

Mitigating environmental risks in small-scale activities: what role for microfinance? A case study from El Salvador

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JEL Classifications: D03, D22, G21, O17, Q53, Q56

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Mitigating environmental risks in small-scale activities: what role for microfinance?

A case study from El Salvador

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Abstract

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1. Introduction

Small-scale activities in developing countries face environmental risks that can represent direct threats for the health and livelihoods of microentrepreneurs and their surrounding communities. Solutions exist to mitigate these risks, but conventional strategies have largely failed at fostering their adoption within small-scale activities (Blackman & Kildegaard, 2003). Recently, some professionals have started to call for the involvement of a new actor in environmental management: microfinance institutions (MFIs) (Schuite & Pater, 2008; Van Elteren, 2007). According to the literature, MFIs would have the advantage of being embedded at the grassroots level and could therefore be relevant intermediaries for the dissemination of environmental awareness-raising information (Hall et al, 2008; SEEP Network, 2008). If they started combining tailored informational messages with their financial services, MFIs could address two main barriers to environmental behaviour change in small-scale activities: lack of awareness and lack of resources (Blackman & Bannister, 2006). The approach looks promising on paper. Doubts however arise regarding MFIs' capacity to implement this type of program and its effectiveness to address barriers to environmental behaviour change.

For the first time, this paper looks at an actual case: a pilot environmental risk management program implemented by a microfinance institution, Integral, in El Salvador. Our objective was to identify the challenges that an MFI can face when seeking to mitigate environmental risks in small-scale activities. More particularly, we sought to identify: (1) internal challenges faced by the MFI when developing new skills and procedures to implement an environmental risk management program; (2) external challenges faced by the MFI when trying to address the barriers to behaviour change in small-scale activities. Understanding these challenges is essential to assess the role that MFIs can play, and their limits, in mitigating environmental risks in small-scale activities. It will also be useful for practitioners who can build on lessons learned and identify potential solutions to overcome such challenges.

Eighteen months after the beginning of the pilot program, we conducted semi-structured interviews with 60 clients and 35 MFI's loan officers and managers. Our study revealed that, despite a real interest from its staff, the MFI had some difficulties in building internal skills and in conciliating its environmental and performance objectives, which compromised the effective implementation of the program. Furthermore, we identified that the pilot program, as it was designed, did not sufficiently take into account the psychological and economic barriers to behaviour change. Finally, we found that the MFI's effort was in some cases countered by external factors out of its reach, such as inadequate national regulations.

The rest of the article is structured as follows. Section 2 introduces the rationales, assumptions and questions behind the involvement of microfinance institutions in environmental risk management. Section 3 presents the case study investigated in El Salvador. Section 4 specifies the methodology used for this research. Section 5 presents the results of the pilot program and analyzes the internal and external challenges faced by Integral in the implementation of this program. Finally, section 6 provides some concluding remarks.

2. Involving MFIs in environmental risk management: a promising approach?

2.1. Small-scale activities and environmental risks

In most developing countries, small-scale activities represent over 90 per cent of private enterprises (Blackman, 2006a). Most of them do not have a significant impact on the environment, especially for those in the trade and service sectors. However, several scientific studies have shown that some small-scale activities, in specific sectors, can entail significant environmental risks (Wenner, 2002)¹. This is the case, for instance, in the following sectors: leather tanning, metal working, electroplating, mining, painting, printing, textile dyeing, auto / motor repair, brick and tile making, wood processing, charcoal making, crop growing, animal husbandry, fisheries, food processing, transportation, etc. (Blackman, 2006a; BRAC, 2006; FMO, 2008; GreenMicrofinance, 2007; SEEP Network, 2008; Pallen, 1997). As illustrated in Table 1, the environmental risks of these activities are linked to non-sustainable input use, inefficiency of production processes, inadequate chemical use, or inappropriate waste management. Due to a lack of awareness and resources, small-scale activities are indeed more likely to use older equipment and apply inadequate production techniques (Lanjouw, 2006).

Table 1. Examples of environmental risks in small-scale activities
(based on FMO, 2008)

| ACTIVITY | ENVIRONMENTAL RISKS | MITIGATION SOLUTIONS |
|------------------------------|---|---|
| Agriculture – Crop growing | <ul style="list-style-type: none"> • Inappropriate use of chemicals • Deforestation, land erosion | <ul style="list-style-type: none"> • Use protective gear (masks, gloves) to avoid intoxication • Integrated pest control • Agroforestry |
| Brick making | <ul style="list-style-type: none"> • Land erosion caused by clay extraction • Toxic smoke emissions | <ul style="list-style-type: none"> • Recover land after extraction to prevent erosion • Use clean fuel • Use chimneys and filters |
| Food stall, small restaurant | <ul style="list-style-type: none"> • Inadequate waste management (risk of pest, vermin, soil and water contamination) • High energy use for cooking | <ul style="list-style-type: none"> • Recycle organic waste as compost • Dispose via community services instead of burning • Use an improved cook stove |
| Leather tanning | <ul style="list-style-type: none"> • Use of acids, solvents, etc. • Inadequate water waste management (risk of soil and water contamination) | <ul style="list-style-type: none"> • Use protective gear (masks, gloves) to avoid intoxication • Use enzymes instead of lime and sodium sulfur • Recycle bath by filtering (Blackman, 2006c) |
| Textile dyeing | <ul style="list-style-type: none"> • Use of chemicals with heavy metals (Vincent & Sivalingam, 2006) • Inadequate water waste management (risk of soil and water contamination) | <ul style="list-style-type: none"> • Use protective gear (masks, gloves) to avoid intoxication • Use filters • Discharge toxic water wastes in appropriate facilities |
| Wood / metal processing | <ul style="list-style-type: none"> • Exposure to wood / metal dust • Use of acids, solvents, paints • Inadequate waste management | <ul style="list-style-type: none"> • Use protective gear • Recycle wood / metal wastes |

¹ Pallen (1997) estimates that 10 to 25 per cent of small-scale activities can entail significant environmental risks.

