

Social and Environmental Impacts of Microfinancing: A Case Study in Haiti

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Abstract

This study explores the social and environmental impacts of microfinancing through a case study of Mutuelles Solidarités (MUSO) groups in Petit-Goâve. Using a mixed-methods approach and survey data from 226 participants, the research examines the relationship between MUSO participation and changes in economic status, community cohesion, and environmental behaviors. Findings reveal moderate economic gains—such as increased livestock and farmland ownership—but limited improvement in food security and educational access. Socially, MUSO participation significantly enhanced community trust and reduced blame behaviors, indicating strengthened social capital. Environmentally, participants reported reduced charcoal use, improved sanitation, and better access to treated water, though waste disposal practices remained unchanged. Gender analysis revealed that men saw more economic benefits, while women experienced greater improvements in sanitation and environmental practices. While MUSO contributes to economic resilience and improved community well-being, its impact is uneven and highlights ongoing challenges. The study underscores the importance of gender-responsive and environmentally conscious approaches in microfinance interventions. It calls for targeted strategies to enhance food security, education, and sustainable waste management. This research contributes to the limited literature on the broader social and ecological consequences of microfinance in Haiti and low-income countries more broadly.

Keywords

Microfinance, Mutuelles Solidarités (MUSO), Caribbean, Haiti, Social Capital, Environmental Benefits, Economic Resilience, Gender Analysis

1. Introduction

Microfinance institutions (MFIs) provide financial services to many poor individ-

uals in low-income countries. Many individuals in Latin American and Caribbean (LAC) countries who experience extreme poverty and are without access to traditional financial services tend to rely on MFIs which provide them services, such as microcredit, micro-savings, money transfer, and micro-insurance (Churchill & Appau, 2020). MFIs provide loans to poor women who live in remote and underserved areas (Baum et al., 2017). The global microfinance market is projected to expand in the upcoming years due to their lower interest rates and the continuation of wealth inequality globally. The global market for microfinance is estimated at US \$ 124 billion in 2018 with around 140 million borrowers and is projected to increase, where LAC countries have the largest regional portfolio by portfolio value at 44% (Stephens & Khemar, 2018).

With the ascension of MFIs in the 1990s, its main goal was to provide financial relief to poor individuals in the Global South who mostly relied on self-employment (Cull & Morduch, 2017). As elucidated by Muhammad Yunus (2006) during his acceptance speech, the Nobel Prize laureate who pioneered microfinance, his purpose was “to find the tiniest amounts of money to support their efforts to eke out a living”. Over time, microfinance has played a key role in social and environmental development.

This study is informed by the social capital theory which suggests that the “value” of social networks (trust, norms, and cooperation) can be leveraged as a productive asset, much like physical or financial capital (Postelnicu & Hermes 2018). In poor communities, where traditional collateral is absent, microfinance institutions (MFIs) use social capital to bridge the gap to financial services, and thus improve social, environmental, and economic outcomes within poor communities

Microfinance has helped many poor communities to accumulate social capital (Feigenberg et al., 2010; Tahmasebi & Askaribezayeh, 2021). In their research of a rural community in Iran, Tahmasebi and Askaribezayeh (2021) discovered that microfinance has significantly helped community members to gain social capital and participate in their development activities. Additionally, many communities have been able to improve their health, education, and nutrition (Geissler & Leatherman, 2015; Isangula, 2012; Viswanath, 2018).

When it comes to the role of MFIs in environmental sustainability, scholarly works have shown mixed results. On one hand, some researchers find that the MFIs are not doing enough for environmental sustainability. There are examples of negative effects of farming (crop, and cattle grazing) and deforestation for fuels, among other microfinance businesses that create hazardous waste that gets discarded into the environment, in places that lack environmental regulation or enforcement. It is undisputed that these activities can negatively impact the environment (Olanipekun et al., 2019; World Wildlife Fund, 2023). On the other hand, some studies showed that with increased financial resources, microfinance users can mediate the negative ecological impact of their business ventures. Many MFIs are finding ways to be ecologically conscious. A new concept, green microfinanc-

