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Evaluate the Achievement of Microfinance Initiatives in Empowering Women to Overcome Climate Change-Related Difficulties

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Abstract

In this paper we assess the efficacy of various microfinance initiatives in allowing women to adapt to and overcome the challenges of climate change across three countries which are India, Bangladesh and Peru. The study analyses how, in selected countries, microfinance programs have enabled women living in these vulnerable regions to adapt to the effects of climate change through financial support, skills development, and access to resources by critically exploring various case studies and empirical data. The study also explores the wider socio-economic impacts of these projects, such as better livelihoods, more decision-making power, and greater resilience to environmental variability. The paper recognizes important milestones while also noting challenges to the full realization of micro-finance in climate change adaptation, including limited access to larger capital, iniquities of gender and sustainability concerns. Finally, policy suggestions are made for how to improve microfinance to increase the effectiveness of women's empowerment in meeting the challenges of climate change.

Keywords: *Green Microfinance; Women Empowerment; Socio-Economic; Sustainable Development; Climate-Economy Interaction*

Introduction

Microfinance programmes are now encouraged by donor agencies in order to improve women's empowerment and poverty alleviation, particularly targeting poor rural women. Approximately 74% of the poorest women are provided loans by microfinance institutions by 2000. Many women who have been given loans from microfinance institutions have been able to invest their loans in businesses that they operate by themselves. In contrast, climate change is one of the most pressing international problems of the 21st century, disproportionately impacting women, especially those in low-income and vulnerable populations. Because these women bear the brunt of environmental disruptions like extreme weather events, agricultural instability and resource depletion, the need for them to adapt and survive only grows more urgent. Microfinance initiatives have been generating increasing attention as a tool for the empowerment of women, providing them with financial services, skills and access to opportunities that enhance their climate resilience. This article assesses the achievements of microfinance programs as sustainable livelihoods for women facing the multidimensional impacts of a changing climate. It explores a few case studies and empirical data to see how that contributes towards women's' economic independence, social empowerment, and improved adaptive capacities. Current policy for most microfinance programmes is to encourage participation of women in order to improve their role in social relationships and economic activities, participation in decision making as well as improving self-confidence and gender equality. Providing loans is more probably to share the benefits with their household, particularly for their children. While microfinance is a global strategy for financial inclusion for certain impoverished demographics, the paper also discusses the shortcomings of these schemes, specifically access to appropriate capital, gender disparities, and sustainability issues. It therefore aims to conclude with concrete recommendations that will help make microfinance strategies work better for women to overcome climate change-related challenges and build long-term resilience.

Women Empowerment Scheme

Empowerment" means improving women's effectiveness in their own lives, as well as having a strong position on both sides, which are individual extents and social extents, in addition to participation of decision-making and women's ability to say something with which they agree or disagree and express their opinion as well. Empowerment in women has been divided into eight indicators which are: mobility to go to the market or the cinema alone for example, economic security, freedom from domination within the family, ability to make both large and small purchases, participation in decision making within the household about significant issues, having legal awareness, and contribution to political issues and protests (Hashemi and Riley, 1996). Malhotra (2004) points out that earning an independent income is a major factor in empowerment of women and leads to an increase in the ability to have a voice and to participate in decision making in the family, they can also ideally expand their ability to contribute on political issue. Ackerly (1995) noted that women who provided labour to loan-assisted projects, sold their own products, managed their own businesses by themselves were also likely to be empowered.

However, Johnson and Roguly (1997) point out that the dimension to have empowerment and reduce discrimination is not just having capital and economic power, but also that women should be given provision to social network to social networks, access to information, and other resources which they need to succeed in business and in their personal life as well. Those factors contribute to the empowerment of women. Meenai (2003) argued that access to credit is not necessary to give empowerment or equality to women, but women must have ability to use this credit to reach their goals and they should use their resources for those areas they want to. Garikipati, (2008) argued that empowerment for women is not only achieved by having credit, but also that education is very significant to increase the empowerment of women and to put women in a stronger position to have more equality for female children, access to food, medical care, and schooling.