Estimations of the global, cumulative impact of small-scale activities on the environment are scarce and complicated to compute². However, different studies show that these environmental risks represent direct threats to the health and livelihood of microentrepreneurs and surrounding populations (Lanjouw, 2006). Blackman et al (2006) demonstrate for instance that brick kilns emissions in Ciudad Juárez, Mexico, are responsible for serious health damages among the nearby residents. These kilns are often fired with a variety of cheap, highly polluting fuels (used tires, plastics, used motor oil, battery cases, etc.), making air quality in Ciudad Juárez one of the worst in the world. The impact is very localized but significant on the mortality and morbidity rates in the area. After conducting a cost-benefit analysis, Blackman et al (2006) even show that there would be more benefits to reduce pollution in these small-scale brick kilns than in larger brick-making firms. Crow & Batz (2006) studied the environmental impact of small bleachers and dyers in India and found that water effluents from these enterprises are loaded with chemicals and heavy metals that directly affect the health and livelihood of surrounding communities: contamination of rivers and groundwater, reduced soil fertility due to high salinity, cattle health problems, decrease in fish stocks, skin disease, shortage of drinkable water, etc. Another study by Lahiri-Dutt (2008) emphasizes that people working in small mining activities are more prone to developing respiratory problems, arthritis and tuberculosis because of their constant exposure to dust, poor sanitation and limited access to potable water. Poor people are thus disproportionately affected by the environmental risks generated by their small-scale activities as they have a limited ability to avoid pollution and treat pollution-related health problems (Blackman, 2006a).

Yet, in most small-scale activities, environmental risks can be mitigated through: the adoption of an upgraded technology that improves efficiency, reduces waste production, optimizes input use and limits contamination (e.g.: energy efficient equipment, filters to reduce water contamination, integrated pest control, etc.); and/or the adoption of adapted behaviours (e.g.: rational use of chemicals, use of masks and gloves, waste sorting and recycling, etc.) (Blackman, 2006c; Crow & Batz, 2006; FMO, 2008). According to FMO (2008), these solutions could bring significant benefits to microentrepreneurs and surrounding populations by reducing inefficiency, occupational hazards, health problems, and environmental contamination. Yet, the voluntary adoption of such solutions is not always systematic.

2.2. Barriers to environmental behaviour change in small-scale activities

The literature identifies a variety of barriers to environmental behaviour change in small-scale activities (Hillary, 2004). These barriers can be categorized into two main types: structural barriers and psychological barriers (Swim et al, 2010).

Structural barriers mainly refer to access to information, access to financial resources, infrastructure limitations and inadequate market regulations. Indeed, microentrepreneurs often lack awareness of

² According to Hillary (1995), the cumulative impact of these small enterprises on the environment could represent up to 70 per cent of all industrial pollution. This number is often cited in the literature but still subject to controversies (Hillary, 2000).

the environmental, health, and sanitation risks linked to their activities (Hilson et al, 2007). They usually lack information on existing solutions to mitigate these risks, on the benefits brought by these solutions, on how to access these solutions, etc. (Blackman, 2006a, 2006c; Mir & Feitelson, 2007). Access to information thus seems to be a first significant barrier to the voluntary adoption of environmentally-friendly technologies or behaviours in small-scale activities (Hillary, 2004; Lanjouw, 2006; Pimenova & Van der Vorst, 2004). A second structural barrier often cited in the literature is the lack of financial resources that prevents a micro or small enterprise from upgrading to cleaner production processes (De Almeida, 1998; De Canio, 1998; Lanjouw, 2006; Pimenova & Van der Vorst, 2004; Swim et al., 2010). As emphasized by Mir & Feitelson (2007), small-scale activities already struggle for their short-term survival. They are often excluded from the banking system for lack of sufficient collaterals and therefore do not have access to the financial resources needed for technological change (Blackman & Bannister, 2006). Lack of adequate infrastructure is also identified as a barrier to environmental behaviour change. For instance, the lack of local technology suppliers or recycling facilities may hinder the adoption of clean technologies or pro-environmental behaviours (De Almeida, 1998; Steg & Vlek, 2009). Finally, another important structural barrier can be inadequate regulations, such as high taxes on clean technologies that lead to price distortions (De Almeida, 1998; Swim et al, 2010).

In addition to these structural barriers, the literature on environmental behaviour change also stresses the important role of psychological barriers, such as habits, social norms, and affect and emotions (Henrich et al, 2001; Jager, 2003; Maréchal, 2009; Steg & Vlek, 2009; Swim et al, 2010). Many authors indeed emphasize that people are often locked in 'habits': they repeatedly perform the same behaviour without deliberating too much. This behaviour became a standard and people are therefore less likely to take into account new information and try new processes (Van den Bergh, et al., 2006; Jager, 2003; Maréchal, 2009; Steg & Vlek, 2007). Moreover, various studies show that people's reluctance to adopt new behaviours is even stronger when their peers are also locked in the same habit. People tend to compare themselves to peer groups and derive 'norms' of what they see as a proper course of action (Barnes, et al, 2004; Henrich et al., 2001; Maréchal, 2009; Swim et al., 2010). Finally, the decision to change behaviour also depends on the affective processes related to the behaviour. For Swim et al (2010), emotions can indeed be stronger drivers of behaviours than rational decision-making.

To address these different barriers, Steg & Vlek (2009) identify two types of strategies: informational and structural strategies. Informational strategies seek to address the lack of awareness of target populations. However, many studies have shown that the mere provision of information does not systematically translate into behaviour change (De Almeida, 1998; Swim, et al., 2010). Steg & Vlek (2009) therefore emphasize that informational strategies should also address the psychological barriers to behaviour change. Beyond the mere content of the information, the way the information is provided (by whom, when, where, how?) is essential. In a case study, McKenzie-Mohr (2000) finds that people who were individually visited by a student were more likely to change their behaviour on lawn watering than people who were just given a flyer on the issue. For Jager (2003), people are also more likely to take into account new information and change their behaviour when this information is

provided at the same time as the behaviour is performed. According to Steg & Vlek (2009), environmental behaviour change is more likely to occur when awareness-raising information is tailored to the needs, wants and perceived barriers of individual segments of population. Such an approach is often referred to as individualized social marketing (Kollmus & Agyeman, 2002; McKenzie-Mohr, 2000; Steg & Vlek, 2009). In addition to informational strategies, structural programs may also be needed to encourage pro-environmental behaviours, for instance by promoting local market development for clean technologies, investing in recycling infrastructure, facilitating access to payment facilities or setting up fiscal and financial incentives for technology change (Steg & Vlek, 2009). The choice of a strategy over another one will depend on the specific barriers identified in each context.

2.3. The need for alternative actors to foster pro-environmental behaviours

Public agencies have already tried to address barriers to environmental behaviour change through both informational and structural strategies, by implementing for instance national awareness-raising campaigns or subsidies / tax incentives programs. However, these interventions have largely failed to improve the environmental behaviours of small-scale activities (Blackman & Kildegaard, 2003), for two main reasons: the lack of adaptation of informational messages and the failure to reach these target populations.

A first reason for the failure of public agencies' interventions is due to the lack of adaptation of environmental messages. Low awareness and lack of technical information are identified as some of the main barriers to the adoption of pro-environmental behaviours in microenterprises (Blackman, 2006a, 2006c; Mir & Feitelson, 2007). However, national awareness-raising campaigns have a limited effect on small-scale activities since messages are often not adapted to the concerns and education level of microentrepreneurs and may not be broadcast through media accessible to this target population.