ing has emerged that focuses on “financial sustainability, poverty alleviation, and environmental protection” (Araya & Christen, 2004). Green microfinancing integrates the principles of environmental sustainability in many of its operations. For example, a German investment and development bank KfW, one of the largest financing organizations in international cooperation, has been providing low-interest loans that focus on energy efficiency endeavors and environmental sustainability in the global south (KfW Development Bank, 2023). In practical terms, green microfinancing can apply environmental criteria by offering the so-called green micro-credits (Allet & Hudon, 2015). MFIs’ significance in LAC countries, such as Haiti, cannot be underestimated.

1.1. Haitian Financial Sector

The financial sector in Haiti is influenced by the political and security instability that is plaguing the small Caribbean nation. Haiti is the poorest country in the western hemisphere, with about a quarter of the population living on less than \$ 2 USD/day (Worldbank, 2022). Over a third of Haitians live with food insecurity and lack access to potable water and sanitation services (The International Institute of New England, 2024). “In 2021, Haiti had a GDP per capita of US \$ 1815, the lowest in the LAC region and less than a fifth of the LAC average of US \$ 15,092. On the UN’s Human Development Index, Haiti ranked 170 out of 189 countries in 2020” (Worldbank, 2022: p. 1). The financial sector comprises nine banks and is mostly regulated by the Banque de la République d’Haïti (BRH) (Sifrain, 2021). Haiti has high interest rates on loans at 13.3% while having less than 4.5% interest rate on deposits (Worldbank, 2022). The 9 commercial banks in Haiti support 1.86 million depositors and 280 accounts per 1000 adults (BRH, 2018). Poor Haitians do not have access to the traditional credit market. As such, many Haitians, mostly women, rely on co-operative banks and microfinance institutions.

1.2. Social Issues

Due to poverty, Haiti experiences a plethora of adverse social issues. Some of these issues include violence, gender inequality, and lack of education. Formal education is known as a mediating factor to improve population health and social outcomes and is also a prerequisite for sustainable economic development. A lack of formal education is a major contributing factor to Haiti’s poverty (Pierre, 2020) as most Haitians do not have access to quality formal education. For example, about 38% of Haitians are illiterate (Haiti, 2022). This vicious cycle therefore cannot be overcome as poor families cannot afford to send their children to school, and a good education is needed to find reasonable employment.

1.3. Environmental Issues

Environmental issues in Haiti include devastating deforestation, overfishing, nat-

ural disasters, lack of data on rainfall patterns, lack of sanitation: proper garbage disposal, lack of access to treated water, and food insecurity. A major reason for these environmental issues is the Ministry of Environment's lack of capacity to effectively implement and enforce environmental laws and regulations (USAID, 2020). Deforestation is an issue that impacts many aspects of Haiti's environment. Particularly, it is driven by rapid urbanization and affects Haiti's ability to sustain major environmental catastrophes such as major rainfalls and hurricanes (Ghilardi et al., 2018; Mompremier et al., 2022). The demand for fuelwood and charcoal for cooking is a major contributing factor to deforestation (Ghilardi et al., 2018).

1.4. Background on MUSO

The precarious socio-economic context in Haiti still prevents the most vulnerable populations from accessing the traditional banking system—especially the ones living in the most remote areas. Effort has been made to develop the micro-funding sector, but a large part of the rural population still has no access to microcredit.

The Mutuelles Solidarités (MUSO) represents an innovative solution to improve access to economic opportunities to the most vulnerable and difficult to access communities. The strength of the model lies in its form of economic resilience. This resilience is built through a social bond and a tense hand playing the role of guardian of self-agents of changes (Koffi, 2010). It therefore relies on social collateral such as solidarity, trust, and other forms of social pressure that push groups to reach a loan repayment rate of 98% (Kota, 2007).