Access to finance and contribution in income-generating activities are the most significant ways to strengthen the position of women in the family, thus, this allows women to influence a larger number of strategic decisions, in particular in poor communities (Goetz and Gupta, 1996). Ackerly, (1995) found in her study in Bangladesh that most borrowers could improve their empowerment via gaining credit from MFI. If the borrower cleverly invests money in a successful enterprise, that will in turn lead to be her not being beaten by her husband, in addition, women can also improve the health and nutrition of their family and can participate in major family decisions makings (Kabeer, 2001). Dixon (1980) as summarised by Fernando (2006) argued that women earning half of the household revenue have more bargaining power than women who are earning less or not earning at all. Schuler et al. (1998) pointed out that there is a significant impact upon the level of empowerment by loans offer to women which increase the contribution women can make in their economic activities. Hashemi and Riley (1996) found in their study that women who were contributing to a credit program are more likely to be empowered to a level where they can contribute to the financial support; they can probability to have empowerment 8 to 12 times in terms of contributing to family support. MFI empowers women to be involved in political issues as well, for instance, knowledge of key national or political debates along with knowledge of the laws on inheritance and contribution to political action of various kinds (Kabeer, 2001).

Empowerment Weakens

However, women may lose their control over the distribution of their working time and may depreciate their powers, as their power weakens within their daily involvement of the family. In such cases women lose their authority when they face certain crisis, for example situations where they spend their wages or sell their valuable assets in order to repayments on their loans and this can lessens their position which is already limited within their family. According to previous studies, this is occurred in many MFIs in India (Garikipati, 2008). Montgomery el al. (1996) found in their study in Bangladesh that MFI has insignificant impact on improving empowerment for women; according to their findings, just 9% of female borrowers could manage their loan activities. Meenai (2003) confirmed that women have little impact of their loans when their loans are used for purchasing land for the family as it is known women do not have a significant impact on income family because in most of cases women work unpaid within their family. Therefore, they cannot repay their loans and face default on the repayments; in this case, women should participate in the decision making surrounding these issues within their family.

Decision Making & Involvement

Decision making involve women has a significant effect on their lives as well as their futures; however, it is not clear what type of decisions should be classified as empowering women (Sebstad and Cohen. 2001). Maldonado and Gonzalez-Vegg, (2008) argued that MFI has had a significant impact on this issue. for instance, studies found in Nepal that 89.000 women out of 130.000 who used the MFI improved their position within their family, these types of decision included, the buying and selling of property, contributing to their daughter's or son's marriage and encouraging their daughters to go to school, all of which had previously been dominated by men. As well as the effect of women participation in MFI in Bolivia on empowerment women were significant, women who have joined microfinance in Bolivia could contribute to the decision making within their family structure to the same level as their husbands, this represents a move forward as up to very recently these women would not have made such decisions alone (Ackerly, 1995). Kabeer (2001) argued that women who borrow loans can have a significant benefit from the direct access to loans, by receiving loans this brings about an increased consumption of goods and services and so are more likely to participate in decision making in households than women who are not receiving loans or not participating in MFI. Mizan (1994) as summarised by Fernando (2006) found in Bangladesh that women who participated in the Grameen Bank have had a positive impact on improving women's decision making in both vicariate context and multivariate contexts. In addition, the Grameen Bank provides women in both monetary and non-monetary resources, for instance, women who were participating in the Grameen Bank could acquire significant revenue and improve their negotiation skills, raising their decision making power (Fernando, 2006). Women using of MFI affect the ownership of productivity assets, such as saving in cash, ownership of property, buying or selling land, livestock for income earning purposes, and in terms of freedom, raise the freedoms within family, such as the ability to make choices, freedom to use their money (Hashemi and Riley, 1996).

However, the fact that despite participating in MFI has significantly impacted upon the improvement in decision making, women earning small incomes bring about a decline in the amount of expenditure and therefore, depend upon the male contribution to some types of household basic need, in such cases the empowerment of women would be temporary and would lead to a withdrawal of male expenditure, this is the most obvious negative point of MFI for women (Meenai, 2003). In some cases, lending credit to women have risks in terms of the appropriation of loan management by mothers-in-law, or in some societies, the mother-in-law attends the meetings regarding loan instalments, instead of her daughter-in-law, this can create problems in the process of lending credit and it also decreases the effect of statues of women in the family (Goetz and Gupta, 1996; Mohammed et al., 2020). Thus, women borrowers do not feel as self-confident in their lives.