A second reason for this failure is due to the difficulty to reach microentrepreneurs. Command-and-control strategies are often ineffective because public agencies lack the human and financial resources to enforce these policies (Wenner, et al, 2004). Most small-scale activities are informal, numerous, and widely spread over the territory, making it very complicated and costly for public agencies to control and sanction them along environmental requirements (Blackman, 2006a, 2006b). Positive strategies based on subsidies or fiscal incentives also have limited effects since they are designed for legal companies and do not reach microentrepreneur populations who are mostly informal. In Ghana, for instance, an incentive program aiming to reduce mercury contamination in gold mining failed to reach 90 per cent of small gold miners because eligibility was conditioned to the legal registration of the activity (Hilson, et al, 2007). Similarly, in Malaysia, microentrepreneurs engaged in textile dyeing and metal finishing were not motivated at all by the fiscal incentives to improve pollution control since they were not registered and did not pay taxes (Vincent & Sivalingam, 2006). Past experiences have thus shown that public agencies may be limited in their capacity to reach small-scale activities.

On the other hand, several recent studies have pointed that a promising approach could be to involve new actors, at the grassroots level (Blackman, 2006a). Ahmed (2006) shows for example that an initiative implemented in Guadalajara (Mexico) was successful in making small and medium enterprises reduce their environmental impact thanks to the mobilization of bigger suppliers who mentored their partner SMEs on environmental management. In León (Mexico), Blackman (2006c) demonstrates that community mobilization was key to disseminate information on the costs and benefits of clean technology and foster the adoption of environmentally-friendly solutions among leather tanneries. Involving grassroots actors could thus be a promising approach to mitigate environmental risks within small-scale activities.

2.4. Involving microfinance: the promise of an integrated approach?

In recent years, some professionals have started to call for the involvement of another grassroots actor in the field of environmental management: microfinance institutions (Hall et al., 2008; Schuite & Pater, 2008; Van Elteren, 2007). A donor, the FMO³, has been particularly involved in promoting environmental risk management within MFIs. Through the development of specific toolkits⁴ and the organization of international workshops, the FMO has sought to encourage its partner MFIs to assess the environmental risks of their clients' activities and raise clients' awareness of mitigation solutions.

At first, this approach looks particularly promising. MFIs indeed have a first advantage in promoting pro-environmental behaviours within small-scale activities: they closely interact with thousands of microentrepreneurs and, as investors, are in a good position to influence microentrepreneurs' decision making (Coulson & Dixon, 1995; Wenner, et al, 2004). Very early, some MFIs indeed identified that the close relationship with their clients is a good opportunity to raise awareness of microentrepreneurs on different issues (Dunford, 2001). Beyond financial education and business management, some MFIs such as Grameen Bank (Bangladesh), BRAC (Bangladesh) or PRO-MUJER (Bolivia) started to take advantage of their network to educate clients on health issues like family planning or HIV/AIDS prevention. Similarly, MFIs could decide, through their loan officers, to raise awareness of environmental risks and provide information on mitigation solutions. As loan officers have face-to-face interactions with these microentrepreneurs, they could individually tailor their messages.

The second advantage of MFIs is that their mission is to provide access to financial resources for people excluded from the banking system, which is often identified as a binding constraint on technological change (Blackman & Bannister, 2006). An integrated approach combining financial and informational services could thus generate clear synergies in the promotion of pro-environmental behaviours.

However, environmental risk management is a very new field for microfinance institutions, which may face important challenges in implementing this type of program.

³ The FMO is the Dutch Development Bank.

⁴ Environmental and social toolkits available online: <http://www.fmo.nl/esg-tools>

2.5. Challenges linked to MFIs' involvement in environmental risk management

Building on the literature on microfinance and environmental behaviour change, we identified two main types of challenges that MFIs may face when getting involved in environmental risk management: (1) challenges in setting up the program within the institution; and (2) challenges in addressing the barriers to behaviour change of their microentrepreneur clients.

First, the capacity of MFIs to effectively implement an environmental risk management program can be questioned. Doubts can arise regarding the technical capacity of MFIs to provide environmental advice. Indeed, microfinance institutions are professional in the provision of financial services, but they do not have *a priori* the skills and expertise needed to assess the environmental risks of their clients' activities and give advice on solutions to mitigate those risks. As microfinance clients are engaged in a variety of activities, each with its specific environmental risks, the range of issues that loan officers would need to master is quite broad. One could thus question the capacity of the MFI to build the internal skills and expertise required to manage environmental risks. Furthermore, practitioners are often concerned that the provision of non-financial services may conflict with the MFI's financial objectives (Lensink, et al, 2011; Lensink & Mersland, 2009). In order to respond to donors' requirements regarding their financial performance, MFIs often put a lot of pressure on their loan officers (Ahmad, 2003). Some studies show that loan officers sometimes fear that they will lose their job if they are not performing and therefore they tend to prioritize the activities on which they are evaluated – usually portfolio development and quality – at the expense of other activities (Ahmad, 2003; Bazoberry, 2001; Dixon et al., 2007). For loan officers, spending time assessing the environmental risks of their clients and discussing mitigation solutions with them could thus conflict with their performance goals and be sidelined as non-priority activities. An MFI willing to implement an environmental risk management program may thus face significant internal challenges in building skills and conciliating the program with its performance objectives.

In addition to these management issues, one could question the capacity of an MFI to address the psychological and structural barriers to environmental behaviour change of microfinance clients. Through their loan officers, MFIs could provide individually tailored messages to their clients, on a face-to-face interaction, at the microentrepreneurs' workplace where the environmental behaviour is performed. They would therefore adopt an approach in line with individualized social marketing and could be more likely to foster behaviour change (Jager, 2003; Kollmus & Agyeman, 2002; McKenzie-Mohr, 2000; Steg & Vlek, 2009). Nevertheless, some authors stress that an informational approach, even if it is individualized, is not enough to change environmental behaviours if people are locked in strong habits (Verplanken & Wood, 2006). According to Verplanken & Wood (2006), breaking a strong habit would require changing the context in which the habit is performed, which may be beyond MFIs' reach. Furthermore, breaking habits requires time (time to change behaviour and time to settle into the new habit) (Verplanken & Wood, 2006), whereas MFIs' relationships with their clients is more based on short-term contracts.

