

# **An Assessment of the Green Microcredit Projects in Bangladesh: Livelihood and Environmental Sustainability**

**By**

**MOHAMMAD MOHAIMINUZZAMAN KHAN**

A thesis submitted to the Faculty of Graduate Studies of  
The University of Manitoba  
in partial fulfillment of the requirements of the degree of  
**Master of Natural Resources Management (M.N.R.M)**

Natural Resources Institute  
Clayton H. Riddell Faculty of Environment, Earth, and Resources  
University of Manitoba  
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## **Abstract**

The green microcredit project in Bangladesh started with the focus of promoting environmental-friendly livelihood practices among the rural marginalized people whose livelihoods were dependent on the extraction of local natural resources. This research examined at the livelihood practices and the livelihood capital of the green microcredit borrowers in Arpara, under Magura District, and in Borlekha, under Moulvibazar District, Bangladesh. Using the Department for International Development, UK (DFID) sustainable livelihood framework, the research analyzed the changes in the borrowers' capital. The research used both qualitative and quantitative approaches to collect field data using different PRA tools and a survey. It was clear from the research that green microcredit is becoming more popular among the natural resource-dependent borrowers. It was also apparent that the green microcredit borrowers have greater social and human capital than the conventional microcredit borrowers. Although the concept has been in practice for only a short duration, the success of the green microcredit project has encouraged other borrowers to opt for green microcredit. In its short existence, the green microcredit project has had some successes and setbacks. During the data collection process, several strengths and weaknesses were identified. In the concluding chapter, a few recommendations have been put forward keeping in mind the strengths and weaknesses of the project. The positive effects of green microcredit on the environment and natural resource base could be seen in the long run if and when the project is scaled up.

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# Dedication

*Dedicated to my beloved wife*

*Nazia Akther*

*Who has endured and sacrificed the most*

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## Abbreviations and Acronyms

ADB	Asian Development Bank
ASA	Association for Social Advancement
AUCC	Association of Universities and Colleges of Canada
BBS	Bangladesh Bureau of Statistics
BDT	Bangladesh Taka
BEGCB	Building Environmental Governance Capacity in Bangladesh
BRAC	Bangladesh Rural Advancement Committee
CBFM	Community-Based Fishery Management Project
CBO	Community-Based Organization
CDF	Credit and Development Forum
CIDA	Canadian International Development Agency
CNRS	Center for Natural Resource Studies
CPRs	Common Property Resources
CRECER	Crédito con Educación Rural
CWBMP	Coastal and Wetland Biodiversity Management Project
DFID	Department for International Development, UK
FGD	Focus Group Discussion
GIS	Geographic Information System
GMC	Green Microcredit
HHs	Households
MDG	Millennium Development Goal
MFI	Microfinance Institutions
NGO	Non-Governmental Organizations
PRA	Participatory Rural Appraisal
PRSP	Poverty Reduction Strategy Paper
SL	Sustainable Livelihood
SLF	Sustainable Livelihood Framework
TSP	Triple Superphosphate
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
VDP	Village Defence Party
WCED	World Commission on Environment and Development

## Glossary

<i>Beel</i>	Perennial water bodies
<i>Haat</i>	Local weekly market
<i>Haor</i>	Saucer-shaped, naturally depressed water basin or river back-swamp
<i>Ijrat</i>	Honour
<i>Khash land</i>	Government-owned land
<i>Korimon/Nasimon</i>	Locally manufactured motorized (shallow pump) three- wheeler vehicle
<i>Lal shak</i>	Red leafy vegetable
<i>Maila</i>	Type of tall grass that grows in the inter-tidal zones of the river, used for mat-making
<i>Murtha</i>	Type of cane that grows in <i>haor</i> , used for mat-making
<i>Purdah</i>	Socio-cultural norm that prevents men, except family members, from looking at women; veil
<i>Shitol pati</i>	Type of mat made from <i>murtha</i>
<i>Shotok</i>	Unit of land or decimal
<i>Thana</i>	Police station at the <i>upazila</i> level
<i>Upazila</i>	Smallest administrative unit of the government administrative system

# Chapter 1

## Introduction

### 1.1 Background

Bangladesh is a developing country with an estimated population of 150 million living in an area of 147,000 km<sup>2</sup> (BBS, 2010). Approximately 72% of the population lives in rural areas, of which around 70% depend on agriculture for their sustenance and the rest depends on other forms of livelihood-generation activity. Even though Bangladesh has made rapid economic progress since the early 2000s, according to one estimate, over 31% of the people still live below the poverty line<sup>1</sup> (BBS, 2010). Therefore, the goal of poverty alleviation plays a significant role in determining the direction of Bangladesh's national policy, development needs, and economic expenditures (PRSP, 2005). Despite the fact that a considerable proportion of the population is still living below the poverty line, Bangladesh has made major progress in recent years, with sustained macro-economic stability, improved health and education, gender parity in primary and secondary education, and continued efforts for the alleviation of poverty (ADB, 2009).

Bangladesh, as a signatory of Millennium Development Goals (MDG), has made a commitment to reduce the percentage of the population living below the poverty line to 29% from the current 31% by the year 2015 (BBS, 2010). Despite sustained efforts on

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<sup>1</sup> In early 1990's Food Energy Intake (FEI) and Direct Calorie Intake (DCI) methods was used in order to measure the incidence of income poverty. A person having daily calorie intake of less than 2122 kilo-calories used to be considered to be in absolute poverty and 1805 kilo-calories in hard-core poverty. In the HES conducted in 1995-1996, the BBS for the first time adopted the Cost of Basic Needs (CBN) method. Similarly, in the Household Income and Expenditure Surveys (HIES) of 2000 and 2005 and 2010, CBN method was used. With this method, non-food consumption is also considered for constructing poverty index. (BBS, 2010)

the part of the Bangladesh government to reduce poverty, the majority of the people are still poor. Hence, there is an immediate need for the government as well as civil society to step in with greater vigour to ensure and promote rapid economic growth and sustained livelihood opportunities for both the urban and rural poor.

## **1.2 Microcredit**

Bangladesh is a very young country, established only in 1971; hence, numerous institutions that are taken for granted in developed nations are yet to be developed or fully functional in Bangladesh. One of the areas where Bangladesh is severely lacking is in providing access to formal financial institutions to the majority of the population (World Bank, 2011). Traditionally, poor people in the rural Bangladesh did not have any access to financial capital from the formal financial institutions to invest in their sustenance due to their lack of collateral. This forced the poor to depend on the local moneylenders. They were trapped in the vicious cycle of poverty till the emergence of microcredit (Rahman, 1996; Khandker, 2001). The concept of microcredit enabled the policymakers, civil society, and the common people to go through a paradigm shift in their approach towards providing and accessing financial implements. A bottom-up, grassroots level financial mechanism not only enabled the policymakers to direct funds to where it was needed the most, but it also helped people across Bangladesh to access formal financial institutions that were not exploitative in nature. With the help of microcredit, rural people had more financial capital to invest, which provided them with an opportunity to reduce their poverty.

However, the effects of the rise of microcredit sector could be directly felt in the declining environmental health. In the process of wanting to maximize utility from the available capital and with the lure of getting out of poverty, people started to overexploit the available natural resources base, which resulted in the declining environmental health across Bangladesh (Yaron, 1994; Rahman, 1996; Hashemi *et al.*, 1996; Microcredit Summit, 1996; Morduch, 1999; Khandker, 2001). Since the beginning of microcredit, it has always been attached to, and associated with, social issues such as education, women's empowerment, health issues, and poverty reduction. However, environmental conservation and the promotion of sustainable use of natural resources have never been in the agenda (Bonomo & Kirchstein, 2010).

The inadequate focus on promoting the sustainable use of natural resources, environmental conservation, and sustainable livelihood options led to the development of the green microcredit concept. It was developed to achieve the related goals of environmental conservation, the sustainable use of natural resources, and the promotion of sustainable livelihood options that would be environmental-friendly while providing sustained economic growth (Haque, 2006; Uddin, 2011).

### **1.3 Green Microcredit**

The concept of green microcredit is a rapidly emerging paradigm which promotes the idea of rural poverty alleviation through the sustained use of natural resources and the promotion of sustainable livelihood sources. Basically, green microcredit is a new and innovative idea which is being tested out in the field (Haque, 2006).

The concept started under the leadership of Dr. C. Emdad Haque and a Canadian research team that visited Bangladesh in 2007 on an exploratory mission to see the situation in the field. In this respect, a number of workshop and brainstorming sessions were organized collaboratively by the Center for Natural Resource Studies (CNRS) and University of Manitoba research team. This was followed by recurrent visits during the fall of 2008 by the Canadian team to identify and develop the scoping, definitions, and conceptual framework regarding the green microcredit project. By mobilizing local communities, a participatory workshop was organized at Koita, Manikganj, Dhaka to identify livelihood opportunities that were environmental friendly and viable as a microcredit program. In the discussion, the focus was kept on poverty reduction, the sustainability of the local natural resources and environment, and importantly on the business viability of the project. Subsequently, six green microcredit projects were approved out of several applications based on specified criteria. These experimental green microcredit projects were launched in two locations: Borlekha Upazila and Magura District (C. E. Haque, personal communication).

The ultimate goal of green microcredit is to protect and use the natural resources and ecosystem in a sustainable manner. One of the pioneering institutes that actively promote green microcredit in Bangladesh is the Center for Natural Resource Studies (CNRS, 2009). According to CNRS, “any activity that does not involve degradation of natural resource or does not involve any chemical fertilizers, insecticides, is considered as a green activity”; special microcredits are provided only to such activities. The experience and feedback from both the borrowers and field workers can be used to modify the design of the new microcredit program. The success and the failure of the

project can be assessed only in due course of time. The success of the project can be assessed by looking in to (i) economic viability of the project in terms of duration, (ii) household income generation, (iii) ecological resource conservation at household level, (iv) conservation of ecological resource at community level, and (v) changes in capital.

## **1.4 Sustainable Livelihood and Environment**

The concept of green microcredit is closely linked to the concept of sustainable livelihood. People who are economically marginalized, especially in the rural areas, carry out a variety of activities, often in combination, for their sustenance. This is the essence of the sustainable livelihood (SL) approach. Authors such as Chambers (1995) and Hussein and Nelson (1998) point out that this is particularly true in the case of the rural poor, who rely on different types of economic activities for their sustenance. The SL approach facilitates an understanding of the linkages between people's livelihood strategies, their asset status, and their way of using available natural resources; therefore it is a useful tool for analyzing both the problem and the scope for promoting sustainable development at the local level.

Development projects, as well as health and education projects, often directly involve microcredit initiatives; however, environmental issues have never been directly linked with microcredit programs. Due to climate change, natural resource exploitation, and other environmental issues, especially in many South Asian countries, donors and supporters of microcredit are emphasizing more on environmental-friendly or green microcredit, where the borrowers are responsible for the well-being of the immediate ecosystem or environment (Hall *et al.*, 2008; Rippey, 2009; Van Elteren, 2007). The role

of microcredit in income diversification is significant, particularly for rural people, whose income flow highly fluctuates and is unpredictable due to seasonality, weather cycles, and a host of natural calamities (Anderson *et al.*, 2002). In the rural context, depending on the types of activities, such diversification may have positive or even negative impacts on the natural resources. The cumulative effects of microcredit programs on the environment and natural resource bases deserve detailed study with empirical evidence from the field.

The SL framework identifies five interconnected parameters: (i) vulnerability contexts, (ii) livelihood capital/assets, (iii) transforming structures and processes, (iv) livelihood strategies people employ, and (v) livelihood outcomes (DFID, 1999). Local people's livelihoods and their access to and control over resources can be affected by events beyond their control. How one family deals with such events and calamities to eke out a living determines the sustenance of that family (DFID, 1999; Cahn, 2002).

## **1.5 Objectives**

Considering the above context, the objectives of this research were:

1. To assess the performance of green microcredit projects at two study locations in Bangladesh from the viewpoints of livelihoods and environmental sustainability;
2. To compare the performance of the green microcredit projects among similar borrowers in different study locations; and
3. To assess the effectiveness of the green microcredit projects as a means to promote livelihoods and environmental sustainability.

## **1.6 Study Area and Methods**

This study was part of the Canadian International Development Agency (CIDA) funded project entitled, Building Environmental Governance Capacity in Bangladesh (BEGCB), which was conducted jointly by the University of Manitoba, Canada; the North-South University, Bangladesh; and the Center for Natural Resource Studies (CNRS, Bangladesh). Hence, the selection of the study area was undertaken by taking into consideration the larger project theme and objectives. The focus of the BEGCB project was on studying the impact of green microcredit on the Moulvibazar and Magura districts of Bangladesh (Figure 1.1). My research was derived from the BEGCB project, and it concentrated on studying the effects of green microcredit on the livelihood of the borrowers in two upazilas of Moulvibazar and Magura – Borlekha and Arpara, respectively.

This study involved qualitative research and followed the case study approach to conduct an in-depth analysis of the implementations and implications of green microcredit projects in Magura and Borlekha, as it was undertaken by the Center for Natural Resource Studies (CNRS). The study also used quantitative approaches to collect data. According to the requirements of the research and based on the local contexts, data were collected through primary interviews, a questionnaire survey, and observations. In addition, understanding of the local areas and the current and past livelihood practices and patterns of the people was derived by using secondary data from research, publications, and project data obtained from CNRS and the Bangladesh Bureau of Statistics. Focus group discussions were carried out towards the end of the research to encapsulate group or collective attitudes and behaviour concerning pertinent issues, as

well as to validate the findings. The study area and the methods are described in greater detail in Chapter 3 sections 3.3, 3.4, and 3.5 respectively.

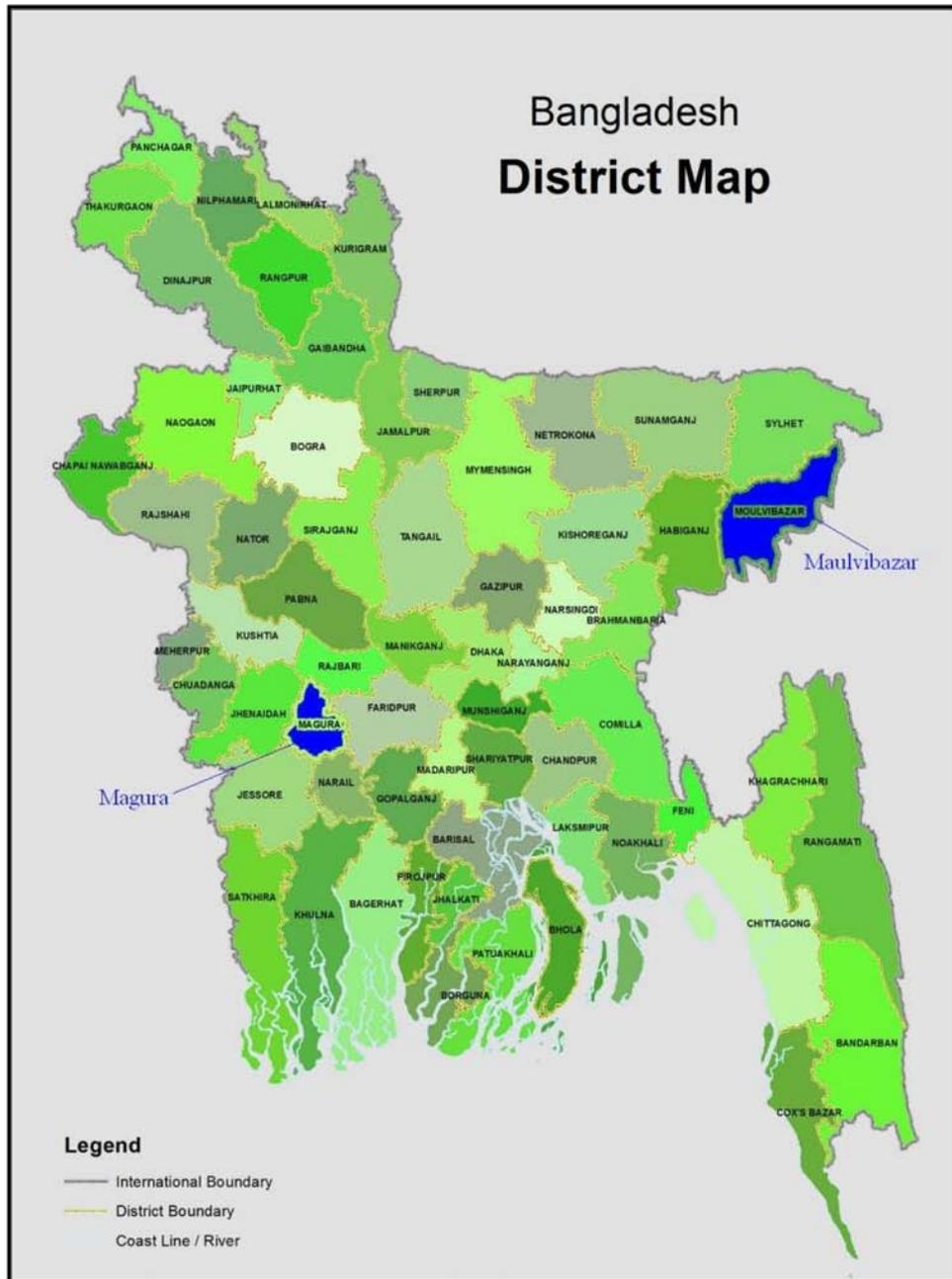


Figure 1.1. Map of Bangladesh showing the two study areas (Magura and Moulvibazar districts) (Source: maps-of-bangladesh.blogspot).

## **1.7 Thesis Organization**

This thesis is organized into six chapters. Following the introduction, Chapter 2 discusses and describes the concepts of poverty, sustainable livelihood, microcredit, and green microcredit. Chapter 3 outlines the study area and the research methods and methodologies that were followed in conducting this study. In Chapter 4, green microcredit and its effects on household-level livelihood capital in the study area are described in detail. Chapter 5 compares and contrasts green microcredit and conventional microcredit based on examining the microcredit projects in the two study areas. Chapter 6 provides the summary, conclusions, and recommendations.

## **Chapter 2**

### **Review of the Literature**

The objective of this chapter is to review concepts and contemporary literature related to sustainable livelihoods and livelihood security, common property theory and issues, and the institutionalization of microfinance for enhancing livelihood security. All of these subjects are interlinked and fall under the larger issue of poverty reduction in the world. One of the major issues of poverty reduction is the achievement of sustainable and secure livelihoods for individuals, particularly in the underdeveloped and developing countries. Furthermore, the limited access of the poor to the formal financial system intensifies the problem. Moreover, natural and human-made disasters also exacerbate the problem of reducing poverty while achieving sustainable livelihood (Chambers & Conway, 1992; DFID, 1999; Cahn, 2002).

In this chapter, I look into the sustainable livelihood concept, common property theory, and microfinance institutions, and I identify the issues that are related to sustainable livelihood, microfinance, and common property resources. Further, I explore how the discourse of these thematic areas can help people in rural Bangladesh to develop their livelihoods in a sustainable manner with the help of microfinance support. Moreover, I review the literature on how the microfinance institutions approach the environment and livelihoods. In the following section, I discuss the above-mentioned issues in detail and identify the gaps in the literature.

## **2.1 Microcredit, Sustainable Development, and Environmental Issues**

### **2.1.1 Microcredit and development.**

Microfinance (synonymously referred to as microcredit in this thesis) means “transactions in small amounts of both credit and saving, involving mainly small-scale and medium-scale businesses and producers” (Khandker, 2001). Microfinance institutions (MFIs) in Bangladesh established themselves as alternatives to the formal financial institutions for the poor. The group-based lending system helped the poor not only in accessing much-needed credits, but also in cementing community cohesiveness and social capital. There is no denial of the fact that, unlike the formal banking institutions, MFIs made significant strides in delivering financial services (savings and credit) to the doorsteps of the poor households, especially to the women with a remarkably high rate of return, yet this came with relatively high transaction costs, thus rendering them (MFIs) dependent on support from donors (Yaron, 1994; Morduch, 1999).

Worldwide, there is a consensus that microcredit as a new paradigm for rural economic development has focused on the achievement of equitable (reduced gender disparity) and sustainable rural livelihoods of the borrowers and on the sustainability of lending institutions (Microcredit Summit, 1996). Even a decade ago, bilateral and multilateral development agencies would encourage micro-lending programs to design and implement their development projects in the targeted rural areas with a view to reduce poverty and break the barriers to accessing loans from formal sources. MFIs, along with providing collateral-free loans to the poor, also provided organizational help,

skill development training, safety nets, community empowerment interventions, and financial and other assistance during crises in ways faster than any other formal lending institutions could provide. They helped to stabilize the poor's consumption and augment familial income and welfare (Khandker, 2001). Microcredit programs have two fundamental dimensions: (i) economic and (ii) social. There is evidence of the beneficial aspects of microcredit in Bangladesh (Rahman, 1996; Hashemi *et al.*, 1996), including the evidence of promoting the poor households' investment in building human capacity through schooling and the use of contraceptives within the family.

The impact of microcredit on women's empowerment or, in other words, a reduction in women's vulnerability against the backdrop of patriarchy, women's limited mobility, their confinement to domesticity, the stringent socio-religious institution of *pardah* (literally, veil), and an overall improvement in intra-household gender relations is noteworthy (Naved, 1994; Hashemi *et al.*, 1996; Kabeer 2001.). There is debate about why women have been primarily targeted by NGOs. Rahaman (1999), based on empirical evidence from the women's groups of the Grameen Bank (a Nobel prize-winning micro-lending institution), revealed that there are two transcripts (public and hidden) behind selecting women for lending money.

The public transcript is based on the argument that women have made greater contributions in attaining socio-economic empowerment in the wider society and also have brought qualitative changes in family welfare through investing their extra earnings in their children and their tendency to demonstrate rational spending for familial affairs. The hidden transcript, in contrast, is grounded on the fact that men as borrowers are difficult for lending organizations to handle; there is increased evidence of men

defaulting loans. Women are more reliable, traceable, and disciplined than men in microcredit programs. In addition, rural women are sensitive to their integrity and honour (*Ijjat*). In fact, group lending is a form of “social collateral” that is opportunistically used to assert group pressure for ensuring repayment. There is also debate regarding who finally holds and spends the money that women borrow from NGOs. Usually, it is the male counterpart (Rahaman, 1999). Thus, the issue of women’s empowerment through micro-capital lending remains an issue of mixed experience.

### **2.1.2 Microcredit and poverty reduction.**

Poverty is a relative and multidimensional term; primarily it represents human needs. In general, poverty refers to people’s inability to fulfill their basic needs. International development organizations tend to define poverty by referring to people living on less than \$2 a day (WHO 2013; World Bank 2013). However, people’s income does not necessarily reflect the true picture of poverty. According to Khandker (2001), poverty for an individual could be the lack of access to social, political, economic, and natural capital; most importantly, it also denotes the lack of right to make economic and social decisions. In my viewpoint, this definition of poverty points out the social, political, and economic aspects that create poverty in society. It addresses the problem and the solution at the same time. The poor groups are rarely able to take advantage of the socio-economic safety net and the development programs designed and implemented by the government and non-government organizations. The valuation of the capital assets of a landless household is around 16 times less compared to that of a large landowner, and around 87% of their earnings are spent on purchasing food for the family (Barkat, 2004). Bangladesh, as an agricultural country, employs almost 65% of its labour force

directly or indirectly in the primary and secondary agriculture sectors. The majority of the people do not have sufficient land to sustain their livelihoods. Because of the susceptibility to a host of natural and human-made barriers, the poorest rural inhabitants fail to explore the fullest potential from the agriculture sectors to support their livelihoods.

Microcredit has been one of the major tools to fight against poverty and achieve the MDGs; the importance and expectation of microcredit as an effective means of poverty reduction and social transformation is further supported by the declaration of the International Year of Microcredit in 2005 and the awarding of the Nobel Peace Prize to Dr. Muhammad Yunus and his Grameen Bank the following year (Bonomo & Kirchstein, 2010).

The emergence of microcredit has given some hope to the poor as a social class. Microcredit lending organizations have institutionalized a blend of informal and formal financial institutions. Providing the poor with the opportunity to access credit for income-generating activities has become one of the most popular development approaches in many developing countries including Bangladesh. It has given the rural households the opportunity to become entrepreneurs and to diversify the sources of livelihood (Uddin, 2011). However, microcredit service providers emphasize more on the economic benefits rather than forwarding thoughts and actions on ecological services. Constraints in accessing financial capital, vulnerability to shocks and stresses, lack of voice to address exclusion, actual and perceived risks in investing in remunerative agricultural technologies, and price hikes in essential commodities put limits on the efforts of the poor to satisfy their basic needs and diversify their livelihoods. The poor, with below

average social, human, and financial capital, find it difficult to manage the much-needed credit from formal institutions such as commercial banks. For them, the alternative is non-formal institutions such as non-governmental organizations (NGOs) and other informal institutions such as private moneylenders. Evidence is available to suggest that microcredit lending helps to improve the productive resource base; however, the programmatic and service delivery aspects of the microcredit programs await improvement (Holmes *et al.*, 2008). Private moneylenders, as another form of active informal institution, charge high interest rates, and formal institutions do not cater to the needs of poor people (Deb, 2009). Moreover, the poor's lack of collateral restricts their access, eventually compelling them to borrow from the local moneylenders. Thus, they cannot break the vicious cycle of poverty.

There is evidence that microcredit programs contribute to strengthening crisis-coping mechanisms, diversifying income-earning sources, building assets, and improving the status of women (Montgomery *et al.*, 1996). Based on empirical evidence from BRAC programs in Bangladesh, Zaman (1999, p. 1) argues that microcredit helps to offset a number of factors that contribute to vulnerability, whereas “the impact on income-poverty is a function of borrowing beyond a certain loan threshold and to a certain extent contingent on how poor the household is to start with.” It is important to examine, in this context, who has access to microcredit and how it impacts the welfare of different groups of individuals and households. There are both extremely poor and vulnerable non-poor groups that are prone to transient bouts of poverty (Zaman, 1999). Based on a study of BRAC members, Khandker (1998) estimated that for every 100 BDT lent to a woman, the household consumption of the borrower family increases by 18

BDT, the moderate level of poverty falls by around 15%, and ultra-poverty declines by 25% at the household level. The duration of membership is also important in this context. Those who had been members longest had an average gross household asset value 112% higher and an average weekly household expenditure 26% greater than the newest members (Zaman, 1999).

### **2.1.3 Microcredit and environmental issues.**

When the microcredit approach was originally introduced, it was expected to work as a secondary support system for development projects; however, debate arose later about whether the microcredit system should be considered as an individual entity in the rural development process or, instead, they should be considered together in a more holistic manner (Bonomo & Kirchstein, 2010). Looking at microcredit activity around the world, it is clear that providing credit only in the form of money does not help the marginalized and poor to get out of poverty; rather it often puts them in the vicious cycle of poverty. The microcredit organizations have realized that in order to help the marginalized and poor to succeed with microcredit, these people's needs related to better health, education, empowerment, and awareness must be addressed. The organizations have therefore incorporated broader development issues such as gender, health, education, legal rights, energy provision, and the environment (Bonomo & Kirchstein, 2010). Many microcredit organizations, such as BRAC in Bangladesh, CRECER in Bolivia, and ASA in India, have successfully shown that even after providing non-financial services, microcredit organizations could be profitable and self-sustainable (Krumm, 2010).

Development projects, as well as health and education projects, are often directly tagged with microcredit; however, environmental issues have rarely been directly linked with microcredit programs and have been identified as environmental friendly microcredit or green microcredit. Due to climate change, natural resource exploitation, and other environmental issues, especially in many South Asian countries, donors and supporters of microcredit began to emphasize more on environmental-friendly or green microcredit, where the borrowers are responsible for the well-being of the immediate ecosystem or environment (Hall *et al.*, 2008; Rippey, 2009; Van Elteren, 2007).

The microcredit borrowers engage in different forms of livelihood practice in order to develop microenterprises, which vary from small-scale farm activities to modern, light industries (Hall *et al.*, 2008). Microcredit borrowers are often directly or indirectly involved in natural resources use to develop their microenterprises. If we see the impacts of microenterprises on the immediate environment from a holistic point of view, the future of microcredit and microenterprises might be called into question. Microenterprises contribute to environmental pollution and degradation; although the amount of pollution by individual microenterprises could be very small, when all the microenterprises are aggregated the amount of pollution and resource use might be enormous and unsustainable (Hall *et al.*, 2008). A study conducted by the GreenMicrofinance, LLC, and the Inter-American Development Bank identified three major areas of environmental concern for microenterprises: (1) unsustainable natural resource use, (2) pollution (air, water, land, and solid waste), and (3) occupational health and safety. It is claimed that authorities monitor the activities of microfinance institutions (MFIs), but there is no authority to monitor the activities of microenterprises (Hall *et al.*,

2008). Moreover, the absence of accountability among the microenterprises and MFIs, as well as the absence of rules and regulations to monitor the activities of microenterprises, has made the problem more serious.

The cumulative effects of microcredit programs on the environment and natural resource base deserve detailed study with empirical evidence from the field. We may safely assume that the increased financial capacity of the borrowers, supplemented by human, physical, and social capital, may lead to the intensification of using farm and non-farm resources, thus resulting in the increased use of chemicals (fertilizers, pesticides, etc.) and eventually adversely impacting the quality of soil, groundwater, human health, and the surrounding ecosystem. Hence, there is a critical need to examine whether microcredit-based enterprises are truly involved in eco-friendly/green activities or not. Nonetheless, the enhanced financial capability of poor rural households could also contribute to improved environmental quality through accessing safer water, improved sanitation, use of more environmentally benign technologies, and enhanced social awareness about environmental conservation (Dasgupta & Goran-Maler, 1994).