Increase Self-Confidence Skills

Self-confidence is one of the most important indicators in measuring the empowerment in women. Sebstad and Cohen (2001) argued that participation in MFI can be significant in learning leadership skills and increases women’s public speaking skills. Kabeer (2001) noted in her study that there were many example where women could become more self-confidant in the public domain, connecting it with the gaining of courage rather than as a source of embarrassment, this led to increased self-confidence for women coping with local elites, such as, dealing with the police or with others who had intimidated them before. (Meenai, 2003) pointed out that MFI might have a significant role to play in achieving more respect which, in turn, leads to increased self-esteem for women. Hashemi and Riley (1996) found that in the Grameen Bank in Bangladesh that women could increase their self-confidence as a result of participating in MFI through the contact with other members of credit programme, as well as, women developing themselves to interact with men outside their family.

Women are not always poorer than men but because women have a lesser ability to entitlement and access to financing income-generating activities, therefore, women are more vulnerable to poverty, hence, reducing women’s vulnerability may affect the provision of access to funds, and Participation of microfinance is significant to reducing violence against women (Meenai, 2003). Schuler et al. (1998) found that the ratios of violence towards women among women who are members of MFI are lower than in those who are not members of MFI. For instance, Working Women’s Forum (WWF) showed that nearly 40% of its members who had experienced violence stopped it as a result of participating in MFI and creating empowerment, whereas, around 28% were able to stop it through group action (Kabeer, 2001). Fernando (2006) argued that credit programmes organizing women into solidarity groups are significant in reducing the rate of domestic violence against women, and also, in providing resources to women this is significant in giving them the confidence to keep control over their resources, and this lead to a decrease in the rate of violence against women by men or their husbands. Mayoux (2001) points out that empowerment of women can be achieved by increasing their saving and credit, this leads to an increase in their economic activities and thus their empowerment which can happen either through the agricultural sector or via micro-enterprise, this in turn leads to an increase in their welfare and for their family as well.

Analysis of Microfinance Impact on Women's Empowerment

This bar chart illustrates the effect of micro finance on different aspects of women empowerment in India, showing the pre and post percentage of women entitled to different aspects of women empowerment through micro finance. Blue bars show the numbers before MFIs and red bars those after microfinance. Microfinance impact was evident across all metrics, including substantial changes across multiple categories. Notably, the contribution of income has risen as women are managing to contribute greater earnings towards the household. It implies higher possibilities of income, financial involvement.

Women-owned businesses have grown tremendously. It means that thanks to microfinance, women can now access the funds, tools and most of all confidence to start and run their own business saving them from poverty, making them economically independent. It has also shown a dramatic improvement in financial independence. Microfinance programs provide women with access to financial resources that allow them to take control of their finances, develop skills, and decrease dependency on others, leading to self-sufficiency. Even literacy and skills training have been found to increase noticeably, which means that microfinance programs are often accompanied by other educational and training programs. This gives women the ability to become aware, be educated, and be empowered to make choices within their finances and business. Households' decision-making has also improved significantly. This indicates that financial autonomy has deeper implications for household decision making, solidifying women's roles in economic and social decision-making. This includes the percentage of women with savings accounts, which increased substantially. This means that microfinance works not only by bringing instant financial relief, however it also generates a climate where saving is important for medium term financial balance.

The bar chart presents a comparative analysis of various aspects of women's empowerment before and after receiving microfinance. The blue bars indicate the situation before microfinance, while the red bars represent the improvements observed after microfinance. The chart shows a significant rise in income contribution by women, suggesting that microfinance has enabled them to participate more actively in household finances. This could be due to increased access to financial resources and income-generating opportunities.