In May 2011, *Le Monde* (national newspaper) portrayed the Mutuelles Solidarités as the adapted solution to local development, a popular financing tool and a catalyst to reinforce the extent of money access, decentralization of financial services, self-management of risks of non-payment, and easy appropriations of microfinance ideology by members. The mutual solidarity strategy is mostly supported in rural economies by Non-Governmental Organizations. Support from these outsiders is expressed in terms of basic tools of distribution and necessity provision for the first twelve months of the groups' cycle. However, the credit portfolio is only made up of the groups' own funds and once constituted, loans are allocated to members through the steering committee of each group at a very competitive rate—the lowest of the microfinance sector in Haiti. Heart to Heart International (HHI) has already implemented the MUSO strategy in Petit-Goâve and in the South-East Department. What is not known about these MUSO groups is the impact if any of them having on environmental consequences. For example, with improved access to micro-credit, there might be improvements in environmental conditions for those communities that are the most vulnerable in Haiti. It is this very line of inquiry that this research project seeks to address given the lack of research. While the expansion of microfinance in LAC has been a source of queries for many in academia, the environmental and social impacts have not been widely considered in the existing literature, and hence the current research

begins to fill this gap.

This research is informed by social capital theory by elucidating the ways in which microfinance programs provide capital to poor individuals. [Bourdieu \(1986\)](#) underscored that social identity and resources acquired from being a group member facilitate “the collectively owned capital” that ultimately benefits a whole community. [Putnam \(1994\)](#) posited that social capital emphasizes the importance of social organization, such as trust, norms, and networks, that can improve the efficiency of a society. This is particularly important for low-income countries where formal social assistance is largely lacking. Additionally, [Feigenberg and colleagues \(2010\)](#) performed the first field experiment and provided evidence on the economic returns in the context of microfinance, via social interaction. MFIs users found themselves in a social contract that occurs because of them meeting each other regularly in groups while engaging in different activities. This has proven to have real economic returns and therefore corresponds to economically meaningful changes in social capital.

1.5. Study Area

This research took place in Petit-Goâve. Petit-Goâve is a coastal town, located about 68 km (42 miles) from the capital of Port-au-Prince and is found in the Ouest department of Haiti. There are about 12,000 residents of the town. Petit-Goâve is the site of the first Mutual Solidarity (MUSO) group that was created by Heart-to-Heart International, a medical NGO that has engaged in significant social engagement with communities across Haiti. The place is reputed to be one of the biggest providers and distributors of charcoal countrywide, and access to basic services is little to non-existent.

Petit-Goâve has 83 financial access points, out of which 4 are MFIs, 6 are cooperative banks, 49 are money transfer operators, and 73 are non-bank agents (such as Digicel/moncash and Haitipay/Lajancash). And one of the MFIs is MUSO, which offers an interest rate of 2%, that eventually returns to the community during emergencies and creates community projects ([Louis, 2022](#)).

2. Materials and Method

Our study aims to answer the following research question: to what extent have MUSO groups influenced environmental and social outcomes in Haiti? Specifically, the research seeks to understand whether there is a relationship between access to MUSO credit and changes in environmental behaviors and improvement of social outcomes.

A survey is used to assess the relationship between access to MUSO groups and its associated micro-credit, and the types of environmental behaviors that community members engage in. There are 30 MUSO groups in Petit Goave. Each group has an average of 40 members with a central committee of 7 individuals. In total, there are approximately 1200 potential members in Petit Goave. While these numbers as a population are considered small by [Rea and Parker \(2014\)](#), given the

cost associated with administering surveys as outlined below, it was best to engage in sampling rather than census, which was the approach that was taken. A local Haitian research team was hired to assist with administering the surveys, given the language barrier to administering surveys in either French or Haitian Kreyol. Surveys were administered face to face to avoid the assumption of literacy of informants. Using Rea and Parker's (2014) criteria for small populations we used a 95% confidence interval with a 5% margin of error which led to a target sample size of between 226 and 306 for Petit Goave. The sampling frame was determined by gathering the names of all the members from the MUSO groups. These names were then input into an Excel Spreadsheet, and random number generation was done. One thing we note is that there may be various MUSO group sizes above or below the average of 40 members per group. Given that we are interested in determining the relationship between the MUSO groups, environmental behaviors, and social outcomes, we used random sampling to cover the mix of the population. Once the first random sample was selected, we examined the sample to ensure that there was not over or under representation of specific MUSO groups given the varying sizes. We did a disproportional stratified sample for small groups—where for smaller groups a larger sample is drawn from the small stratum than its population size would proportionally dictate to ensure that there was no underrepresentation.