Another key barrier to environmental behaviour change in small-scale activities is the lack of financial resources to upgrade to cleaner production processes (De Almeida, 1998; De Canio, 1998; Swim et al., 2010). As mentioned earlier, microfinance institutions are in a perfect position to provide the financial resources needed to invest in clean technologies. However, this implies that alternatives to upgrade production processes (for instance, an efficient cook stove for small restaurants and snack bars) are available on the local market (Millard, 2002) and that these alternatives bring clear economic benefits to the microentrepreneur in order to be voluntarily adopted by him (De Canio, 1998; Srinivasan, 2008). In Ciudad Juárez, Mexico, a project failed to promote the use of propane gas in brick kilns, instead of dirty fuel, because propane prices were too high and the substitution was not bringing direct economic benefits to the brick makers (Blackman, 2000). Even if they manage to implement an environmental risk management program, MFIs may not be able to address other structural barriers to behaviour change such as technology availability, pricing or even inadequate infrastructures and regulations (Steg & Vlek, 2009; Swim et al., 2010). An MFI willing to implement an environmental risk management program may thus face significant external challenges in addressing all psychological and structural barriers to behaviour change.

Environmental risk management is still a very new issue for the microfinance sector. After reviewing the literature, we saw that MFIs may face serious challenges in setting up an environmental risk management program and addressing barriers to clients' behaviour change. No study so far has looked at the way this approach is being implemented by microfinance institutions. Two main research questions thus remain untouched:

- (1) What challenges does an MFI face at the internal level when setting up an environmental risk management program?
- (2) What challenges does an MFI face at the external level when seeking to address barriers to environmental behaviour change in small-scale activities?

For the first time, this paper seeks to tackle these questions by looking at actual practices through the analysis of a case study from El Salvador.

3. A pilot program in El Salvador

El Salvador, a small country of around 7 million inhabitants in Central America, faces several major environmental challenges, among which are water contamination, outdoor air pollution, and deforestation (MARN, 2011; World Bank, 2006). The Ministry of Environment and Natural Resources (MARN) is however constrained with limited resources. All micro and small enterprises are supposed to comply with the Environmental Code and get Environmental Licenses from MARN. However, the Ministry does not have the means today to ensure the enforcement of the Code at the micro and small enterprises level. It rather focuses on big companies through a system of complaints and sanctions. Furthermore, apart from a couple of nationwide awareness-raising campaigns on specific issues (such as turtle protection, organic composting, energy savings, etc.), the Ministry is not very involved in implementing prevention and support programs to foster the adoption of pro-environmental behaviours

within the Salvadorian society. The National Committee for Micro & Small Enterprises (CONAMYPE) however identifies environmental management as a key issue for micro and small enterprises in the country. In 2009, CONAMYPE even decided to include environmental objectives in its vision and mission. They are currently considering developing some support programs to help micro and small enterprises to progressively comply with the Environmental Code. However, for the moment, they have not had the means to effectively start addressing the issue. In 2009, the Salvadorian Microfinance Network ASOMI, which gathers eleven MFIs in the country, organized a couple of workshops to raise awareness among its member MFIs regarding their ecological footprint. The context in El Salvador was therefore favorable to the involvement of a microfinance institution in promoting environmental management within small-scale activities.

Integral, which has been registered as a non-bank financial institution since 1990 and is by far the MFI with the largest outreach in El Salvador (with more than 45,000 active borrowers), started to be interested in the issue. In June 2008, two representatives of the institution participated in a workshop on environmental risk management in Quito, organized by the FMO for its partner MFIs. During the workshop, the FMO presented a methodology to assess and mitigate the environmental risks of microfinance clients⁵. Integral decided to test this approach through a pilot program in six agencies, before rolling out the program to all twenty-five agencies over the Salvadorian territory. The six pilot agencies were selected because their portfolios were estimated to be the most environmentally-risky ones. Around that time, the Housing Loan Manager was appointed as the Social & Environmental Issues focal point and became in charge of the coordination of the pilot program. Integral worked on adapting and simplifying FMO tools. In October 2009, they organized a training session on environmental risk management for agency staff (loan officers, branch manager, and operation manager) from the six pilot agencies. Loan officers were then asked to: (a) identify in their portfolio environmentally-risky activities; (b) discuss environmental risks and mitigation solutions with clients; (c) fill in a specific form for each client wherein they would write down the environmental risks that they have identified in the client's activity and the mitigation solution that they suggested to the client; and (d) conduct follow-up visits to monitor and write down changes in practices linked to environmental risks.

The pilot program was initiated in October 2009 and pursued throughout 2010 and 2011. It targeted mostly three types of activities considered as environmentally risky:

- Food production and sale: Activities such as bakeries, food stalls, small restaurants, *tortillerías* or *pupuserías*⁶ may be associated with environmental risks depending on their cooking energy source. Using wood for cooking indeed raises issues of deforestation (in a country where the origin of the wood used by microenterprises is difficult to trace) as well as health and sanitary issues linked to air pollution (frequent exposure to smoke emissions can create eye irritation, throat inflammation, chronic lung disease, or even some throat or lung cancers).

⁵ The methodology developed by Triodos Facet and promoted by the FMO is available online: <http://www.fmo.nl/esq-tools>

⁶ *Tortillerías* and *pupuserías* are food stalls that produce and sell *tortillas* (thin corn 'pancakes' or breads) and *pupusas* (corn tortillas stuffed with cheese, beans, meat, etc.). Both are very typical and widely consumed Salvadorian dishes.

- Manufacturing workshops: Activities such as metal workshops, aluminum workshops, auto-repair workshops, brick making, carpentry, sewing, can all be concerned with environmental risks linked to chemical use and waste management.
- Agriculture: Farming can also entail environmental risks due to inadequate use of chemicals and unsustainable natural resources management.

Integral thus decided to become a new actor in the field of environmental risk management, trying to promote mitigation solutions in small-scale activities through an innovative individualized informational approach. This initiative stands as an interesting case study for different reasons. First, Integral is one of the very few microfinance institutions that have taken the challenge to engage in environmental risk management. As a pioneer in this field, Integral gives us the opportunity to identify the achievements and challenges in implementing this type of program. The case is furthermore interesting in that Integral is a large and very professional MFI which has been able to achieve good financial performance. The issues that Integral faces when implementing an environmental risk management program can therefore be representative of what other MFIs may encounter. Finally, the case is interesting because Integral decided to get involved following the insights provided by one of its donors, the FMO. Contrarily to some MFIs which would only adopt an environmental exclusion list to respond to donors' expectations (Allet, 2012), Integral opted for a positive approach – raising their clients' awareness of environmental risks – which seems more constructive but is also more complex to implement. For all these reasons, we therefore decided to apply our two research questions to Integral's case.