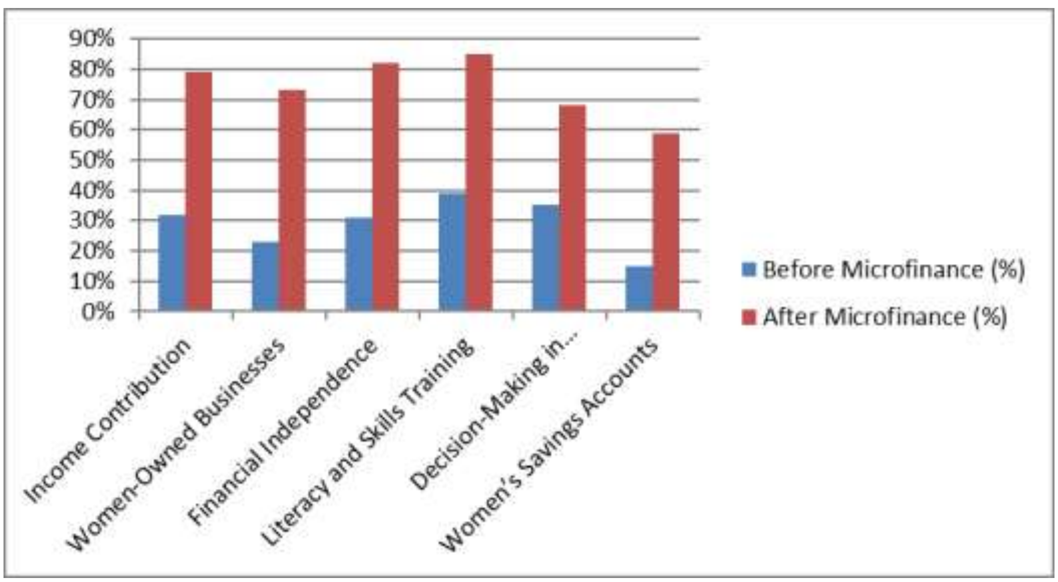

Chart (1) Impact of Microfinance on Women's Economic Empowerment in India
Source: Authors' own compilation from Web of Science data.

There is a notable increase in women-owned businesses, indicating that microfinance has facilitated entrepreneurship among women. Access to credit and financial support has likely encouraged them to start and sustain their own enterprises, leading to economic self-sufficiency. The chart shines a spotlight on the transformative essence of microfinance in enabling women by uplifting their economical standing, their voice in decision-making, new opportunities in entrepreneurship, and their extension of well-being.

Financial independence has also improved substantially. This suggests that microfinance has helped women gain greater control over their financial decisions, reducing their reliance on others and enhancing their economic autonomy. Literacy and skills training have seen considerable growth, which implies that microfinance programs often include educational components. These help women acquire essential financial and entrepreneurial skills, enabling them to make better business and household decisions. Decision-making in households has improved significantly. This suggests that financial empowerment translates into greater influence within the household, allowing women to take part in key economic and social decisions. The percentage of women with savings accounts has increased notably, reflecting a shift toward financial security and long-term planning. Microfinance appears to encourage a culture of saving, promoting economic stability and resilience.

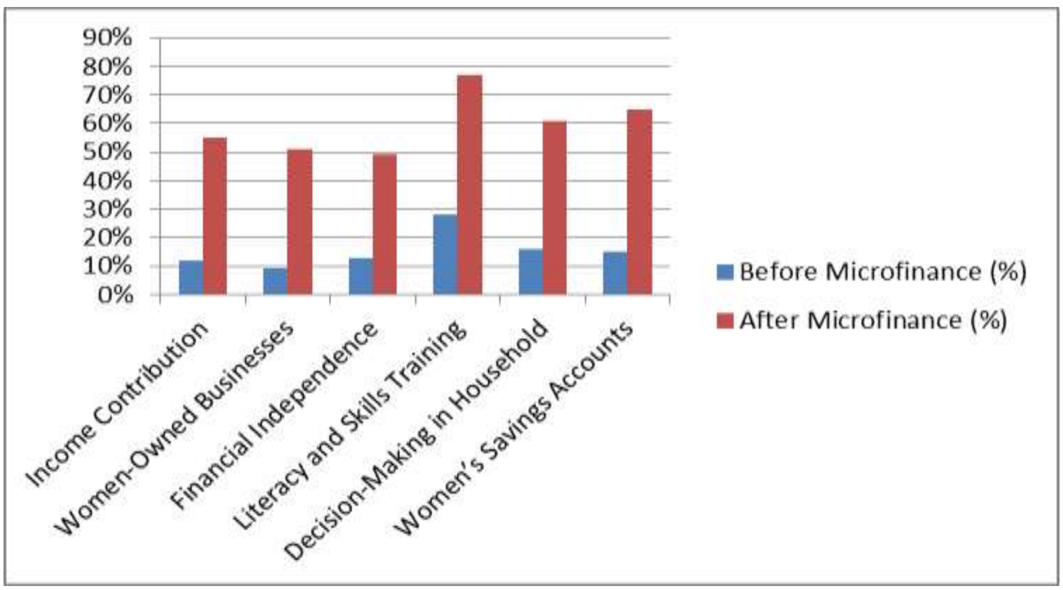

Chart (2) Impact of Microfinance on Women's Economic Empowerment in India
Source: Authors' own compilation from Web of Science data.

