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**The Nexus between Green Microfinance and Triple  
Bottom Line Concept from the Context of a Developing  
Nation: A Literature Review**

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## **The Nexus between Green Microfinance and Triple Bottom Line Concept from the Context of a Developing Nation: A Literature Review**

### **Abstract**

In the domain of global development studies, environmental preservation, poverty eradication and energy conservation have received research attention. In recent years, these issues have also been reviewed by the microfinance scholars as ‘green microfinance’ that promotes the concern for environmental responsibility along with the social and financial objectives. This is can be related to the concerns of “people”, “planet” and “profit”, i.e. the “Triple Bottom Line” framework. With this background, this qualitative research emphasizes that green microfinance not only pursues profit, but also upholds ecological balance within businesses, resources, the environment and society. In addition to reviewing the theoretical arguments in the prevailing literature, this article encapsulates the potential benefits that lead micro-finance institutions to engage in green microfinance interventions. In this backdrop, the research provides preliminary insights and groundwork to the target audience of microfinance institutions, renewable energy policy makers and stakeholders to formulate relevant strategic options in sustaining green microfinance ventures.

**Key Words:** Micro-finance, Green Microfinance, Triple Bottom Line.

## 1. Introduction

Growing interest by academics and practitioners as well as the increasing need for knowledge creation and dissemination in the microfinance sector, led to the development of "Green Micro-finance" ideology. In recent years, along with the financial and social objectives, the microfinance fraternity has embraced the concern for environmental bottom line that initiated the development of green microfinance (GMF) programs (Allet, 2010).

Bangladesh can be considered as the birth place of the current concept of microfinance that is increasingly being replicated in many nations of the world. However, despite its rapid economic growth and negligible carbon footprint, the Global Climate Risk Index 2017 ranks Bangladesh as the sixth most vulnerable country in the world due to the consequences climate change. Particularly, the poor and underprivileged populations are in the frontlines who have been suffering the most as a result of climate change adversity (Skoufias et al., 2011). Realizing this, a growing interest is evident in the Microfinance Institutions (MFIs) in promoting GMF practices to reduce detrimental ecological impacts and foster environmentally-friendly initiatives (Rouf, 2012).

Worldwide, there is a major transition underway in the energy sector to considerably cut global greenhouse gas emissions for mitigating climate change and enhancing energy security (Islam et al., 2014). Improved energy supply is essential sustainable development and poverty alleviation (Ahammed & Taufiq, 2008). Recognizing the important role that energy can play in addressing the many dimensions of poverty, many MFIs in Asia and Sub-Saharan Africa have introduced loans to purchase modern, renewable energy systems that reduce GHG emissions and uplift the clients' living standard (Christine & Yannick, 2012). Yet, 1.317 billion people worldwide do not have access to energy, and of them, 99.8% live in rural areas of developing nations (Komatsu et al., 2011). This indicates the market potential for GMF programs, like energy lending by MFIs in these nations, is significant, particularly in the countries like Bangladesh that have energy crisis of low electrification rates in poor and rural communities (Rouf, 2012).

With a significant contribution in the socio-economic development of rural communities (Asaduzzaman et al., 2013), proponents of GMF claim that microfinance institutions have a significant role to play to promote

environmental sustainability (Forcella, 2012, Elteren, 2007). This called for the rationale of triple bottom line concept for GMF interventions (Araya and Christen, 2004). The principle of Triple bottom line (TBL) has been defined around the objectives of ‘maintaining financial viability while advancing the social interests of stakeholders and protecting the environment; this corresponds to the social, financial & environmental goals of GMF (Elkington & Rowlands, 1999, Goel, 2010). With this backdrop, the study aims to synthesize the growing body of literature on the rationale of GMF practices and identify its implications in the light of TBL framework.

