru

Own elaboration based on several publications on Green microfinance in Peru.

The two main channels by which Fondesurco delivers its clients green microfinancial alternatives are outlined below:

(1) Promotion of clean and renewable energy: FondeEnergía

This product is aimed to generate credit possibilities to buy productive equipment with specific characteristics referred to the promotion of the usage of clean and renewable energy, so that the client could access to the possibility to credit and improve its economic condition, as well as contribute to the reduction the greenhouse emissions in the productive process- mainly related to agricultural activities- and the quality of life of households in rural zones.

FondeEnergía is a financial product provided since July 2011 and as a result of a detailed analysis and evaluation of innovative technologies available and the market in which it could be possible to promote the usage of eco-friendly solutions. Nowadays, the grants finance the acquisition of solar heating machines (for accomodation services, cheese maker plants and

households), improved ovens (for restaurants and individual food business), improved cooks (for households) and basic useful machines for agricultural and commercial activities based on the usage of clean and renewable energy. Additionally, it is being developed a special supply of illuminations photovoltaic systems and other renewable energy systems. To November 2014, FONDEenergía have had granted almost 7000 credits which represents 938,801.00 Soles (292,253.3 USD), details can be found in the following figure.

**Total amount of disbursements on the project FONDE ENERGY (2010-2014)**

<b>YEAR</b>	<b>NUMBER OF PRODUCT</b>	<b>AMOUNT OF DISBURSEMENT US\$</b>	<b>NUMBER OF BENEFICIARIES</b>
<b>2010</b>	7	8,607.40	25
<b>2011</b>	29	16,009.40	70
<b>2012</b>	178	89,280.60	421
<b>2013</b>	214	102,177.40	361
<b>2014</b>	158	76,178.60	212
<b>TOTAL</b>	<b>586</b>	<b>292,253.30</b>	<b>1089</b>

Fuente. FONDESURCO (2015). Cumbre Mundial de Finanzas Solidarias.

To develop this product, FONDESURCO has had the collaboration of ADA of Luxemburg, MEI and the GIZ of Germany, who have contribute in the methodical development of the project so that it could successfully achieve its goals. The effectiveness of the portfolio makes FONDESURCO crediting for the first place in the Green Financial Awards from Luxemburg as well as the CITI Price of Peru as the most innovative financial institution (PREMIC 2013)

Still, due to its more than 20 years' experience in the field of microfinance and rural development, they have also started to participate in the design of new products. This is why FONDESURCO keep very close relationship with their clients and has understood their needs. Referring to this kind of products, FONDESURCO takes special attention in guarantee its effectiveness. In this sense they have established a tight communicational relationship with the supplier before and after the equipment is delivered. Before, they make sure it accomplish the

efficiency usage of renewable and clean energy at optimum conditions; and latter to make sure the functionality of the equipment.

## (2) Agriculture

In respect to agriculture, and supported by the United Nations Development Program and the Frankfurt School, FONDESURCO has developed the project “Microfinanciación para sistemas de Adaptación basados en Ecosistemas (MEbA)”, aimed to foster the agricultural adaptation to climate change. As being part of this global project, FONDESURCO receives technical assistance from the Frankfurt School referring to the development and implementation of new financial products focused on the adaptation to climate change. This has allowed FONDESURCO to develop an innovative system, known as (Centralized Underwriting System) - CEUS, which makes possible to include the climate risk component into the credit evaluation process. This approach would evaluate 1) the productive process, b) the familiar income and expenditure, c) the characteristics of the cultivate- to- be financed, d) the pests that could affect, and e) the micro climate.

In the context of the implementation of MEbA, FONDESURCO is aimed to provide micro financial products and services which enable them to make investments on activities related to the ecosystem sustainability generating at the same time both incomes and resilience towards climate change. FONDESURCO has developed some of the 40 alternatives considered by MEbA as effective alternatives for adaptation to climate change, which are following mentioned:

### **Alternatives for MEbA investments on Climate Change Adaptation**

<b>Good practices</b>	<b>Technologies</b>
Organic fertilisers	Seeds bank
Soil nutrition	Windbreaks barriers
Conservation agriculture	Biodigesters
Ecological agriculture	Fog collectors
Organic agriculture	Solar dehydrators
Apiculture	Agricultural drainage

Ecotourism	Efficient cookstoves
Cultive diversification	Firebreaks barriers
Home gardens	Solar hydropony
Sustainable forestal management	Greenhouse
Integrated nutrients management	Natural retaining walls
Integrated plague management	Raining water reservoirs
Permaculture	Drip and sprinkler irrigation
Pisciculture	Blind tube system
Filtering dams	Mixed nursery
Soil restauration	Border trenches
Shifting cultivation	
Agrosilvopastoral system	
Silvoagricultural system	
Silvopastoral system	
Natural shade	
Agricultural rooftop	
Waru-waru	