The survey was designed along with a key informant from Heart-to-Heart International (the NGO who initiated the MUSO strategy) and was translated into both French and Haitian Kreyol. The survey was pre-tested prior to actual administration among community members, and edits were made to the final instrument given the feedback from the pre-test. The survey was conducted over one week in Petit Goave during the hours of 9 am and 6 pm. On average, the survey took between 30 and 45 minutes to be completed, and no reward was given for participation in the study though participants were told that they can withdraw at any point during the administering of the survey.

We conducted descriptive and inferential statistical analysis of the data using the SPSS statistical software package (version 28). In the analysis, we examined the following themes: the impact of MUSOs on social and environmental outcomes of MUSOs and participants' general environmental perceptions. Descriptive analyses of the demographics of the survey participants were examined in terms of gender, age, educational levels, head of household, and occupation, years enrolled in the MUSO, and other relevant demographics to understand the makeup of the MUSO groups. We then examined social status before and after their participation in MUSO and compared participants' environmental behaviors. We performed bivariate and multivariate analysis to assess social outcomes and environmental behaviors based on different demographic variables. We investigated to what extent MUSO groups influenced environmental and social outcomes in Haiti. Specifically, we assessed whether there is a relationship between access to MUSO credit and changes in environmental behaviors and improvement of social outcomes.

3. Results

A total of 226 MUSO participants were included in the Petit Goave sample. **Table 1** shows the percent distribution of demographic variables of this study—gender, age, education, head of household, primary occupation, and years enrolled in MUSO. As shown in **Table 1**, most MUSO participants are male, 70%, about 58% of them have only a kindergarten education, most head of household are women (75%), and most participants are self-employed, as farmers (31%) and small business owners (31%).

Table 1. Demographic characteristics for the total sample N = 226.

Variable	Percentage
Gender	
Men	70
Women	30
Age Group	
15 - 29	22
30 - 44	46
>44	32
Highest Education Level	
Kindergarten	58
Primary School	42
Head of Household	
Women	75
Men	25
Primary Occupation	
Farming	31
Small Business	31
Factory Worker	25
Government	11
Other	2
Years in MUSO	
<two years	64
>two years	32

3.1. Economic Impact

The economic impact of being a participant of MUSO was measured by looking at their farming assets, food security, home improvement, children's education,

and healthcare.

Farming assets were assessed by looking at participants who own livestock and those who own or rent farmlands. Prior to joining MUSO, a significant number of participants own livestock (75%). After joining MUSO, eight percent of those that owned livestock were able to increase their quantity, and another 10% were able to improve their breeding conditions. Many participants owned farmland (45.6%), while some rented farmlands (21.6%). We noted a major change as far as the participants' ability to increase the quantity of farmland ownership and leasing, 20% and 69%, respectively. Even with the increase in farming assets, the participants' basic social needs did not significantly improve. When asked whether the farming assets better support their basic social needs, 54.1% reported yes while 45.9% reported no. When looking further into whether their farming assets improve other aspects of their lives such as their children's education, their home conditions, food security, and healthcare access, the results are mixed. A significant number of participants (79.2%) claimed that the education of their children did not improve, while 69% reported that their home conditions did improve. A small number of participants (15%) reported that food security improved. As for healthcare access, there was a significant improvement between pre and post MUSO. About 86% of participants were able to visit a health care provider when sick after their participation from 13% pre-MUSO.

3.2. Social Impact

We examined the social impact by assessing community members' cohesiveness of MUSO participation on **Table 2**. We noted some stark differences in participants' reports of community life before and after participation in MUSO. Trust among community members went from 34% pre-MUSO to 74% post-MUSO. As for blaming community members for negative consequences, it went from 46% to 20%.