4. Methodology

This article is based on a qualitative study conducted during six weeks in May and June 2011 in El Salvador. We opted for a qualitative approach, with 95 people interviewed, in order to fully understand, beyond the results of the pilot program, what are the factors determining such results.

To understand the institutional opportunities and challenges faced by Integral in the implementation of the pilot program, we first conducted semi-structured interviews with a wide range of managers and employees of the MFI (35 people in total). We interviewed fourteen top managers working at Integral's headquarters: the Executive Director; the Housing, Social & Environmental Issues Manager; the three Housing, Social & Environmental Issues Officers; the Regional Manager, Financial Manager, Audit Manager, Organization & Processes Manager, Risk Manager, Projects & Planning Manager, Information Technology Manager, Marketing Manager, and Human Resources Officer. We furthermore conducted interviews at Integral's branch level. On the one hand, we interviewed two branch managers and nine loan officers in branches that were involved in the pilot program (Apopa, Ahuachapán, Flor Blanca). On the other hand, we interviewed two branch managers and eight loan officers in branches that were not part of the pilot (Centro, Santa Ana). Each interview lasted between thirty and forty-five minutes. An open, semi-structured protocol was created to guide these interviews. The protocol detailed a flexible list of topics to be tackled, among which were: importance of environmental issues, environmental risks in the portfolio, clients' environmental awareness, clients'

capacity to mitigate environmental risks, role of loan officers in tackling environmental issues, willingness and capacity of loan officers to promote pro-environmental behaviours; and for those who participated in the pilot, opinion on the training and tools that were provided for the pilot, implementation of pilot activities, and eventual difficulties encountered.

Then, in order to identify the achievements and challenges faced by Integral in addressing the barriers to clients' environmental behaviour change, we compared an experimental group of clients (pilot agencies' clients) with a control group (other agencies' clients). We conducted a total of sixty semi-structured interviews with a sample of clients from both groups (thirty clients in the pilot group, thirty clients in the control group) in four different agencies. In order to select a valid control group, we opted for a matching approach, which is often used in the economics literature (Girma & Görg, 2007; Frondel & Schmidt, 2005; Hujer et al., 2004; Hulme, 2000; Wagner, 2002). This approach consists in pairing each observation with a control one that shares characteristics as similar as possible. Sample selection was thus made in two steps: (1) selecting pilot and control agencies, and (2) pairing pilot clients with control clients.

Out of the six agencies that were involved in the pilot program, we decided to focus on two agencies that have proved to be the most active in implementing the pilot program: Apopa, whose portfolio is mostly urban and peri-urban, and Ahuachapán, whose portfolio is more rural. On the basis of information provided by Integral, we then identified Centro and Santa Ana as suitable control agencies because they present similarities respectively with Apopa and Ahuachapán, in terms of portfolio size, number of clients, number of loan officers, average loan amount, gender distribution and urban/rural distribution. Moreover, Centro and Apopa are both located in San Salvador area, whereas Santa Ana and Ahuachapán are both in the Western part of the country.

In the two pilot agencies, our objective was to interview as many clients from the pilot program as possible. Some of the pilot clients could not be interviewed for various reasons: they had dropped out from the institution; they were located in areas with high insecurity issues; or they could not be encountered during the multiple field visits. Out of the fifty-eight clients that were involved in the pilot program in the two selected agencies, we managed to interview a total of thirty clients (fourteen in Apopa and sixteen in Ahuachapán). Thanks to MIS⁷ data and loan officers' knowledge, we then paired each pilot client already interviewed with a control client presenting similar characteristics (fourteen in Centro and sixteen in Santa Ana). Our first criterion was to match activities (since environmental risks are intrinsically related to the sector of activity): for example, if we had interviewed two metal workshops in Apopa, we tried to find two metal workshops in Centro. Then, when there was enough choice, we sought as much as possible to find control clients with similar gender, geographical location (rural/urban), education level, and age, since all of these variables can have some influence on the environmental awareness and behaviour of the clients. The characteristics of our sample are presented in Table 2.

Each client's interview lasted between thirty and sixty minutes. The interviews were conducted in Spanish directly by the author. Loan officers or representatives of Integral were not allowed to stay

⁷ MIS: Monitoring & Information System

during the discussion in order to avoid any bias in clients' answers. An interview protocol had also been prepared with a list of topics to be tackled, such as: credit history with Integral, relationship with the loan officer, satisfaction regarding Integral's services, awareness of environmental risks linked to the surroundings and the activity, capacity to reduce these risks, previous and actual environmental behaviour, environmental management suggestions given by the loan officer, and opinion on the role of loan officers regarding environmental management suggestions. To identify actual environmental behaviours, we looked both at self-reported and observed behaviours. For previous environmental behaviours and eventual changes of behaviours, we relied on self-reported behaviours, as well as on the environmental risk forms that had been filled in for pilot clients by loan officers in 2009-2010.

Table 2. Client sample characteristics

| ACTIVITY | PILOT | CONTROL |
|--------------------------|--------------|----------------|
| Food production and sale | 18 | 18 |
| Manufacturing workshops | 10 | 10 |
| Agriculture | 2 | 2 |
| EDUCATION LEVEL | PILOT | CONTROL |
| None | 7% | 13% |
| Primary | 46% | 44% |
| Basic | 33% | 30% |
| Medium | 7% | 13% |
| Superior | 7% | 0% |
| LOCATION | PILOT | CONTROL |
| Urban | 57% | 67% |
| Rural | 43% | 33% |
| GENDER | PILOT | CONTROL |
| Male | 47% | 50% |
| Female | 53% | 50% |

Collected data was first analyzed in an inductive approach, before creating a dialogue between our results and the literature on environmental behaviours. Specific attention was given to the triangulation of information (Guérin, et al, 2011) thanks to the multiple levels of interviews (top management, branch managers, loan officers, clients)⁸. Preliminary results were presented to and validated by Integral's top management at the end of the field research.

⁸ We also conducted interviews with six external stakeholders to gather more contextual information about environmental issues in El Salvador and ongoing programs and policies at the level of microenterprises. We interviewed two managers of the Ministry of Environment and Natural Resources of El Salvador, the Director of CONAMYPE (the Salvadorian Micro and Small Enterprises National Committee), the Director of the Salvadorian microfinance network ASOMI, the Executive Director of another Salvadorian MFI actively engaged in environmental management (Fundación Campo), and an officer of IPES (the Permaculture Institute of El Salvador).

5. Findings

Findings from our study show that the pilot program implemented by Integral in El Salvador only has modest results. This confirmed the relevance of our research questions: as the implementation of this environmental risk management program was not very successful, it is essential to identify the internal and external challenges faced by Integral.