Although the concept of green microenterprises is new and under development, microcredit organizations are willing to try it out by applying the concept to reduce poverty. So far, the green projects that the microcredit organizations have undertaken have been mostly pilot projects with an environmental management focus or they have put the label of green project on their existing projects (Allet, 2011). One of the major problems with green microcredit, as identified by Allet (2011), is the inadequate or absence of measuring tools available to the microcredit organizations. However, an array of tools is already available to measure the social performance of microcredit. These

include (1) adopting environmental policies, (2) reducing their internal ecological footprint, (3) managing the environmental risks of their clients' activities, (4) providing green microcredit to promote environmentally-friendly activities or clean technologies, and (5) implementing non financial services such as, environmental awareness-raising campaigns (Allet, 2011). It is encouraging that the microcredit organizations are willing to change and the borrowers are aware of the problems of microcredit program and its provisions and they are ready to address the new challenges.

## **2.2 Promotion of Livelihood and Environmental Sustainability through Green Microcredit**

The issue of livelihoods in rural Bangladesh is complex and seasonal variation plays an important role in determining the livelihood pattern (Deb, 2009). A large portion of the rural population has a secondary source for earning their livelihoods. One of the major secondary livelihood patterns (which can be primary in some cases) centres on natural resource extraction and harvesting from open-access or common-pool resources such as fishing and collecting different kinds of plants and other raw materials. Many of the people who are engaged in natural resource extraction are functionally or absolutely landless. The institutional process of governance and sustainability in the use of the natural resource base is an important concern. Policies and regulations devised by the state may hinder the extraction of natural resources by the poor, natural resource-dependent communities; scrupulous leasing procedures of the productive natural resource bases through a competitive bidding process may restrict the access of marginalized people, thus jeopardizing the very basis of their livelihoods.

The emergence of microcredit has presumably started to impact on the people and the natural resource base. Initially, it was provided for income generation, consumption, and emergency use. In Bangladesh, more than 13 million poor households have access to microfinance with the help of around 1,200 microfinance institutions (CDF, 2002). However, four large MFIs (BRAC, Grameen Bank, ASA, and Proshika) dominate the microfinance sector in Bangladesh. They collectively serve around 11.4 million or 90% of all clients, and have over \$800 million in outstanding loans and around \$380 million in savings (Zaman, 2004). This success was possible due to the visionary approach of the MFIs and their willingness to undertake the associated risks of lending to the poor. MFIs were able to convince the skeptical decision- and policymakers that microcredit could help the poor to get out of poverty, especially during the scaling-up processes (Zaman, 2004).

The role of microcredit in income diversification is significant, particularly for rural people whose income flow is highly fluctuating and unpredictable due to seasonality, weather cycles, and a host of natural calamities (Anderson *et al.*, 2002). In the rural context, depending on the types of activities, such income diversification may have positive or even negative impacts on the common property resources (CPRs). For example, increased livestock holdings generated through accumulated savings and direct financial programs can lead to overgrazing and pressure on the natural resources. It is important to examine how women maintain a balance between their traditional pro-environment roles and the increased pressures on CPRs (forest and aquatic resources, soil features, water flow, farm management, cropping cycles, etc.) owing to their involvement in microcredit programs. Examining how eventually women might be the victims of the

decline in CPRs is also critical from a development perspective (World Resources Institute, 1994-95).

The relationships between CPRs and microcredit-based interventions deserve special attention. The concept of green microcredit was already raised in Chapter 1. The opportunistic uses of horizontal relationships and social capital are well understood (Conning, 1998; Morduch, 1999). Schrieder and Sharma (1999, p. 74) argue that “microfinance has the potential to enable collective action, the coming together of the community, and more sustainable community-based organizations. Members of the community can acquire skills that will allow them to locally design, develop and manage community projects.” This scope of collective action lays the foundation of popularizing and sustaining environment-and-resource-friendly green microcredit programs in the rural areas of Bangladesh.

### **2.3 Sustainable Livelihood (SL) and Livelihood Security**

Livelihood, in general terms, means earning to make a living. In order to earn a livelihood, individuals or households need certain degrees of capabilities. Capabilities are impacted by a host of factors that enable individuals to enhance, implement, and earn the household’s livelihoods (DFID, 1999). One of the widely used definitions was put forward by Chambers and Conway (1992). They stated:

A livelihood comprises the capabilities, assets (including both material and social resources), and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and

maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. (Chambers & Conway, 1992, p. 5)

Ellis and Allison (2004) added a new dimension of resources to the concept of livelihood. They argued that the concept of livelihood captures ideas not only on what people usually do in order to make a living, but also intricately relates with access to and the availability of different kinds of capital/resources that eventually provide them a certain level of capability to sustain their livelihoods. For them, the concept also simultaneously captures the mechanisms and functioning of cross-scale institutions and policies that either accelerate livelihood functions or hinder people's pursuits for livelihood well-being. Because livelihood perspectives involve a complex set of attributes and contextualities, they can be examined using different lenses. In this regard, Scoones (1998) argued that within a particular context or situation (politics, policy, agro-ecology, socio-economic condition), it is important to examine what combination of livelihood resources helps people to mediate their capabilities for a different variety of livelihood strategies. Livelihood security refers to a secured form of ownership or access to resources and income-earning activities, including reserves and assets to offset risk, ease shocks, and meet contingencies. For poor people, the concept of livelihood relates primarily to having adequate stocks and flows of food and cash to meet basic needs (WCED, 1987).

The sustainable livelihood (SL) approach refers to the variety of activities that people carry out, often in combination, to make a living. As several authors (e.g., Chambers, 1995; Hussein & Nelson, 1998) have pointed out, this is particularly critical in the case of the poor, who often rely on a number of different types of economic activities

for their livelihoods, and where it is not any specific activity but their combined effect for the household economy that matters. The SL approach facilitates an understanding of the linkages between people's livelihood strategies, their asset status, and their way of using available natural resources; therefore, it is a useful tool for analyzing both the problem and the scope for promoting sustainable development at the local level. The SL approach offers a more appropriate basis for evaluating the socio-economic impact of projects or programs which have poverty alleviation as at least one of the overall objectives, since it provides a more realistic framework for assessing the direct and indirect effects on people's living conditions than, for example, one-dimensional productivity or income criteria.

In the international arena, the United Nations Development Programme (UNDP) has taken the initiative to promote the SL approach, specially focusing on Sustainable Human Development (SHD), which was mandated and adopted in 1995 (Krantz, 2001). The overarching mandate includes: poverty eradication, employment and sustainable livelihoods, gender, protection and regeneration of the environment, and governance. Several countries are also working on the broader international goal of reducing poverty in the world. Some international non-governmental organizations such as CARE have also identified the SL approach as the way to reduce poverty and vulnerability among the poor. However, they put more emphasis on the household livelihood security strategies, specifically on developing the human capital.

The SL framework of the Department of International Development (DFID, United Kingdom) has identified five interconnected parameters: (i) vulnerability contexts, (ii) livelihood capital/assets, (iii) transforming structures and processes, (iv) the

livelihood strategies that people employ, and (v) livelihood outcomes (Figure 2.1). Most importantly, the first step in examining livelihoods is to understand fully the context in which the livelihoods evolve. Local people's livelihoods and their access to and control over resources can be affected by events beyond their control. For households, the vulnerability context is the external environment in which the people live (DFID, 1999). Natural and human-made disasters, such as earthquakes, floods, droughts, agricultural pests and diseases, and conflicts, can interrupt individuals' livelihoods. These interruptions or shocks are major concerns in terms of livelihood vulnerability. Similarly, natural forces and trends, such as population growth, the availability of natural resources, health problems, national and international economics, politics, prices, production, employment opportunities, and social constructs, can have direct or indirect impacts on livelihoods (Chambers & Conway, 1992; DFID, 1999; Cahn, 2002). The ability of individuals to deal with such shocks can determine the livelihood sustainability of processes (Chambers & Conway, 1992; DFID, 1999; Cahn, 2002).

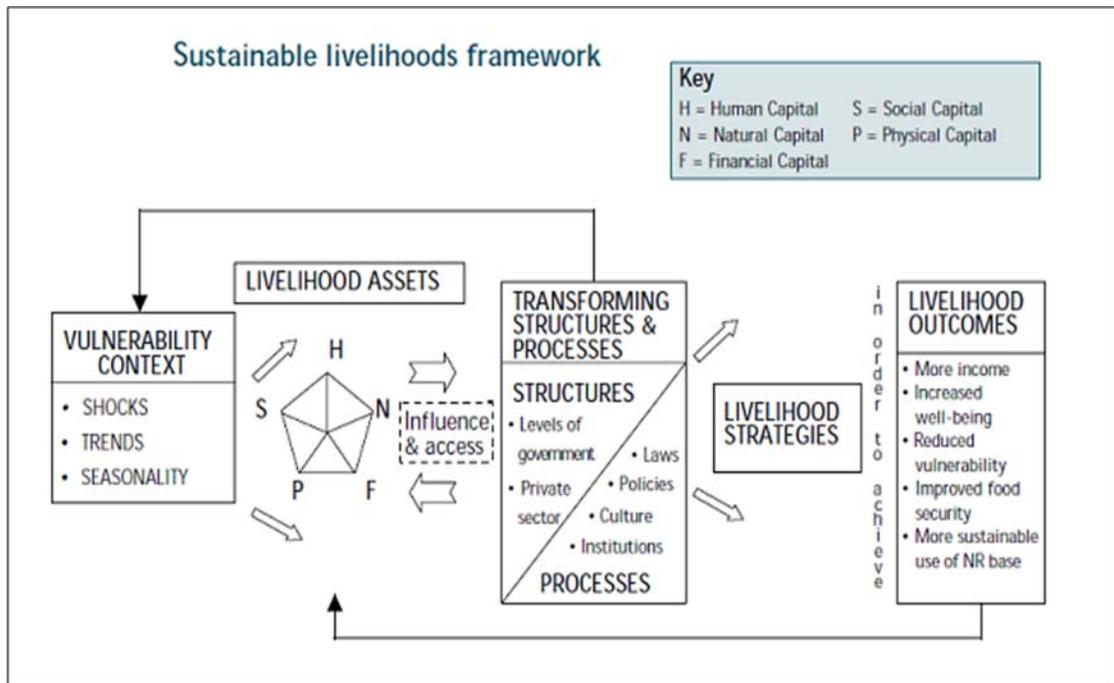


Figure 2.1. DFID sustainable livelihood framework (Source: DFID, 1999).

Depending on the assets people have, the structures and processes that impact them, and the vulnerability context under which they operate, people choose livelihood strategies that will best provide them with livelihood outcomes. Ellis explained (2000, p. 40), “livelihood strategies are composed of activities that generate the means of household survival.” Livelihood strategies need to change as the external environment changes since local people and the poor in particular have little control over their context. Sometimes unsustainable and unproductive livelihood strategies continue because of tradition and habit (Izadi & Cahn, 2000); livelihood activities can also be introduced as coping strategies in difficult times.

Getting a clear view from the rural participants about their diverse and dynamic livelihood strategies is important in undertaking appropriate interventions for their socio-economic development (Izadi & Cahn, 2000; Farrington *et al.*, 1999). It is important to understand some intangible attributes, such as the structures or organizations and the

processes — laws, policies, societal norms, and incentives — that impact many aspects of livelihoods. Access, control, and use of assets are often influenced by the locally embedded institutional structures and processes. An understanding of the structures and processes of the rural livelihoods thus provides the link and relationship between the micro entities (i.e., individuals, households, hamlets, and communities) and the macro entities (i.e., areas, regions, government, powerful private enterprises, and elite groups) (Scoones, 1998; Carney, 1998; Ellis, 2000). Such an understanding helps to identify areas where restrictions, barriers, or constraints occur and explain social processes that impact the sustainability of rural livelihoods (Scoones, 1998).

Scoones (1998) identifies three types of rural livelihood strategies: (i) agricultural intensification or extensification, (ii) livelihood diversification by adopting various trades and rural enterprises, and (iii) migration (including alternative income generation and remittances for family income enhancement). Carney (1998) lists different categories of livelihood strategies linked to the natural resource base, non-natural resource base, and migration, whereas Ellis (2000), in his framework, characterizes livelihood strategies as natural and non-natural resource-based activities. An understanding of livelihood outcomes is intended to provide, through a participatory enquiry, a range of activities that rural people undertake to improve their familial well-being and reduce poverty in the broadest sense (DFID, 1999).

## **2.4 Various Forms of Capital that Support Livelihoods**

The livelihood of people is comprised of a complex combination of human skill, ability, social network, financial capability, and the availability of and access to natural

resources. These components are termed as capital or assets by different organizations and scholars. DFID has identified five core asset categories or types of capital upon which livelihoods are built. DFID asserts that if the capital is strengthened, households will be able to sustain their livelihoods and cope better with shocks and stresses. The five types of capital are perhaps best thought of as livelihood building blocks; the term *capital* is used in this thesis because it is the common designation in the literature (DFID, 1999).

#### **2.4.1 Human capital.**

Human capital can be represented by the skills, knowledge, experience, and inherent ability of individuals to adopt different livelihood strategies and achieve their livelihood objectives. A household's human capital is determined by the household size and the age, skill level, leadership potential, and health status of the household members. For many rural households, ill health and the lack of proper education are the major problems in achieving the livelihood objective. Appropriate knowledge and labour – or the ability to command labour – determines the achievement of positive livelihood outcomes (DFID, 1999). Classical economists view human capital as the means of production; they argue that one's productive outputs depend partly on the “rate of return on the human capital” that one owns (Sen, 1985, 1990, cited in Deb, 2009). However, for certain categories of people like fishers and farmers, traditional ecological knowledge, comprising the Knowledge-Practice-Belief complex, can be viewed as specific human capital because such people use their skills, knowledge, and experience as means of production (Berkes, 2008, cited in Deb, 2009).

### **2.4.2 Social capital.**

Social capital is the complex relationship between societies and individuals that influences individuals' behaviour and shapes their livelihood objectives (Pennar, 1997; DFID, 1999). These complex relationships are created through networks, social membership, and relationships of trust, reciprocity, and exchanges. Such relationships can be vertical or horizontal across the wider society, and they can increase people's trust and ability to work together and also expand their access to wider social and political institutions or civic bodies. These relationships also create a much-needed social safety net, an informal institution that helps the poor and the vulnerable groups in the face of shocks and stresses. Moreover, social capital also reinforces the values of social norms, bonds, attitudes, responsibilities, and a culture of reciprocity and mutual trust. Such social capital encourages need-based collective actions for social and economic development. It is argued that more active and diverse linkages or relationships are better than old, inactive relationships since they create more resilience in the social capital building processes (Pretty, 1998; Pretty & Ward, 2001). Some scholars consider social capital and political capital to be interconnected since social relations allow people to access political space. In the livelihood context both social capital and political capital are encapsulated under one concept of social capital (DFID, 1999). In the context of natural resource management, the role of social capital is widely recognized (Ostrom, 1990; Jodha, 1991; Pretty, 1998; Pretty & Hine, 2000; Pretty & Smith, 2004, cited in Deb, 2009). Coleman (1988, p. 104) commented that one should combine self-interest and the interests of the collective to enhance one's social capital. In order to protect and promote the natural resource base, social capital should be used in an appropriate manner.

### **2.4.3 Natural capital.**

The term *natural capital* refers to the natural resources that provide opportunities for the households to maintain a livelihood. Natural capital can be a wide range of resources such as the atmosphere and biodiversity of which land, water, forest, and fisheries; some of these resources can be used to enable livelihoods. Ekins (2003) has summarized how natural capital provides four classes of environmental functions: (i) source functions, (ii) sink functions, (iii) life support functions, and (iv) human welfare functions. Research in different parts of the world have seen that “not only do the rural poor rely heavily on natural resources, they also increasingly live in areas of high ecological vulnerability and relatively low levels of resource productivity” (Baumann, 2002, p. 4). It has been seen that indigenous peoples across the world are increasingly claiming the right to control their lands and resources as a basis of their livelihoods, local economy, self-governance, and representations of their own socio-political institutions (Colchester, 1994; Smith, 1999; Battiste & Henderson, 2000, cited in Berkes, 2008, p. 258).

Moreover, natural capital in the livelihood context is closely related to the vulnerability context. Some shocks damage the natural capital base and consequently disrupt the livelihood activity of the dependent households and communities. Some economists, such as Bravo-Ortega and Gregorio (2007, p. 73), argue that “natural riches produce institutional weaknesses; weak institutions generate conditions that give rise to voracity effects through which interest groups devote their energies trying to capture the economic rents from natural resources.”

Moreover, the natural resource sector can absorb only a limited amount of the workforce; the capital has less potential to grow substantially and generate more employment opportunities; rather, it loses its productivity in subsequent years. Furthermore, control of and access to natural resources determines households' ability to escape from poverty.

#### **2.4.4 Physical capital.**

In the livelihood framework, physical capital is defined as infrastructure, tools, equipment, housing, and household goods. These “physical things” help people to generate income and enable their mobility and access to a wider market, thus helping them to maximize their efforts for livelihood outcomes. The different types of infrastructure, such as affordable transport, secure shelter/buildings, adequate water supply and sanitation, clean and affordable energy, and access to information (communications), are the bases of successful livelihoods (DFID, 1999). Researchers have found that one of the major causes of poverty is the lack of such physical infrastructure or inadequate access to it, especially in rural communities. On the other hand, adequate access to such infrastructure can enhance livelihood productivity and reduce opportunity costs (DFID, 1999). Most of the physical capital, such as roads, energy and water supply, and marketplaces, is generated through big development projects undertaken by the government or international/regional development organizations for the well-being of communities. However, some physical capital is developed or established by individuals for their livelihood purpose, such as shelter for living or renting, water pumps for irrigation, or a mobile telephone for communication. In this area of physical capital, the government or non-governmental organizations can only

facilitate the process or provide indirect support to the households' by providing such facilities.

Physical capital connects remote areas (where most of the poor people live) with urban production, marketing centres, or the wider geographical regions. It also allows the poor households to obtain better information about the better livelihood opportunities and gives them the chance to make more-informed decisions to improve their livelihoods. For example, the use of GIS in the remote fishing villages of Kerala, India, has helped fishers to make decisions about the movement of fish shoals in the sea. They can set their fishing gear accordingly to maximize their catch. The use of cell phones in the rural areas of Bangladesh has helped farmers and fishers to communicate with their allied groups about the price of their produce in different urban and semi-urban markets. All of these tools can help rural people to augment their income (A. Deb, 2012, personal communication).

#### **2.4.5 Financial capital.**

Classical economists view financial capital as funds that are used to produce real capital and profit (Pearce, 1986). In the livelihood context, financial capital refers to the financial assets/resources that people use to achieve their livelihood goals. Such capital also includes flows and stocks of resources that can contribute directly to consumption and production. The two major sources of financial capital are: (i) the available stock and (ii) the regular inflow of money. The available stock means any capital that does not have liabilities attached to it, and it usually does not entail reliance on others. It includes resources over which one has control such as cash, bank deposits, and liquid assets (e.g., livestock and jewelry). This source also includes financial institutions such as banks and other forms of formal money lending. The second source of financial capital, the regular

inflow of money, means any other sources of income that are continuous and secure such as jobs or remittances (DFID, 1999).

Financial capital is the most visible and flexible form of capital among the five types. It can be easily transformed into other forms of capital and used directly for livelihood outcomes or to complement other forms of capital (DFID, 1999; Rakodi, 2002). Changes in financial capital can be easily seen and measured. However, financial capital does not always clarify the difference between income and assets; in rural areas income and assets usually overlap, for example, a cow for a poor household is both a source of income (by selling milk) and an asset (selling the cow in time of need for cash). Moreover, most of the poor lack financial capital and have only limited access to financial sources (DFID, 1999; Rakodi, 2002). In the livelihood context, land<sup>2</sup>, jewelry, household items, liquid cash, and fixed deposits are considered assets; these assets can be used to improve livelihoods or overcome shocks and stressors (Rakodi, 2002). In addition, income is any fixed, secure source or inflow of cash to the household; this includes jobs, businesses, farming, remittances, and income from rent and other sources (Rakodi, 2002). However, gambling, lotteries, and bank loans are not considered income, and they do not reflect the regular flow of financial resources.

The DFID sustainable livelihood framework as depicted in Figure 2.1, is the first of its kind to identify the process of generating sustainable livelihoods for individuals. The framework was developed from the theoretical works of Sen and Chambers & Conway (Mensah, 2012). However, the framework has some critical drawbacks in understanding the complexity of livelihoods. The framework greatly emphasizes

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<sup>2</sup> In the context of Bangladesh, land is considered financial capital since the poor can often sell their land in time of need. Even if they cannot sell the land, they can always mortgage it to the local moneylenders to procure cash or liquid money.

individual capability with respect to the five types of capital; rather than employing a holistic approach, it focuses more on individuals and treats them as separate entities in society (Mensah, 2012). Moreover, the framework does not take into consideration the cultural, political, and religious components separately; they are bundled up with social capital, which does not represent the actual scenario of the livelihood context (Deb, 2009). Furthermore, the framework is constructed as a *one size fits all* concept, disregarding the overall social context in which it might be used (Mensah, 2012). Nevertheless, due to the scoping of this research, I have used DFID's SL framework to understand the effects of green microcredit on individual livelihoods.

## **2.5 Scaling Up**

Limited research has been done in the field of *scaling up*. The term has different meanings to different communities, organizations, and states. Hooper *et al.* (2005) described scaling up as a “single nebulous blanket term covering all forms of expansion, growth and replication.” Scaling up can also refer to “efforts to bring more quality benefits to more people over a wider geographical area more quickly, more equitably, and more lastingly” (IIRR, 2000, cited in Hooper *et al.*, 2005). Uvin and Miller (1996) identified four distinct types of scaling up: (i) functional, (ii) quantitative, (iii) organizational, and (iv) political. They described the processes as follows: Functional scaling up is the process of diversifying grassroots programs and adding new facilities to them. Quantitative scaling up refers to the total increase in the number of members and the coverage area of the organization. Organizational scaling up is the process of strengthening and improving the effectiveness and efficiency of the organization's

activities by developing manpower within the organization. Political scaling up is the process of mainstreaming the organization's goal regarding the national and international sector through local political processes and international organizations (Hooper *et al.*, 2005).

In consideration of Uvin and Miller's (1996) work, it is clear that the expansion of microcredit programs in Bangladesh progressed through similar phases. The scaling up started linking local people with regional and national authorities, recruiting motivated staff, decentralizing authority, and formulating information management systems and internal controls. It was also characterized by the willingness of the higher authorities to learn from mistakes (Zaman, 2004). This process was also supported by the fact that monetary transactions were being done in public and often supervised and monitored by the senior staff (Zaman, 2004). Moreover, the lessons learned from the field and feedback from the grassroots helped the policymakers of the microfinance institutions organizational to make changes to the organizational behaviour and influence the national policymakers. MFIs also kept sharing their experiences and exchanging ideas among them, which helped them to scale up the microcredit programs (Zaman, 2004; Hooper *et al.*, 2005).

Green microcredit is a new and innovative idea which is being tested out in the field. It is different from conventional microcredit in terms of the lending amount, the lending period, the economic and in-kind assistance, and most importantly the focus on the environment. The experience of the borrowers and field workers, as well as their feedback, can be used to modify the design of the new microcredit program. The ultimate goal of green microcredit is to protect and use natural resources and the ecosystem in a

sustainable manner. The ecological footprint that is left by the individual microcredit borrower can have cumulative positive or negative effects on the ecosystem, as well as on the individual livelihood outcome (Dasgupta & Goran-Maler, 1994; Hall *et. al.*, 2008; Allet, 2011). We need to have a better understanding of individuals' livelihood activities and their direct and indirect dependence on natural resources.

## **2.6 Summary**

The gaps in the literature and the needs to advance knowledge can be summarized as follows: (a) The literature review indicates that there is a critical need to examine the various aspects of livelihood strategies and the complex interconnections of microcredit and natural resource use patterns in the rural areas in order to understand the significance of the livelihood strategies that people adopt in rural Bangladesh and to promote sustainable livelihoods. Understanding the dynamism of rural livelihoods in light of the existing complexities is critically important before implementing any project aimed at poverty alleviation. (b) The need to acknowledge the dependence of the poor on accessing common property resources and to promote the sustainable use of them is also highlighted in the literature. (c) Green microcredit is a very new concept and it faces a number of constraints and challenges. Constraints stem mainly from the limited number of projects that are currently being undertaken, and challenges are related to convincing people who have not been exposed to the idea of green microcredit to undertake green projects. (d) Further, the study of the literature on conventional and green microcredit initiatives highlights the need to promote and adopt eco-friendly approaches to ensure the sustainable livelihoods of the rural populace, which in turn will ensure the conservation

and sustainable use of the natural resources. Moreover, there has hardly been any effort to examine the microcredit programs using the lens of environmentalism. (e) Finally, there is the need to enhance the capacity to organize and build local institutions, to improve the efficiency in the service delivery of the microcredit programs, and to ensure sustainable uses of the natural resource base for generating maximum benefit for the resource-dependent communities. From the above discussion and review of the literature, the key question that comes in my mind is: Can microcredit programs be used sustainably to protect the ecological services and natural resource base and to enhance livelihood security?

# Chapter 3

## Research Method

### 3.1 Introduction

This study examines the roles of green microcredit in the contexts of livelihood improvement and natural resource management in selected rural villages of Bangladesh. Being situated at the interface of socio-economic and natural resource management perspectives, this research logically requires the adoption of qualitative tools and methods for data collection. The research was undertaken from June to August 2011. During this period, I pretested and finalized questionnaire and used the questionnaire survey and then I interviewed the borrowers and lenders of the green microcredit programs along with the other conventional microcredit borrowers from the study area.

Social researchers and anthropologists use their own methods of investigation and research techniques to arrive at rules for conducting research. Scholars in favour of adopting a qualitative approach argue that multiple-constructed realities do exist in society and nature, and that it is impossible to make any generalization free from a certain time and context. They also argue that social research is value-bound and that it is impractical to differentiate between causes and effects (Guba, 1990). Qualitative research is more concerned with the in-depth questioning of the *what, how, why, where, and when* of the things being investigated (Creswell, 2009) using reflexive inquiry, whereas the quantitative approach tends to be confined to the volume or amount of the concerned variables. Philosophically, the qualitative approach makes use of participatory pragmatic methods and a related system of philosophy in an expansive and creative form of research that is inclusive, pluralistic, and complementary in nature (Deb, 2009). It examines

humans in different social settings – their relationships to a host of factors – through their socio-cultural constructions, assuming that human interpretations are connected to how they view their social world and that human perceptions and behaviour depend on continuous learning rather than biological instincts (Berg, 2004).

The information and experience accumulated through the lifetime of a rural individual is obviously of such a scale and quality that it cannot be normally accessed fully by any quantitative tool (Sarda & Maynou, 1998). Hence, participatory qualitative approaches are found to be more responsive than any other approaches for exploring complex phenomena such as livelihoods and natural resource management issues that are situated and embedded locally. Qualitative tools allow the generation of knowledge that supports actions; such an approach is believed to de-elitise and demystify some aspects of field research, thereby rendering it as a local empowerment tool which common people can use to promote actions to improve their quality of life (Tilakratna, 1990).

The main purpose of the qualitative approach is to understand better particular groups/communities, conditions/situations, roles/events, and the interactions of the individuals through largely an investigative process, where the researcher gradually makes sense of particular social phenomena by comparing, contrasting, replicating, and classifying the objects of research (Locke *et al.*, 1987, Miles & Huberman, 1984, cited in Creswell, 2009, p. 194). Using a host of participatory techniques, researchers immerse themselves in the everyday life-world of the participants through actively interacting with them to gain a good understanding of their perspectives and meanings (Marshall & Rossman, 2006). Qualitative research focuses on both the process and the outcome, and it relies on utilizing tacit knowledge (intuitive and felt knowledge) to appreciate the

nuances of the participants' multiple realities (Lincoln & Guba, 1985). However, despite its superiority in conducting social research over other techniques and methods, qualitative research is not free from biases and limitations. One limitation is that the results are often not generalizable and quantifiable, and hence policymakers rely upon them less.

Qualitative research makes use of a multitude of techniques available for generating ideas, and it offers a range of epistemological, theoretical, and methodological possibilities (Creswell, 2009) while considering the holistic nature of knowledge-building. Qualitative tools are most appropriate to achieve a better understanding of rural characteristics, and development practitioners have constructed a family of approaches collectively known as Participatory Rural Appraisal (PRA), the origins and strands of which have been aptly described in a popular way by Chambers (1994a, 1994b, 1994c). PRA has been defined as “a family of approaches that enable people to express and analyze the realities of their lives and conditions, to plan themselves what action to take, and to monitor and evaluate the results” (Chambers & Blackburn, 1996, p. 1). Advantages of PRA are that it allows a reversal of learning directly from the local people, onsite, and face-to-face, and that such learning is rapid and progressive and has the scope of conscious exploration, flexible use of methods, opportunism, improvisation, iteration, and cross-checking (Chambers, 1994b, p 1254). However, the findings can be too specific about a certain area and are usually difficult to apply to general interpretations.