Drawing on a variety of information stemming from sources such as research in academia, financial reports, in-depth interviews, and field observations, the present study suggests that green microfinance in Bangladesh is a young but promising sector. Some notable programs have already been initiated by the Non-Government Organizations (NGOs) and MFIs under the state owned supervisory institution Infrastructure Development Company Limited (IDCOL) for disseminating renewable energy (i.e. Solar Home System, Biogas technology etc.) to the rural population. If policies and incentives are vigilantly executed and can be incorporated in the environmental strategies, this sector offers long-term rewards (Komatsu et al., 2011). The current study is a work in progress that attempts to call for research attention on the emerging field of GMF in a developing country like Bangladesh. With this background, the study focuses on the following issues:

- Reviewing the concepts of Green Micro-finance and its implications
- The linkage between Green Micro-finance and Triple Bottom Line framework from Bangladesh Context.

This paper sets forth to provide the methodology of research in section II followed by a brief overview on conceptual background of GMF and its implications from the perspective of TBL outline, as illustrated in section III. The prospect of MFIs in Bangladesh for developing green practices has been highlighted in section IV demonstrating a conceptual model based on current practices. Finally, the study concludes in section V with an emphasis on relevant policy formulations and further research in promoting the institutional endeavors in this regard.

## **2. Research Methodology:**

The present study is qualitative in nature that appraises the prevailing literature on the domain of Green Microfinance and relates the concept with Triple Bottom Line ideology. In this regard, the incremental benefits of environment friendly initiatives developed by MFIs and outlines their motivations, potentials and constraints have been discussed in this paper. To explore the GMF interventions, the study employs the theory of triple bottom line framework and then reviews the prevailing literature based on the context of the study. In order to accomplish the research objectives both qualitative and quantitative data have been synthesized in this paper.

The primary data source comprises of obtaining information from key informant interviews (KII) with Renewable Energy Program Managers of Gramen Shakti, a prominent NGO disseminating renewable energy technology mostly through Micro-finance schemes. This method of data collection has been applied to avail the opportunity for establishing rapport and get an insiders' view regarding the rationale of micro-financing the access to RE in rural Bangladesh (Trochim & Donnelly, 2001).

The secondary data sources include reports and publications issued by Government and Non-government organizations, Digital Record books, Peer reviewed Journalsetc. An extensive and scientific literature search in online library sites was conducted at PROQUEST, EMERALD, Elsevier, Google Scholar, Research Gate, IEEE, JSTOR and Science Direct platforms to gather the relevant data and insights for the study.

## **3. Literature Review:**

### **3.1 Micro-Finance**

Microfinance targets the lower-income households to ensure access to affordable financial services offered by retail providers to finance income-producing activities, build assets, stabilize consumption, and protect against risks. These services include savings, credit, insurance, remittances, payments and others (MIX, 2014). The microfinance sector has attained 12 percent growth per year in total outreach over the last decade and now reaches over 101 million borrowers across the globe with a gross loan portfolio of \$89

billion. Yet microfinance reaches less than 20 percent of its potential market among the world's three billion or more poor (IFC, 2014).

By focusing on expanding financial outreach to the underprivileged populations, MFIs have intensive knowledge of, relationships with, and access to low-income people with widespread branch networks on the ground (Christine & Yannick, 2012).

### **3.2 Green Microfinance**

Over the past decades, microfinance has strongly advanced on the potential of realizing the double bottom line goals of financial viability and social impact (Wenner et al., 2004). However, in the recent years, several practitioners from the microfinance industry have started to assert that MFIs should expand their services further along with these double objectives to address environmental sustainability which has been conceptualized as Green Microfinance (GMF) (USAID, 2008). It is the application of microfinance to promote not only financial inclusion and social empowerment, but also environmental sustainability (Rouf, 2012).

Environmental protection is a critical issue for people living in poverty as they often suffer the most due to climate change, sea level rising, and weather disruptions. Recognizing this, green microfinance attempts to incorporate a third bottom line while maintaining positive financial and social performance (MIX, 2014). The impacts of climate change, pollution, waste and other environmental issues should be part of the long-term approach for businesses, organizations and institutions to allow a continued economic growth. Following the same logic of development, microfinance institutions are focusing on green microfinance (Allet, 2014). Green microfinance is a financial service which tries to improve the environmental conditions by creating incentives for the poor. It provides the poor with microfinance that encourages them to use more sustainable environmental-friendly practices (Rouf, 2012).