Own elaboration based on MEbA profile of investment portfolio (Internal document)

As for the past years, the MEbA had invested in the following activities/ technologies

#### **Total amount of disbursements on the project MEbA**

<b>GREEN PRODUCTS</b>	<b>Nº PRODUCTS</b>	<b>AMOUNT OF DISBURSEMENT S/.</b>
<b>Ecological Agriculture</b>	38	230,871
<b>Organic Agriculture</b>	53	440,900
<b>Fish farming</b>	11	74,300
<b>Ecotourism</b>	10	152,500
<b>Conservation Agriculture</b>	3	13,000
<b>Soil Restauration</b>	35	272,000
<b>Shifting Cultivation</b>	190	1,530,400
<b>Agrosilvopastoral system</b>	15	79,100
<b>Eco friendly technologies</b>	715	1,025,622
<b>TOTAL</b>	<b>1070</b>	<b>3,818,693</b>

Fuente. FONDESURCO (2015). Cumbre Mundial de Finanzas Solidarias.

#### *Opportunities*

FONDESURCO has received from Renewable Energy and Energy Efficiency Partnership (REEEP) 150,000 Euro (500,000 Soles) to promote, through granting FondEnergy

credits, the usage of eco-friendly energy in the rural areas of Arequipa, Moquegua and Ayacucho (Chivay, Aplao, Cocachacra, Arequipa, Chuquibamba y Pampacolca). REEP has the aim of reduce in 1,715 tonnes the CO2 emissions from the atmosphere and to save 3,370 MWH per year and to install small scale equipments which allow the access to renewable energy up to 460 KW per person.

One of the main topics in the Paris Declaration was referred to the climate funding. In this matter, the establishment of the Climate Green Fund increased its capitalization and exceeded the amount of \$10,200.00 and nine decisions related to green finances were approved.

The Climate Investment Funds (CIF), an institution aimed to finance programs to reduce the greenhouse emissions, received resources from development banks and 14 donors and establishes its five lineaments to 63 developing countries and middle income ones. An injection of \$765 million which increase the global commitments. The Clean Technology Fund is the biggest CIF program, with resources up to \$3,900 million approved to develop 70 renewable energy projects.

To the year 2020, the Corporación Andina de Fomento (CAF) is aimed to turn to 50% of its portfolio in green financing, which evidence the commitment towards the productive transition throughout its financial solutions. For example, the Forest Program is structured into five components: 1) reduction of emissions by avoiding deforestation and forest degradation, 2) green business with no wood products, 3) recovery and restoration of forests and degraded land, 4) amelioration of the eco efficiency of forestal industry.

### *Good practices*

Some remarkable experience in the region refers to the Centro American Bank for Economic Integration BCIE, which carried out the “Accelerating the Investments in Renewable Energy in Central America and Panama Project” (ARECA), by which it granted a partial credit guarantee up to \$ 56,250.00 to the San Jose Bank SA, as a partial coverage to finance the Florex

Photovoltaic Project located in the town San Ramon, Costa Rica. Through this strategic alliance, it could be possible the development of small scale renewable energy projects (Under 10 MW). Furthermore this alliance (ARECA/BCIE) has endorsed the economic and social development in the zone known as the Central American isthmus, through the granting of Partial Credit Guarantees and Non Refundable Technical Assistance to hydro, biomass and solar projects, generating renewable energy investments up to \$111.6 million, the equivalent to 41 MW and 130,302 tons of CO<sub>2</sub>/year, mitigated from the atmosphere.

Since 2009, the financial group BAC CREDOMATIC, launches the implementation of the Environmental Management System, based on the environmental impact caused by the energy, water and paper consumption. In 2013 it obtained the declaration C-Neutrality by the National Government of Costa Rica, being the first financial entity in receiving such recognition. The process was based on the surveillance, reduction and compensation of greenhouse effect gases. To the end of 2014, almost 300 tonnes of CO<sub>2</sub> were reduced, due to the implementation of reduction project management such as: installation of 2000 solar panels, luminaire changes towards LED technology and AC equipment changes to refrigerant gas. Moreover, the BAC Green Mipymes Project started in 2014 and in just 6 months the portfolio raised up to \$500,000, 5 benefited enterprises from different sectors, 158 KW installed from solar energy and a reduction of 15 tonnes of CO<sub>2</sub> per year. In fact, to keep reducing emissions, it will be needed count on 30 trees during a 50 years period. Green Mipymes is aimed to grant credits with special conditions to invest in renewable energy equipments, mainly photovoltaic and thermo solar equipments, and energy efficiency.