## **3.2 Conceptual Framework**

This research has adopted the DFID (1999) sustainable livelihood framework (SLF) (see Figure 2.1 in Chapter 2) as the basis of understanding the roles of green microcredit in the local livelihood dynamics. The SLF identifies five major types of capital that individuals use to have a sustainable livelihood. The five types of capital are the following: i) human capital, which deals with people's ability to work; ii) social capital, which deals with people's ability to create linkages; iii) natural capital, which deals with the natural resource base, accessibility, and use; iv) physical capital, which deals with infrastructure; and v) financial capital, which deals with financial institutions and the availability of funds. All five types of capital are present and need to be considered in determining the livelihood outcome of the local people in rural Bangladesh. Using the five types of capital related to livelihoods, the research identified the existing livelihood conditions among the green microcredit borrowers and analyzed the effects of the green microcredit on their livelihood practices.

## **3.3 The Study Area**

This study is part of a project funded by the Canadian International Development Agency (CIDA), entitled, Building Environmental Governance Capacity in Bangladesh (BEGCB), and conducted jointly by the University of Manitoba, Canada; the North-South University, Bangladesh; and the Center for Natural Resource Studies (CNRS, Bangladesh). Hence, the selection of the study area of this thesis was undertaken by taking into consideration the larger project theme and objectives. The focus of the BEGCB project was on studying the impact of green microcredit in the Moulvibazar and

Magura districts of Bangladesh. My research was derived from the BEGCB project and concentrated on studying the effects of green microcredit on the livelihoods of the borrowers in two upazilas of Moulvibazar and Magura – Borlekha and Arpara, respectively (Figures 3.1 and 3.2).

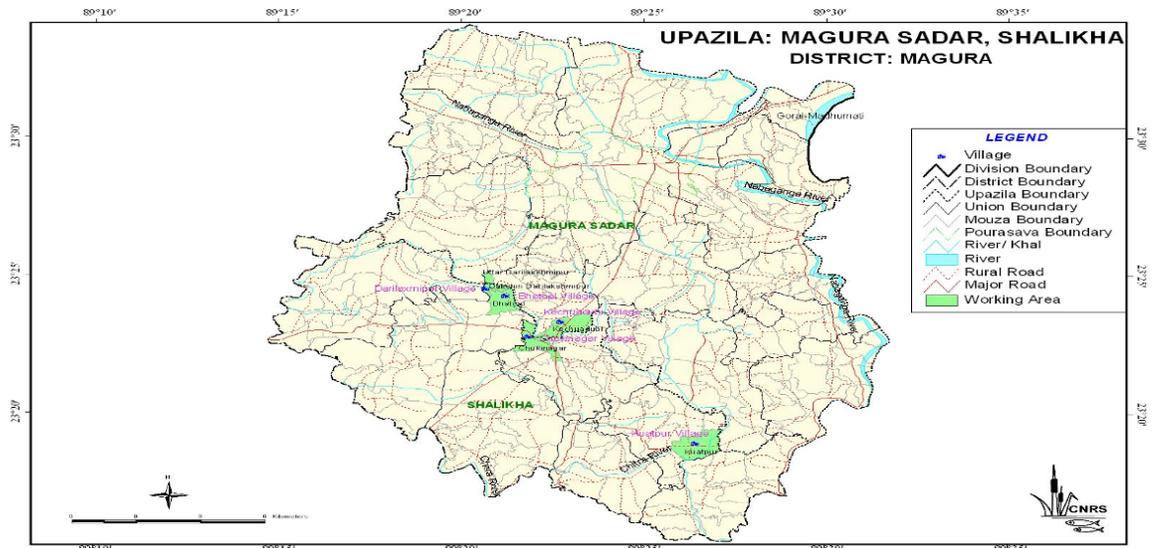


Figure 3.1. Map of project area (Magura) with proposed villages (Source: CNRS, 2009).

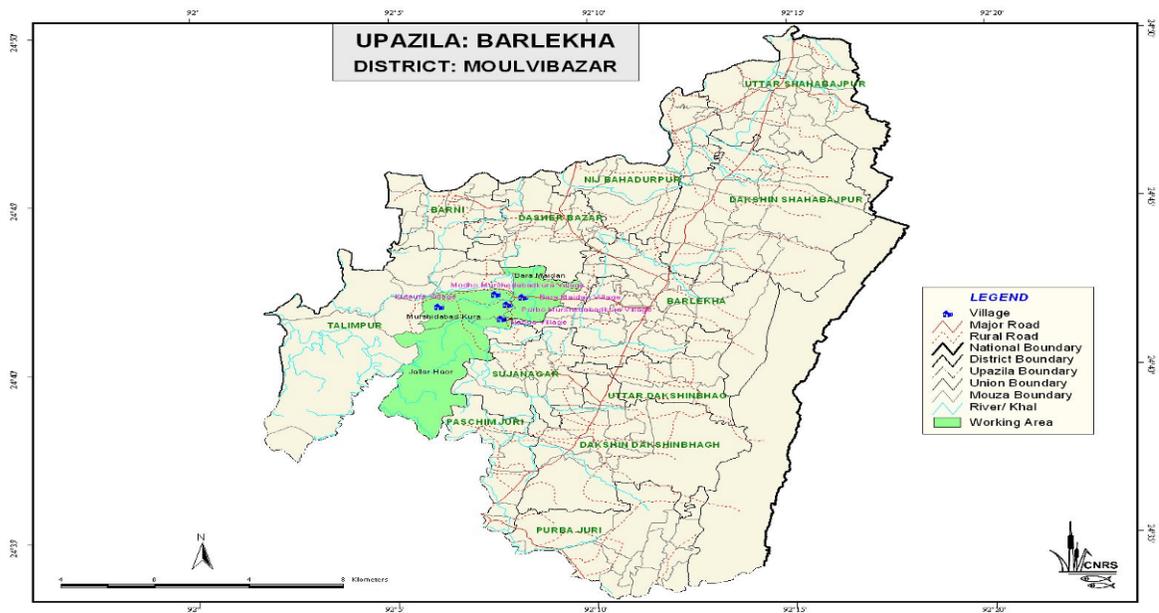


Figure 3.2. Map of project area (Borlekha) with proposed villages (Source: CNRS, 2009).

### 3.3.1 Geographic profile of Magura and Borlekha.

Magura District is a floodplain area characterized by a central district town, surrounded by a few service centres and rural settlements. This district was selected as the study area in consideration of its typical floodplain characteristics and representativeness of a riparian social-ecological zone. Magura is located in the south-western part of Bangladesh (Figure 1.1). The district is located under the Khulna Division, with an area of 1048 km<sup>2</sup>; it is surrounded by Rajbari District on the north, Jessore and Narail districts on the south, Faridpur District on the east, and Jhenaidah District on the west. The district is immensely influenced by rivers of various sizes and intensity. Fatki River flows through the western side; Nabagonga River flows on the eastern side, and the River Chitra flows on south side of the district (BEGCB, 2010).

The other study area selected was Borlekha Upazila. It is located at the *Haor* Basin in the north-eastern part of Bangladesh, under Maulovibazar District (Figure 1.1). The upazila is a wetland area characterized by a central town and surrounded by a few service centres and rural settlements, as are commonly seen in the north-eastern part of Bangladesh. This upazila was selected in consideration of its unique characteristics and representativeness of the wetland social-ecological zones that remain underwater for almost half of the year. The upazila is located under Maulovibazar District, with an area of 501.65 km<sup>2</sup>; it is surrounded by India on the east, Golapganj and Beanibazar upazilas on the north, Kulaura Upazila on the south, and Kulaura and Fenchuganj upazilas on the west. Borlekha Upazila comprises an important part of the Hakaluki *Haor* system, which has an area of around 72.46 km<sup>2</sup> (BEGCB, 2010).

### 3.3.2 Social and economic profile of Magura and Borlekha.

The study area in Magura is predominantly agriculture-based, with 51.26% of the population engaged directly in agriculture, of which 19% earn their livelihoods by doing manual labour, and only 1.22% of the people are engaged in fishing (BBS, 2010). In terms of landholding among the peasants, 15% are landless in the district (BBS, 2010); 3.1% of the households (HHs) in the study area have no land; 42.5% of the people have less the 50 decimals of land; and only 7.0% HHs possess more than 350 decimals of land (CNRS, 2009). It is also interesting to note that 39.1% of the population rely on only one primary occupation without having to engage in any secondary occupation. In addition, the secondary job preferences among the population are limited to agriculture labourer or small business. The lack of income-generating opportunities among the low-income group has been compounded by the low level of per capita landholding in the district. The landless agricultural workers earn less than \$2.00 per day and this is dependent on seasonality and gender (Holmes *et al.*, 2010). Other major hindrances to livelihood security for

Table 3.1. *Primary Occupation of the Study Villages in Magura (N= 175)*

<b>Occupation type</b>	<b>Percent</b>
Agricultural worker (own land)	38.0
Agricultural worker (owned and leased land)	7.4
Agricultural worker (lent and leased land)	3.4
Agricultural worker also a day labourer	8.9
Day labourer	2.5
Full-time fishers	4.5
Part-time fishers	1.2
<i>Beel</i> guarding	0.1
Fish business	3.9
Small business	6.4
Handicrafts	1.2
Service	3.2
Household work	2.1

(Source: CNRS, 2009)

the local poor people are natural and human-made disasters. Moreover, the institutionalization and commercialization of common property resources have also delimited the livelihood opportunities for the poor in this region.

Due to the proliferation of microcredit programs in the rural areas of Bangladesh, a large number of poor people take loans from NGOs. These are conventionally given to women for microenterprise development for the purposes of self-reliance and livelihood security. A study carried out by CNRS observed that a large number of the population (31%) do not receive any form of loan (voluntary or for any other reason). It also suggested that more than 55% of the people are actively taking loans from NGOs for various purposes (CNRS, 2009). As is common in NGO-run microcredit operations in other parts of Bangladesh, the people have the opportunity to take loans from multiple sources. Data contained in Table 3.2 reveal the distribution of people's access to the sources of loans. It is apparent that loans administered by NGOs are mostly for agriculture, small businesses, and other similar purposes aimed at generating profits while paying little attention to environmental protection or sustainability.

Table 3.2. *Sources of Loan at the Study Villages in Magura (Multiple response) (N= 175)*

<b>Sources of loan</b>	<b>Percent</b>
Received loans from NGOs	55.9
Received loan from commercial banks	18.9
Other sources	4.3

(Source: CNRS, 2009)

Five villages in Magura District were selected for this research on green microcredit projects. Kuatpur village is situated in the south-east corner of Magura; Kechuadubi and Chukinagarh villages are situated in the middle of Magura; and the villages of Bhatuail and Darilaxmipur are located in the west and in the centre of Magura.

The livelihoods in the Borlekha study area are determined by seasonal variance. Here, 29% of the population make their livelihoods from terrestrial agriculture and agriculture-related work (5.9% of them earn their livelihoods by doing manual agricultural jobs) and around 19% of the people are engaged in fishing, full-time or part-time (CNRS, 2009). In terms of landholdings among the peasants, 24% are landless (BBS, 2010). Among all the households in the study area, 60.9% HHs have less than 50 decimals of land and 28.8% HHs possess up to 350 decimals of land (CNRS, 2009).

Table 3.3. *Primary Occupation of the Study Villages in Borlekha (N= 175)*

<b>Occupation type</b>	<b>Percent</b>
Agricultural worker (own land)	13.1
Agricultural worker (owned and leased land)	7.5
Agricultural worker (lent and leased land)	2.5
Agricultural worker also a day labourer	5.9
Day labourer	3.1
Full-time fishers	16.0
Part-time fishers	2.8
<i>Beel</i> guarding	0.4
Fish business	12.9
Small business	5.7
Outside (city or country)	12.0
Handicrafts	2.4
Service	3.4
Household work	1.3

(Source: CNRS, 2009)

It is interesting to note that 40.0% of the population do not engage in any secondary occupation; moreover, the secondary job preferences among the population are limited to agriculture labourer or small business. The microcredit movement has also touched the remote and difficult-to-access areas of Bangladesh; even though some areas are known to be conservative from a socio-religious point of view, NGOs have successfully targeted the women to form self-help groups. A study carried out by CNRS

observed that a large number of the population (47.4%) do not receive any form of loan (voluntary or for any other reason). It also suggested that more than 30% of the people are involved in an “active borrowing-and-returning” process administered by NGOs (CNRS, 2009). Data contained in Table 3.4 show the distribution of people’s access to the sources of loan. As is common in many other NGO-serviced areas, the people opportunistically take loans from multiple sources.

Table 3.4. *Source of Loan at the Study Villages in Borlekha. (Multiple response) (N= 175)*

<b>Sources of loan</b>	<b>Percent</b>
Received loans from NGOs	30.0
Received loan from commercial banks	10.8
Relatives	16.9
Other sources	12.1

(Source: CNRS, 2009)

Five villages under Borlekha were selected for this research project: Kutaura, Nanua, Boromaidan, East Murshidabad Kura, and Moddha Murshidabad Kura. All the villages are situated in the south-western part of Borlekha, along the fringe of Jallar *beel*.

### **3.3.3 Significant differences between the two study sites.**

The two study areas are unique in their own standings. The south-western district of Magura characterizes floodplain landscape; the riparian ecosystem allows a multiple-crop farming pattern. The people are more or less engaged in terrestrial agriculture and agriculture-related work. In terms of natural resource availability in the district, a variety of fish and prawn fauna and *maila* (grass used for mat-making) were reported by inhabitants. *Maila* grows abundantly along the riverbank; the grass is cultivated by mat-makers who desperately need access to them. In the north-eastern district of Maulovibazar, the landscape and local ecosystem is impacted heavily by the impulse of floods. Floods are an important determinant in the maintenance of local hydrological

systems and the associated growth, breeding, and availability of flora and fauna. Flash floods and prolonged floods impact the livelihood pattern of rural people in both the study areas. During the wet season, people are engaged in fishing and the extraction of aquatic resources such as water lilies, snails, *murtha* (a local fibre used to make mats), and some other aquatic resources from the *haor*. During the dry months, a section of the population that has access to upland areas can opportunistically shift to terrestrial agricultural practices for an enhanced familial income.



*Plates 3.1: Rising water inundating the rural road during May 2011.*



*Plates 3.2: Inundated vegetable garden of green microcredit.*

### **3.4 Research Design**

As was mentioned earlier, my research applied a qualitative approach; however, to gather information on the green microcredit programs and their manifestations first-hand, a questionnaire survey was administered among the target groups. Several PRA tools, such as key informant interviews, focus group discussions, and case studies were conducted (Chambers, 1994a). Using these tools, I looked into different aspects of green microcredit, the borrowers' livelihoods, and the impact on the immediate ecosystem and ecological resources in the area. The field study was conducted over a period of three months, from June to August 2011.

### **3.5 Data Collection**

Followers of the qualitative approach make use of social advocacy and interaction to conduct in-depth social studies since they help to examine critically specific social issues. However, it is a time-consuming though creative form of social research. According to the requirements of the research and based on the local contexts, data collection techniques were selected. In order to have a better understanding of the local areas, as well the current and past livelihood practices and patterns of the people, I used secondary data from research, publication, and project data of the Center for Natural Resource Studies (CNRS) and the Bangladesh Bureau of Statistics (BBS). In order to examine the social realities of the green microcredit borrowers and to substantiate some qualitative attributes of my research, I administered a questionnaire survey among the borrowers. Sequentially, I carried out in-depth case studies to get further insights into what was happening at the household level as a direct consequence of green microcredit programs. Focus group discussions were carried out primarily to encapsulate group or collective attitudes and behaviours concerning pertinent issues and also to validate the findings. Key informant interviews were carried out with the policymakers from CNRS and the government at Dhaka. Table 3.5 reveals the types of tools used along with the corresponding specific objectives.

Table 3.5. *Some Specific Tools for Attaining Research Objectives*

<b>Objective</b>	<b>Tools applied</b>	<b>Information obtained</b>
1. To assess the performance of green microcredit projects at two study locations in Bangladesh from the viewpoints of livelihoods and environmental sustainability;	Secondary data, Survey	Population, household structure, age, sex, male-female ratio, household income, education, level of food security, primary and secondary occupations, assets, land ownership pattern, skill, living condition, housing pattern, water, electricity, seasonality of employment, liabilities, savings, expenditure, and memberships in different institutions
2. To compare the performance of the green microcredit projects among similar borrowers in different study locations; and	Case study, Survey	Effects of microcredit on individual households, with a specific focus on the green microcredit recipient families, their past and present economic condition of livelihood, and future plans.
3. To assess the effectiveness of green microcredit projects as a means to promote livelihoods and environmental sustainability.	Focus group discussion (FGD), Policy Key informant interviews	Current status of natural resources, changes over time, contributions of green microcredit in favour of resource use and environmental sustainability, participation in self-help groups, policy support, resource control, and power.

### 3.5.1 Sample size and reason.

As was mentioned earlier, green microcredit is a new concept, and it is being field-tested in two different socio-economic and agro-ecological zones of Bangladesh. Moreover, there were only 14 green microcredit-sponsored projects taking place between the two locations during the research duration (June to August 2011). Therefore, in order to have comparable data, the respondents were selected on the basis of the following attributes: (i) all the respondents were members of CNRS, (ii) all the recipients of green microcredit from both the locations were covered under the survey, (iii) two similar green microcredit projects from each of the two study locations were considered for case studies, and (iv) eight randomly selected CNRS member borrowers were also interviewed. The techniques used in the research are briefly discussed in Table 3.6.

Table 3.6. *Number of Respondents (with Different Tools) Involved in Different Villages*

Location	Name of Villages	Questionnaire survey		Case study	Seasonal calendar	Focus Group Discussion	Policy Key informant
		GMC	Conventional microcredit				
Arpara, Magura	Kuatpur, Kechuadubi, Chukinagarh Bhatuail, and Darilaxmipur	7 out of 7	4	2	3	1	N/A
Borlekha, Moulovibazar	Kutaura, Nanua, Boromaidan, East Murshidabad kura, and Moddha Murshidabad kura	6 out of 7*	4	2	2	1	N/A
Dhaka, capital city		N/A	N/A	N/A	N/A	N/A	2

\* One respondent was not available during the survey.

### 3.5.2 Survey.

A structured survey questionnaire is intended to provide quantitative information on the basic demography, socio-economic information, and livelihood strategies. Such information is used to examine the economic, social, education etc. status and related changes at the household level, as well as at the community level (Gilbert *et al.*, 1983). Because surveys also allow room for triangulation and the validation of certain information through careful follow-up at the household level (Anderson *et al.*, 2002), I opted to apply this field method. The survey format (Annex 1) served the purpose of collecting information on the following issues:

- (i) Demographic information (i.e., family size, composition, sex, age, religion, dependency ratio/civilian labour force);
- (ii) Socio-Economic information (i.e., income with seasonality, average income, income sources and divergence, main and subsistence sources, contributions from fisheries and agricultural sources, debt situation);

(iii) Assets and resources (i.e., physical resources, economic resources, natural/livestock resources, resource use pattern, resource degradation factors); and

(iv) Livelihood strategies and outcomes.

A standard questionnaire was developed for both the study sites. The questionnaire was pretested in a non-target village adjacent to the study area. With the feedback, it was modified and simplified. Afterwards, the final survey was conducted in both the locations among the green microcredit (GMC) borrowers and also a few conventional microcredit borrowers. The conventional microcredit borrowers were purposively selected as non-GMC groups so that comparison between the GMC and non-GMC conventional microcredit borrowers could be made. The survey was designed to examine four different aspects of a family in the context of livelihoods. The general household information section contained aspects of age, sex, and the education level of the borrowers and their family members. The livelihood section embodied the aspects of the family's livelihood strategy, including the types of employment, seasonal variation, number of earners, and pattern of expenditure. The section on natural resource looked into the types of natural resources, as well as the use and dependence on natural resources for the sustenance of livelihoods. The microcredit section contained information on the borrowers' association with NGOs and MFIs, borrowing pattern, use of credit, and saving pattern.

### **3.5.3 Case study.**

Case studies are considered an important way of doing social research (Yin, 2003), involving an in-depth longitudinal examination of a single instance or event, as well as of a single family or household. It is an empirical, real-life inquiry that

systematically looks at various events. The analysis of cases allows researchers to gain a sharpened understanding of why the instance happened as it did, thus allowing to “build upon theory, to produce new theory or to challenge prevailing theory” (Tellis, 1997). Yin (2003) indicates that case studies should not be considered as a tool exclusively for qualitative research; rather, they can be suitably used to gather both quantitative and qualitative evidence. The objective is to report the complexity of social activities in order to represent the meanings that social actors bring to those particular settings. Case studies consider the fact that social reality is created through locally embedded social interactions, albeit those situated in particular contexts and histories. They seek to identify and describe such social interactions before trying to analyze and theorize based on them (Stark & Torrance, 2005).

As was mentioned earlier, the study areas were selected based on the delivery of CNRS-administered green microcredit (GMC) in certain project areas. CNRS operates its GMC program in two districts of Bangladesh. One study area is Magura, characterized by riverine waterscape, located in the south-western part of the country. In Magura District, eight families in five villages have been provided with loans under the GMC scheme. Another location is Nunua village located under Borlekha Upazila (sub-district) in the northeastern part of Moulvibazar District. Eight families in two villages were purposively selected for the study. For this research, the cases were selected purposively; I adopted the case study approach as a tool and considering two specific dimensions:

1. Geographical scale: The whole village with its ecosystem characterization was considered as a case. From this perspective, the villages of Kuatpur and Kechuadugi under Magura District represented the riverine ecosystem. The village of Nunua, located

under Moulvibazar District, represented the floodplain wetland system. Based on the ecological characteristics prevailing in these districts, the inputs needed for producing mats are grown in different agro-climatic regions.

2. Family/individual level: Each respondent with his/her own distinct familial and socio-economic characteristics was considered as a case. This criterion was especially relevant when I wanted to obtain longitudinal information from the cases over a period of time; such a case study approach allowed me to observe the changes taking place at the micro-level in the life of an individual or family.

Out of these sixteen families, four identical income-generating projects were selected, with two in each district. One of the two projects in Arpara Upazila, under the administrative jurisdiction of Magura District, was located in Kuatpur village. It involved the simultaneous cultivation of *maila* (a special type of long grass used for weaving mat) and mat-making using the raw materials generated therein. The other project in the same upazila involved the gardening of organic vegetables in Kechuadubi village. Another two cases of income-generating activities under the GMC scheme were located in Nunua village, under Borlekha Upazila, Moulvibazar District; the projects involved *murtha* (a special mat plant) cultivation and mat-making, and organic vegetable gardening.

### **3.5.4 Key informant interviews.**

In this research, key informant interviews were carried out with specific people to get in-depth information regarding green microcredit. However, due to the limited number of people aware of the green microcredit concept and the fact that green microcredit is not part of mainstream microcredit programs, only two policymaker-level individuals were interviewed as key informants for this research. One of these interviews

was carried out with the Executive Director of CNRS to get his opinion and vision regarding green microcredit. Another interview was carried out with a government official from the Bangladesh Microcredit Regulatory Authority to procure information on the government's position on green microcredit and its plans regarding the potential promotion of such a concept.

### **3.5.5 Focus group discussion (FGD).**

FGD is now widely used in participatory research. It is a form of group interview that capitalizes on communication between a group of purposively selected, knowledgeable participants in order to generate data and information through group interaction (Kitzinger, 1995). This group process helps people to explore and clarify their views in ways that would be less accessible or not achievable through key informant interviews, thus helping to examine not only what people think but how they think and why they think that way (Kitzinger, 1995; Iowa State University Extension Services, 2004). Most authors agree that the main advantage of FGD is the purposeful use of group interactions and their socially appropriate communication in order to generate data and information (Merton *et al.*, 1990; Kitzinger, 1995; Morgan, 1996). It is this use of interaction which distinguishes focus groups from other groups (Merton *et al.*, 1990). This emphasis on interaction is reiterated by Morgan (1996), who goes on to identify the three major components of focus group research: (1) a method devoted to data collection, (2) interaction as a source of data, and (3) the active role of the researcher in facilitating group discussion for data collection. FGD is used as a tool to understand people's attitudes and opinions about different social issues, such as race relations or attitudes to "motion pictures" (Bogardus, 1926).

FGD as a qualitative technique was used to generate the villagers' views and perceptions of GMC as a means of livelihood and income generation. I carried out one FGD in each of the study areas with the GMC beneficiaries at an aggregate level. I carried out the FGDs following the completion of the surveys and case studies at the individual or household level. The FGDs also proved useful in the process of validation and triangulation. I found this technique very useful when I got conflicting information about certain issues at the individual or household level, and I felt the need to develop a consensus opinion or perception on certain issues. This technique proved particularly useful when I examined the stakeholders' opinions on the viability of GMC in promoting livelihoods and environmental sustainability.

### **3.6 Data analysis**

The research was carried out in two rural villages in two different districts; their characteristics represent two different agro-ecological zones. In the pursuit of field research, a voluminous amount of information was generated. For numerical information generated through administering the survey, I used basic arithmetical calculations to consolidate the quantitative findings. For each case study, I translated the recording into English and double-checked the content. For each set of questions asked during the focus group discussions, I took notes of the answers/responses and later systematically placed the findings where applicable to meet the objectives.

I took sufficient time to systematically organize the findings into different categories of knowledge. Each of the chapters of this thesis is comprised of the empirical set of data, respondents' perceptions and experiences, and my own observations as an

independent field researcher. I used photograph plates to strengthen my findings. I have maintained anonymity and confidentiality wherever deemed necessary; otherwise quotes have been generously used.

### **3.7 Research Limitations**

During my research, I confronted several research limitations in terms of data collection in the field and availability of secondary data. The most conspicuous limitation of this research was that during my field work the green microcredit projects were in their early stage and thus incomplete. At that time, the duration of the green microcredit program implementation was only few months. A complete assessment therefore could not be on the final outcome of the project. Moreover, only a limited number of operational green microcredit projects were available during my field study. These projects were located in two *upazilas* in two different socio-ecological and economic contexts; efforts to make generalization would require further in-depth study in other socio-ecological and economic contexts and with larger population coverage. Green microcredit programs are not institutionalized as the mainstream microcredits programs are; therefore only a limited number of MFIs and government organizations were contacted and interviewed. The concept of green or environmental-friendly microcredit is still at the germination stage, and much more needs to be observed as the programs extend horizontally in rural areas and vertically within the households.

# **Chapter 4**

## **Green Microcredit (GMC) to Households and the Effects on Livelihood**

### **4.1 Introduction**

The concept of green microcredit (GMC) is a very new tool being used and promoted by a handful of NGOs and microfinance institutions (MFIs) seeking to promote the conservation of natural resources and their sustainable use, while improving the living standard of some of the most marginalized people in Bangladesh. As was discussed in Chapter 2 of this thesis, GMC is very similar to the conventional microcredit insofar as it provides economically marginalized sectors of society with easy access to credit. Yet it is fundamentally different by providing people with not only the much-needed funds but also the training and skill sets to apply to their sustenance while conserving and sustainably using the natural resources. This chapter gives an overview of the mechanisms associated with conventional and green microcredit provisions to the people. Then it examines the similarities and dissimilarities of functions between the conventional and green microcredit programs and projects in the study areas. Finally, it highlights the profiles and characteristics of green microcredit borrowers and the impact green microcredit has had on their livelihoods.

In this section of the research, I expected to see a drastic change in the microcredit distribution and collection mechanism. I also anticipated seeing an increase in livelihood capital among the green microcredit borrowers in both locations.

## **4.2 Green Microcredit, Mechanism, and Status in Apará and Borlekha**

In this section of the thesis, I examine the perceptions of borrowers and lending organizations, particularly CNRS, about green microcredit (GMC). I also examine the operational mechanism of green microcredit and note how it differs from that of other conventional microcredit operations. Finally, I critically examine how the green microcredit programs are affecting the borrowers' livelihoods.

### **4.2.1 Green microcredit.**

The concept of green microcredit has been developed by C. Emdad Haque, professor at the University of Manitoba, and it is being tested by CNRS, a Bangladesh-based non-government organization. The philosophical framework behind green microcredit is that the credit will be provided to those categories of rural borrowers whose livelihoods depend on access to and the judicious use of the local natural resource base (Hall *et al.*, 2008). It differs substantially from the conventional forms of microcredit (Khandker, 2001; Hall *et al.*, 2008; Allet, 2011). These differences are presented in greater detail in Table 4.1. Green microcredit philosophy puts more emphasis on the income-generating activities of the people dependent on natural resources for their subsistence. The concept of green microcredit is based on the fact that small-scale credit, coupled with need-based skill development training, will help such people to sustainably manage their immediate ecosystem and the natural resource base (Van Elteren, 2007; Hall *et al.*, 2008; Rippey, 2009) rather than merely creating alternative income sources.