A report on GMF by European Union, 2013 refers to a survey result on 160 MFIs primarily from developing nations, which revealed that 78% of MFIs perceive to have a role to contribute in protecting the environment; 19% believe that environmental protection is a major objective, while 49% believe that it is an imperative objective (Forcella, 2013). Thus the incentives to

introduce the “environment” component in addition to the MFIs’ socio-economic interests, can be summarized by the following observations:

- The clients of MFIs, especially in rural areas, are among the most vulnerable to the consequences of environmental degradation (Skoufias et al., 2011, Rouf, 2012).
- The activities of MFIs' clients may sometimes cause severe damage the local environment: old, polluting and non-efficient ways of production with potentially negative effects on health and social safety (Islam et al., 2014, IDCOL, 2018).
- MFIs are among the few existing channels that have the potential to directly influence and regulate the activities of rural clients to ensure environmental sustainability along with socio-economic developments (Christine & Yannick, 2012, Kabuta et al., 2008).

However, environmental management is still an evolving area for the microfinance sector. Therefore, the question may arise about the rationale of the MFIs’ interest to integrate an environmental dimension that is still considered as a marginal approach in the sector (Allet, 2014, Forcella, 2013, Christine & Yannick, 2012). Researchers in MF interventions have studied the drivers for adopting GMF practices. A motive in this regard can be the strategic and financial benefits for the institutions themselves that are specified below:

First, by dealing with the environmental issues, MFIs can avail funding from socially responsible investors (SRI) or environmentally-sensitive donors (Kabuta, et al., 2007, Pikhholz, 2005).

Second, by expanding their services with GMF, the MFIs can distinguish themselves from competitors and attract clients by offering specific ‘credit and additional services’ schemes. This may consist of the practices for supporting clients to increase their productivity through access to energy-efficient technologies or training in sustainable production techniques (Araya & Christen, 2004, Schuite & Pater, 2008, Hall et al., 2008).

Third, by embracing the environmental responsibilities, the MFIs can enhance their public image, and uphold staff motivation, and stakeholder

relations (Forcella, 2013, Elteren, 2007, Hall et al., 2008). Therefore, MFIs’ interest for incorporating green ventures would entail an incentive on environmental management that is driven by the strategic and financial benefits derived from such initiatives. Table 1 encapsulates the development opportunities and challenges of MFIs for venturing in this sector (Allet, 2014, Rouf, 2012). The environment friendly practices can take many forms, such as:

- Help micro-entrepreneurs to preserve and protect their income in the long term
- Protect the health of communities
- Lower overhead for microenterprises
- Allow MFIs to invest in a growing market in line with the **"triple bottom line"** investors

Engaging in green microfinance requires an orientation towards financial and innovation management. Indeed, adapting financial products to promote technologies and environmental practices, or develop non-financial environmental services, necessitates mastering specific skills and implement new management procedures.

	Potential benefits / opportunities	Potential costs / Constraints
<b>Clients’ interest</b>	Role in sustainable development and poverty alleviation: <ul style="list-style-type: none"> <li>• Economic productivity &amp; income generation</li> <li>• Decreased health &amp; safety hazards</li> <li>• Reduction in environmental risks</li> <li>• Improved living standard</li> <li>• Enhanced access to information</li> <li>• Technology ownership &amp; knowledge sharing</li> </ul>	<ul style="list-style-type: none"> <li>• Balancing the economic and social bottom lines with the environmental concerns for the micro-entrepreneur.</li> <li>• Lack of affordability due to higher investment cost</li> <li>• Lack of awareness on the long term benefit of green microfinance</li> <li>• Limited availability of technical and maintenance support</li> </ul>
<b>MFI’s interests</b>	<ul style="list-style-type: none"> <li>• Superior organizational image</li> <li>• Access to new funding (SRI, etc.)</li> <li>• Diversification &amp; competitiveness</li> <li>• Market exploration</li> <li>• Increased employee motivation</li> <li>• Reduced credit risk</li> </ul>	<ul style="list-style-type: none"> <li>• Managerial capability and willingness to adopt green microfinance practices</li> <li>• Financial cost of implementing new management processes / programs</li> <li>• Efforts on monitoring &amp; coordination</li> </ul>



		<ul style="list-style-type: none"><li>• Logistics &amp; technical support from regulatory bodies</li></ul>
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**Table-1: Opportunities and Constraints of Green Microfinance Interventions summarized from Prevailing Literature**