The bar chart compares key indicators of women empowerment before and after access to microfinance services. The situation before microfinance is show by the blue bars and the red bars depict the impact after microfinance. I want to emphasize the contrast between these statistics and the previous data as well as recognize the empowerment of women through microcredit noted in the MPA methodology from 2005 – 2012. About income contribution increased with a good margin after microfinance. At first, the percentage of women who were financially supportive was minuscule. However, once they receive microfinance, a much larger percentage of women are now able to contribute, indicating they were previously unable to earn money due to a lack of access to funds, either to open a business or find a job.

The number of women entrepreneurs has rapidly increased, showing that microfinance has enabled women access to funding and subsequent expansion of microenterprises. This growth indicates improved economic opportunities for women, as well as a move towards greater self-reliance and reduced reliance on male family members for financial support. Financial independence has emerged a powerful answer, this has shown that microfinance empowers women to handle her own finances.

Women have greater access to credit and financial tools so they can make financial decisions on their own, which helps increase their autonomy and better household economic conditions. Microfinance has indeed been associated with significantly improved literacy and skills training. Educational and training components are integrated with many microfinance programs: providing women with the knowledge to manage finances, running businesses and make considered economic choices. This is a rise indicative that financial empowerment correlates with skill improvement, which represents eventual growth in the economy. Households are making more decisions than ever. A relatively small percentage of women had significant influence over household finances and economic choices, before the advent of microfinance. Data also shows that after borrowing, women are more involved in decision-making at the household level, as they have access to money and are financially independent. This shift robustly enables gender equality at home, with women increasingly taking a lead in family financial decisions. Women's saving accounts have also surged significantly. Savings have important implications for economic security, and microfinance seems to have fostered a savings culture for women. Access to microfinance services means that women are more likely to open savings accounts and build financial resilience, helping to provide greater stability for their families and future investments.

Overall, the data highlights the positive impact of microfinance on women's empowerment, fostering financial independence, entrepreneurship, education, and active participation in household decision-making.

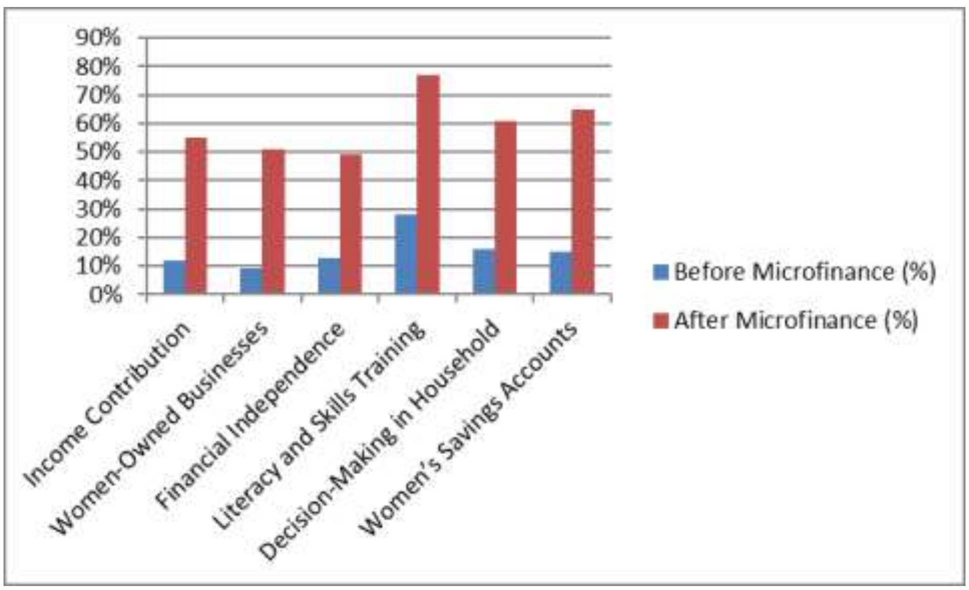

Chart (3) Impact of Microfinance on Women's Economic Empowerment in India
Source: Authors' own compilation from Web of Science data.

Overall, the data highlights the transformational role of microfinance in promoting women's economic and social empowerment. Thanks to microfinance, women have been able to contribute more to the family income, gain a sense of independence, involve themselves in household decision making and be secure with their finances.