Table 4.1. *Comparison between Conventional and Green Microcredit Projects*

<b>Issues</b>	<b>Conventional Microcredit Projects</b>	<b>Green Microcredit Projects</b>	<b>Remarks</b>
<b>Development objective</b>	Enhance income-generation opportunities from any conventional source with or without compromising the values of the ecosystem	Enhance income-generation opportunities vis-a-vis maintaining the integrity of the immediate ecosystem and natural resources	Objectives are primarily set by lenders based on local perspectives.
<b>Impact on the ecosystem and natural resources</b>	May or may not impact.	Respectful to the values of integration and does not tend to impact the environment negatively.	For example, use of gear with a smaller mesh size will catch fish irrespective of size, thus threatening the biodiversity. Use of a net with appropriate legal mesh size will allow fry and juvenile to escape and survive.
<b>Operational mechanism</b>	Interest rate and group size may vary; more tuned to local entrepreneurship development and quick return of money.	Skill set of borrowers, market demand of the produce, and environmental integrity are given special considerations.	
<b>Amount of loan and interest rate</b>	Vary from 2,000-25,000 BDT	Vary from 10,000-100,000 BDT	Depending on the type of project, borrower's goodwill and years of membership, economic capability of the lending organization, number of earners and remittance earners in the family.
<b>Interest rate</b>	15-17% flat method; under declining method of payment, interest rate will go up to 30%/year.		
<b>Economic gain</b>	Usually quicker and higher	Time-consuming in nature as projects relate to biological growth and availability of the inputs	For example, a non-green borrower with a rickshaw project will be able to make money immediately; a borrower with organic fish culture project will have to wait for maturity of the fish for final sale.
<b>Payback time</b>	Weekly to fortnightly; usually no grace period over 10 months	Monthly; two months grace period, in a year	
<b>Long-term outcome</b>	Higher chance of income and livelihood stability	Moderate chance of income and relatively lengthy process	
<b>Knowledge</b>	No special knowledge set required	Pro-green orientation required	New set of gendered knowledge might evolve
<b>Limitations</b>	Lenders are more oriented towards quick disbursement and recovery of loans	Market and customers are not yet ready to accept higher quality organic produce	More research on developing micro- and macro-level marketing outlets and awareness of buyers are needed.

Sources: Data collected from the field, 2011.

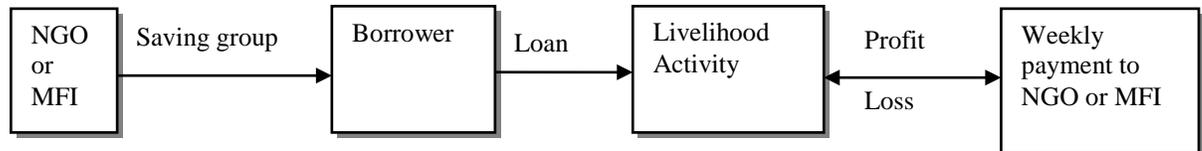
With the input of rural communities, CNRS (2009) has developed sets of criteria to determine which activities are green or not green. The criteria of green activities are the following:

- (i) cultivation without the use of any chemical fertilizer,
- (ii) cultivation without the use of chemical pesticides, herbicides, or other similar materials,
- (iii) sustainable yield of natural resources, so the borrower cannot overexploit the natural resources (e.g., *maila* and *murtha*) before they are fully mature and harvestable, and
- (iv) cultivation without introducing any exotic plant or animal for use as inputs in the projects.

#### **4.2.2 Green microcredit operational mechanism.**

It is well-known to development practitioners that the concept of microcredit was revolutionized and popularized by the Nobel laureate Professor Muhammad Yunus and his institution, the Grameen Bank (Bonomo & Kirchstein, 2010; Yeasmin, 2012). Conventional microcredit programs follow certain common rules. Microcredit borrowers have to become members of a savings group and they have to save some money in the group savings fund before they become eligible for the loan (Hulme, 2007). Notable here is that the lending institution develops a peer group within a community-based organization (CBO) in which each member of the village community is responsible for the activity of the others. These groups thus function to create a form of social pressure to maintain the group cohesion. The groups also transform into a form of social capital through their crystallized networks. Loans are given on the basis of the group leader's

recommendation, and the borrowers have to submit plans regarding the use of the loans. The group is liable for the individual borrower, and it is the responsibility of the group and the leader to make sure the weekly installments are repaid. The repayment starts from the week following the loan disbursement without any delay.



*Diagram 4.1. Conventional microcredit operational mechanism.*

The loan amount varies from BDT 2,000.00 to BDT 25,000.00 (\$1.00 USD = 82.00 BDT) depending on the organization, the borrower's relationship with the organization, and the borrower's social status. Borrowers do not have any individual accountability to the microcredit-providing organizations; rather, group accountability is at work here.

Green microcredit projects also operate on the same principle, but with some important changes in their approach, which are highlighted below (Diagram 4.2). In the initial stage of the green microcredit project, CNRS conducted public consultations, especially with the stakeholders (who depend on the natural resources and are potential users of the loan).

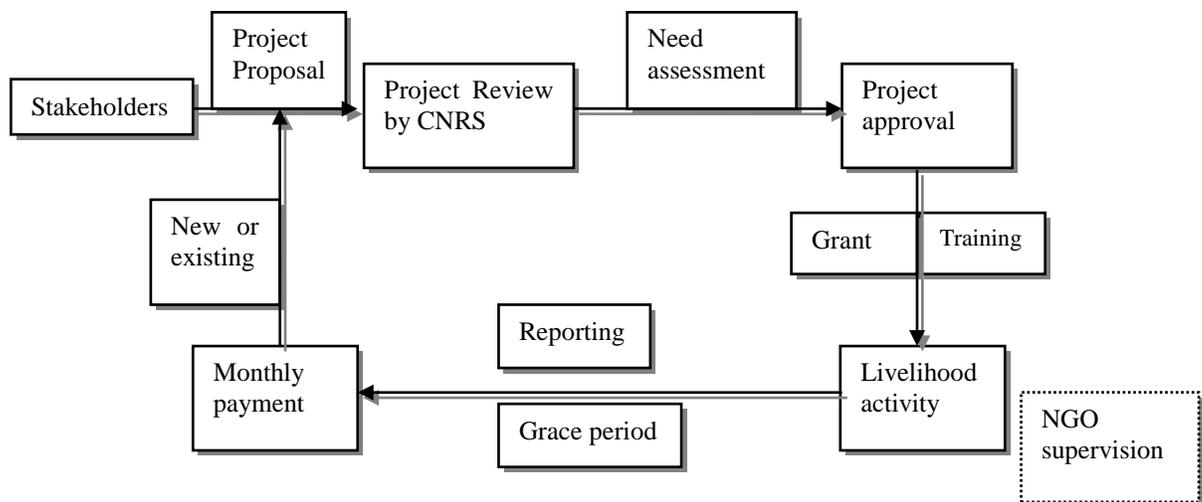


Diagram 4.2. Diagram of the green microcredit operational mechanism.

Based on the consultations, CNRS developed its criteria for accessing green microcredit, which help guide borrowers in developing their project proposals. CNRS reviews the projects to determine their feasibility. Along with the loan, CNRS provides training and a capital grant to help borrowers to start new projects. Most of the time, the green microcredit projects are aligned with the borrowers' existing knowledge, skills, and livelihoods; they are encouraged to transform their non-green projects to greener, eco-friendly projects. The size of CNRS's green microcredit loans varies from 10,000 to 15,000 BDT to individuals and up to 100,000 BDT to groups, which the borrowers have to pay back in 10 installments over a period of 12 months, with an additional 2 months as a grace period. Moreover, the green microcredit borrowers also receive other incentives to take up the project, such as agriculture equipment, water pumps, and a rickshaw van (Executive Director, CNRS, 2011, personal communication).

### **4.2.3 Green microcredit effects on local environment and livelihood.**

It takes time to see the effects of any new project on individuals, society, and the environment, and green microcredit projects are no exception. However, some changes in behaviour and perception were noticed among the green microcredit borrowers. The changes in livelihood cannot be measured only in terms of increased earning; rather changes can also be seen and measured in the ways the borrowers approach their livelihood. Such a change was evident when Dipti Rani (*Nunua, Borlekha*) said, “We don't harvest all the *murtha*. We leave the small ones and only harvest the mature ones.” Similarly, Bulu Rani (*Arpara*) said, “people look for my vegetable because it tastes good even though it is smaller in size.” People are seeing the impact of alternative sources of energy for cooking. The impact of biogas plant was well summarized by Shayedhul Islam (*Bhatoail*): “I did not have to cut trees or buy firewood last year and also can use the by-product from the plant as fertilizer. I am saving money from two sides.”

As was mentioned above, the effects of green microcredit on the environment cannot be seen in a short period of time. The cumulative effect of years of human exploitation can be seen today; similarly, to see the cumulative effects of green microcredit one needs careful monitoring over considerable time. However, the process of change and the symptoms of change can be seen from individual actions and perceptions. A comprehensive baseline study of the environment and natural resources in the study area was not available. The lending organization does not have a mechanism to monitor the changes every year in the study area. It may therefore be difficult to assess real changes that can be attributed solely to green microcredit. Nevertheless, they do

monitor the changes in the borrowers' livelihood activities, which can give some useful insights into the impact of green microcredit on the life of the local people. I will examine the effects of green microcredit on local livelihoods in the following section.



*Plates 4.1:* Biogas plant in Magura.



*Plates 4.2: Jute fermenting in Fatki River, Magura.*

### **4.3 Green Microcredit in Magura and Borlekha – People and Livelihood**

The livelihood patterns of the inhabitants of Magura and Borlekha are not very different from those of people in other parts of rural Bangladesh. Agriculture and fishing are the two most important livelihood practices in the two communities of the study. In this section, using the DFID sustainable livelihood model, I analyze the livelihood practices among the green microcredit borrowers.

### **4.3.1 Human capital.**

According to DFID (1999), to sustain a livelihood, an individual needs to possess some tangible and intangible capital. One intangible capital, apparently not immediately saleable, is human capital. Human capital refers to the individual's level of education, age, skills and training, leadership ability, health status, traditional knowledge, and experiences. A discussion on the education, age, skills, and leadership abilities of the borrowers is therefore pertinent here.

The education level among the green microcredit borrowers and their family was higher than that of the most other people in the region. Only the children below the age of 5 and a few elderly women were found to be illiterate in both the study areas. Literacy, in its functional sense, is meant to interpret one's ability to read, write, and do basic numerical calculations to the extent needed for simple market transactions and rural livelihoods (UNESCO, 2006). The young age groups had attained a certain level of primary education; some of them had the opportunity to attend high schools and local colleges. It is interesting to note that more girls than boys were being enrolled for education at schools and colleges. However, the males were more successful in completing their education (Figures 4.1 and 4.2). This can be attributed to the fact that parents tend to organize a social marriage for their girls within the age limits of 16-25 years. Moreover, even if females do not get married, they tend to stay home and help their mother with the daily household activities.

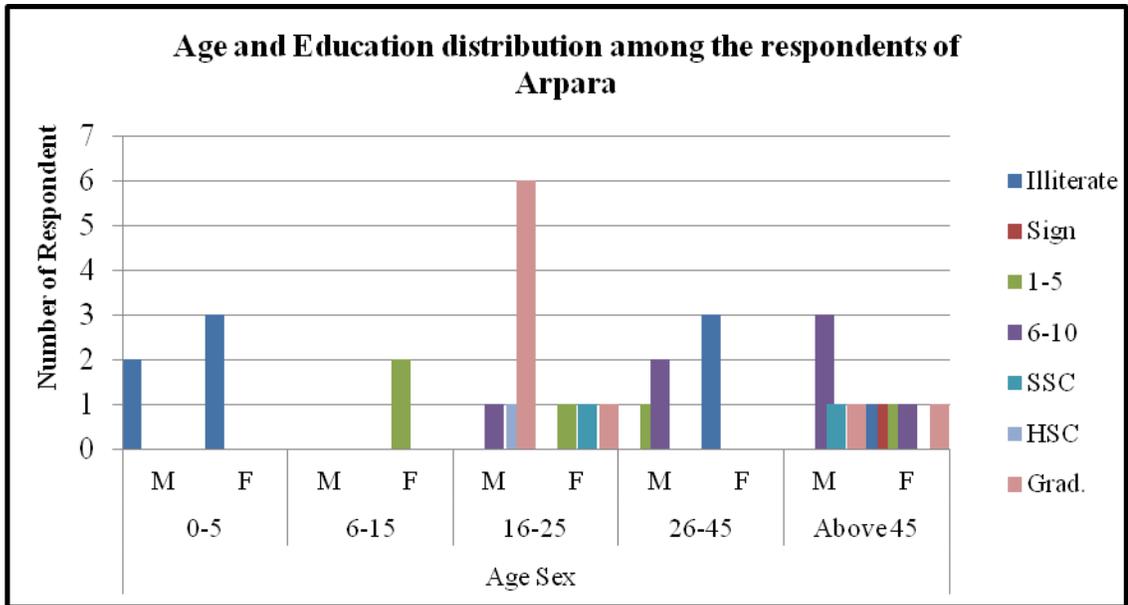


Figure 4.1. Education level among the green microcredit borrowers at Arpara.

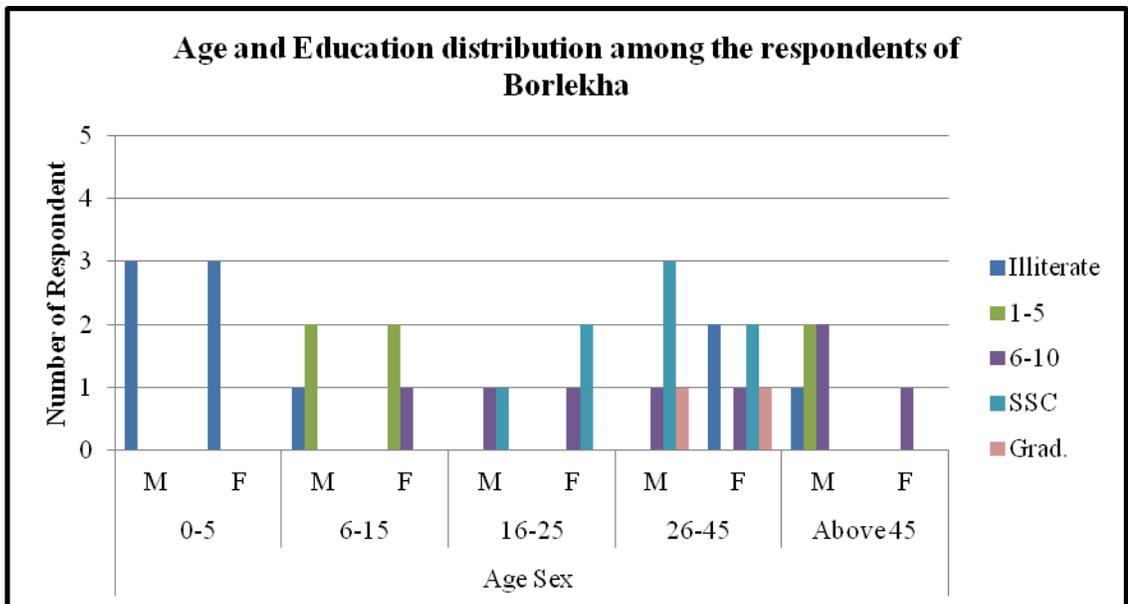


Figure 4.2. Education level among the green microcredit borrowers at Borlekha.

In examining the Borlekha and Arpara cases more closely, I found that females in Arpara had a higher level of education than those in Borlekha. This interesting difference can be attributed to the fact that Borlekha has traditionally been a more conservative and patriarchal society, where females are not encouraged to attend school or take part in

livelihood activities other than household work (Uddin, 2011). Even though societal values seemed to be changing to some extent, as one of the elderly female respondent asserted:

When I was young, I did not go to school at all, but I was outgoing and have gained wide ranging experiences...Today people respect me for that and come for my advice, which would have never happened in the past...No one would have come to a lady for any kind of advice...So things are slowly changing.

The pace of change was found to be much slower in Borlekha than Arpara; the people in the latter community were found to be more liberal and eager to respond positively to social changes such as the education of females.

As the Chinese proverb says, “give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime.” According to DFID (1999), individuals with various types of livelihood skills are more able to support themselves and cope with economic shocks and natural disasters than those without any or only limited skills. CNRS’s green microcredit program not only provides credit to individuals but also trains them on how to use such credit by investing in sectors that support natural resource conservation and promote environmental-friendly economic activities.

Figures 4.3 and 4.4 reveal the type of training provided by CNRS to its green microcredit borrowers. It is interesting to note that according to the borrowers both in Arpara and in Borlekha (45% and 50% respectively), livestock-rearing and vegetable gardening are the thrust areas for the training and capital grants that CNRS provides to its borrowers even though CNRS official papers indicate that all of the respondents have attended natural resource conservation and management training sessions before

receiving loans. When asked to list the things that they were taught, none of the respondents from Borlekha stated that they had been trained on the significance of conserving and sustaining the natural resources.

In contrast, 22% of the respondents in Arpara mentioned receiving training related to natural resources conservation from CNRS. The people's failure in Borlekha to mention such training could be attributed to the possibility that they already knew about the significance of conserving their natural resources base. They would therefore not consider the training imparted to them by CNRS as significant, but rather redundant. Also, several organizations have implemented natural resource management programs in the region, and it is quite possible that the locals took such training from other NGOs and did not participate in CNRS's training sessions. In essence, more people in Arpara mentioned the usefulness of the training in the sustainable uses of natural resources compared to Borlekha. Further, this finding could also indicate that the people in Arpara have retained more from the CNRS training than the people in Borlekha.

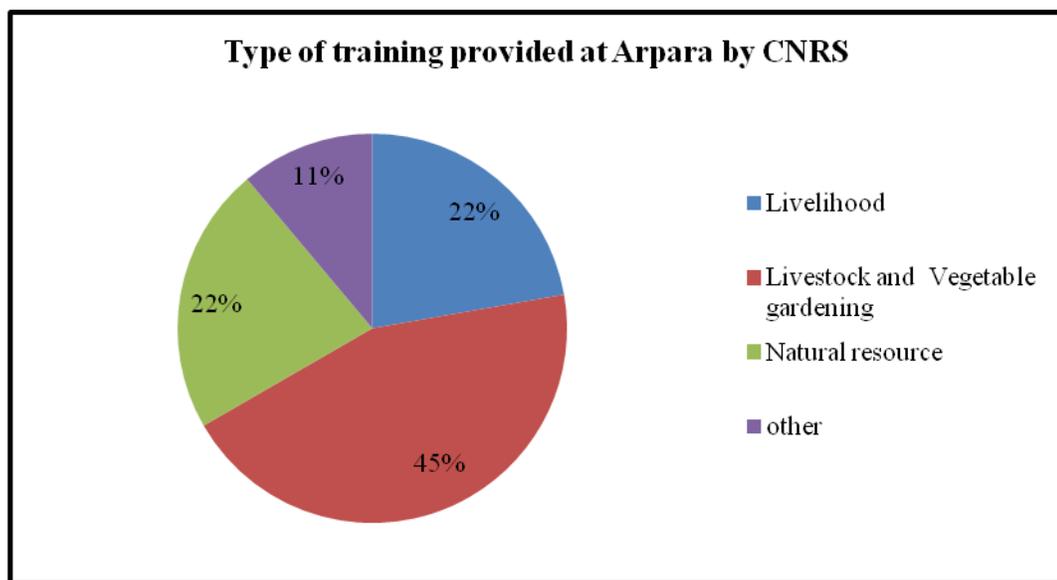


Figure 4.3. Training provided among the green microcredit borrowers at Arpara.

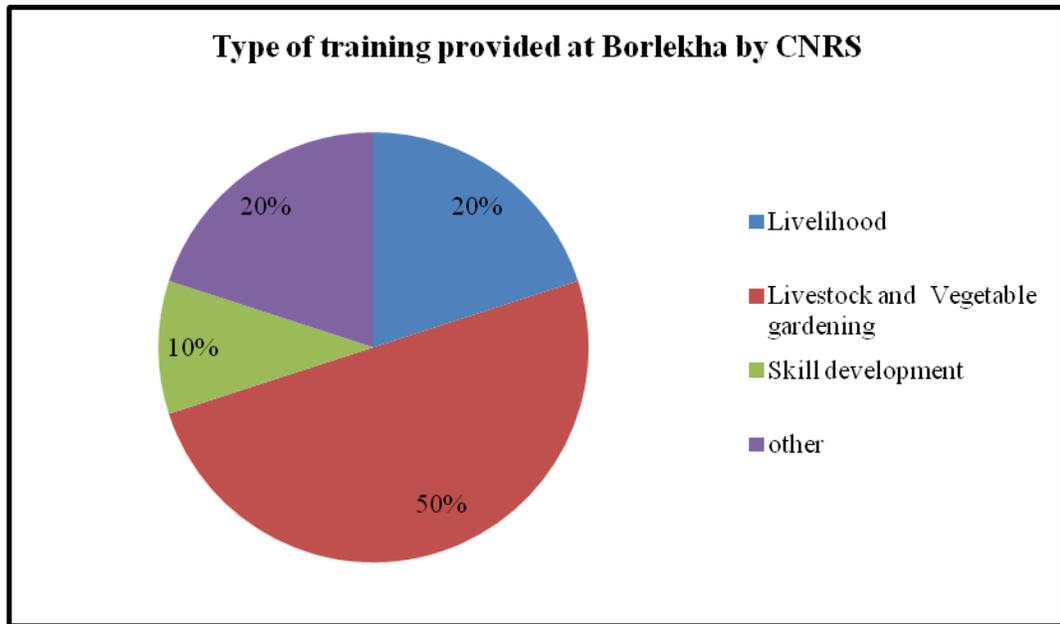


Figure 4.4. Training provided among the green microcredit borrowers at Borlekha.

Both in Arpara and Borlekha, the respondents did not mention anything about the health awareness program or training, and only 10% of the respondents in Borlekha talked about the skill development training. Such a pattern could have resulted if the same group of people had received various types of training and if there had been no new recruitments for training. It was further observed that only one individual in Arpara had diversified his/her livelihood from traditional fishing and working as a security guard to start growing indigenous tree saplings in a nursery and establish a vegetable garden. I observed that people only changed their existing natural resources use patterns to achieve their sustenance; they never completely moved away from their previous livelihood sources.

#### 4.3.2 Social capital.

As was mentioned in Chapter 2, social capital refers to a complex relationship between societies and individuals that shapes their behaviour and livelihood objectives

(Pennar, 1997; DFID, 1999). Social capital helps individuals to make right livelihood choices and assists them in coping with numerous stressors (Pennar, 1997). Among the borrowers of microcredit, social capital can be measured by looking at their membership in organizations, their relationships with family members, friends and kin, their relationships with local power holders, and their own social status, including their religion and caste (Deb, 2009).

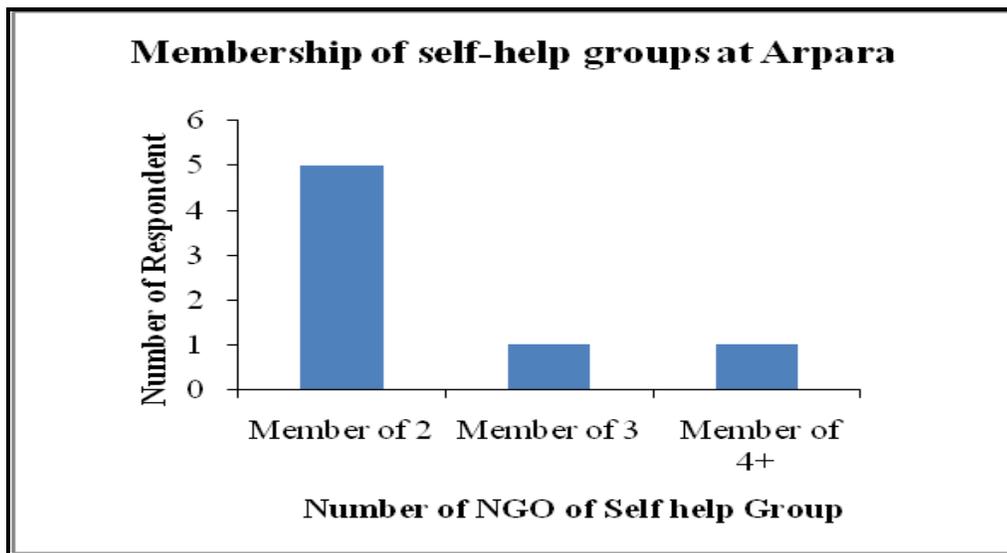


Figure 4.5. Multiple memberships at Arpara.



Figure 4.6. Multiple memberships at Borlekha.

My findings revealed that the borrowers of green microcredit were heterogeneous in terms of their social status, religion, and caste in both locations. All of them had some form of membership or linkage (direct or indirect) with the social elites. The respondents were not only members of community-based organizations (CBOs) organized by CNRS; some were members of multiple NGOs or MFIs. Figures 4.5 and 4.6 represent such information from the respondents in Arpara and Borlekha.

In Arpara, 72% of the respondents were members of more than one NGO or MFI, and they had taken loans from them. In addition, 28% of the respondents had taken loans from more than three to five NGOs or MFIs. On the one hand, these multiple memberships helped the borrowers to get more money when they needed it to support their livelihoods. These NGOs have replaced the traditional moneylenders and given the poor access to a formal system of banking. On the other hand, borrowing from multiple sources often forces people who are economically marginalized to fall into a dependency trap through getting involved in a borrowing “treadmill.” In the long run, such a mechanism could create a vicious cycle of poverty. Due to the fact that the structured formal sources of lending do not directly consider humanitarian dimensions, they lack the merits of the local moneylenders or relatives as sources of borrowing who often provide moral and logistical support to families in crises. However, dedicated NGOs are not only a good source for the villagers to borrow money; they are a good platform for the minorities to have their voices heard. Their ability to communicate directly with government institutions and the social elites has given NGOs a special social space that used to be held primarily by the local elites.

### 4.3.3 Natural capital.

In the rural areas, dependence on natural resources for income-generating activities is higher than in industrial areas. The two study areas are ecologically distinct and offer diverse natural resource bases for the local people to sustain their livelihoods. Figure 4.7 shows the types of natural resources on which they rely, as identified by the respondents. As revealed in the diagram, fish is the most important natural resource in Arpara, followed by shells. Interestingly, the respondents did not mention one of the most important natural resources, locally known as *maila*. This omission may have been influenced by the fact that *maila* grows abundantly along the riverbanks, that is, in common property areas, and without any human care. In the Borlekha area, a wide variety of fish, water lilies, and shells are available. The respondents there similarly failed to comprehend the significance of *murtha* as a natural resource. However, these two major plants, *murtha* and *maila*, are among the most significant sources of livelihoods in the areas, especially for women involved in mat-making.

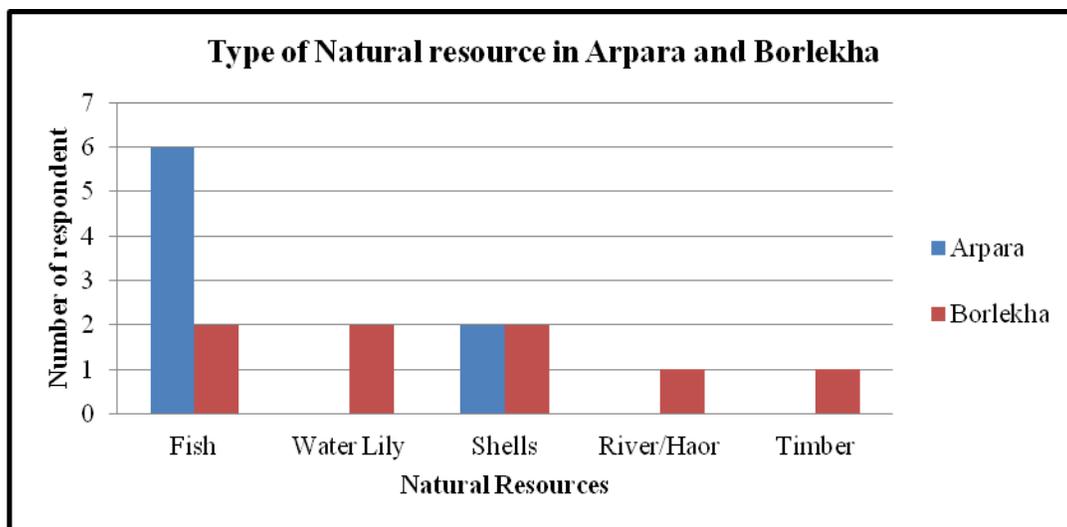


Figure 4.7. Natural resources in Arpara and Borlekha.

One of the major concerns embodied in the livelihood framework relates to the right and access to use and manage natural resources. Because the natural resources are different in the two study areas, the local management systems are also different.

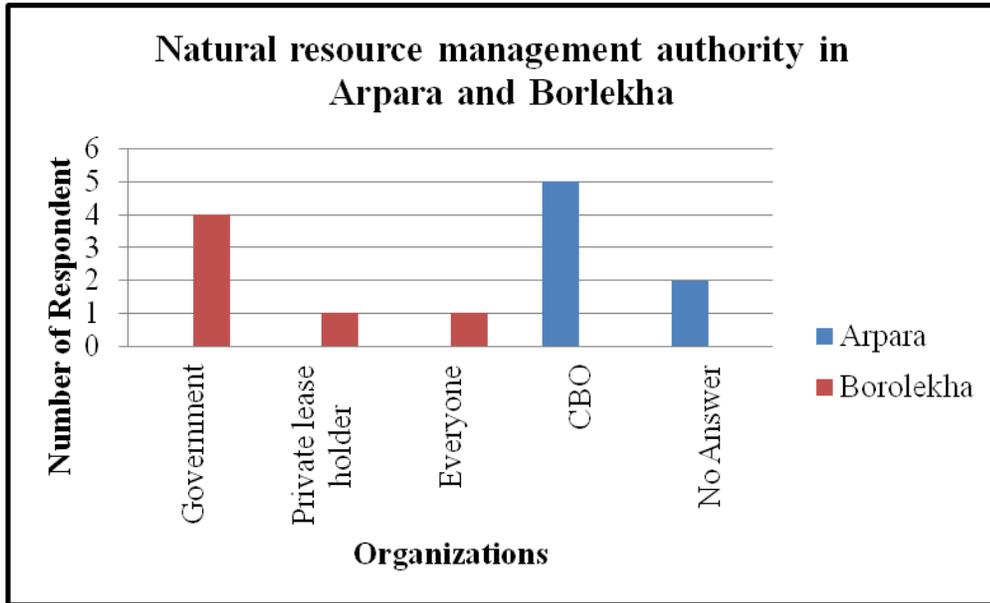


Figure 4.8. Natural resource management authorities in Arpara and Borlekha.