BAC is focused on energy self-consumption projects and they exclusively finance projects which promote the reduction of electricity to satisfy the daily demand of enterprises, without introducing exceeds to the grid. It is only about distributed generation. At the financial level, this has been an incentive for the enterprises due to the fact that the credit quote is adjusted to the savings the equipment could make. In this sense, the enterprise saves in the

electric bill while it realizes the equipment investment. At the end of the credit period, the amount expended in the payment turns into savings, contributing though to a positive TIR and VAN values of the project. If the financing has a 10 years period, and the equipment has a life of almost 25 years, so it is only needed 15 years of savings in the tariff, with a low depreciation of the equipment and the yearly tariff increment in the country.

#### **4. Conclusions and lessons learned**

**FONDESURCO, as a COOPAC, plays a fundamental role in the insertion of green financial products and services into Base-of-the-Pyramid populations**, who are at the same time vulnerable to climate change and responsables for activities which contribute to the generation of greenhouse emissions. Through a business model based on incentivizing micro investments on energy efficiency technologies (FondeEnergy) and specific actions towards the adaptation of the agriculture to climate change(MeBA), FONDESURCO has developed a simplified and basic business model, taking into consideration most of the rural population characteristics and financial needs. In this sense, for example, it has created the Rapid Information System (SIR) which is appropriate to the level and type of technology mostly used in rural areas, with easy and understandable language, and useful content.

**Green microfinances, as a practice in Peru, may be in risk of being just a theory and not develop sustainable intervention strategies.** As it has been described above, most of the efforts made by FONDESURCO and others working on green microfinance are partially or completely financed by a third party who may be an international organization aimed to subsidy the intervention. In this sense, the “green” concept relies mostly on this financial aid; meaning, COOPACs will prioritize economic profitability investments overall, regardless of whether this are green or not green. Subsidies make possible to have a low interest rate and, therefore, be more attractive to the client, who, having or not knowledge or understanding about the “green concept” will choose certain investment just because of it. Then, this could evidence certain risk

for the concept of “green microfinance” to achieve its real meaning, promoting consciousness both in the COOPAC and in the client about taking or not green investments.

**It is necessary as from the government to develop enabling mechanisms for promoting the practice from the organizations themselves, namely, intelligent subsidies.** It is recommendable for the organizations to start pushing up intrinsic strategies which could make the green micro financing practice sustainable and part of the core business instead of just being a subsidized activity by a third party. In this, the role of the government becomes a quintessential element on striving sustainability for this kind of organizations. It may be needed from the government to develop mechanisms, specifically incentives such as those known as intelligent subsidies, which are oriented to subsidize the deployment of the organization until it achieves its self - economic sustainability. This is the case of Colombia, through Banca de Oportunidades, COOPACs receive public decreased subsidy, which may not be used to lower the interest rates, but to afford the administrative ongoing process of the organization and its insertion to the market for a determined period of time until it starts to be profitable. Another mechanism could be the one based on certification and awards, such as the Declaration of Neutrality by the National Government of Costa Rica.

**An effective surveillance and evaluation system may be developed in order to control the advance towards the habits changing and the institutionalization of green microfinances as an economic, social and environmental investment.** The effectiveness indicator could not be only if a grant was allocated or not, because it does not measure the whole impact of green microfinances at economic, social and environmental fields. It does not give an account of how much energy is being saved, how much less emissions are being avoided, how much beneficial is an agricultural practice in the adaptation to climate change, or even, how much monetary savings are being perceived by investing in some clean technology rather than another. As the impacts are not quantified yet in the country, there is no indicator which could accurately measure the impact of green microfinances in the organization. Experts

mentioned an indicator should be focused not in the portfolio rentability but in the effective amount of disbursements.

**An integral program for technical assistance and technology transfer may be developed. One of the most important objectives of green microfinances practices is to lead a conductual change in the beneficiary population.** Since the most important factor in an organization is achieving sustainability and sustainability is based on a solid and continued demand, being aware of the alternatives they are taking which may be worth its investment. In this sense, an intervention with a high focus on technical assistance, training and creating awareness programs and a very accurate technology transfer strategy should be deployed. Every green microfinance program should be strengthened with a complementary component of awareness creation which ensure the client understand what is he investing at and which are the effects of such investment.

**Innovation and development may be endorsed and promoted so as to generate new products and services based on the particular needs of the clients.** Based on a subsidiary principle, COOPACs are the ones who know the most about the typical rural clients due to the fact of their decentralized intervention and presence in the most vulnerable areas. Knowing the clients may lead to contribute on the design of new technology and alternatives which may be effective to their needs. This is why, in collaboration with local research centers, enterprises or universities, COOPACs could play a significant role in ameliorating the accuracy of the technological supply in which clients could invest.

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