Table 2. Social impact of MUSO (%).

	Pre-MUSO	Post-Muso
Trust	34	74
Blame	46	20

3.3. Environmental Impact

On **Table 3**, we explored the environmental consequences of being a MUSO participant. We investigated the participants' energy choices for cooking, particularly the use of charcoal, kerosene, or propane. We also looked into their home sanitation system, such as the use of indoor toilets, pit latrines, and open-air defecation. Additionally, we assessed their access to drinking water. Since all the participants did not have access to indoor plumbing, we explored what methods they used for drinking water storage. Most participants decreased their use of charcoal after

joining MUSO, from 62% to 45%. A similar trend was noticed for open defecation where it went from 84% to 42%. Participation in MUSO helped participants secure access and store treated water. In terms of access to treated water, participants had an increase in access after being a part of MUSO with 69% having access to treated water pre-MUSO while 88% had access to treated water post-MUSO. Similarly, there was an increase in the number of participants who had access to storing water post-MUSO with a percentage increase from 62% to 77%. However, when it comes to the percentage of participants who burned trash as their main method of disposing of their household waste, we didn't observe major differences between pre-MUSO (13%) and post-MUSO (12%).

Table 3. Impact of MUSO on environmental consequences (%).

	Pre-MUSO	Post-Muso
Use of Charcoal	62	45
Open Defecation	84	42
Access to Treated Water	69	88
Water Storage	62	77
Burning Trash	13	12

3.4. Bivariate Analysis of Economic Factor by Gender

An overwhelming majority of MUSO participants were men; however, many heads of household were women. We analyzed the effects of MUSO on their economic status by gender using Pearson's Chi square for statistical significance. We specifically analyzed their ability to procure new livestock and farmland. Additionally, we assessed whether the improvement of their basic social needs differed by gender. **Table 4** showed the gender differences, where men were more likely to benefit from MUSO participation. About 25% of men were able to buy new livestock compared to 19.4% of women. As for buying new farmland, 11% of men compared to 10.4% of women. More men (57.4%) reported that their basic social needs were met compared to 47.6% of women. While a directional difference was observed, it was not statistically significant. When the data was disaggregated by gender to explore further into whether their farming assets improve other aspects of their lives such as their children's education, their home conditions, food security, and healthcare access, the results are mixed. More women (19%) compared to 11.3% of men reported MUSO improved their abilities to send their children to school. As for improvement on their home conditions, a vast majority of men (76.4%) and women (74.6%) reported that MUSO helped them. More men (19.3%) reported that their food security improved compared to 11.1% of their counterparts. Both men and women overwhelmingly reported their ability to see a doctor when they are sick was significantly improved.

Table 4. Post-MUSO economic impact by gender.

	Men	Women
Own Livestock	25.2	19.4
Buy Farmland	11	10.4
Basic Social Needs Met	57.4	47.6
Children's Educated	11.3	19
Improve Home Conditions	76.4	74.6
Improve Food Security	19.3	11.1
Healthcare access	88.9	83.5

3.5. Social Impact by Gender

When assessing the social impact of MUSO by gender, very little difference was noted. *MUSO* participants were asked whether the trust among community members improved and whether they blame each other for conflict. On **Table 5**, about 78% of men reported to have trust in community members compared to 72.7% of women. As for blaming each other, both genders (90.1%) reported the same.

Table 5. Post-MUSO social impact by gender (%).

Community Cohesion	Men	Women
Trust	78	72.7
Blame	90.1	90.1

3.6. Environmental Impact by Gender

Participants Environmental impact of MUSO was analyzed by gender and were asked about their energy choice for cooking, home sanitation system, access to drinking water, and trash disposal practices. **Table 6** illustrates the gender differences of MUSO participants' environmental practices. Women (67.7%) decreased their use of charcoal significantly more than men (48.3%) with a p -value of 0.009. Similarly, women (51.2%) reported that their home sanitation improved significantly compared to men (34.4%) with a p -value of 0.05. No gender differences are noted regarding their access to drinking water and its storage. However, more women (21.2%) reported burning their trash compared to less than one percent of men with a p -value of 0.008.