In the Borlekha area, the main natural resources are the natural wetland system, *haor*, and the aquatic biodiversity available there, which include different species of fish, aquatic plants such as *murtha* and water lily, and molluscs. According to 67% of the respondents in Borlekha, these resources are managed by the government, yet 16% think they are managed privately because though the natural wetland system is officially state-owned, some *beel* (deep productive depressions) are leased out to wealthy elites. However, 17% think the wetlands are managed by everyone who depends on it because poor fishers widely enjoy access to wider water bodies for harvesting aquatic resources, including fish, especially during the monsoon period. Moreover, since *haor* is a common property resource, no one pays taxes to the government to access the water bodies that are not leased out. On the other hand, around 71% of the respondents in Arpara think that the

natural resources are controlled by CBOs. This perception is due to the fact that the major natural resource in this area is the Fotki River. The river and the surrounding wetlands are managed by the CBOs to insure secure and proper breeding ground of fish; and also other natural resources are also found by the river and its surrounding area.

It is important to note that the people's perceptions of who owns the resources have a significant impact on how they are used and managed, as well as how the people respond to various management regimens. It was observed that if people perceived that a resource belonged to them or the community, they tended to be more careful in resource extraction and use. However, if they felt that it was an open-access resource, they tended to considerably overuse and overharvest it. This corroborates the earlier findings of Uddin (2011) in the same region, where he found that resource extraction increased as property rights over the resources decreased.

#### **4.3.4 Physical capital.**

Physical capital usually refers to the infrastructure of the areas (DFID, 1999). In Bangladesh, seasonality determines the modes of communication and transportation. The impacts of seasonal variation can be seen clearly in Borlekha, located in the north-eastern part of the country. The area is seasonally flooded and remains underwater for 3 to 4 months every year. During the monsoon period, the only mode of transportation is by boat. The main roads in the area are mostly paved, but the rural roads linking the households in the villages are not. The unpaved roads become unusable during monsoon and flood season. The same scenario can be seen in Arpara. Most of the major roads are paved but internal rural roads are not. However, Arpara is ecological and geologically different from Borlekha. In terms of geographical elevation, Arpara is higher than

Borlekha. Flooding occurs in Arpara only if the Fatki River overflows, and it does not stay flooded for a long period of time.

Both the Borlekha and Arpara communities have good access to schools and colleges for education and to *haats* (local weekly market) and bazaars for trade and commerce. Moreover, to maximize the use of the physical infrastructure for enhancing local livelihoods, CNRS has given 2 three-wheelers, locally known as *Korimon/Nasimon*, to borrower groups in both the locations. Each vehicle is shared by all the borrowers of a group to transport their goods.

#### 4.3.5 Financial capital.

According to the DFID livelihood framework (1999), there are two types of financial capital. The first type includes assets such as land, gold, cash money, and other valuable items that the people own. The second type is the right to financial services. Among the green microcredit borrowers in both the study areas, their major assets are their land and domestic animals; 100% of the respondents in Borlekha and 90% in Arpara have some form of land assets. The land is mostly used for agriculture or to build houses. Land was found to be a good and secure form of financial asset for the rural villagers.

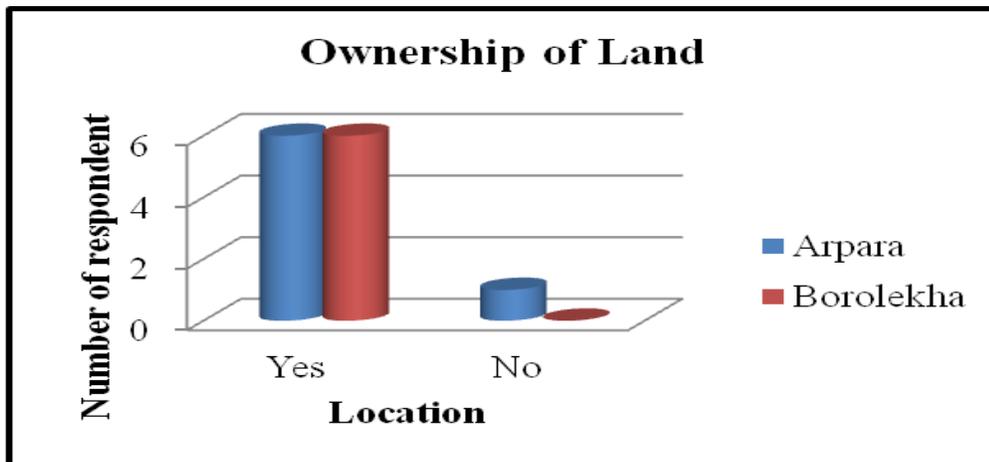


Figure 4.9. Ownership of land among the green microcredit borrowers.

The second form of financial capital included banks, NGOs, MFIs, CBOs, and self-help groups among the formal financial institutions, and local moneylenders, relatives, and sometimes wholesalers among the informal financial institutions. Due to the expansion of the microcredit organizations in different parts of the country, it has become easier for the poor to get credit.

Regarding access to green microcredit, it is not as easily available as other forms of microcredit. CNRS is the only organization that has started to provide such loans as a pilot project. CNRS itself has over 2,000 members in Borlekha and over 500 members in Arpara, yet only 16 families from the two locations have been given green microcredit. One of the strengths of the green microcredit program is that it provides people with a considerably higher loan, ranging from 10,000 to 100,000 BDT to individuals or groups. This larger amount allows the scaling up of other types of microcredit enterprises.

In terms of delivery, the loan is given not only to the female member of the family, as in the conventional microcredit system. Rather, it is given to the household and both the husband and wife have to sign for the loan and are equally liable for the repayment. During the loan application process, both the husband and wife have to agree on the same project and the family is obliged to use the loan for the specified type of economic activity. Women enjoy equal rights in using the loan, according to the borrowing principles of CNRS. If the loan is given to a group, all the members have to agree to the project on the basis of consensus and put their signatures on the documents.

## 4.4 Summary

In this chapter, the findings of my field study from the two sites – Borlekha and Arpara – were analyzed. In the first section, the analysis revealed key differences between conventional and green microcredit in the priorities for selecting the economic sector, lending amount, and lending period. Green microcredit programs are also more concerned with nature conservation than profit maximization.

In my observation, one of the positive aspects of green microcredit projects is that borrowers are not induced to undertake new livelihood practices, which might require new sets of skills, clients, and marketing mechanisms. Instead, green microcredit projects demand changes in the borrowers' existing microcredit-based activities so that they can cope quickly with the required sets of knowledge, practices, and marketing structures to be environmental friendly.

The impacts of green microcredit on the borrowers' livelihoods are not as profound as other recent livelihood changes, such as the addition of foreign remittances to the household. However, the changes resulting from green microcredit can be seen in the livelihood capital, in particular, the human capital and social capital. The borrowers have become more aware of the surrounding natural resources and the natural components and threats to their sustainability. In effect, according to the green microcredit borrowers at the general community level, the other local members are learning from the green microcredit borrowers and taking initiative to practice environmental-friendly livelihoods.

# **Chapter 5**

## **Conventional Microcredit vs. Green Microcredit Programs: Comparative Perspectives**

### **5.1 Introduction**

In this chapter, I examine and compare the livelihood patterns of the green and the conventional microcredit borrowers by adopting the DFID (1999) livelihood framework. First, I examine how the two distinct microcredit programs (i.e., green and conventional) and their *modus operandi* influence different borrowers. Second, I assess the effects of green microcredit on borrowers from both the study sites.

From this section of the research, I expected to see improvements and changes in the green microcredit borrowers' livelihood practices and in their use of the natural resources. Moreover, I expected to see a higher level of livelihood capital among the green microcredit borrowers than the conventional microcredit borrowers.

### **5.2 Livelihood Status of the Green Microcredit and Conventional Microcredit Borrowers in Arpara and Borlekha: A Comparison**

The DFID (1999) livelihood framework puts forward five types of capital (used synonymously with the word *assets* in this chapter) that assist an individual/household directly in making a livelihood or play supportive roles in sustaining livelihood functions. Using this framework, I examine some of the forms of livelihood capital of the

conventional and green microcredit borrowers in the Arpara and Borlekha villages to obtain some fundamental information on the changes (positive or negative) taking place among the borrowers' livelihood patterns. In this section, I examine the human capital, social capital, natural capital, and financial capital. I purposefully exclude the physical capital because in both the study areas the borrowers have similar patterns of rural physical infrastructure, with identical levels of accessibility.

### **5.2.1 Human capital.**

In its simplest interpretation, human capital refers to people's ability to perform and think or decide, as well as their level of knowledge, maturity, education, training, and other such "software" (i.e., experience/intellectual ability) and "hardware" (i.e., physical strength for manual labour) characteristics (DFID, 1999). In the context of rural livelihoods, the most important human capital for poor families includes the male-female composition, their physical conditions and workability, and the overall age distribution of the family members. According to ILO's Worst Forms of Child Labour Convention No. 182, Article 2 (1999), any boy or girl aged below 18 is considered a child and is not eligible to work in all life sectors. However, in rural Bangladesh, children over 5 years of age do help, directly or indirectly, in the household and farming/fishing activities. They are not likely to be as productive as the adults. Among the GMC respondents and their family members in both sites, many are skewed in the age group of 16-45. The family dependency ratio is higher, varying from 60-220%<sup>3</sup>; some families have a higher number of children under 15, while others have several elderly members. The sharp variation between the number of earners and unproductive/unemployed, the lower participation

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<sup>3</sup> Family Dependency Ratio is calculated as: (Number of people aged 0-14) + Those aged over 65 and over/number of people between 15-64\*100

rate in the productive labour market, and the prevalent low scope of rural employment not only result in a higher dependency ratio, but also a disequilibrium in earners-dependents, which negatively impacts family well-being (Figure 5.1). In my study areas, the borrowers of green microcredit represent older age groups (usually around 40 years and above) than the conventional microcredit borrowers. This implies that younger people (usually <40 years) take more conventional microcredit to invest in business.

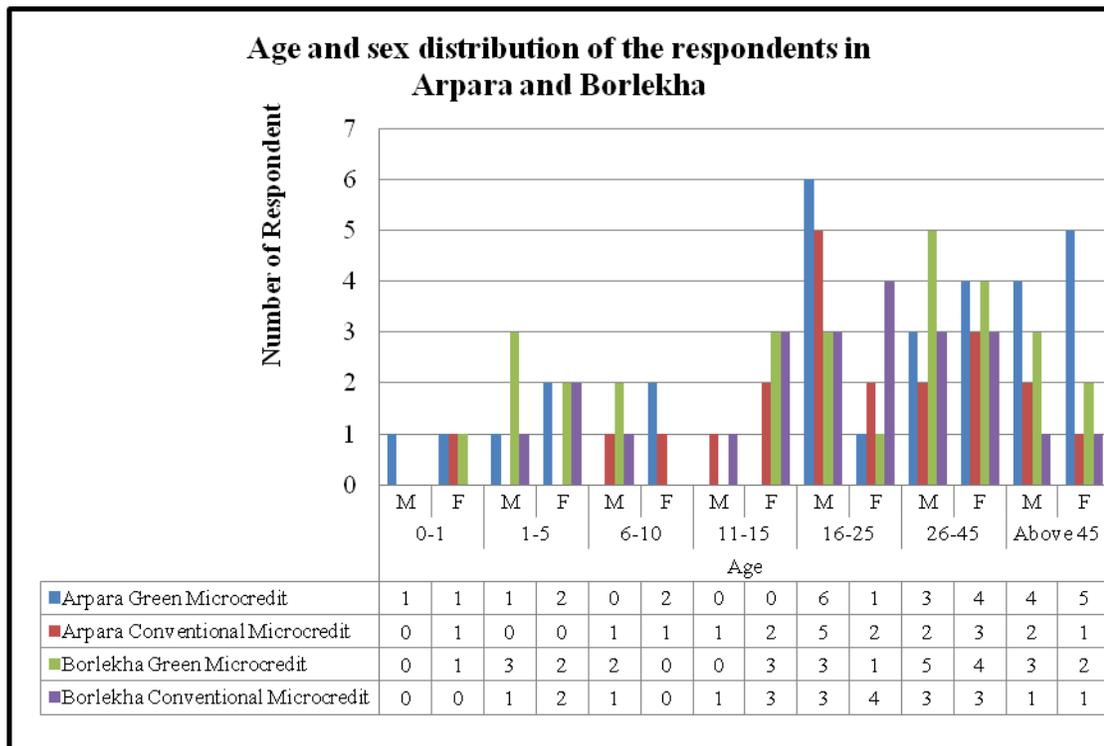


Figure 5.1. Demographic characteristics of the borrowers.

Another human capital is the level of education. It has been hypothesized that the more educated people are, the more they are able to diversify their livelihoods. Furthermore, new opportunities open up for the educated people. As a result, many of the younger generations, who are relatively educated, tend to move away from the traditional forms of livelihood. Many of the borrowers also do not want their children to take up the

traditional family livelihood practices. They want their children to be educated and migrate to larger urban areas. As expressed by one borrower expressed,

I could not finish school due to the liberation war, and after the war I had to work in the field with my family to support ourselves. But I want my sons to be educated and have a better life. They are in the big city now for better education. I will support them even if I have to work hard. (Shahidul Islam, Arpara)

Figure 5.2 shows that more males and females are completing high school and going on to further study, which reflects the change in the borrowers' attitude. Although it appears that a large number of the respondents and their family members are illiterate or can only sign, this does not reflect the overall scenario because most of the illiterate are skewed in the older generation or below 5 years of age. An increasing number of female students are completing up to the 12th grade of formal school education.

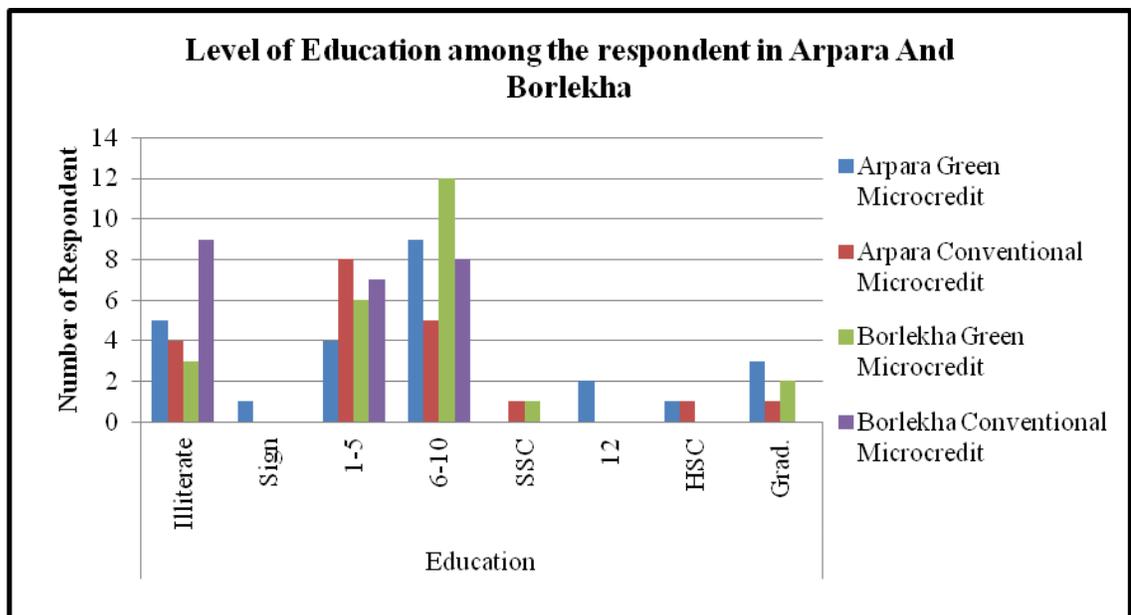


Figure 5.2. Education level of the borrowers.

In the context of rural livelihoods, another significant human capital is the level of skill, which helps people to earn reputations locally, resulting in a higher chance of

employability, a higher level of income, and a better livelihood. In order to develop the human capital among the microcredit borrowers and to enable them to maximize the benefits from the loan, all the NGOs and MFIs provide some kind of training to their borrowers. Some of the training is conducted in formal settings through a combination of conceptual and practical demonstrations, site visits, and interviews with successful farmers. Other activities are carried out in informal settings, such as during weekly/biweekly installment collection meetings (field manager, Arpara, CNRS).

Figure 5.3 and Figure 5.4 reveal the number of respondents who received different kinds of training; 90% of the green microcredit respondents from Borlekha and Arpara stated that they had received some form of loan-specific training. Others did not consider the training lessons to be significant because they had engaged in such activities for a long time, and many had inherited indigenous knowledge concerning certain trades from their surroundings<sup>4</sup>. However, in the conventional microcredit scheme, 90% of the Arpara borrowers said they had not received any training from CNRS. I talked with the local branch manager of CNRS about this issue of providing loans without sufficiently orienting the receivers. I was told that they did not have enough funds to bear the cost of any training session.

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<sup>4</sup> As part of the green microcredit project and also as part of ongoing other CNRS administered projects the villagers have received training. They have been given training both on accounting and bookkeeping and on greening of microcredit. However, the respondents were unable to clearly distinguish between the different types of trainings; therefore they reported that no training was given to them by CNRS.

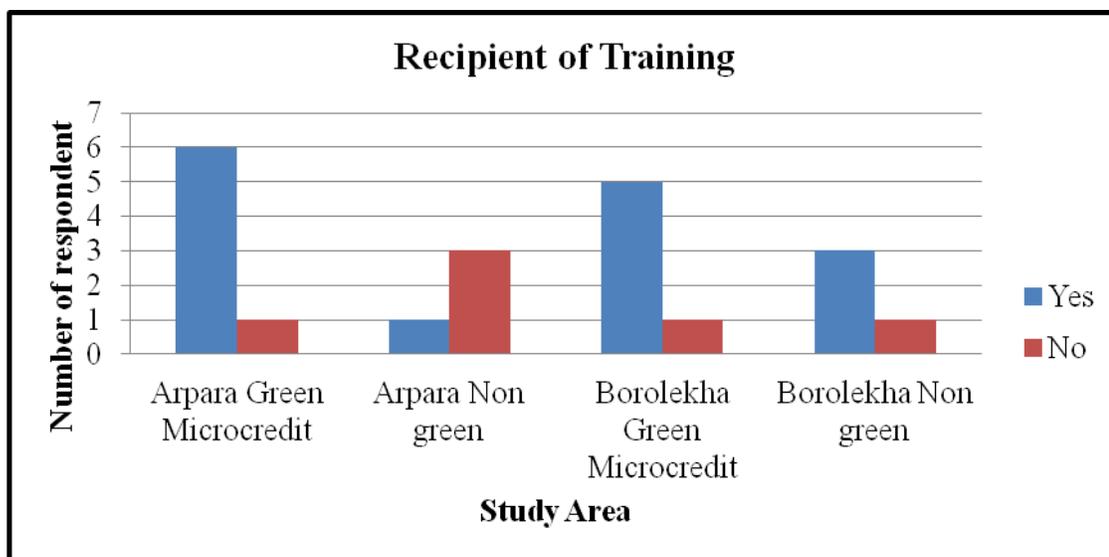


Figure 5.3. Recipients of training among the conventional and green microcredit borrowers.

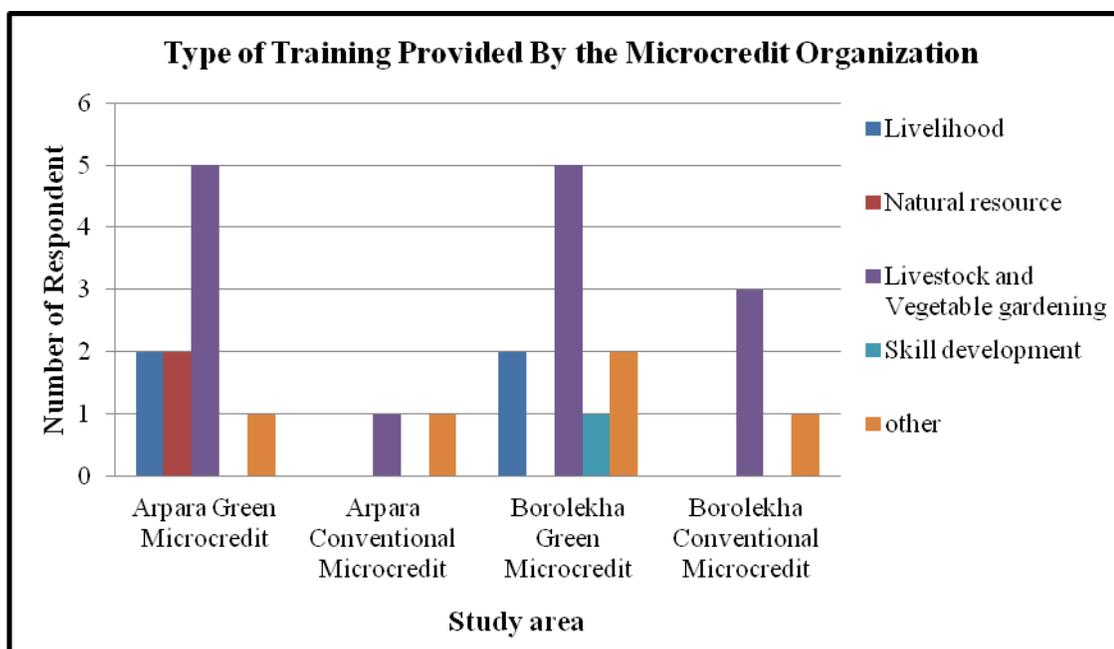


Figure 5.4. Type of training provided by the microcredit organization for green and conventional microcredit borrowers.

In Borlekha, some of the conventional microcredit borrowers mentioned that they had received some training from CNRS. This was due to the fact that in the Borlekha area CNRS had undertaken a wetland management, flood response, and flood preparedness program through which different groups had been formed and trained since the early

1990s. The borrowers had taken such training under the DFID-funded Community-Based Fishery Management (CBFM) I and II projects and later the Coastal and Wetland Biodiversity Management Project (CWBMP) project. In my view, as was indicated in Chapter 4, the majority of the borrowers of the green as well as the conventional microcredit programs in both the locations, in fact, had received training on income-generating activities, such as livestock rearing, vegetable gardening, and nurseries, but the people considered the training redundant rather than increasing their knowledge and awareness. It is interesting to note that none of the conventional microcredit borrowers had ever received any training on natural resource management and conservation. Ironically, though CNRS is a nature conservation-oriented NGO, it did not emphasize training or lessons related to local natural resource management issues among the conventional microcredit borrowers.

### **5.2.2 Social capital.**

Social capital implies the individual's linkages in the society through kinship, race, ethnicity, group membership, and political affiliation (DFID, 1999; Deb, 2009). Such social ties play vital roles in determining one's livelihood strategy, food security, and coping mechanism (Ali, 2005). In rural Bangladesh, one of the major sources of social capital for the poor is linked with their relationships with social elites and political leaders since these largely influence their access to macro-institutional supports for farming, post-disaster events, and access to schemes such as vulnerable-group feeding, post-disaster housing support, and food-for-work programs. Locally, poor people tend to look for opportunities from extended kinships framed in the form of self-help groups, CBOs, NGOs, and MFIs because the informal and non-governmental sectors have been

more successful in quickly reaching the doorsteps of the rural poor compared to the formal government sectors.

In both the locations, all the conventional credit and GMC borrowers were also members of one or more NGOs/MFIs. Interestingly, GMC borrowers in Arpara tended to borrow money from more than two NGOs/MFIs, while Borlekha GMC borrowers demonstrated restricted borrowing from two NGOs/MFIs. A similar tendency was also observed among the conventional microcredit borrowers in both locations (see Figure 5.5). This could be due to the fact that the Arpara inhabitants enjoyed three rotational crops of paddy cultivation and fishing seasons; hence, the farmers and the businessmen required operational capital at three different times tuned to the farming/fishing practices. In the case of Borlekha, given the nature of the low-lying flood terrain, I observed only one season for the cultivation of paddy and one season for fishing available to the locals. Traditionally, the farmers, fishers, and small businessmen of Borlekha would take single loans from the local moneylenders or social elites, who charged higher interest rates and imposed conditions in favour of the lenders. Since the emergence of the NGOs and MFIs, borrowers have had the freedom to get loans at much lower interest rates compared to those of moneylenders.

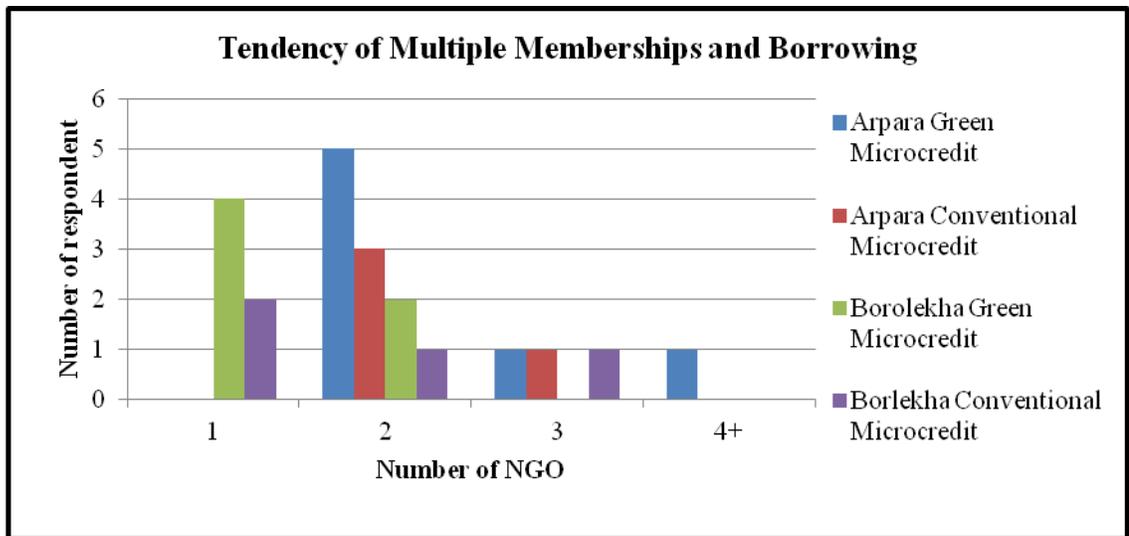


Figure 5.5. Tendency of multiple memberships and borrowing.

Respondents from among both the conventional microcredit and green microcredit borrowers are linked with the same NGOs but in my observation, they do not have the same levels of social capital. The GMC borrowers are more socially active and have more direct communication with the government and NGO officials for their projects. In addition, they can access these officials with their concerns and raise their voices against any injustice. As was mentioned earlier, most of the GMC members are part of different CBOs organized by CNRS in their respective locations, and they are responsible for the management of the natural resources in the areas. Their memberships and responsibilities provide them with opportunities to create and enhance their social capital.

However, at times, this enhanced social capital among the GMC borrowers tended to isolate them from the higher social elites or politically powerful persons. One such example was evident from the activism of CBOs organized by CNRS; group members reported to the local administrative authority that a local political leader had illegally put up *Bara jal* (banned gear made of high density synthetic nets designed to catch fish of all

sizes irrespective of maturity) along fish migration routes during the spawning season in the nearby *beel*. Such illegal fixing of the net by the influential political leader would jeopardize fish migration, the availability of fish in the area, and the interests of the common people who depended on the resource base. The government authority took action promptly and removed the trap from the *beel*. The CNRS branch manager mentioned that since the creation of the CBOs, local political leaders never worked with poor CBO group members or helped them in their efforts for the conservation of natural resources. In Borlekha, a GMC borrower and local activist, Jhorna Chakraborti, is well-known and respected by the local elites, and they discuss matters with her before taking any decision on behalf of the local people.

I observed that the conventional microcredit borrowers were seemingly reluctant to undertake conservation activities, and they were more concerned with the performance of the loan and the business they were doing. They might have had a stronger social network but they did not have the vertical linkages to access the government channels.

### **5.2.3 Natural capital.**

In this thesis, natural capital refers to the natural resources (such as rivers, *haor*, large water bodies, and other aquatic and terrestrial resources) which can be managed or cultivated in their natural setting using human interventions to achieve higher production. Natural capital also includes the right to use and manage these resources. As was mentioned in Chapter 4, natural resource dependency is comparatively higher in rural than urban settings. In my understanding, the natural resource dependency in rural settings can be generally divided into two broad categories, natural resource dependency

for livelihood-generating activities and natural resource dependency for daily consumption.

Natural resource dependency for livelihood generation relates to the extraction, processing, and use of natural resources, such as *maila* and *murtha* for mat-making, catching fish for sale in the market, and the extraction of any other forms of aquatic or terrestrial natural resources for sale or for the production of goods. The local people in both the study areas often indicated that due to the emergence of microcredit, the ever-decreasing natural resource base, and the restricted use of natural resources due to privatization, a significant number of the rural marginalized population had shifted from natural resource-based livelihoods to other forms of livelihood. From the field survey it was clear that none of the conventional microcredit borrowers was directly or indirectly dependent on natural resources for their livelihoods. On the other hand, all the green microcredit borrowers were directly or indirectly dependent on natural resource use for their primary or secondary occupation. Furthermore, the green microcredit borrowers could identify some of the common natural resources in the area (Figure 4.7), but none of the conventional microcredit borrowers could identify any of them.