Despite participation in credit program by women and leading to acquisition a significant source of capital from the credit group to their husband, it may create risks for women and lead to the manipulation of women (Maldonado and Gonzalez-Vegg, 2008). In addition their husband can put pressure on them to become a member of credit programme in order to gain an amount of capital from the MFI, indeed there is some strong evidence in the Grameen Bank in Bangladesh where women who had waited for a long time to get loans, or who were unsuccessful in gaining loan from MFI, they were faced with violence from their husbands. This is an obvious negative point of the credit programme for women (Goetz and Gupta, 1996). Schuler et al. (1998) argued that access to credit for women does not place them in a better situation in terms of domestic violence, they found in their study in Bangladesh that domestic violence towards women has increased when women got access to credit and began earning independent incomes. Goetz and Gupta (1996) argued that a significant proportion of loans offered to women by MFI may be invested by their male relatives; this can lead to difficulties in loan repayments. For instance nearly 63% of women who have participated in The Grameen Bank in Bangladesh had very limited or even no control over the loans which they have been given. Fernando (2006) made another point which should be considered which is that several development programmes target women so that they can become overburdened and responsible for the bulk of the aspects of family life, These can include from child care contraception, cleaning and cooking, also generating income savings, thus, it should be asked whether MFI has led to an increase of burdening in women who have already had social and economic burdens placed upon them from within their society.

In terms of the repayment of loans, Malhotra (2004) argued that women gaining loans from micro-finance institutions they can face many problem when they decide to set up enterprises such as high cost and low revenue enterprises, heavy workloads contribute to repayment pressure (Zia *et al;*. 2024). In such cases women have been employed as unpaid family workers, and in this situation women cannot get a high benefit from their loans. When they receive loans that they are not able to make the repayments, eventually they are going to take loans from other institutions or banks with a high interest rate and face serious debt (Goetz and Gupta, 1996). Therefore, women should control their loans in a very closely.

Studies in Bangladesh found that female control over loans depends on the stage of life women are at, in addition, to this polygamy within households has a significant impact on the level of control over the loans, and naturally has a greater effect on the decision making of the household, where older married women are less likely to be able to keep hold of control than young married women (Goetz and Gupta, 1996). Rahman (1999) found in his study that out of 151 participants in the Grameen Bank, nearly 77% of participants were using their loan for themselves, whereas, just 23% of women have given their loans to their husband. Hashemi and Riley (1996) found in the BRAC institution credit program contributors can still get benefits even when women hand over their loan money to their husband, the family realizes that they are the source of this income, and then also their family was kinder and more respectful during the time that women were receiving their loan, in the some cases their husbands tried to help her wife with the cooking or childcare (Yaqub *et al;*. 2025). Furthermore decreases in physical violence against women were noted around the time of credit group meetings. Malhotra (2004) identified the degree of loans control by women, and that they showed that women participants who were divorced, separated, or widowed were more likely to have a control over their loans; this is as a result of the absence of men in the family. Control of loans is difficult when women receive large loan and then use the in small investment activities, in these situations it cannot absorb larger cash inputs, particularly, when the investment activities are being made in an improved technology, therefore, the loan will be used by their husband or another family male in other activities. On the other hand, White (1991) as summarised by Goetz and Gupta (1996) argued that women can control their loans when the men do not engage in their investment activities, in addition; she confirmed that even when the loans are used in some areas that are related to male activities, women can still control their loans. Furthermore, women who have used their loan to buy a rickshaw may still retain control over their investment activities, if the rickshaw is licensed in their name, As long as they have established an agreement with the rickshaw-puller for the rent of the activity. In some cases, for example in India women are not allowed to keep money in their pockets (Garikipati, 2008).

The Role of Microfinance on Women's Empowerment before and after Climate Change

Microfinance had already helped women raise their incomes, become small business owners, and access education for their children before climate change even began in earnest, improving women's financial independence and social empowerment. Participation in microfinance programs was associated with increased household decision-making control, highlighting women's contribution to economic and social development. But the microfinance, particularly in demand and agriculture-based areas especially for women, has been questioned greatly after climate change. Extreme weather events, dropping crop yield and business disruption caused by climate-related threats contribute to income instability, disrupting the financial progress for women. The economic hardships stemming from global warming have also imperilled their decision-making agency and educational investments for their children. Although microfinance is still needed for women's empowerment, its implementation and successful effort to empower women in the climate-affected regions would need adaptations in the form of climate-resilient financial strategies and sustainable business models.