Table 6. Environmental impact by gender (p -value).

	Men	Women
Decrease Use of Charcoal	48.3	67.7 (0.009)
Home Sanitation Improved	34.4	51.2 (0.05)
Access to Treated Water	87	47.6 (0.40)
Water Storage	62.2	62 (0.604)
Burning Trash	0.08	21.2 (0.40)

4. Discussion and Conclusion

The findings of this study highlight the multidimensional impact of MUSO participation on economic, social, and environmental factors among participants in Petit Goave. While there were some notable improvements in specific areas, the overall results suggest a complex interplay of benefits and persistent challenges. Economically, MUSO participation led to an increase in farming assets, including livestock and farmland ownership or leasing. However, despite these gains, participants did not experience a substantial improvement in their ability to meet their basic social needs. While healthcare access showed a dramatic increase in post-MUSO, other areas such as food security and children's education saw limited improvement. This suggests that while MUSO may enhance economic resources, it does not necessarily translate into broader economic stability or improved livelihood outcomes for all participants. Other researchers have similar findings (Ali, 2024; Banerjee et al., 2015; Karim, 2008). Socially, the program had a significant positive impact on community cohesion. Trust among community members increased, while blaming behaviors decreased. These findings suggest that MUSO played a role in fostering a more cooperative and supportive community environment, which is crucial for collective development and resilience in resource-limited settings. Previous studies have shown that community cohesion, such as trust and collaboration within communities (Banerjee et al., 2015) and a stronger sense of community belonging (Ahlin & Jiang, 2008) increased with MFIs. From an environmental perspective, MUSO participation was associated with a decrease in the use of charcoal for cooking, a reduction in open defecation, and increased access to treated drinking water. These improvements suggest a positive shift toward more sustainable and healthier living conditions. However, no significant changes were observed in household waste disposal practices, indicating the lack of alternatives in Haiti. However, microfinance programs like MUSO could potentially support the development of such alternatives, for instance, through loans for small-scale waste management enterprises. This study contributes to a limited literature that assesses environmental practices among MFI users. Gender disparities were observed across different impact areas. Although men benefited more from economic improvements, women experienced greater gains in home sanitation and reduced charcoal use. This highlights the need for gender-specific strategies to ensure equitable benefits from economic and environmental interventions. This is in line with research carried out by Karim (2008) and Ali (2024), where they noted that because most MFI loans are taken by women, the positive outcomes aren't that significant and that women might be disempowered since men still appropriated their gains.

MUSO participation has led to meaningful economic, social, and environmental changes in the lives of its members, though the extent of these benefits varies. The most pronounced improvements were observed in healthcare access, social trust, and environmental sanitation, while food security and educational access remained largely unchanged. Gender differences indicate that men gained more

economic benefits, whereas women saw greater improvements in sanitation and environmental practices. For example, increased community trust might improve sanitation practices and access to clean water. Future programs should consider targeted interventions to address the gaps identified in this study. Specifically, efforts should focus on enhancing food security, improving access to education, and addressing waste management issues. Additionally, gender-responsive strategies should be integrated to ensure that both men and women can equally benefit from MUSO participation. Overall, while MUSO provides valuable support to its members, further enhancements are necessary to maximize its long-term impact on economic stability and community well-being. In line with the social capital theory, particularly with the increase in community trust, a program like MUSO can lead to positive social, environmental, and economic outcomes

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of Colgate University (protocol code ER-S21-41 and date of approval: July 13, 2021) for studies involving humans.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

<https://www.mdpi.com/ethics>. The data presented in this study are available on request from the corresponding author due to respecting privacy of participants and ethical reasons of) disclosing data that was not intended to be shared beyond the research team.

Conflicts of Interest

The authors declare no conflicts of interest.

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