It is understood that historically a significant number of the rural population depended on the open-access natural resources for their daily use. Major sources of protein and vitamins come from the open-access natural resources, such as fish found in the rivers, *haor*, and *beels*, and from different types of leafy vegetable that grow in the fallow land by the water bodies (Minkin *et. al.*, 1992). While talking with the conventional microcredit borrowers (in the sample), it was apparent that they were completely dependent on the local market for their daily food and nutrition. This shift

could be because they did not want to continue with the traditional practices or might be too engaged in their daily business. However, in my observation during my field work in Arpara, many of the local people (mostly conventional microcredit borrowers) were busy fishing from the river as the heavy monsoon rain came down. On the other hand, the green microcredit borrowers were still engaged in open-access natural resource extraction for their daily use as well as to sustain their livelihoods.

The green microcredit borrowers in both locations had different opinions regarding the issues of ownership, right to use, and right to manage natural resources (Figure 4.8). On the other hand, the conventional microcredit borrowers were oblivious to these issues.

#### **5.2.4 Financial capital.**

Financial capital represents the possession and accessibility of individuals to cash. Financial capital can be measured by two different yardsticks. First, it is indicated by the regular flow of cash in the household. This income can be earned from wages, business activities, remittances, rent, and similar sources. Any irregular or probability-based income such as lotteries and gambling are not considered financial capital. Second, financial capital can be ingrained in different types of physical assets such as land, houses, jewelry, bank deposits, or household valuable items that can be liquidated immediately (DFID, 1999). In rural Bangladesh, such assets help individuals and households to cope with financial shocks and any other adverse situations (Deb, 2009). In this section, I examine the type of profession, ownership of land, use of land, and other assets which help the individuals and households to achieve their livelihood goals. My

observations apply to both Arpara and Borlekha villages among the conventional and green microcredit borrowers.

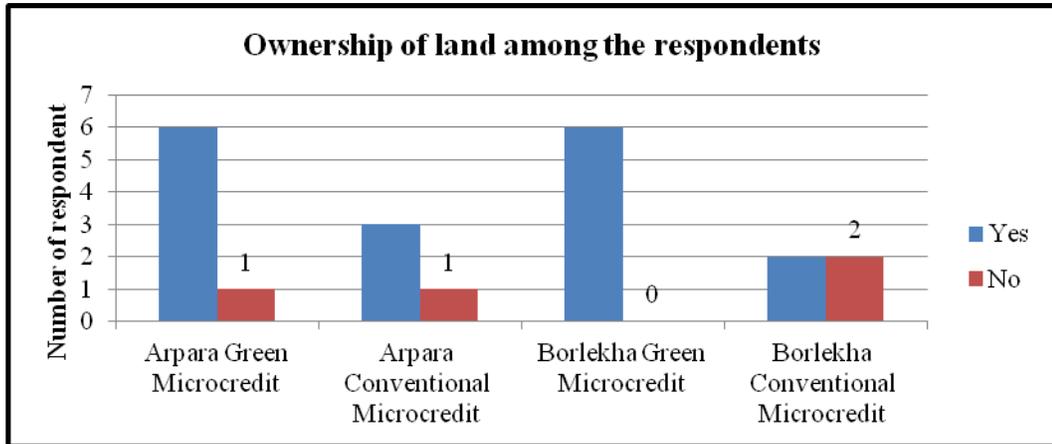


Figure 5.6. Ownership of land among the respondents.

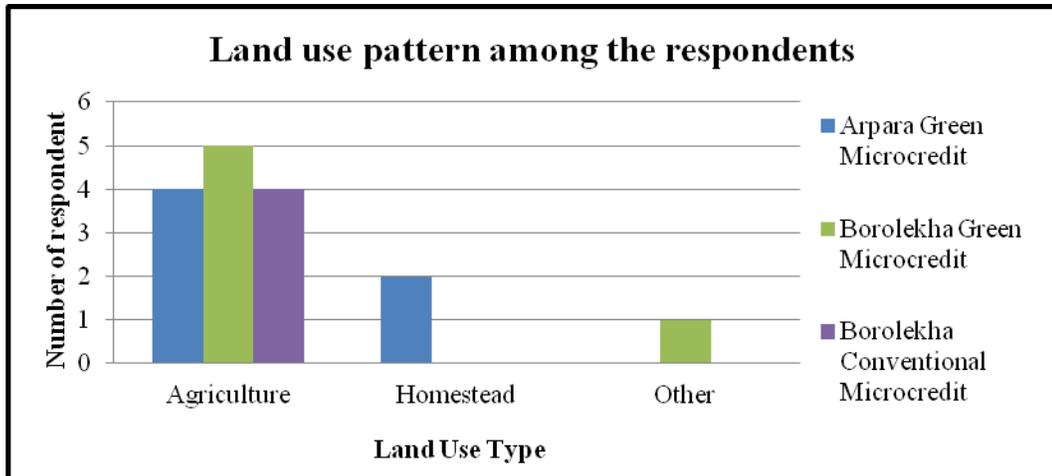


Figure 5.7. Land use pattern among the respondents.

Figures 5.6 and 5.7 reveal the land ownership and use patterns among the GMC and the conventional microcredit borrowers. In Arpara, 90% of the respondents under both the GMC and conventional microcredit schemes had some land areas either for agriculture practices or for homesteads. The remaining 10% were landless respondents

who lived on government *khas* land<sup>5</sup>. In most cases, the landless groups leased land for farming practices. Noticeably, all (100%) the GMC respondents in Borlekha had some amount of land for terrestrial farming and homesteads, and only 50% of the conventional microcredit borrowers had land, either for farming or for homesteads. Among the landholders, almost everyone used the land for productive agriculture purposes, and only very few used land for non-productive purposes such as houses, kitchen construction, or keeping the land fallow.

One of the significant parameters of financial capital is securing income from multiple sources. Among the respondents in Borlekha and Arpara (both green and conventional microcredit borrowers), 57% were directly dependent on agriculture for their primary source of income, while only 5% were dependent on agriculture for their secondary source of income. Moreover, 14% of the respondents were dependent on fishing as their primary occupation, and 10% depended on handicraft-making with raw materials derived from natural resources; only 9% of the respondents were dependent on fishing as their secondary occupation, and 19% were dependent on natural resource-based handicraft-making in both the locations (Figures 5.8 and 5.9). The higher incidence of engagement in handicraft-making as a secondary occupation can be attributed to the fact that during the monsoon season, most of the inhabitants can hardly be engaged in any income-earning activities due to environmental constraints. Interestingly, 29% of the respondents did not have any secondary occupation.

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<sup>5</sup> Land formed through the slow process of siltation or government-owned land; it is not seriously managed by the government land administration and is often regarded as common property. Sometimes, there is evidence of serious violence between the landless groups and the powerful political elites over possession of such new land.

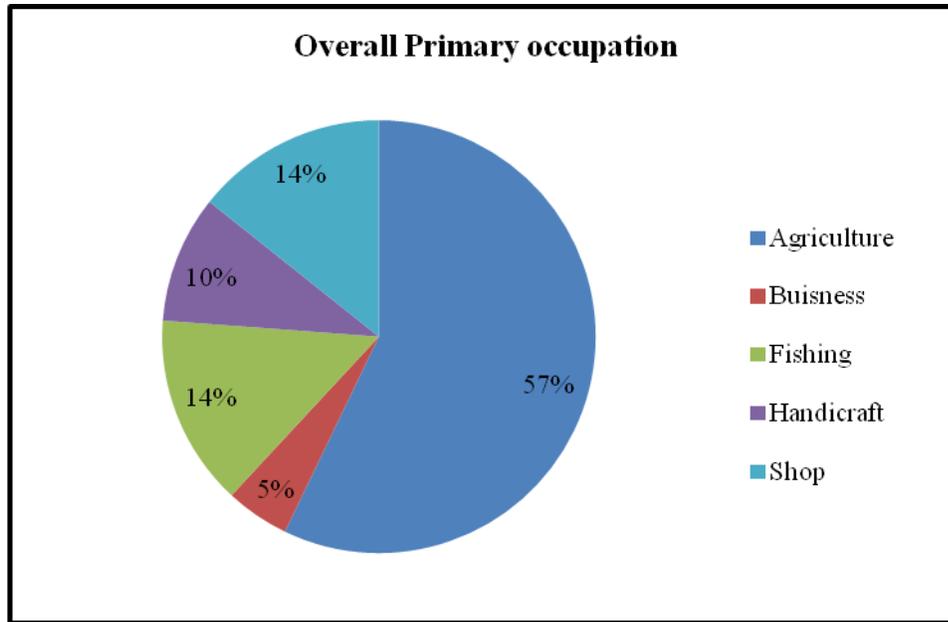


Figure 5.8. Overall primary occupation.

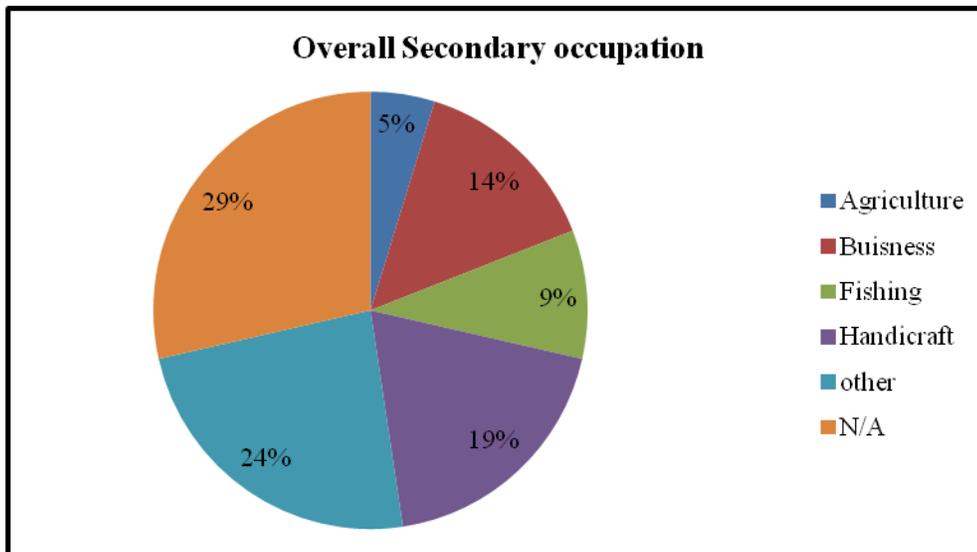


Figure 5.9. Overall secondary occupation.

Upon examining the distribution of primary and secondary occupations among the conventional and GMC borrowers, it is evident that most of the conventional microcredit borrowers from Borlekha were engaged in agricultural activities as a primary occupation and were involved in non-agro-based activities as a secondary occupation. However, in

Arpara, all the respondents were engaged in non-agro-based primary and secondary occupations (Figure 5.11).

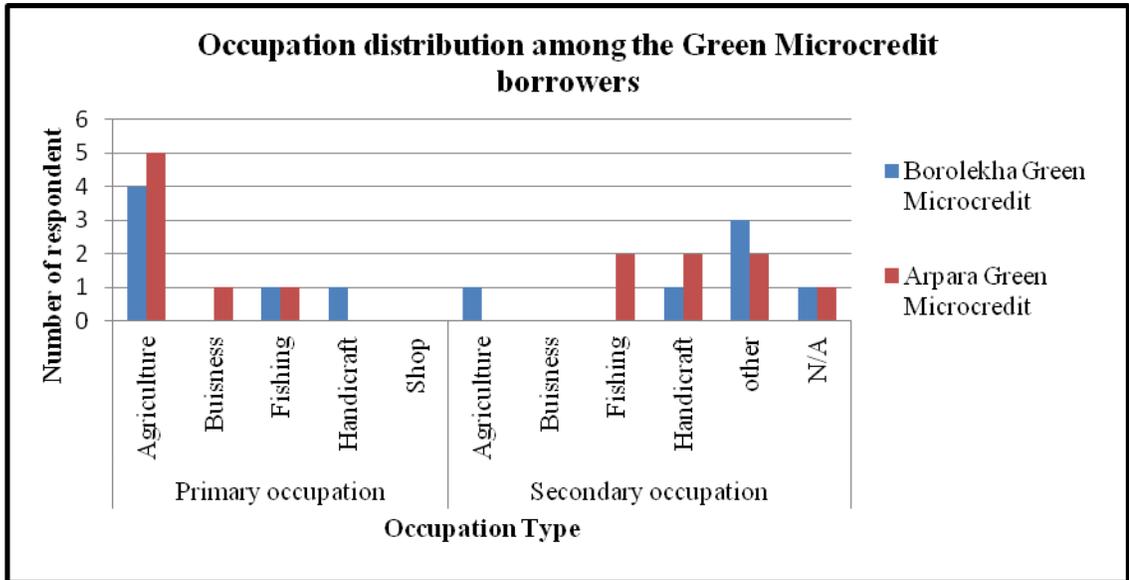


Figure 5.10. Occupation distribution among the green microcredit borrowers.

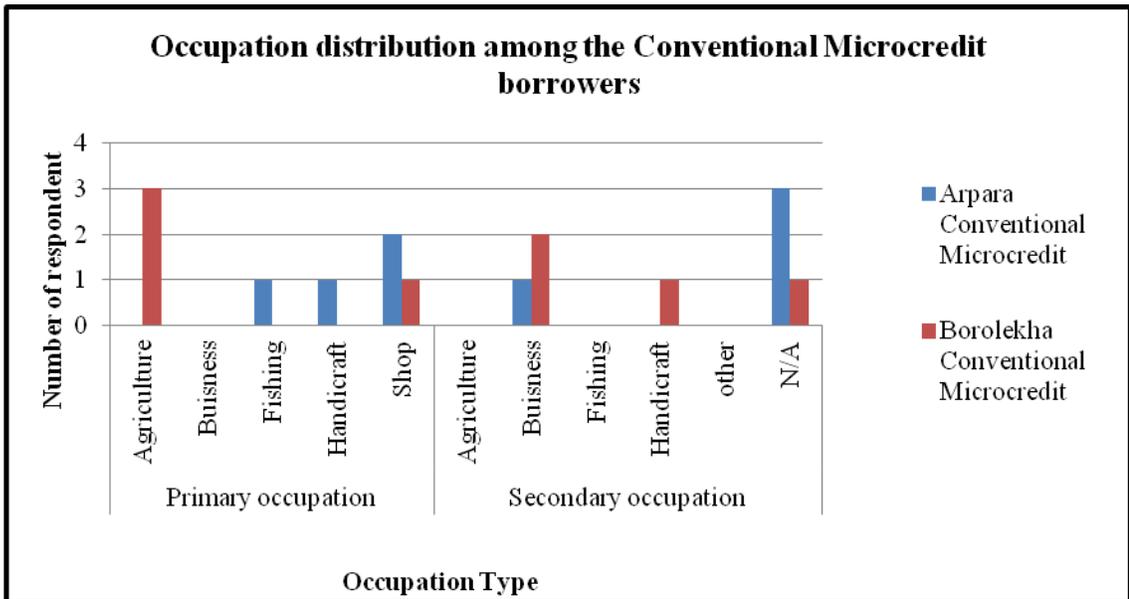


Figure 5.11. Occupation distribution among the conventional microcredit borrowers.

The majority of the GMC borrowers in both the locations were engaged in agriculture as their primary occupation and had diverse non-agro-based secondary occupations. This provided the GMC borrowers an opportunity to diversify their

occupations, thus reducing the inherent pressure on the natural resources while developing a solid financial capital base (Figure 5.10).

### **5.3 Use of Microcredit by the Conventional Microcredit Borrowers and Green Microcredit Borrowers**

Although green microcredit functions under the larger operational framework of general microcredit, it has specific mechanisms built into it to attain its desired goal, taking care of the local environment and natural resources while making a profit from the venture. One of the major mechanisms of green microcredit lending institutions is to monitor and provide advice to borrowers in a timely manner so that they use the loan in an environmental-friendly and economically productive way. Earlier studies on microcredit revealed that people use microcredit for different purposes including productive activities, such as livelihood generation, and non-productive activities, such as covering the cost of a marriage ceremony, the construction of houses, and the treatment of diseases (Uddin, 2011).

In both the study areas, among the conventional microcredit and green microcredit borrowers, I observed that the majority of the loans were taken to enhance livelihood activities (Figure 5.12). The livelihood activities included a host of areas such as agriculture, fishing, vegetable gardening, mat-making, and running seasonal or small businesses. They also received microcredit loans to pay for medical treatments and to construct new houses or repair existing houses. These are considered non-productive sectors of investment by microcredit organizations. However, from the livelihood well-being and ill-being points of consideration, illness is one of the major hindrances in

achieving livelihood goals. Hence, households do not hesitate to desperately spend loan money to get back to the physical normalcy of family members (DFID, 1999; Deb, 2009).

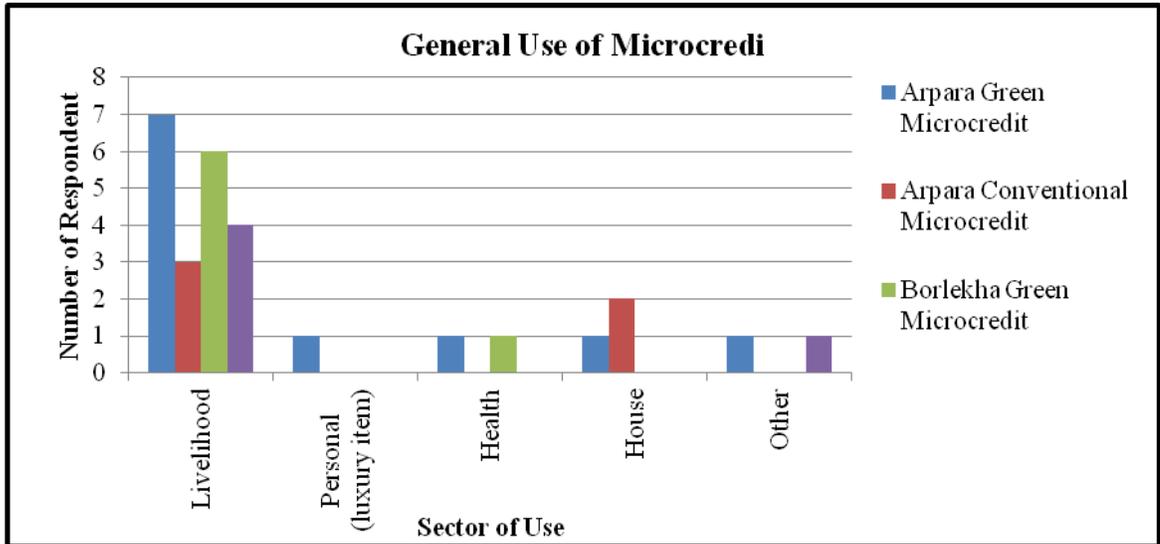


Figure 5.12. Use of microcredit among the borrowers.

Although the majority of the borrowers used microcredit for livelihood purposes, only the borrowers under green microcredit schemes used the loans for environmental-friendly or green livelihood purposes. Such green livelihood initiatives included agriculture, fishing, aquaculture, vegetable gardening, mat-making, nurseries, and domestic animal rearing. Interestingly, among the conventional microcredit respondents, none was oriented to use the loan in environmental-friendly livelihood activity. This had the direct and indirect implication in that, though none of the conventional microcredit borrowers was directly dependent on the natural resource base for their livelihood activities, nevertheless they were indirectly dependent on different natural resources such as water and soil, which they could overexploit or pollute out of ignorance (Figure 5.13). In Arpara and Borlekha, most of the green microcredit respondents invested the loans in rearing domestic animals, followed by vegetable gardening, purchasing fishing gear, and

paddy cultivation. Some of these investments directly enhanced the livelihoods using the green microcredit whereas others did not.

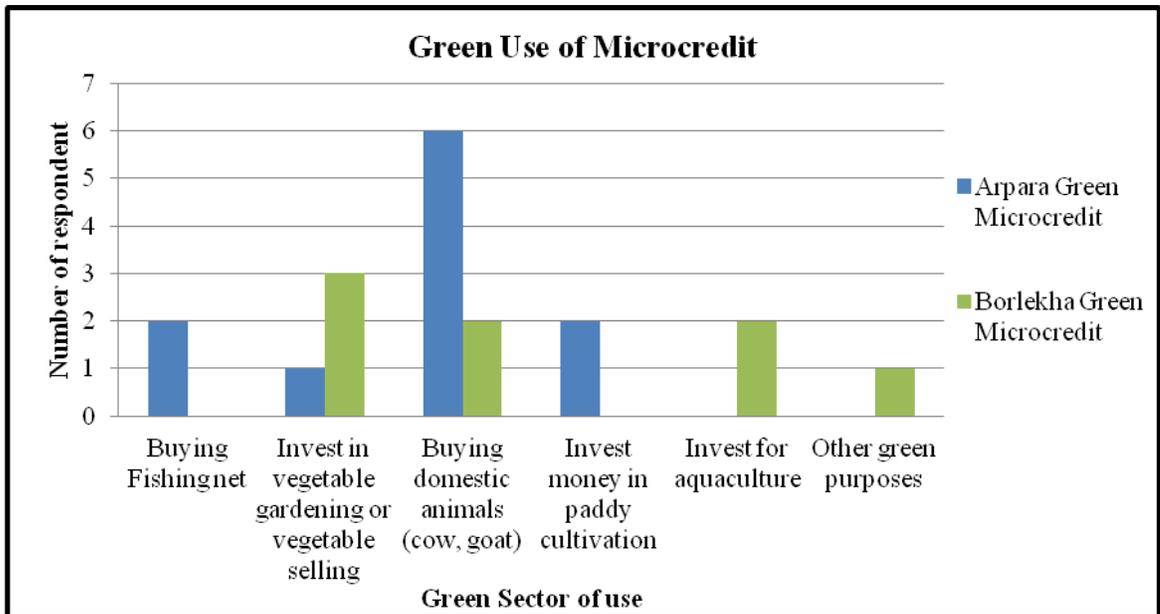


Figure 5.13. Green use of microcredit.

## Overview of conventional vs. green microcredit: mechanism and livelihood capital.

It is clear that there are certain differences in terms of operational activity and livelihood capital among the conventional and green microcredit borrowers. These differences are encapsulated in the data presented in Table 5.1.

Table 5.1. *Conventional vs. Green Microcredit: Mechanism and Livelihood Capital*

<b>Issues</b>	<b>Conventional Microcredit</b>	<b>Green Microcredit</b>
<b>Loan amount</b>	Starts at Tk. 3,000.00 and goes up in every new loan from the same MFI up to 10,000.00.	Starts at Tk. 10,000.00 for individuals up to Tk. 100,000.00 for groups. The consecutive loan amount goes down or stays the same.
<b>Repayment time</b>	Weekly, from the day of disbursement; within 46 to 48 weeks.	Monthly, with two-month grace period, within 12 months.
<b>Interest rate</b>	17% flat method, under declining method of payment.	
<b>Support and assistance</b>	Some training is provided depending on availability of funds.	Training is provided before the project is given. One-time technical assistance is also given to get the project started.
<b>Overall goal</b>	To generate revenue and poverty reduction.	To protect natural resource base, sustainable use of natural resource, generate revenue, and reduce poverty.
<b>Motivation factor</b>	To generate revenue to repay the loan and get a bigger loan.	To protect the environment, create awareness, and get out of poverty.
<b>Human Capital</b>	No special effort to develop human capital	Special effort given to develop human capital by giving training.
<b>Social Capital</b>	Creates some linkages with the peer groups and NGO/MFI	Creates multilevel linkages in the society with peer groups, government officials, and NGO/MFI
<b>Natural Capital</b>	Mostly not dependent on natural resource for sustenance and not concerned about natural resource	Dependent on natural resource for sustenance, creates access, and manages natural resources
<b>Physical Capital</b>	Equal access to all local and national infrastructure for both types of credit borrowers.	
<b>Financial Capital</b>	Ownership of land is common, main forms of income-generating activity is agriculture and business	Ownership of land is common, main forms of income-generating activity are agriculture and natural resource-based activity.
<b>Uses</b>	Productive and non-productive sector	Productive green sector only

## **5.4 Case Study of Green Microcredit Projects in Two Study Areas**

Green microcredit is a new concept, grounded on the larger microcredit concept. CNRS has implemented this concept as a pilot project in two locations in Bangladesh, with financial support from CIDA, through the Association of Universities and Colleges of Canada (AUCC) and the University of Manitoba, Canada. From these two locations, I selected five green microcredit projects as case study units to obtain insights on livelihood changes among the green microcredit borrowers.

### **5.4.1 Case 1 - Bulu Rani Biswas.**

She is 45, a widow in Chiki Nagar, Arpara, in Magura District. She and her son live in the same house with her daughter-in-law and grandchildren. Her husband passed away around 12 years ago. Bulu Rani was left with a child and no potential source of income. Some of her relatives helped her for a short period of time. Her husband was a fisherman by profession; he did not have any land for farming. They had a small homestead area with a house by the river; it was acquired by the government for embankment construction. They did not get any compensation from the government. Following the construction of the embankment, she constructed a house on the embankment and now they live there. She became a member of Grameen Bank 10 years ago. She received a small loan to buy fishing gear for fishing in the nearby river. She was earning barely enough for the mere survival of the family. She became a member of a CNRS-based CBO at the same time. Then she worked with CNRS in the nature conservation project. Along with seasonal fishing activities and working with CNRS, she took more loans and started to carry out small-scale terrestrial agriculture on leased-in

land. She also took care of two cows that are owned by other people<sup>6</sup>. She received training from CNRS and other NGOs on poultry-rearing and vegetable gardening. She is also a member of the Village Defence Party (VDP) and works as a guard on a part-time basis.

She has been with CNRS for 7 to 8 years. When CNRS started the green microcredit project in 2009, the Director of CNRS offered her the GMC loan. In relative terms compared to other microcredit loans, it was a large amount of 20,000 BDT. He explained to her that it would be given only to people who were willing to do organic agriculture. She took it as a challenge and thought, “If I can do this and make [a] profit, people will follow me and start doing organic agriculture, and I will be a role model for the country” (Bulu Rani).

She did not know at the beginning that she would be receiving some extra incentives to do this project. She took 20 *shotok* (decimals) of land as a lease. She set up her nursery in one corner and used the rest of the land for organic vegetable cultivation. In her nursery she grows saplings of only indigenous species of fruit, timber, and medicinal plants. In the first year of vegetable gardening, she planted different leafy vegetables such as spinach, *lal shak* (a red leafy vegetable), and other fast-growing crops. She also made her own organic fertilizer by composting. The yield was good and she found that there was a demand for organic vegetables: “People buy my vegetable even if it is one BDT more than that vegetable grown in a non-organic way, and they don't buy from anyone else's produce” (Bulu Rani).

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<sup>6</sup> People living in the upland of the floodplain usually send their cattle to someone residing in the low-lying areas, where grass is abundant on common grazing areas. Before the flood appears in the low-lying areas, those cattle are sent back to owner in the upland areas. This seasonal cow-rearing is a source of income for poor families of low-lying land areas in the *haor*.

The only problem she is facing now is that there are more weeds in the garden and she has to work harder to get a good harvest. She is already planning for next season. She wants to try out high-value crops. She explained, “Some other people are producing high-yielding varieties and making money. I can do this too” (Bulu Rani).

From my field observation, it was clear that she had to work hard to make her livelihood. Figure 5.14 provides a calendar depicting her seasonal activities. She works throughout the year in either the vegetable garden or the nursery. Sometimes she works in two places at the same time. Her son also helps her in the work besides his regular job of fishing. He takes the produce to the local market where he sells it.



*Plates 5.1:* Bulu Rani in front of her nursery.



Plates 5.2: Bulu Rani is cultivating paddy in between vegetable production seasons.

Member Names	Occupation	J	F	M	A	M	J	J	A	S	O	N	D
Bhulu Rani Biswas	Vegetable gardening	■	■	■	■					■	■	■	■
	Nursery	■	■	■	■	■	■	■	■	■	■	■	■
	Paddy					■	■	■	■				
	VDP guard									■			
Taposh Biswas	Work in vegetable gardening, nursery, and paddy	■	■	■	■	■	■	■	■	■	■	■	■
	Fishing	■	■	■	■				■	■	■	■	■

Figure 5.14. Seasonal work calendar for Bhulu Rani.

Bulu Rani plans to continue with her vegetable gardening and nursery projects, even if she does not get any new loan from CNRS for green schemes. She thinks she can earn more and improve her livelihood status. A breakdown of her earnings for the years

2011 and 2012 is shown in Annex 4 (Source: CNRS). In her opinion, people will be motivated by looking at her project and her success. In fact, now people are willing to take green microcredit loans due to the incentives that CNRS provides, such as technical assistance and training. Without the incentives, people might be reluctant to take the loans as green projects require more care and labour, as well as a continuous commitment to the environment.

#### **5.4.2 Case 2 - Anita Rani Das.**

Anita Rani Das is 35 and comes from Pabijuri village, Borlekha Upzila, under Moulvibazar District. She is married to Ranjit Das (50), with two daughters aged fourteen and two respectively, and two sons aged eight and one respectively. The older daughter and son attend school. Anita's husband is a farmer by profession. They have 60 *shotok* (decimals) of land including homestead areas. Her husband generally cultivates paddy during October to March and during the monsoon. She makes mats using a locally available plant, *murtha*. She and her husband have been members of CBOs for the last 10 years and have worked with CNRS on different projects since then. She has taken loans from CNRS and BRAC to invest in agriculture production and for medical treatment.