Table (1): summarizing the data on the impact of microfinance on women's empowerment before and after climate change.

Aspect	Before Climate Change	After Climate Change
Global Reach of Microfinance	Over 200 million microfinance clients, with 60% women (CGAP, 2013)	Women still make up 60% of clients in affected areas (CGAP, 2020)
Income Increase	Average 20-30% increase in income for women microfinance clients (IFAD, 2015)	Income stability affected due to climaterelated risks in agriculture and business
Business Ownership	72% of women report owning small businesses (World Bank, 2011).	70% of women farmers experience a decline in productivity due to climate change (IFAD, 2018).
Impact on Education	60% of women report better access to education for their children (Microfinance and Education Study)	Educational improvements still possible, but more difficult for women in climate-affected regions
Social Empowerment & Decision-Making	50-70% of women report greater control over household decisions (World Bank, 2011)	Social empowerment may decline as women face more economic instability due to climate change

Source: Authors' own compilation using Web of Science data

The table compares the effects of microfinance on the status of poor women before and after climate change business persons. The table shows this across five areas: Global Reach of Microfinance, Income Increase, Business Ownership, Education and Social Empowerment & Decision-Making. Each dimension demonstrates the benefits of microfinance prior to climate change and illustrates how climate risk has put those benefits in jeopardy. Enhance microfinance to improve women's empowerment and address climate change challenges needs a multifaceted approach. Here are several strategies to achieve this:

- **Global Reach of Green Microfinance**

Microfinance, before climate change, had a very broad footprint, serving over 200 million clients, 60% of whom were women. This means microfinance was a key contributor in the inclusion of women in finances, granting them the means to build businesses and grow personally. But, even though women comprise 60% of clients in these areas, risks and uncertainties forced by climate change may have diminished the potential of microfinance in these regions. This indicates that while women are still active participants in green microfinance, climate change has probably restricted their commercial growth. Giving loans and financial support for eco-friendly projects, such as energy-efficient stoves, solar panels projects or sustainable agriculture improvement, which can help women adapt to and mitigate climate change impacts (Yaqub 2024).

- **Increase of Income**

Microfinance had played a part in the economic empowerment of women, with per capita income of clients increasing by as much as 20-30 % on average. Unfortunately, this extra money must have meant improvised conditions of house, investments within the workplace, and provision for all families. Climate change was climate-related risks in agriculture and business. In developing economies, many women rely on agriculture and microenterprises for their livelihoods. Extreme weather, droughts, floods, and confusion about growing seasons have made it difficult for women to hold regular sources of income, curtailing the financial benefits they once reaped from micro-finance. Design microfinance products that provide precisely to women's needs, such as flexible and regular payment schedules, lower interest rates,reduce tax and savings accounts that incentivize climate-resilient investments.

- **Business Ownership**

Microfinance had supported reports of 72% women who owned small businesses prior to climate change. Credit access helped women expand their businesses and supplement household income. After climate change, 70% of women farmers, the same percentage, said that their productivity at work declined due to environmental changes. Because many businesses in rural areas are connected to agriculture, a decrease in productivity correlates directly with how viable the business will be. This means that women entrepreneurs are more greatly challenged to keep and expand their businesses, a major economy at the microfinance level.

- **Impact on Education & Capacity Building**

Sixty percent of women reported higher access to education for their children as a result of increased financial stability from microfinance before climate change. This means that microfinance positively influenced intergenerational development, with advantages for children and families investing in their children's future. But after climate change, even if education could improve, it is much harder for women living under the effects of climate change to get this improvement. Climate change-induced economic instability erodes disposable income, which in turn makes it more difficult for families to cover school fees, supplies and other educational-related costs. In punishing conditions, families may feel compelled to allocate scarce resources to support short-term financial needs rather than long-term educational investments.

Capacity building through provides training on proper financial management, budgeting process, and investment to empower women to make well-versed decisions about their finances. Climate resilience training is very important to educate women on climate-smart agricultural practices, water preservation, and prepare for disaster to enhance their ability and skills to cope with climate change (Salih et al., 2018).

- **Strengthening Social Networks & Decision-Making**

At the time before climate change, microfinance played an important role in social empowerment, with 50–70% of women— having more control over household decision making. It means financial independence gave women a bigger say in issues such as spending, education and overall family welfare. After climate change, though, social empowerment may be hit hardest as women face increasing economic instability. Climate-induced disruptions that cause financial stress can also reduce women's decision-making power, because economic stress can bring about a return to traditional gender roles with men controlling decision-making in the financial domain. The additional commercial pressure may also drive women back into reliance on male family units, undoing much of the progress gained from microfinance.