Indeed, the pilot program first did not have a big outreach in terms of number of clients sensitized. From December 2009 until May 2011, the program reached a total of 149 clients. They represent only 0.01 per cent of the portfolio of the six pilot agencies and 0.003 per cent of the total portfolio of Integral (in terms of number of clients). This low outreach is rather surprising since interviewed branch managers and loan officers all estimate that environmentally risky activities represent between 10 and 40 per cent of their portfolio clients (depending on the geographical location). Out of the 149 clients reached, seventy were visited by the loan officers from the six pilot agencies after they had received training, in late 2009 and early 2010. Loan officers conducted a follow-up visit in early 2010 for forty out of these seventy clients. However, they did not take the initiative to assess the environmental risks of other clients later in 2010 and 2011, until someone from the headquarters came for this purpose and conducted visits of seventy-nine additional clients in March 2011. The number of sensitized clients was moreover very different from one pilot agency to the other: two agencies did not assess the environmental risks of any client at all after receiving the training, whereas one of them raised awareness of up to thirty-six clients. Even if the program was first implemented as a pilot, outreach appears to be very limited.

Furthermore, the impact of the pilot program also seems rather modest. Among the clients who were reached by the pilot, 40 per cent remember that someone from Integral came to discuss environmental and sanitary issues. Only 23 per cent actually remember what the loan officer recommended in order to reduce environmental risks and health hazards. Two factors could explain this limited result: either the clients did not pay attention to the advice due to lack of awareness or interest in environmental issues; or, despite what they claim, loan officers did not actually try to raise clients' awareness and just worked on assessing environmental risks and filling out the required form. It is very difficult to know exactly what happened during the field visits, but one could assume that both factors played a role in the limited effect of the program. Furthermore, almost all 23 per cent of clients who remember the loan officer's advice say that they already knew about the mentioned environmental risk and the recommended mitigation strategy. Finally, the pilot program does not seem to have fostered any change in environmental behaviours. None of the interviewed clients from the experimental group reported a change in behaviour following the loan officers' advice between 2009 and 2011.

These modest results thus confirm the importance of understanding the challenges faced by Integral in mitigating environmental risks in small-scale activities. Following our research questions, we first identified internal challenges linked to the setting up of the environmental risk management program within the institution. Second, we identified various challenges in addressing the barriers to environmental behaviour change of small-scale activities.

5.1. Internal challenges in implementing the program

High motivation, low technical knowledge

The limited outreach of the pilot program cannot be attributed to a lack of motivation from loan officers. On the contrary, during interviews, loan officers as well as branch managers expressed a high interest in the topic. They all asserted that 10 to 40 per cent of their portfolio clients is concerned by environmental risks, and that it would be important to reduce these risks. In Integral, loan officers who manage rural portfolios are recruited for their background as agro-economists or agro-engineers, which makes them even more inclined to consider the environmental risks of their clients' activities. Several of them clearly defined environmental assessment as being part of their job and mission. In Integral, loan officers are called 'asesores', which can be translated in English as 'advisors.' As 'asesores', many affirmed that it is their role to give advice to their clients and help them improve their businesses and well-being, may it be in terms of financial management, marketing, productivity, or even environmental risk management. Interviewed loan officers made a clear link between environmental management and social mission. In addition, they mentioned that supporting clients to reduce their environmental risks could be beneficial to their institution: it could improve the reputation of the MFI and avoid some credit risk (a baker that gets sick from fire smoke or a farmer that gets intoxicated from chemicals may stop repaying their loans).

However, loan officers felt that they are not in a good position to help clients mitigate their environmental risks because they still lacked the technical knowledge and tools that would be needed. Loan officers and branch managers that participated in the pilot were interested in the training that they received about environmental risk management. Yet, they deplored that the training was too theoretical and short (it lasted half a day) and that they were not provided with more specific tools and technical information on solutions to mitigate environmental risks. As they are not professionals of environmental or energy issues, they found it difficult to provide clients with information that would actually foster pro-environmental behaviours.

Conflicting priorities within the microfinance institution

Another barrier to the effective implementation of the pilot program was related to the internal strategy of the MFI: the activities of the pilot program were to some extent conflicting with the actual objectives and processes of Integral. Similar to what we found in the literature (Ahmad, 2003; Bazoberry, 2001; Dixon et al., 2007), loan officers all mentioned that they are already overloaded with work and have strict objectives to achieve (in terms of portfolio size, number of clients and portfolio quality), which determine in part the amount of their monthly salary. Loan officers' objectives had not been reviewed to be compatible with the new tasks required by the pilot program. In consequence, they found it difficult to have the time to both achieve their regular objectives and raise clients' awareness on environmental issues:

It is difficult with the workload we have. (Loan officer, Apopa)

There is a lot of pressure with our other goals. We lack time. We have many other things to do.

(Loan officer, Ahuachapán)

It could be conflicting with our objectives, because we sometimes run against time.

(Loan officer, Santa Ana)

Moreover, assessment of environmental risks had not been integrated in the credit methodology or the manual of procedures of the MFI. Environmental risk assessment was performed after the provision of the loan, outside of the regular field visits that loan officers would conduct. The extra burden of assessing environmental risk was thus important. Had environmental risk assessment been included as one of the tasks to be completed by loan officers during their regular field visits, when they assess the capacity and willingness to pay of microentrepreneurs applying for a loan, the additional burden of the new task would have been lesser. Despite the willingness of the person in charge of the pilot program, data collected by loan officers on environmental risks was not included in the Monitoring & Information System (MIS)⁹. This data was processed manually, which entails a higher risk of incomplete or incorrect data and makes it more difficult to ensure clients' follow-up and progress monitoring. Some loan officers also mentioned that they lost motivation in manually sending data to the headquarters because they never received feedback on the data analysis. Another issue was the lack of regular training. Loan officers in the pilot agencies only received training at the beginning of the program. However, out of the twenty-one loan officers trained in Apopa and Ahuachapán in 2009, only eight were still working for Integral in 2011. Loan officer turnover would have required more regular training sessions, but it did not occur because training on environmental risk assessment had not been included in the regular training curriculum provided to every new loan officer. For all these reasons, the pilot program was perceived by several branch managers and loan officers as a very specific, time-bounded, punctual initiative. Some loan officers thought that they had to perform environmental risk assessment only once, for a specific set of clients. They perceived the exercise as a requirement from the headquarters, somehow conflicting with their regular objectives, but not as a task that should be integrated into their daily processes.

Integral's experience thus confirms that an MFI willing to implement an environmental risk management program may face important challenges in building internal skills and conciliating its different objectives (financial, social, and environmental), which may in the end compromise the effectiveness of such type of program.