### 3.3 Triple Bottom Line Approach for GMF interventions

Triple bottom line (TBL) is a sustainability-related construct that was coined by John Elkington (1997) (Elkington & Rowlands, 1999). Evolving over the years, the construct gained significant popularity with the emergence of the term “sustainable development” from the Brundtland Report, published in 1987. Driven by the sustainability concept, TBL provides a framework for measuring the performance of business and the success of the organization using three objectives: economic, social, and environmental (Goel, 2010). In his definition of TBL, Elkington used the terms profit, people, and the planet as the three concerns referred to the economic, social, and environmental responsibilities respectively.

MFI's venturing in environment friendly initiatives are pioneers in adopting a triple-bottom-line approach that offers development potentials on the three dimensions: reduction of environmental risks, improvement in living standard and enhanced economic productivity (Rouf, 2012, Islam et al., 2014, Komatsu, 2011, Asaduzzaman, 2013, Marro & Bertsch, 2015). In the light of above discussion, the next section of the paper analyzes the GMF interventions in renewable energy technology from a developing nation like Bangladesh conceptualizing the TBL framework, as illustrated in Fig. 1.

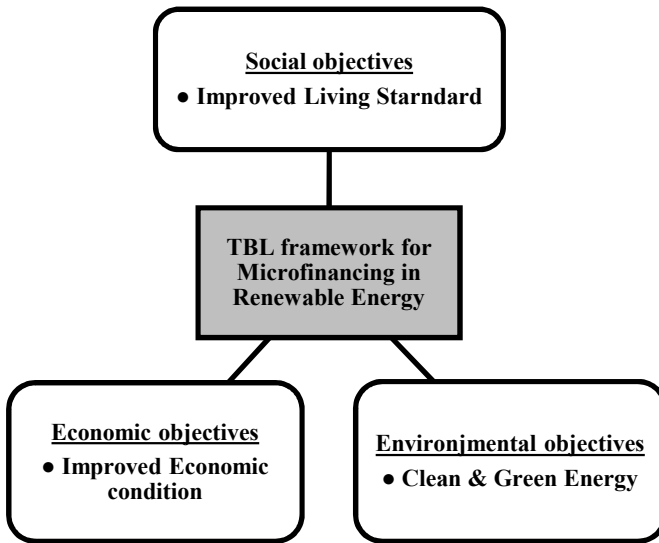


Fig. 1. Triple bottomline framework of Green microfinance

#### 4. Discussion: the Nexus between Green Microfinance and Access to Renewable Energy

Energy is central to nearly every major challenge and opportunity the world faces today. Access to energy has a great impact on the life situation of rural population by influencing their economic productivity, health, education, and gender-related issues (Khan & Khan, 2009). The lack of access to modern energy services is one of the reasons impeding developing countries' efforts to break the poverty cycle (Christine & Yannick, 2012). Estimates are that 2.5 billion people worldwide rely on traditional fossil fuels as their principal source of energy for household and small scale economic purposes (Kabuta et al., 2008). The unsustainable harvest of biomass resources and inefficient combustion of open fires indoor and outdoor activities can cause significant damage to the environment (such as deforestation) and human health (Komatsu et al., 2011).

This calls for policy formulation by the energy sector to significantly cut global emissions for mitigating climate change and ensuring energy security. Although comparing to the fossil fuel alternatives, investment costs in renewable energy technologies (RET) like Solar Home Systems (SHS) are

generally higher, yet this option becomes economically feasible when all externalities (e.g. environmental cost, health hazards etc.) and lower operating costs are being considered (Hamid, 2013).

From this context, as the main barrier for the access to renewable energy technology is the high upfront cost, micro-financing the purchase and usage of energy services has proven to be a good solution to overcome this barrier (Pascale and Philippe, 2009). This is evident from the growth of RET usage in rural households in Bangladesh for electrification through SHS, most of which have been funded and installed by microfinance schemes under the supervision of state owned IDCOL in cooperation with NGOs and MFIs (IDCOL, 2018). The renewable energy ventures in Bangladesh have been acclaimed as one of the notable green energy programs in the world in recognition to the development potentials it offers for the rural population in the country (Islam et al., 2011, SREDA, 2018). This is where other actors of microfinance can play a key role in promoting a positive ecology by facilitating the exchange of experiences and technical knowledge with microfinance institutions.