Encourage the formation of Women's Self-Help Groups (SHGs) to foster proper support, joint decision-making, and public resources, which can increase women's bargaining power and resilience. Work with local communities is initial to develop microfinance initiatives that are culturally address specific climate challenges faced by women (Yaqub 2024).

- **Access to Technology and Innovation**

Empowering women to combat climate change through access to modern technology and innovation in microfinance involves leveraging financial tools to offer women with the properties they need to adopt sustainable performs and green technologies (Salih et al., 2025). Technologies such a Digital Financial Services (DFS) are encourage the use of mobile banking and digital wallets to rise women's access to financial services. Access to modern facility and new technologies that assist women adapt to climate change, such as energy-efficient stoves, drought-resistant seeds, drip irrigation systems, and renewable energy solutions. Provide regular training program on the practice and maintenance of climate-resilient technologies (Salih et al., 2021; Fatah et al., 2025; Salih et al., 2019; Rahman et al., 2021). This ensures that women can optimize the benefits of these technologies and sustain their use over time.

- **Monitoring and Evaluation**

Monitoring and Evaluation is a critical element of ensuring that microfinance programs effectively empower women to combat climate change. A strong monitoring and evaluation framework helps regular progress, measure impact, and identifies areas for improvement. (Abdulrahman et al., 2025; Fatah et al., 2025; Salih et al., 2025). Regularly assess the impact of microfinance programs on women's empowerment and climate resilience to ensure they are meeting their objectives. Implement systems for women to provide feedback on microfinance services, ensuring their needs and perspectives are continuously integrated into program design.

A well-designed monitoring and evaluation scheme are necessary to ensures that microfinance programs empowering women to combat climate change are effective, sustainable, eco-friendly and scalable. By continuously monitoring progress, gathering feedback, measure risks and adapting strategies, these programs can optimize their impact on both women's empowerment and climate resilience (Yaqub 2019).

- **Overall Analysis**

The table presents that the positive impact of microfinance on women in terms of financial stability, entrepreneurship, education, and empowerment became evident prior to the climate change, but the advantages provided by microfinance have been tarnished as a climate risk. Women who depend on agriculture-related activities are at high risk from climate change as their income is unstable and productivity is adversely affected. Education and social empowerment are also negatively impacted as financial difficulties afford less to children's schooling and diminish women's decision-making power. Microfinance is still available to women but climate change has created economic instability which is a major obstacle to the continued success recorded in the past (Ali *et al*;. 2024). Resolving these challenges requires climate-resilient financial strategies, adaptive business models and policy interventions to safeguard the economic progress of women in microfinance programs.

Conclusion

This paper showcases the transformative power of microfinance initiatives in the adaptation of women to the effects of climate change in India, Bangladesh and Peru. Through various case studies and empirical data, it illustrates how microfinance programs have equipped women with essential financial resources, competencies, and access to crucial resources that have empowered them to endure and recover from climate-driven adversities, including extreme weather incidents, agricultural disruptions, and resource scarcities. Data from these initiatives has shown socio-economic benefits, such as improved livelihoods, greater decision-making power and overall increased resilience, which play a role in wider efforts of climate change mitigation and adaptation (Aivas et al;. 2025).

While highlighting these positive results, the paper also identifies challenges that constrain the broader potential of microfinance for climate change adaptation. Access to larger capital investment opportunities is limited, gender inequality manifests in subtle and pervasive ways that curtail women's access to economic opportunity, and without strong long-term sustainability plans many microfinance programs remain open to questions of sustainability. Not only that, but the limited scope of many microfinance projects, combined with their lack of integration into larger strategies for climate resilience, have prevented them from being fully effective against the complex, changing impacts of climate change.

This study stresses on more inclusive, gender-sensitive and adaptive strategies within the microfinance that suits the specific needs of women in climate-vulnerable regions. Microfinance can contribute to solving these problems and empowering women leaders in the fight against climate change, leading to a more resilient community. Hence, the paper ends with specific policy recommendations to strengthen the design, scalability and sustainability of microfinance programs, to genuinely support women in addressing the effects of climate change in their lives.

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