5.2. Challenges in addressing barriers to environmental behaviour change

In addition to these internal management issues, our case study also revealed further challenges in addressing barriers to environmental behaviour change, be they psychological, economic and financial, or other structural barriers.

⁹ Integral is however planning to integrate social and environmental indicators into its MIS.

Psychological barriers

By asking loan officers to discuss environmental risks with their clients during field visits, Integral opted for an approach very close to individualized social marketing. Integral assumed that a face-to-face discussion would be efficient to promote pro-environmental behaviours. Our study however revealed that this approach still encounters difficulties in addressing some of the psychological barriers to behaviour change mentioned in the literature (Jager, 2003; Maréchal, 2009; Steg & Vlek, 2007; Swim et al., 2010). We identified that some clients may ignore the advice provided by loan officers and stick to their behaviour because: (a) they do not always perceive loan officers as legitimate ‘messengers’ of pro-environmental practices; and (b) they appear to be locked in strong habits that cannot be broken by the mere provision of information.

One of the promises of involving microfinance in raising clients’ awareness of environmental risks is based on the assumption that, as investors and advisors, loan officers are in a good position to influence the decisions of their clients regarding business management. Loan officers themselves seem to be conscious of this power:

As loan officers, we could have a bigger impact because there is trust, clients listen to us.
(Loan officer, Ahuachapán)

We could be a good channel of awareness-raising since clients see their loan officer as the ‘Dios Dinero’¹⁰. (Loan officer, Santa Ana)

A significant majority of interviewed clients (84 per cent) said that they would be interested in receiving some advice from their loan officers on environmental risks. They see it as an attention given by the MFI to the client. During the pilot program, the approach was never perceived by clients as a constraint but rather as a support.

However, our study clearly reveals that, even if they would be interested in receiving advice, not all clients would actually trust the capacity of the loan officer to provide adequate recommendations. Indeed, as detailed in Table 3, the quality of the relationship with the loan officer is directly linked to the opinion of the client regarding loan officers’ capacity to give environmental recommendations. The quality of the existing relationship with the MFI thus directly determines how the recommendation will be perceived. Some loan officers were conscious of this limit:

It only works with clients who already trust us. (Loan officer, Apopa)

Table 3. Relation between trust in the loan officer and opinion on loan officer’s capacity to provide environmental advice

| Level of trust in the loan officer | Clients believing that loan officers have the capacity to provide environmental advice |
|------------------------------------|--|
| High | 71% |
| Medium | 50% |
| Low | 20% |

¹⁰ ‘God of Money’ in Spanish

In our sample, some clients stated that they have very good and trustful relationships with their loan officers. These clients said that they are confident in the capacity of loan officers to help them mitigate environmental risks (with the condition that they would receive some training). They are already used to discussing with their loan officers and expressed interest in receiving advice from them:

I know her well. I really trust her. Any time I need some advice, I go and find her.

(Pupusería, Apopa)

He is smart and nice. Every time I need some help, I go and find him. (Pupusería, Centro)

However, on the other hand, part of our sample revealed that they do not have a very good relationship with their loan officers. These clients usually think that the latter will not have the capacity to give them adequate recommendations regarding the environmental risks of their activity and solutions to improve it. They consider that loan officers would not be credible in this role, since they are primarily focusing on economic aspects and repayment imperatives:

Loan officers are only interested in economic aspects. They don't take time to talk.

(Carpenter, Santa Ana)

Loan officers do not have the knowledge. They only know about finance.

(Pupusería, Centro)

I do not have so much trust. They put too much pressure. [...] I don't think it should be their role to give advice on environmental risks. They do not know anything about occupational hazards.

(Metal workshop, Apopa)

They put too much pressure when one is just two or three days late. I want to get out of here.

[...] It is important to give advice, but loan officers are not interested in clients' well-being.

(Workshop, Santa Ana)

Our study thus reveals that microfinance clients do not systematically perceive loan officers as legitimate advisors regarding environmental risk management. As a consequence, they may just ignore the suggestion provided by their loan officer.

As emphasized in the literature (Jager, 2003; Maréchal, 2009; Steg & Vlek, 2007; Van den Bergh, et al., 2006), the tendency to dismiss new information is even stronger when people are locked in 'habits', which is the case for part of the microfinance clients that we interviewed. Our sample clients seem to be relatively aware of the environmental risks linked to their activity. Very few of them identify these risks as 'environmental' or relate them to ecological issues (such as deforestation or biodiversity loss). They are rather concerned with the health consequences of such risks: asthma and lung disease generated by daily exposure to smoke (for food-related activities using wood as a cooking energy source¹¹), wood dust (for carpenters), clothe dust (for sewers); risk of intoxication from chemicals (for farmers); risk of water contamination from inappropriate waste management, etc. However, even if they are aware of health hazards linked to chemicals, very few clients decide to

¹¹ Half of interviewed clients engaged in food production and sale said that they do not like using wood as an energy source because the smoke can generate eye and lung problems.

decrease their use of chemicals or at least use protective gear (two of the farmers we interviewed had been seriously intoxicated but were still using chemicals without wearing any mask or gloves). Even if they are not pleased with smoke emissions, many interviewed clients keep using wood as a cooking energy source. Indeed, even though they are aware of certain risks, the microentrepreneurs that we interviewed do not change their practices because they have always done it this way before:

I could use protective gear. It is not a question of cost. It is just a question of habit.

(Farmer, Santa Ana)

It is a question of habit. I never used protective gear when I was working with muriatic acid with my father. (Aluminum workshop, Santa Ana)

I would not listen to the loan officers' advice regarding the use of chemicals, because my grandparents have always done it this way, we are used to it. (Farmer, Apopa)

Interviewed loan officers identified this barrier as being part of the 'culture' of the people. Clients justify their behaviours compared to what they are used to doing and compared to what other people around them do. The literature on environmental behaviour identifies some specific strategies that address this psychological barrier and prove more efficient in fostering behaviour change: providing the opportunity to directly experience the promoted technology or behaviour (Duerden & Witt, 2010), providing comparative feedback (Steg & Vlek, 2007; Swim, et al, 2010), promoting role models (Steg & Vlek, 2007), providing positive feedback on what people do well or could do well rather than negative criticism on actual behaviour (Jager, 2003; Maréchal, 2009; Steg & Vlek, 2007; Swim, et al, 2010), challenging people and making them commit to a change in their environmental behaviour (Maréchal, 2009; Steg & Vlek, 2007; Wood, et al, 2005), etc. Some interviewed loan officers suggested for instance to foster pro-environmental behaviours by organizing a 'competition' between their clients, with an award granted to the microentrepreneur with the best environmental behaviour. However, at the time of the study, the approach implemented by Integral was only based on a discussion regarding actual practices and potential mitigation solutions. Furthermore, such discussions between the loan officer and the client had only happened once or twice over 18 months, whereas breaking habits would require longer term actions and innovative strategies addressing psychological barriers (Verplanken & Wood, 2006).