She knew about the green microcredit project from the CNRS branch manager. She received the green microcredit loan in a group of five for cow-rearing, vegetable gardening, and making dairy products. She was given the vegetable gardening component of the bigger project. In order to implement the project, she was given 20,000 BDT as a loan and a rickshaw van, water pump (shallow pump), and other agricultural equipment as technical support.

With the loan money, she cultivated tomatoes, spinach, and other vegetables. High-yielding and quick-growing varieties of seed were procured from the local market. . In preparing the land for farming, she used organic fertilizers including cow dung and other organic materials. However, she also used chemical fertilizer like urea (a source of nitrogen), TSP (Triple Superphosphate, a source of phosphorus), and Murate of potash for better growth and harvest along with the organic fertilizer. When asked about pest control, she explained,

I had no option but to use insecticide to protect my crop, although we know that the cultivation should be done organically and no chemical fertilizer and pesticide can be used. But the irony is that pests from neighbouring fields find our organic field as safe haven for them as we did not use any chemicals initially. But ultimately, I have to make money out of the project as I have to pay back. So I have to protect my crop, and I don't see any harm in using insecticide to protect my produce.

<b>Member Names</b>	<b>Occupation</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Ranjit Das	Agriculture (rice)												
	Vegetable Gardening												
	Mat-making												
Anita Rani Das	Vegetable Gardening												
	Mat-making												

Figure 5.15. Seasonal work calendar for Anita Rani Das and her husband.

Even though a mixture of chemicals and organic fertilizers was used in cultivation, Anita Rani said that her vegetable was in greater demand than others' produce in the locality. People told her that the vegetables tasted better than other ones in the market. Usually her husband takes the vegetable to the local market. She also said that although her vegetables were more expensive than the regular ones, people still bought hers because of the preferred taste according to consumers.

When asked about her future plans, she said she would take a loan and continue the organic vegetable gardening even if the loan was not meant for a green microcredit scheme. From her viewpoint, people were interested in taking such loans for the incentives, not for the green concept per se. However, she thought in the long run people would realize the potential of organic farming.

#### **5.4.3 Case 3 - Rekha Rani Roy.**

Rekha Rani Roy is 38. Her husband, Ajit Kumar Roy, lives in the village of Kuatpur, under Bunogoti Union of Magura District. [Editor's note: Does she live there with her husband?] Her husband is a small farmer and businessman. They have 11 *shotok* (decimals) of land which Ajit Roy inherited. His brother, Montu Roy, lives next door as a separate household. She has two sons; both are educated, married, and now live in Dhaka. Rekha Rani and her husband have been members of CNRS-supported CBOs for a long time. They have worked with CNRS on other projects and been active members of the CNRS microcredit program from the beginning. She has also been a member of Grameen Bank for a long time. She has taken loans from Grameen Bank several times to use for

agricultural production. She has always paid back her loans on time. She has also taken loans to pay for her children’s education, to renovate her house, and for her son’s marriage.

Rekha Rani learned about the green microcredit from CNRS officials in 2009. She came to their weekly meetings, where she was explained the program. Only Rekha Rani and Bishakha Rani took the loan. Rekha Rani asserts, “I wanted to do something new and see if I can improve my livelihood and also improve the environment.” *Maila* cultivation and mat-making is not new for them, but large-scale cultivation is new. They used to cultivate *maila* on the riverbank behind their home. Now they cultivate it on a large scale in order to have a sufficient supply of *maila* to make mats and turn this profession into a sustainable livelihood practice. For this, they had to lease-in land from other people, cultivate *maila*, and harvest it in time so that the owners of the land could go for the rotational cropping of other crops. Moreover, they are now trying to save more *maila* seed in a more scientific manner for next year’s cultivation since this should result in a higher percentage of germination. They used to collect seeds and store them in a crude manner.

Member Names	Occupation	J	F	M	A	M	J	J	A	S	O	N	D
Ajit Kumar Roy	Business												
	<i>Maila</i> cultivation and harvesting												
Rekha Rani Roy	<i>Maila</i> processing and mat-making												

Figure 5.16. Seasonal work calendar for Rakha Rani Roy and her husband.

After harvesting, drying, and cooling the *maila*, it is ready to be woven into a mat format. It takes two people to make the mat. One weaves the mat and the other feeds the *maila* and closes the end. If Rekha Rani had a supporting hand, she could make an average of 12 *maila* mats every week; they are valued at 100-110 BDT each. A breakdown of her earnings for the years 2011 and 2012 is shown in Annex 5 (Source: CNRS). Her husband takes them to the local market every week and sells them to the wholesaler. As part of the project assistance, CNRS has provided them a rickshaw van, which they use to carry the mats to the local market. Sometimes the wholesalers come and take the produce from her too. If the wholesalers come and take mats from her, they pay in advance, almost like a pre-order.

So far, Rekha Rani has made some profits from the project. However, due to the lack of a helping hand, she could not make more mats. Many people in the area are involved in similar livelihood practices. Moreover, the lack of proper space for storage caused the decay of *maila*. However, she is still willing to continue making *maila* mats in a green manner. She thinks that all the neighbours are willing to take green microcredit for the incentives offered by the organizing institution, not necessarily for their dedication to the environment. Nevertheless, in the long run, if involvement in green projects fetches some positive results in livelihood well-being, rural people will accept the concept and be willing to take such loans. Rekha Roy commented,

Ultimately, it is about livelihood. We have to make money and survive. If the green projects are financially lucrative, people will accept them cordially. It will take time and people will make their own decisions based on profitability and their common respect for the local environment.

#### **5.4.4 Case 4 - Bishakha Rani Roy.**

Bishakha Rani Roy is 28 and from Kutpur village, under Bunogoti Union of Magura District. She is married to Montu Roy (40), and has three daughters and a son aged between 2-8 years of age. Two of her daughters go to school and the other two are toddlers. Her husband is a fisherman by profession and caste; he is also a seasonal farmer. They have only 11 *shotok* (decimals) of agricultural land, which her husband shares with his brother, Ajit Roy. None of them is educated; they can only write their names. She is a member of Grameen Bank and CNRS-run programs; she has taken loans from both the banks to buy fishing craft and gear for her husband and to buy some equipment for farming. Her husband also practices traditional medicine; for that he often goes away from home. Their only income sources are from agriculture and weaving *maila* mats. Her family opined that the decline in catch per unit of effort is associated with the entry of too many new fishermen in the local floodplain areas in the last few decades. Such an influx has jeopardized the resource base and hence their source of livelihoods. They are having a hard time sustaining their livelihoods with the income generated only from the agriculture activity.



Plates 5.3: Bishakha Rani and her children making *maila* mat.

Bishakha Rani knew about the green microcredit from the CNRS officials when they offered it to her sister-in-law. Both of them received an equal amount of loans and incentives from CNRS. CNRS provided some training regarding green activities, explaining what they could and could not do. With the loan money, she leased-in land from the neighbour who has land, or has control of land, on the riverbank. Her husband helps her in *maila* cultivation and harvesting, and she dries and makes mats with it. She can make 12-15 mats per week if she has a helping hand and can manage the required time. Her daughters sometimes help her in making mats. However, they do not have the skills to weave the mats quickly. She has to pay other people to help her in making mats.

Her husband takes the mats to the weekly village market, locally known as *haat*. Sometimes wholesalers come and buy the produce from her at 100-110 BDT per mat. A breakdown of her earnings for the years 2011 and 2012 is shown in Annex 6 (Source: CNRS).

Member Names	Occupation	J	F	M	A	M	J	J	A	S	O	N	D
Montu Roy	Fishing	■	■	■	■	■	■	■	■	■	■	■	■
	<i>Maila</i> cultivation and harvesting		■	■	■	■	■	■	■	■			
Bishakha Rani Roy	<i>Maila</i> processing and mat-making	■	■	■	■	■	■	■	■	■	■	■	■

Figure 5.17. Seasonal work calendar for Bishakha Rani Roy and her husband.

As Bishakha Rani stated, mat-weaving is a time-consuming and laborious activity; it does not pay much for her efforts. Preparing the *maila* mat-making is also time-consuming. Moreover, storing *maila* is also a problem for them due to the lack of proper storage space. Another problem is finding other people who can help her in making mats because all the neighbours are also engaged in the same occupation. Furthermore, Bishakha Rani commented, “There are people who can help me but will not help me because we are not from the same caste; caste status matters sometimes.”

She is pessimistic about the green microcredit project; she thinks people are only interested to take the loan for the incentives offered. When CNRS originally offered the loan no one wanted to take it. After being informed about the economic incentives, everyone wanted to take the loan. She thinks if CNRS does not give the incentives, no one will take the loan. She said that she would do some other projects if she could get the money because *maila* mat-making is too hard. She wants someone to develop a machine that will reduce the human input in making the mat and increase the productivity. Her

opinion could be due to the fact that she is looking at mat-making as only an individual activity for short-term gain. She does not comprehend that scaling up production, adding value to the product, and proper marketing could lead to larger economic gain.

#### **5.4.5 Reflections on Rekha Rani Roy and Bishakha Rani Roy in the context of livelihood capital.**

By closely examining the cases of Rekha Rani and Bishakha Rani's involvement in green microcredit projects, we find three distinct sets of capital in action. In terms of social capital, Rekha Rani is more opportunistically advanced than Bishakha Rani because her husband is directly involved in different social activities such as local politics and community-based organizations. Moreover, due to the age factor, both Rekha Rani and her husband are respected in the local community. In contrast, Bishakha Rani's husband is not socially active and their social networking is very weak.

In terms of financial capital, both Rekha Rani and Bishakha Rani's husbands have equal amounts of land and a similar professional base. The only factor that separates Rekha Rani from Bishakha Rani is that Rekha Rani receives financial support from her two sons, who are educated and working in the capital city. This extra income is reflected in her possession of household belongings, the superior quality of materials of the house, and her greater ability to take risks for livelihood opportunities.

In terms of human capital, both the women have achieved similar levels of education, but in terms of experience and knowledge, Rekha Rani is to the fore due to the age factor. Moreover, Rekha Rani's husband is more educated and has more livelihood skills than Bishakha Rani's husband. Although Bishakha Rani's husband has a unique

skill and knowledge of traditional medicine, he could not use them properly to diversify his livelihood income.

#### **5.4.6 Case 5 - Dipti Rani Das.**

Dipti Rani Das is 45 and from Nanua village, in Borlekha Upazila, under Moulvibazar District. She is married to Dhirendra Das (55), and has two daughters (18 and 16) and a son (18). They have 30 *shotok* (decimals) of land, which they use for agriculture. Her husband is a farmer by profession and her son works as a construction worker. Both Dipti Rani and her husband are illiterate but their children went to school. The older daughter dropped out of school after grade five and the son dropped out after grade ten. The younger daughter is still going to school; she is in grade 10.

Dhirendra Das works in his agricultural field for five months a year; Dipti Rani and her daughters help him in processing the crops. During the dry period, low-level harvesting and processing of *murtha* is carried out, and hence, the production of mats (*shitol pati*) declines. During the monsoon, when the surrounding areas get flooded, people in the *haor* area make mats. The *murtha* plants mature and are harvested during this time. *Murtha* grows naturally in the *haor*, and everyone who depends on the production of mats harvests from low-lying lands there. This process is not sustainable because the overexploitation of the *murtha* plants often reduces the production for the following year. Dipti Rani has planted some *murtha* plants near their house.

Dipti's husband harvests *murtha* from the *haor* area. He harvests only the mature *murtha* plants and leaves the young ones. Sometimes they have to buy *murtha* from other people. Following the harvest of *murtha*, the stems are dried and then boiled, and barks are separated from the stem. Then, the separated barks are dried again so that they are

ready for mat-weaving. This is a time-consuming and laborious process. Dipti Rani and her daughters weave mats. She can make up to 10 mats every week and each of them sells for 250-350 BDT in the local market. Her husband takes the mats to the local market for sale. Her son also contributes to the family depending on the availability of work but he does not help in making mats.

<b>Member Names</b>	<b>Occupation</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Dherand Das	Agriculture												
	<i>Murtha</i> harvesting, processing												
Dipti Rani Das	<i>Murtha</i> processing and mat-making												

Figure 5.18. Seasonal work calendar for Dipti Rani Das and her husband.

It is important here to reflect upon on the project as a whole. After viewing the projects in person and talking with the borrowers of the green microcredit, it is apparent to me that the projects themselves are viable in their own socio-ecological and economic context. However, in order to sustain and grow the projects, the people need to come out of their traditional thoughts and focus only on production. They have to develop and explore new avenues to add value to their products and look for broader markets. Table 5.2 shows the economic growth of individual projects from 2010 to 2013 (data based on CNRS). Looking at the table, two broad conclusions can be drawn: (a) in terms of performance, the projects in Arpara are doing better than those in Borlekha, and (b) all the projects in both the locations are making some profit. This apparently shows that there is a potential for green microcredit in rural Bangladesh if some barriers can be overcome.

Table 5.2. Overview of Individual Project Earnings from 2010 to 2013 (Based on Available Data)<sup>7</sup>

Area	Name	Project	Year	Income (BDT)	Expenditure (BDT)	Loss/Profit (BDT)
Borlekha	Anita Rani Das	Organic Farming	2010	11,700.00	5,200.00	6,500.00
			2011	14,800.00	4,700.00	10,100.00
			2012	8,000.00	5,100.00	2,900.00
	Dipti Rani Das	<i>Murtha</i> Cultivation & Mat-making	2010	36,900.00	14,000.00	22,900.00
			2011	60,000.00	22,500.00	37,500.00
			2012	48,600.00	17,850.00	30,750.00
			2013	30,000.00	15,000.00	15,000.00
Arpara	Bulu Rani Biswas	Organic vegetables, nursery, and composting	2011	14,850.00	8,170.00	10,680.00
			2012	13,873.00	2,093.00	21,380.00
	Bishakha Rani Roy	<i>Maila</i> Cultivation & Mat-making	2011	74,551.00	44,112.00	30,439.00
			2012	122,550.00	52,025.00	70,525.00
	Rekha Rani Roy	<i>Maila</i> Cultivation & Mat-making	2011	106,480.00	47,830.00	58,650.00
			2012	133,250.00	48,925.00	84,325.00

(Source: CNRS.)

## 5.5 Strengths, Weaknesses, and the Future

Green microcredit is a very new concept; it has not even completed its first small-scale field trial. However, even during the field trial the feedback coming from the borrowers has been positive, but there are some concerns related to the projects. After visiting the projects personally and interviewing the borrowers individually, one FGD was conducted in each location with the green microcredit borrowers. During the FGD, specific issues were discussed, such as, how people perceive green microcredit, what are the positive aspects of green microcredit, what are the shortcomings of green microcredit,

<sup>7</sup> It should be noted that the expenditure did not clearly include if it included the loan repayment or not. Also there is no clear indication of the source of the money for the expenditure. Moreover, the projects are ongoing so a conclusive stand cannot be taken in this research.

what are the problems that they may face during implementing their project and how the green microcredit can be made more popular in the community. Through the FGD processes certain weaknesses and strengths were identified by the borrowers. The details about these weaknesses and strengths are given in the following sections.

The weaknesses that have been identified by the borrowers and my own observation of the green microcredit projects are the following:

(i) The concept of *green* is yet not clear among the borrowers. Although they have memorized the definition of what is green microcredit, in fact they do occasionally deviate from that definition. I found that farmers doing organic farming did not hesitate to take up chemical insecticides and herbicides if there was an outbreak of pests.

(ii) The green microcredit program is very young and the projects have been in place for a very short time. During this period both the borrowers and the lender (CNRS) have been learning about the problems. However, this learning process has not been helped by the short duration of the projects as well as other administrative complications. Moreover, the borrowers have not yet been able to identify all the problems and shortcomings of green projects.

(iii) Seasonal variation is a key factor for the green microcredit projects. Due to differences in the geographic characteristics, the same project cannot be implemented identically in both locations. Moreover, the disbursement of loans has not yet been synchronized with the seasonal variation. For instance, while I was talking with the green microcredit borrowers in Borlekha, they identified that if the loan was given right before the floodwater recedes then they could maximize the dry season and cultivate two different crops during that time. Similarly, prime examples of the same project having

different results in two different geographic locations are the cow-rearing and milk production projects. These types of initiatives are suitable for Arpara, where the higher land produces fodder throughout the year and the animals can pasture freely. On the other hand, in Borlekha, the animals can only get sufficient fodder during the dry season, when the *haor* dries up. However, during the flood the animals cannot live for 4 to 6 month on starch since fodder is scarce. Based on my observation and feedback from the borrowers, it was clear that animals lost their health and died during that time.

(iv) Finally, the borrowers have repeatedly identified that the produce, especially the mats made from *maila* and *murtha*, does not get any special value in the market since the local people and the wholesalers do not understand and appreciate the changes that the green microcredit is making in the environment. Furthermore, the market for organic and environmental-friendly products is very limited at the village level and even the *upazila* level. Moreover, the small number of green projects restricts the expansion of market.

Despite the weaknesses, the green microcredit borrowers have listed numerous strengths of green microcredit initiatives:

(i) The loan that is provided to start up the project is significantly larger, which allows the borrower to start and sustain a project properly. The borrowers in both areas have unanimously said that larger amounts allow borrowers to start and sustain the initial stage of a new project. One prime example is Bulu Rani, who has no land and very limited capital; with the large loan she leased the land for a longer period of time and started the farming activity.

(ii) The delayed repayment model developed by CNRS helps the borrowers to establish their businesses and then repay the loan. During the FGD the borrowers acknowledged that the two-month grace period given to them to repay the loan helped them. They would like to have a three-month grace period and a lower interest rate.

(iii) The training provided by CNRS also helps the borrowers to enhance their livelihood options and improves their skills and knowledge. The hands-on approach by CNRS helps the borrowers to develop their projects more successfully.

(iv) Finally, the approach taken by CNRS to introduce the new concept by providing an in-kind incentive, such as a water pump, rickshaw van, and agriculture equipment encourages the borrower to pursue environmental-friendly farming and promotes sustainable natural resources extraction and use. This keeps the borrowers interested in doing the project and encourages others too.

Green microcredit could play a very important role in the future in promoting sustainable resources use, diversifying livelihood options, and promoting empowerment and social change at the grassroots level in Bangladesh and other developing countries.

In order to see the effects of green microcredit in the larger society and environment, the best option would be to scale up the project to a national level. In order to analyse the present status of green microcredit and how the government is pursuing the issues, two key informant interviews were conducted. One interview was with the Executive Director of CNRS and other one was with an official from Microcredit Regulatory Authority. When I talked to the Executive Director (ED) of CNRS, he made it clear that not all sectors of agriculture or the natural resource base can be transformed into green activity. One of the major sectors of agriculture in Bangladesh is the

cultivation of paddy. This sector cannot be totally converted into organic or green activity. Nonetheless, a mixture of green methods such as integrated pest control with conventional approaches (e.g., chemical fertilizer) could be used to reduce the effects of paddy cultivation on the environment (ED, CNRS). Moreover, in order to scale up green microcredit, all the MFIs and NGOs in Bangladesh should have to join in using the same platform by integrating and modifying their existing microcredit programs and putting more emphasis on environmental issues. As Zaman (2004) mentioned, there are about 11 million borrowers of microcredit in Bangladesh; if all the MFIs and NGOs can encourage their borrowers to change their livelihood practices, the cumulative effect would be felt in the environment in a short time.

While I talked with the Executive Director CNES, he revealed that one of his major concerns was the issue of incentives. He thinks that the government should take a leading role in conjunction with the MFIs and NGOs to bear the cost of going green. The mechanisms of who pays for the incentive and what type of incentive there should be need to be developed and clarified before the scaling-up process starts. While talking with one of the policymakers in Bangladesh, it was apparent that the microcredit regulatory authority and the government are taking initiative to promote green microcredit programs under a different label. According to the official, they are giving money to smaller NGOs to disburse as microcredit for different green projects. However, they are not working with the major MFIs and NGOs and are not even communicating with the ones that have already had experience with green projects.

## **5.6 Summary**

In this chapter, first, I examined and compared the livelihood status of the green and conventional microcredit borrowers. In my observation, there is very little apparent difference among the borrowers in terms of livelihood status. However, taking into consideration the livelihood framework, some significant differences were revealed among the borrowers' livelihood capital. Moreover, in terms of loan use patterns, the conventional microcredit borrowers demonstrated no concern for the environment and only the green microcredit borrowers used the loans in an environmental-friendly manner.

While examining the green microcredit project in both locations, it was apparent that not all the green microcredit borrowers had the same level of livelihood capital and not all of them had taken up this project as a challenge to try to change their prevailing status and livelihood conditions.

In the following chapter, I intend to assess the strengths and weaknesses of the green microcredit program. I will also analyze the green microcredit borrowers' perspectives on the concept and whether and how the program could be replicated in other parts of Bangladesh.

## **Chapter 6**

### **Summary, Conclusions, and Recommendations**

#### **6.1 Summary**

The research was conducted as part of the larger Canadian International Development Agency (CIDA) – funded project, Building Environmental Governance Capacity in Bangladesh (BEGCB), which was conducted jointly by the University of Manitoba, Canada; the North South University, Bangladesh; and the Center for Natural Resource Studies (CNRS, Bangladesh). The study fits into the BEGCB project by examining the features of green microcredit, by comparing the key similarities and differences between conventional microcredit and the newly emergent concept of green microcredit, and by measuring and analyzing the impact of green microcredit on the lives and livelihoods of the people in the study areas. In particular, this study, *An Assessment of the Green Microcredit Projects in Bangladesh: Livelihood and Environmental Sustainability*, links to the second objective of the BEGCB objective: setting multi-dimensional livelihoods which are friendly to the environment and the sustainable development of the poor and ultra-poor people in the project area.

The purpose of this research was to understand the role and function of green microcredit as well as its impact on the livelihoods of the people in the study areas, with a particular focus on understanding the differences between the roles and functions of conventional microcredit initiatives versus green microcredit projects, in order to promote the sustainable use of the natural resources. Given this purpose, the objectives of the research were: (i) to examine the operational aspects and effectiveness of green microcredit projects in Bangladesh at two study locations from the viewpoints of

livelihoods and environmental sustainability; (ii) to compare the effectiveness of the green microcredit projects among similar borrowers in different study locations; and (iii) to assess the viability, strengths, and weaknesses of green microcredit projects as the means to promote livelihoods and environmental sustainability.

The field work for this research was undertaken in Moulovibazar and Magura districts of Bangladesh from June to August 2011. In all, 23 interviews were undertaken, which included 13 borrowers from green microcredit projects, 8 from conventional microcredit projects, and 2 individuals representing the policymakers (NGO and Government). Qualitative data collection tools such as case studies, a questionnaire survey, focus group discussions, and observation were used to collect the data for this research. In addition, secondary data were collected from documents, publications, statistics, and field research documents from CNRS and BBS.

The process of data analysis started with the initial field interviews and a survey, emerging trends and themes were identified and verified for accuracy, and greater detail was obtained from new interview respondents. Two focus group discussions held towards the end of the research were also used to verify the findings for their accuracy and authenticity. Upon completion of the research, the collected data were analyzed using Excel and content analysis, starting with the transcription of the interviews. The emergent trends were developed into themes, which were further divided into categories and sub-categories after analyzing the transcribed interviews and field notes based on my personal observations.

## **6.2 Conclusion**

This study contrasts the impacts of the conventional microcredit projects and green microcredit initiatives on the lives and livelihoods of the people living in the study areas. Analysis based on key factors such as livelihood, natural resources use, social capital, and human capital showed that those who participated in the green microcredit initiatives had a significantly higher understanding of environmental issues and were aware of the concept of sustainable natural resource use. Further, it was also found that in terms of social and human capital the green microcredit borrowers were better endowed compared to the conventional microcredit borrowers. In terms of livelihood options, green microcredit borrowers had greater options to explore new environmental-friendly livelihood activities; hence, their livelihood portfolio was more diversified and dynamic and less prone to environmental risks compared to the conventional microcredit borrowers. General conclusions that relate to the study objectives are listed below.

### **6.2.1 Operational aspects and effectiveness of green microcredit.**

Green microcredit borrowers were found to have a greater degree of livelihood options compared to the conventional microcredit borrowers. This could be attributed to the fact that green microcredit borrowers get better training, they are encouraged to diversify their livelihoods, and the organization which provides them funds is directly involved in monitoring the progress of each individual borrower. Further, in terms of operational aspect, the borrowers reported that it was easier for them to access funds through green microcredit initiatives because they were involved in sustainable livelihood practices and the lending organization felt more confident in funding the households that they had trained themselves, whereas in conventional microcredit projects training is not

given for livelihood security and diversification. In addition, it was found that the green microcredit borrowers had greater access to funds and their loan amounts varied from 10,000-100,000 BDT, whereas conventional microcredit borrowers could only access funds ranging from 2,000-20,000 BDT. This has resulted in making the green microcredit borrowers more independent in terms of their livelihood choices, and it has also contributed to making them less reliant on natural resources for their sustenance compared to before as well as compared to the conventional microcredit borrowers.

### **6.2.2 Comparing the effectiveness of the green microcredit projects in two study sites.**

In terms of effectiveness, there are basically four major areas that have been impacted due to the green microcredit initiatives: (i) social capital, (ii) financial capital, (iii) human capital, and (iv) natural resource dependence and use.

#### ***6.2.2.1 Social capital.***

In Arpara, social capital is higher amongst the borrowers since they are more proactive in implementing various projects, and the community-based organizations (CBOs) of which they are members are better organized and run compared to the ones in Borlekha. In addition, the people and CBOs in Arpara have more robust linkages with other organizations and institutions in the region, including various government departments. The people and CBOs in Borlekha were found to be less organized and had few linkages with other institutions.

### ***6.2.2.1 Financial capital.***

In terms of financial capital, the people in Arpara have better financial sources due to their income-earning opportunities. Moreover, compared to Borlekha, many families in Arpara have members in urban areas, such as Dhaka and Jessor, who contribute to the family income. The people from Arpara were therefore seen to be more willing to take risks with changing their livelihood options, whereas the lack of such remittances and financial security rendered people from Borlekha more reliant on the conventional livelihood options, and they were seen to be less enthusiastic about trying out new livelihood options. However, the introduction of green microcredit has enabled people in Borlekha to diversify their livelihoods from conventional fishing and mat-making to vegetable gardening and livestock-rearing. They are also undertaking value addition to their mat-making activities. As the demand for organic produce has started to increase in Bangladesh and the local market (not because it is organic but because of the taste) green microcredit borrowers were found to be more enthusiastic about their future as they could already witness increased demand for their produce in the market in the short span of three years.

### ***6.2.2.3 Human capital.***

In terms of human capital, people in both the locations have been given extensive training for natural resources conservation, the sustainable use of natural resources, and the diversification of their livelihoods. Because of this training, people in both the study sites were found to have greater livelihood options today compared to what they conventionally had. This has enabled the people to become more financially independent and less prone to seasonal and environmental risks. Increased financial abilities and better

livelihood options have resulted in gradual changes in the social fabric of the study area. It was found that overall more children were attending and completing school, and the number of girls going to school had significantly increased. One of the most important contributions of the green microcredit initiatives was noticed in terms of women's empowerment. Women are actively managing the investment and resources, and are also participating in social movement for natural resource conservation. This has resulted in the empowerment of the women as their participation in the decision-making relating to the use of funds, in household decisions, and in the CBOs has increased significantly.

#### ***6.2.2.4 Natural resource dependence and use.***

In terms of natural resource dependence and use, it was found that people in both the study sites, Arpara and Borlokeha, were more aware of the environmental issues and of the implications of the extraction of natural resources such as aquatic resources, various flora, and fauna. Natural resource use was reported to be more sustainable today than before the green projects. Local community members have become more aware about overwhelming use of chemical fertilizers and insecticides, and more people were found to be moving towards organic farming practices. However, some instance farmers had no choice other than using chemical fertilizer to save their crop.

#### **6.2.3 Viability, strengths, and weaknesses of green microcredit projects.**

Green microcredit is a very new concept yet gradually it was seen to be gaining more ground in the study areas. People who are green microcredit borrowers are more enthusiastic about it than conventional microcredit projects. In particular, the women were seen to be active decision-makers and equal participants in the green microcredit

initiatives, and hence they were more enthusiastic about the green microcredit projects. Further tests of green microcredits projects would be required to make firm conclusion about the viability of this new concept.



*Plates 6.1:* FGD arranged at Borlekha.



*Plates 6.2: FGD arranged at Arpara.*

Nonetheless, since green microcredit is a very new concept, there are certain weaknesses associated with the initiatives. In my observation and based on feedback from the borrowers, some of the obvious weaknesses in the green microcredit initiatives are:

(i) There is a very thin line between going organic and ensuring that the final produce is also organic. I found it peculiar that farmers readily took up organic farming, yet if there was too much of a pest problem, they did not hesitate in using chemicals.

(ii) The size of the projects is not large enough and the duration of each project is not long enough to have a clear idea about the problems the borrowers are facing. Moreover, the short duration of the projects also means that an effective feedback mechanism cannot be put in place. However, it is acknowledged that a sustainable initiative is only possible if there is constant learning in the system yet this is possible

only when a feedback loop is made integral to the system. This can be established by having regular meetings with the borrowers, MFIs, and policymakers.