However, the sector of microfinance must be cautious in the introduction of this environmental strategy because we still don't know much about the effectiveness of these green programs and their real impact on the micro-entrepreneurs.

<b>Solar Home System Program</b>	Till December 2017, IDCOL disbursed USD 504.5 million (BDT 41,727 million) as credit and channeled USD 96 million (BDT 7006) million as grant to all POs.
<b>Biogas &amp; Bio-fertilizer Program</b>	Till December 2017, IDCOL provided refinancing facility of BDT 626.83 million to the POs. Till December 2017, IDCOL earned BDT 114.10 million as interest and BDT 339.43 million as principal repayment.
<b>Improved Cook Stove (ICS) Program</b>	A total of 1,447,801 ICS installed under the program till December, 2017 among which 487,002 ICS have been installed during January – December, 2017. The total grant amount disbursed for the program during January – December, 2017 is BDT 178.45 million.

<p><b>Solar Minigrids &amp; Irrigation Pumps Projects</b></p>	<p>Till December 2017, a total of BDT 1191.56 million has been disbursed for renewable energy projects, of which BDT BDT 384 million has been provided as loan and BDT 807.56 million as grant.</p>
<p>As of 31 December 2017, overall collection rate of IDCOL loans in Green energy projects is around 88.86 percent.</p>	

**Table -2: Financing in RE Projects in Bangladesh**

**Prospects of Micro-financing in Renewable Energy**

**4.1 Focusing on “People” - the social dimension**

The increasing adoption of SHS in the rural communities offers convenience in household chores and reduces harmful in-house air pollution resulting from kerosene vapors (Asaduzzaman et al., 2013). Thus the dissemination of renewable energy contributes in improving health and safety conditions among the most vulnerable groups within the nation as cited by M. Hasan, Manager, Grameen Shakti in a key informant interview session on May 8, 2017 with the authors. By enabling the usage of electronic home appliances like mobile phones, televisions and radios, renewable energy technology increases access to information, enhances living standard and assists in emergency situations (Komatsu, 2011).

**4.2 Profitability & Economic aspects**

Renewable energy solutions like SHS has the potential for reducing energy expenses those households incur from traditional biomass fuels, resulting in savings in energy costs (Marro & Bertsch, 2015). In the off-grid rural areas, power generated by SHS, supports rural businesses to increase their economic productivity and income through extended working hours at night (Khan & Khan, 2009). The domestic production of solar energy equipment has created job opportunity for technicians and local youth in related industries. According to Sustainable & Renewable Energy Development Authority (SREDA), Govt. of Bangladesh, around 70,000 people are directly or indirectly involved with the green energy program that contributed in employment generation in a green industry.

## 4.2 Planet perspective – Environment conservation

For emerging economies, like Bangladesh, renewable and clean energy provide cost effective opportunities to adopt low carbon development electrification program (Islam et al., 2014). This is evident in the fact that, the installation of around 4.1 million SHS in rural Bangladesh, replaces around 180,000 tons of kerosene per year having an estimated value of USD 225 million which is one of the primary sources of greenhouse gas emissions in developing nations (IDCOL, 2018). Since about 12% of people in the country have been using renewable energy technologies, there is a significant potential for even greater diminutions of harmful greenhouse gases.

## 5. Conclusion

Despite growing attention towards sustainable development, the critical connections between micro-financing the access to energy and poverty alleviation is rarely discussed. The consequences of limited access to modern energy sources, especially electricity, can trap poor communities in a vicious cycle of poverty and underdevelopment. One way to combat this problem while still enhancing the affordability of modern energy in rural communities is by the implementation of green microfinance programs as argued in this paper. Green microfinance is a promising phenomenon in the microfinance fraternity; definitions, terminology, and indicators in this novel area are at an early stage. Consequently, this study has been framed as groundwork that requires further empirical research and multilateral collaboration to better comprehend the prospects and constraints in the evolving arena of green microfinance.

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