Economic and financial barriers

Additionally, the pilot program implemented by Integral did not manage to foster behaviour change because, beyond mere advice, it did not make the link with technical solutions that would entail clear economic benefits for the clients. For instance, in a context where gas subsidies have been drastically reduced (the Government of El Salvador removed most gas subsidies in March 2011), loan officers cannot expect their clients involved in food-related activities to reduce their wood consumption and use more gas just because they advise them to do so. Loan officers could however play a more effective role if they started to raise clients' awareness on the existence of energy-efficient cook stoves on the Salvadorian market. 36 per cent of our clients involved in food production and sale have already heard about efficient cook stoves (mostly on television). However, only one had already seen such a cook stove, and most clients did not know anything about the actual economic and health

benefits of this technology or about its cost and access. 47 per cent said they would be interested in investing in such an efficient cook stove, provided they can get access to a microcredit. Integral has been working on developing specific credit lines for investing in efficient cook stoves, solar panels and solar lanterns. However, when this study was conducted, the institution was still in an initial phase and had not yet developed marketing and communication tools around these technical solutions. Other initiatives in the microfinance sector have shown the importance of linking awareness-raising to the provision of microcredit: this is the case for Grameen Shakti for instance (Barua, 2001). However, within Integral, the pilot program was implemented without taking advantage of the synergies that could be created by linking the informational approach to the access to credit for investing in clean technologies.

Structural barriers beyond the MFI's reach

Had it tailored its informational approach (with comparative feedback, etc.) and coupled it with the provision of adapted loans, Integral might have been able to better influence the environmental behaviour of its clients. However, there are still some structural barriers to behaviour change that are beyond the reach of the microfinance institution.

A first barrier that we identified is the lack of adapted local infrastructures. Several clients living in rural areas mentioned that they do not have the choice but burn their wastes or throw them away (usually in the nearby river) because there is no service of garbage collection in their area. One of the interviewed carpenters expressed concern on the issue of deforestation in El Salvador. He asserted that he would rather buy timber from sustainably managed forests, but that his suppliers today do not use any certification that would help him know what the exact provenance of timber is. Lack of adapted infrastructures constrained these clients' ability to mitigate environmental risks.

A second type of barrier beyond microfinance reach is linked to public policies. When we carried out this study, we had a clear example of a public policy giving the wrong signal to microentrepreneurs (De Almeida, 1998; Swim, et al., 2010). A month before field data collection, in March 2011, the Salvadorian government drastically decreased subsidies on gas bottles. The price of gas bottles almost tripled for microfinance clients, increasing from USD 7 to around USD 20. The economic shock obliged some interviewed clients to decrease their use of gas and replace it with wood (eight clients out of thirty-six involved in food production and sale) and went counter to the effort of Integral in promoting gas as a cleaner cooking fuel.

Finally, the economic and social context is also a strong determinant of microentrepreneurs' behaviour choice. 63 per cent of our sample says that they are affected by the global economic crisis. 46 per cent clearly mention that they are not ready to invest in anything today, even if they have access to a microcredit. Salvadorians are even more reluctant to invest in upgrading their businesses out of concern that it could attract the attention of *maras* (armed gangs) who would ask them to pay *rentas* (extortions). Initiatives taken at the level of a microfinance institution may thus be challenged by barriers that go beyond their reach and hinder the influence of an informational approach.

6. Conclusion

Recently, some donors and experts have claimed that microfinance institutions could play a role in fostering pro-environmental behaviours among their client microentrepreneurs. Our study revealed that involving MFIs in such a new area entails significant challenges that may limit the role that MFIs can play in mitigating environmental risks in small-scale activities.

On the one hand, microfinance institutions seemed to be in a good position to foster pro-environmental behaviours in small-scale activities, thanks to their embeddedness at the grassroots level and to the synergies that could be created between informational and financial services. On the other hand, results from the pilot program conducted in El Salvador showed very limited results, both in terms of outreach and effectiveness. Basing our analysis on 95 interviews with microfinance clients and staff, we identified two types of factors that could explain such modest results: (1) internal challenges faced by MFIs in implementing an environmental risk management program; and (2) challenges in addressing barriers to behaviour change through the pilot program.

First, the results of our study showed that the MFI had some difficulties in building internal skills and in conciliating its environmental and performance objectives. Despite a high motivation, loan officers lacked the technical skills required to orient clients towards adapted mitigation solutions. They had to deal with conflicting priorities within their institution, as they were asked to spend some time raising clients' awareness on environmental issues but were still pressured to reach tough operational objectives.

Second, even if awareness-raising is essential to foster pro-environmental behaviours, we clearly found that its effect on behaviour change is hindered by psychological, economic and other structural factors that the pilot program was not able to fully address. In particular, we found that clients were not always receptive to awareness-raising messages, either because they did not perceive loan officers as legitimate advisors or because the pilot program did not include more innovative strategies that would have encouraged them to break their habits. Moreover, the MFI did not create the synergies between its awareness-raising activities and its financial services that would have helped overcome the economic and financial barriers to behaviour change. Finally, the effort provided by Integral was in some cases countered by external factors, such as a change in national policy, on which the MFI could not have any influence.

As we based our analysis on a case study, a limit of this paper is that our results cannot be generalized. Nevertheless, this study enabled us to have a fine understanding of ongoing processes around the implementation of this particular program in El Salvador and to identify some lessons that can be valuable for practitioners. In order to reduce the tensions between the different bottom lines of the microfinance institution and make sure that such awareness-raising activities are performed on a daily bases, a first recommendation would be to fully integrate environmental risk management in the objectives and daily processes of the MFI, at all levels (manual of procedures, staff training, MIS, etc.). Second, an MFI could gain direct benefits and have a greater impact on its clients' environmental behaviour if it took advantage of the synergies created by an integrated approach: by raising

awareness on a mitigation solution bringing economic benefits to the client and providing them access with credit to invest in this solution. Third, the impact of the informational message could be improved by adopting strategies that consider the psychological barriers to behaviour change, such as comparative feedback, direct experience, and commitment strategies. Finally, developing partnerships with technical organizations could be key in making this type of program more effective in the future, as it would respond to different issues: that of low technical skills within the MFI and that of the lack of legitimacy of the loan officer. Further research is needed to assess whether environmental risk programs taking into account these recommendations show better results and whether this type of program can be cost-efficient compared to other approaches aiming to foster pro-environmental behaviours in small-scale activities.

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