(iii) Seasonal variation requires different projects in different locations. Implementing similar projects in two different locations with different geographical realities, however, was found to be counterproductive. Each project needed to be mulled, planned, and executed keeping in view the geographical and socio-economic realities of the project area. Such local realities were not considered in the projects.

(iv) Finally, the produce and the products generated from the green microcredit initiatives were not marketed properly. They were sold in the local markets even though the produce and the products were recognized as being better than those produced with the help of chemicals. However, I felt that these produce and products could be sold for greater values if marketed properly, particularly outside the local markets, and thereby ensuring increased revenue and an improved standard of living for the borrowers.

Despite its weaknesses, green microcredit can be a vehicle for social change and can promote sustainable resource use in the long term. The borrowers listed numerous strengths of green microcredit initiatives that were evident within its short period:

(i) The loan amount is large, which helps the borrower to start and sustain a project properly.

(ii) The two-month grace period given to the borrowers to produce and sell the product before repaying the loan allows the borrowers greater financial stability and freedom.

(iii) Training provided by CNRS also helps the borrowers to enhance their livelihood options and improve their skills and knowledge.

(iv) The incentives that are given by CNRS also encourage the borrower to pursue environmental-friendly farming and they promote sustainable natural resources extraction and use.

Given these findings, I can assert that green microcredit can play a very important role in the future in promoting sustainable resources use, diversifying livelihood options, and promoting empowerment and social change at the grassroots level in Bangladesh and other developing countries.

#### **6.2.4 Green microcredit, environmental effect and ecological sustainability.**

One of the burning questions regarding the concept of green microcredit is how environmental-oriented is the green microcredit program and what are the effects of these green microcredit projects on the environment. As mentioned earlier, this is a new concept with only a limited number of borrowers in the field. Moreover, there has been no comprehensive study of the overall environmental condition and the status of natural resource base. Due to their small size and limited number of green microcredit projects and borrowers, the effects of green microcredit on the environment thus far have been very nominal. In order to determine the effects of green microcredit on the environment, natural resource base and overall ecosystem of the area, it is imperative that the projects are scaled up to the national level and in-depth ecological and natural resource studies are carried out. In Bangladesh there are more than 11 million microcredit borrowers. If they adopt the principles of sustainability in natural resource and ecosystem use as well as the restraint from other anthropogenic activities that are

detrimental to the environment, then the cumulative effects on the ecological and natural resources could be positive and more visible.

### **6.3 Scaling Up**

With the completion of the CIDA-funded BEGCB project in 2013, it is now time to look back and reflect on the achievements and disappointments of the green microcredit pilot projects. The borrowers and CNRS officials have identified several strengths and weakness of the projects. The projects have successfully shown that the borrowers are willing to take the initiative to modify their livelihood practices if they are given some external support from the MFIs to offset the risk involved in shifting from conventional to green livelihood. The two-level financing approach that has been implemented by CNRS has helped the borrowers to achieve some of the project goals. The first level of financing involved the microcredit component itself, which allowed the borrowers to start the project, and the second level of financing was the actual grant (either in cash or in-kind). The two levels of financing help the borrowers to invest the microcredit loan only on the project, not on other supporting materials. However, this grant component is not a common sight in any other microcredit operation since the cost is not recoverable.

The broader goal of green microcredit is to reduce poverty among the rural people in the two study sites and to protect the natural resources and increase their sustainable use. This goal is directly related to the MGDs. In order to see the effects of green microcredit on the environment, as well as on individuals' livelihoods, the project needs to be implemented on a larger scale, that is, it needs to be scaled up. As Hooper *et al.*

(2005) have identified, after the initial stage of the project, the processes of scaling up take place in four stages: (i) functional, (ii) quantitative, (iii) organizational, and (iv) political.

From my point of view, the process of scaling up has a domino effect. This is seen from CNRS's experience. After the some success of the green microcredit project, the accountancies and the neighbours are now more willing to take up green projects or livelihoods. This reflects the willingness of the people to change. Moreover, this also provides the opportunity for the MFIs to scale up the concept. The first step of scaling up is to involve all the NGOs and MFIs in the country, not only CNRS, to incorporate the concept of the environment more directly in microcredit-supported livelihoods. Many of the MFIs have some environmental-friendly programs but these are separate from their regular, conventional microcredit programs. They can incorporate a green program into the conventional microcredit program, starting with a small number of borrowers and then taking the next stage of scaling up. As MFIs start giving green microcredit, the borrowers' demand will start to increase. With a high volume of green microcredit borrowers, the organizations will need to also improve their own manpower by increasing their efficiency and effectiveness in monitoring and assessing the green projects. The final stage of scaling up involves the policymakers in creating rules and regulations and in supporting the MFIs in the process. One of the major concerns in scaling up green microcredit is the issue of grant money. Who is going to pay the cost and how can it be recovered? The policymakers can help by implementing economic tools on the national scale to generate revenue to support such costs (C. E. Haque, 2013, personal communication).

The effect of green microcredit on the environment and livelihoods is not that apparent at this moment. In order to see the effect, the concept needs to be scaled up so that the cumulative effect on the environment will be visible.

## **6.4 Recommendations**

Reflecting on my thesis, I offer several recommendations for the green microcredit project operators, which could help them to increase the number of green microcredit borrowers and replicate the project in other parts of the country. Presently, the green microcredit projects are located in two different study sites in Bangladesh. The sites have distinct geographical, ecological, and socio-economic characteristics. Specific recommendations suitable for each of these two area are therefore formulated.

### **6.4.1. Arpara, Magura District.**

Arpara, Magura District is located in the south-western part of the country, and the ecological and economic activities that take place there are influenced by the big river system. The area is conducive to agriculture and has a diverse natural resource base. The ongoing projects are area-appropriate and have a high potential for success. However, in order to sustain and succeed, the projects need to consider the following issues:

- (i) The mat-making processes need to be more efficient to maximize production and materials use and to minimize costs by creating work groups.
- (ii) The vegetable gardens need to cultivate high-value crops and look for other value-addition activities such as, packaging and preserving.
- (iii) The marketing of the product is very important; therefore, the borrowers need to develop partnerships with other organizations to market their produce/material better.

(iv) The green microcredit borrowers are given some training. However, more training should be provided on how to do organic gardening, composting, and also awareness-building training on sustainable natural resources extraction. (v) In order to promote more broadly sustainable natural resource use and environmental-friendly livelihoods, the community needs to collaborate and form cooperatives. This will allow them to farm and market organic produce on a larger scale than what is possible or feasible now at the individual scale. Creating cooperatives will also reduce the natural resource over-extraction from the common property resource. This might also increase the responsibilities of more resource users and make them aware of the consequence of overexploitation. Creating cooperatives will also strengthen the community and build social capital further among the borrowers, which could help them during natural shocks.

#### **6.4.2 Borlekha, Moulvibazar District.**

Borlekha, Moulvibazar District is located in the north-eastern part of the country; the ecological and economic activities there are influenced by the large *haor* system. The projects have taken into consideration the issues of flooding and prolonged inundation in the area. Even then, some of the projects have faced difficulties in coping with this issue. In order to sustain the existing green projects or to develop new ones the following steps could be taken:

- (i) The vegetable garden project can cultivate more quick-growing varieties;
- (ii) The project area is inundated on average for six months a year; a project can be developed with this component in mind. One such project would be floating agriculture, using water hyacinths, which can build floating beds for cultivation, and then during the dry season this water hyacinth bed can be used as organic fertilizer;

(iii) The cow-rearing project needs to be designed only for a short time during the dry season. The lack of movement and grazing land during the prolonged flood hampers the growth of the animals.

(iv) Due to the geographic and climatic characteristic of the area and observing the some positive outcomes of the green microcredit project, I highly recommend that CNRS continue to provide larger size loans for the projects, with a three-month grace period, and with provisions for biweekly repayments. (v) The green microcredit borrowers are given some training in this area too. However, the training should be more customized to fit the natural and geological characteristic of the area. More training should be provided on how to do organic gardening, composting during flood season and also awareness-building training is need on sustainable natural resources management.

## **6.5 Final Thoughts**

This research was a learning process for me in the field of microcredit and rural livelihoods. Understanding conventional microcredit and how it is helping the rural poor with their livelihoods was a significant learning process. Conventional microcredit itself is quite recent and green microcredit is an even newer concept combining microcredit and sustainable natural resource use with the ultimate goal of poverty reduction. Although it is an interesting and innovative concept, it has some positive and negative characteristics. Nonetheless, we have to keep in mind that this project has been implemented only over the past three years. The learning from this project will help the policymakers to modify and develop the existing microcredit systems. In order to see the

impact of green microcredit on the local livelihoods as well as on the local environment we will have to wait some time.

This research was a step towards understanding the effect of green microcredit on the livelihoods of the local people. In order to assess the full effect of green microcredit projects two future study is imperative. The first of this study should be related to the natural resource base. Due to the limited scoping of the research and the unavailability of the data on the natural resource base and its usage, I was not able to see or measure the impact of green microcredit on the environment and on the natural resource base. This aspect of the study could be further developed, and I am hopeful that doing so will give us a better understanding of the cumulative effect of green microcredit on the environment. And the second one should be focussing on the long-term effects of the green microcredit projects up on the change in natural resource use and the see the sustainability of the individual projects.

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# Annex 1

## INFORMED CONSENT



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**Research Title: Green Microcredit & its Implication on Sustainable Livelihood**

**Researcher: Mohammad Mohaiminuzzaman Khan**

**Proposed script for verbal recruitment of research participants in the Socioeconomic Household Survey Schedule that will be spoken in Bengali:**

I am currently in the process of conducting my Masters Thesis research. The purpose of the proposed research is to understand how green micro-credit can improve livelihoods at household level in Magura district, Bangladesh. To investigate with this central objective, I will work with the local people including members of Center for Natural Resources Studies (CNRS) an environmental based nongovernmental organization. The research will analyze the influence of green microcredit with specific reference to livelihood improvement and environmental sustainability. This research is being sponsored by the Canadian International Development Agency (CIDA) project on “Building Environmental Governance Capacity in Bangladesh”. It has already been approved by the Joint-Faculty Research Ethics Board at the University of Manitoba (Canada).

This consent letter, a copy of which will be left with you for your records and reference, is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like know more details about something mentioned here, or information not included here, please feel free to ask for clarification. Please take the time to read this carefully and to understand this information.

In the course of the research you will be asked a series of questions that will help me to understand how natural resources can enhance livelihood opportunities with micro-credit support as well as to maintain environmental sustainability. You will be requested to participate in an interview session that will last in between 30 minutes and 1 hour. If more time is required, a subsequent meeting can be arranged at your convenience. These interviews may be conducted at your place of work, home, or at another location of your preference. After the interview you may be contacted and asked to participate in further research activities such as focus group discussion.

Your responses to questions during the several sessions of the research will be documented in a notebook. However, your names will be recorded for organizational

purposes such as, in case you need to be contacted for further information or clarification at a later date. However, if you wish to stay anonymous your name will not be taken or may be kept in separate file. You will have an option to disagree or change any information in future, in which case, the information would be suitably modified with your inputs. The data provided by you will be used to complete a progress reports, my Master's thesis, and will potentially be published in an academic journal. You will not be identified by name in any such publications.

You are free to decline to participate in this research, withdraw from the study at any time, and/or choose not to answer any questions you may not be comfortable with. If you do decline to participate in the study or answer any questions, you will not face any negative consequences. If I have not explained the study clearly, please feel free to ask for clarification or additional information at any time throughout your participation.

If you have any complaints or further questions about the nature of this research, your concerns may be directed to the Human Ethics Secretariat at the University of Manitoba (204- 474-7122), [research@umanitoba.ca](mailto:research@umanitoba.ca), or to my advisor, Dr. C. Emdad Haque, who may be contacted at +1-204-474-8375, [haquece@ms.umanitoba.ca](mailto:haquece@ms.umanitoba.ca). Please be advised that the staff at these offices speak only English.

**Researcher:**

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Participant's Signature

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Date

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Researcher's Signature

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Date

## **SOCIOECONOMIC HOUSEHOLD SURVEY SCHEDULE**

**Natural Resources Institute**

**University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2**

**Statement seeking consent**

My name is Mohammad Mohaiminuzzaman Khan, I am a Masters student at Natural Resources Institute, University of Manitoba, Canada. This survey is intended to improve our understanding about the livelihoods aspects of the rural community. I consider you as a knowledgeable and experienced person about the issue, I am trying to explore. The interview will take around 30-40 minutes of your valuable personal time. You are under no obligation to participate in the interview. If you intend to participate, please feel free to discuss your opinions openly. You have the freedom to end the interview any time or refuse to answer specific questions. In such an event, you can simply mention 'no comment'. Your responses will be held in strict confidence, and the results of the study will be compiled with no reference made to specific participants.

This research is being funded by Canadian International Development Agency (CIDA) project on “Building Environmental Governance Capacity in Bangladesh”. It has already been approved by the Joint-Faculty Research Ethics Board at the University of Manitoba (Canada). Your information and opinion is definitely considered valuable to us. Ethics Review Board of the University of Manitoba has approved this questionnaire and the proposal. If you have any question or concern, you may contact with the chair of the Ethics Committee or Dr. C. Emdad Haque, Director , Natural Resources Institute at 204-474- 8373.

**General information**

1. Name of the respondent \_\_\_\_\_

Age \_\_\_\_\_ Sex (a) Male (b) Female

Address Village \_\_\_\_\_, Union \_\_\_\_\_, Upazilla \_\_\_\_\_,

Zilla \_\_\_\_\_, Division \_\_\_\_\_.

Religion (a) Islam, (b) Hindu, (c) Buddhist, (d) Christian

Relationship with Household Head: \_\_\_\_\_

(see code “c” in question 2)

**2. Household Composition**

SL	Members Name	RHH	Sex	Age	Marital status	Educational	Primary occupation	Secondary occupation	Membership with organization	Skill
a*	b*	c*	d*	e*	f*	g*	h*	i*	j*	k*
1										
2										
3										
4										
5										
6										
7										
8										

c\* **Relationship:** HH Self: 1, wife/husband of HH: 2, son/daughter: 3, father/mother: 4, brother/sister: 5, son's wife/son-in-law: 6, grandson: 7, nephew/niece: 8, servants: 9, , father/mother-in-law: 10, brother/sister-in-law: 11, Others: 99 (Please mention.....)

f\* **Marital status:** Unmarried: 1, Married: 2, divorced: 3, separated: 4, widow: 5, single: 6, abandoned: 7.

g\* **Education:** Class 1: 1, class 2: 2, class 3: 3, class 4: 4, class 5: 5, class 6: 6, class 7: 7, class 8: 8, class 9 and 10: 9, SSC: 10, HSC: 11, Degree: 12, Post-graduate: 13, illiterate: 14, only can write name: 15, only ca read: 16, both reading and writing: 17, not applicable: 18, Others: 99 (Please mention.....)

h\*, i\*: **Profession:** Boatman: 1, driver: 2, sr. labourer: 3, jr. labourer: 4, service: 5, business: 6, daily labour: 7, domestic HH works: 9, rural transportation: 10, Homebased works: 11, student: 12, net weaving: 13, farming: 14, bettlenut farming: 15, own shop: 16, shrimp fry catching: 17, wood collection: 18, raw fish selling: 19, fishdrying and selling: 20, owner of nets: 21, owner of nets and boats: 22, owner of boat: 23, company/bohoddar: 24, moneylender: 25, artisan: 26, livestock rearing: 27, chicken/duck rearing: 28, rickshaw pulling: 29, old/inert: 30, jobless: 31, subsistence fishing: 32, fulltime fishing: 33, not applicable: 34, Others: 99 (Please mention.....)

j\* **Membership:** Project: 1, BRAC: 2, Prashika: 3, ASHA: 4, CARE: 5, World Vision: 6, Grameen Bank: 7, Not applicable: 8, Others: 99

k\* **Skill:** Mechanic: 1, net weaving: 2, sewing/artisan work: 3, handicraft: 5, weaving machine: 6, singer/player: 7, diver: 8, handicraft: 9, not applicable: 10, Others: 99 (Pl. mention.....)

**Livelihood**

3. Do you own any land? (a) Yes (b) No

4. What is the amount of the land? \_\_\_\_\_

**5. What are the uses of the land?**

(a) Agriculture, (b) Fallow, (c) Homestead (d) Other\_\_\_\_\_

**6. How much land you are cultivating this year? \_\_\_\_\_**

**7. Do you own the entire agriculture product?**

(a) Yes (b) Shared 50:50 (c) 3Party shared

**8. What is the current market value of the land? \_\_\_\_\_**

**9. What kind of Agricultural equipment's do you have? \_\_\_\_\_**

(Plough: 1, Spade:2, Harrow: 3, Power tiller: 4, Deep tubewell: 5, Shallow well: 6, Husking engine: 7, N/A: 8, Others: 99 (Pl.mention.....)).

**10. Do you have to rent agricultural equipment's? If yes, how much you pay for that?**

(a) Yes (b) No Rent per day:\_\_\_\_\_

**11. Do you have any secondary occupation? (a) Yes (b) No. If yes:**

\_\_\_\_\_

**12. How much money do you earn from that source?: \_\_\_\_\_/year**

**13. Does any other family member earn money in the family?**

SL	Members Name	RHH	Sex	Age	Primary occupation	Income from primary occupation/ year	Secondary occupation	Income from Secondary occupation/ year
1								
2								
3								
4								
5								

**14. Duration of employment for individual income earner?:**

S/N	Members Name	Occupation	J	F	M	A	M	J	J	A	S	O	N	D
			M	F	C	B	J	A	S	V	A	K	A	P
1		Primary												
		Secondary												
2		Primary												
		Secondary												
3		Primary												
		Secondary												
4		Primary												
		Secondary												
5		Primary												
		Secondary												

(Boishak, Joishtho, Asar, Srabon, Vadro, Arshin, Kartik, Agrahaon, Posh, Magh, Falgun, Chaitra)

**15. What are the Livestock do you have and what is the average monthly income from them? :**

S/N	Type of animals	Quantity	Monthly Income (BDT)	Monthly Expenses (BDT)	Monthly net income (BDT)
1					
2					
3					
4					
5					

(Cow: 1, Buffalo:2, Sheep:3, Goat: 4, Duck: 5, Hen: 6, Pigeon: 7, N/A: 8, Other: 99 (pl. mention.....))

**16. (a) Do you have any pond, if yes what is the ownership status: \_\_\_\_\_**  
 (Self: 1, Own with family: 2, Joint ownership: 3, Leased: 4, N/A: 5, Others: 99 (Pl. mention.....))

**(b) How much do you earn the pond (annually)\_\_\_\_\_**

**17. What are the domestic valuables do you have**

S/N	Type of valuables	Quantity	Net value (BDT)	Monthly income (BDT)
1				
2				
3				
4				
5				
6				
7				
8				

(Bed: 1, Clock: 2, Radio: 3,TV: 4, Show-case: 5, Furniture: 6,Ornaments: 7, Valuable shari: 8, N/A: 10,Others: 99 (Pl. mention.....))

**Common Property Resources**

**18. What kinds of Common Property Natural Resources are available in the area?**

- (a) \_\_\_\_\_
- (b) \_\_\_\_\_
- (c) \_\_\_\_\_
- (d) \_\_\_\_\_
- (e) \_\_\_\_\_

**19. Who has the ownership of the Common Property Natural Resources?**

- (a) Government, (b) Private lease holder, (c) Everyone, (d) Specific community, (e) Organizations (f) Others\_\_\_\_\_

**20. What is the condition of Common Property Natural Resources?**

- (a) Very Good (b) Good (c) Better than before (d) Moderate (e) Declining (f) Bad

**21. Who manages or controls the use of CPR?**

- (a) Government, (b) Private lease holder, (c) Everyone, (d) Specific community, (e) Organizations (f) Others\_\_\_\_\_

**22. Are you dependent on CPR? (a) Yes (b) No**

**23. What kind of CPR you use for livelihood purpose?**

- (a) \_\_\_\_\_  
(b) \_\_\_\_\_  
(c) \_\_\_\_\_  
(d) \_\_\_\_\_  
(e) \_\_\_\_\_

**24. Do you need to pay for the CPR? (a) Yes (b) No. if Yes, How much\_\_\_\_\_**

**25. What is the harvesting season for CPR**

S/N	Name Of CPR	Harvesting season	Number of harvest in a year	Usages

**Microcredit and Green Microcredit**

**26. Are you a member of any self help group or NGO?: (a) Yes (b) No**

**27. Are you receiving any credit or loan from any NGO? (a) Yes (b) No (Multiple answers)**

S/N	Name of the organization	Amount (BDT)	Number of time Loan received

**28. What are the terms and conditions for getting micro-credit from NGO**

Name of NGO	Amount	Duration	Interest Rate	Approval Time	Terms and Conditions

**29. How much money is provided at the first time in other NGO? : \_\_\_\_\_.**

**30. How much money is provided at first time in CNRS? : \_\_\_\_\_.**

**31. How much money is provided at first time for GM by CNRS? : \_\_\_\_\_.**

**32. Where do you use the credit for?**

- (a) Livelihood
- (b) Personal (luxury item)
- (c) Health
- (d) House
- (e) Other \_\_\_\_\_

**33. Did you use the credit for green purposes? What amount?**

- (a) Buying Fishing net
- (b) Invest in vegetable gardening or vegetable selling
- (c) Buying saplings to plant in your homestead or other place
- (d) Buying domestic animals (cow, goat)
- (e) Invest money in paddy cultivation
- (f) Invest for aquaculture
- (g) Other green purposes: \_\_\_\_\_

**34. Did you use the credit for non-green purposes?**

- (a) Small business (shop/tea stall etc.)?
- (b) Household consumption?
- (c) Health or medicine or treatment purpose?
- (d) Marriage?
- (e) Other purposes?

**35. Do you borrow money from multiple sources at a time? (including NGO, Friends and Relatives)**

Source	Amount	Interest rate	Reason	Problem facing in repayment

**36. Why do you prefer (or not) micro-credit compared to other sources of loan available in your locality?**

- (a) \_\_\_\_\_
- (b) \_\_\_\_\_
- (c) \_\_\_\_\_
- (d) \_\_\_\_\_
- (e) \_\_\_\_\_

**37. Does the micro-credit organization provide any training to improve your livelihood or to manage the natural resources? If yes, what type?**

- (a) Yes      (b) No

- (a) \_\_\_\_\_
- (b) \_\_\_\_\_
- (c) \_\_\_\_\_

**38. What was your monthly income (general livelihood) before getting micro-credit? And what is now?:** \_\_\_\_\_

**39. Does micro-credit help to increase your monthly income? How?**

**40. Do you have any savings:**    (a) Yes      (b) No

**41. If yes, where?** \_\_\_\_\_

*(Project VO fund: 1, NGO group: 2, Post office: 3, Bank: 4, Savings documents: 5, Insurance: 6, Land leasing: 7, loan to others: 8, Others: 99 (pl. mention.....))*

**42. Total amount of savings in BDT:** \_\_\_\_\_

## Annex 2

### Interview schedule Case study

- a) How did you get to know about Green Microcredit? What particular factor motivated you to take the green micro credit loan instead of normal microcredit loan?
- b) How much was the amount of the loan? Was there any condition in taking the loan?
- c) Are you receiving any additional incentive for taking this loan?
- d) Did you received any a) training or b) did you participate in any awareness increase program before or after the loan was given?
- e) How did you use this loan in terms of a) investment and b) other use?
- f) Now, let us talk about your cultivation. Do you own the land?
- g) If you rented in the land, how much did you pay for renting the land?
- h) How did you prepare your land for cultivation?
- i) Where did you get the seed for the crop? What is the price (per unit e.g. per kg. ) of the seed? How would you rank the quality of the seed? Does the seed regenerate or not?
- j) What kind of problem did you face after planting seeds?
- k) How did you control pest and weeds in the agricultural land (vegetable garden)?
- l) How your surrounding field are cultivated? Do they use any chemical fertilizer or herbicide or pesticides?
- m) Where do you sell your produce? How much did you get from selling your produce (per unit)?
- n) Do you sell your produce directly in local markets (e.g. haat, bazaar etc.) or wholesalers collect produce from you in the field?
- o) Who is your targeted customer?
- p) Are the people aware about Green Microcredit?
- q) Is there any demand for organic produce in the local market?
- r) Is there any price difference between your produce and other produce?
- s) What is your future plan in terms of organic farming?

- t) What are main problems/barriers in producing organic produce?
- u) Are you going to take this loan again after you finish repayment?
- v) Would you have taken this loan without the associated incentives?
- w) Will you do organic farming next time without this loan?
- x) Do you think you can make profit from this?
- y) If you make profit from your organic farming, how would you use the profit?
- z) When are you going to plant your next crop?
- aa) When do you need the loan most in the processes?
- bb) How Green Microcredit can be made popular among other people and organization?

## **Annex 3**

### **Interview schedule for Policy maker.**

1. Let me start by asking your opinion on microcredit?
2. Do you think any of the microcredit programs are intentionally putting any emphasis on environment or environmental sustainability while giving credits?
3. What do you fill or understand by green microcredit?
4. How you would define green microcredit? (Are you familiar with any microcredit that is environmental friendly or supports conservation of natural resources?)
5. In your personal opinion, do you think this is a viable concept? Why or why not?
6. As a policy maker or in place to make change, how do you think this could be made more popular and viable among the Microcredit providing organization and borrowers?
7. What kind of policy intervention can be taken to make this more attractive to the microcredit providing organization?
8. Is there any need for governmental support to encourage environmental friendly microcredit to the microcredit organizations (donor)
9. What kind of policy assistance and incentive do they need to implement this concept? ( government donor)

## Annex 4

### Organic vegetables garden, Environment friendly Plant nursery and cow dung manure production, Monthly status Owner: Blue Rani Biswas

Name of Month	Activity	Target	Achieve	Income Tk.	Price per Kg Organic	Price per Kg (Non-Organic)	Production Cost Tk.	Loss/ Profit	Remarks
January' 11	Cultivate Olcopy	30 kg	25 kg	200.00	10.00	8.00	-	200.00	
	Sweet gourd	-	-	-	-	-	200.00	(200.00)	Seed cost
February' 11	Tomato	200 kg	93 kg	1209.00	13.00	10.00	50.00	1159.00	
	Potato	400 kg	350 kg						Not sale Stock in House.
	Data	200 kg	159 kg	1590.00	10.00	8.00	30.00	1560.00	
March' 11	Tomato	-	67 kg	871.00	13.00	10.00	871.00		
	Data	-	10 kg	80.00	10.00.00	8.00	10.00	70.00	
April' 11	Data	300 kg	250 kg	1050.00	5.00	3.00	50.00 +1350.00	(350.00)	Labour cost 150*9
	Potato	400 kg	350 kg	3200.00	-	-	-	3200.00	
	Red Leaf	50 kg	40 kg	400.00	10.00	8.00	10.00	390.00	Seed cost 20/-
	Basil leaf	40 kg	35 kg	350.00	10.00	8.00	10.00	340.00	
May' 11	Data	100 kg	100 kg	500.00	5.00	3.00	-	500.00.00	
	Sweet gourd	100 kg	40 kg	600.00	15.00	12.00	-	600.00	
June' 11	Basil leaf	-	10 kg	150.00	12.00	15.00	-	150.00	
		-	-	600.00	-	-	-	600.00	Water sall
July' 11	Mahagoni plan	-	300	1800.00	6.00	-		1800.00	
	Joint mango plant with hybrid	-	120	-	6.66.00	-	800.00	(800.00)	
*Present position Bule rani plough Paddy for seed because 3months the land not cultivation vegetable for huge water.									
August' 11	-	-	-	-	-	-	-	-	Water Cover the land
September '11	Harvesting Paddy	-	120 kg	2250.00	18.75	-	500.00	1750.00	
October' 11	Tomato	1000 kg	-	-	-	-	1120.00	(1120.00)	
*Tomato seed 120/-; Data 20/-; Basil leaf 20/-; Net 700/-; Land Preparation 300/-									
November '11	Basil leaf	50 kg	-	-	-	-	20.00	(20.00)	
December '11	-	-	-	-	-	-	20.00	(20.00)	
January' 12	Data	-	50 kg	400.00	-	-	-	400.00	
	Tomato	-	75 kg	1100.00	-	-	-	1100.00	
February' 12	Data	-	75 kg	600.00	-	-	-	600.00	
	Tomato		310 kg	3100.00	10.00	-		3100.00	
March' 12	Tomato		460 kg	3240.00.00	7.00	-		3240.00	
April' 12	Data	300 kg	269 kg	2152.00	8.00	6.00	-	2152.00	
	Basil leaf	120 kg	105 kg	1050.00	10.00	8.00	-	1050.00	
	Okra	40 kg	22 kg	325.00	15.00	15.00	50.00	275.00	Seed cost
	Basil leaf	40 kg	35 kg	350.00	10.00	8.00	10.00	340.00	
May' 12	Basil leaf	-	10 kg	100.00	10.00	10.00	-	100.00	
June' 12	-	-	--	-	-	-	-	-	
July' 12	Mango Plant	40	33	1650.00	-	-	165.00	1485.00	

Name of Month	Activity	Target	Achieve	Income Tk.	Price per Kg Organic	Price per Kg (Non-Organic)	Production Cost Tk.	Loss/ Profit	Remarks
	Mahagoni Plant	500	467	8406.00	-	-	1168	7238.00	Labor Cost
August '12	-	-	-	-	-	-	-	-	
September '12	Paddy	200 kg	100 kg	1000.00	-	-	700.00	300.00	
<p><b>*January 2011 - December 2011</b>  <b>Total Income - Tk. 14,850.00; Total Expenditure Tk. 8,170.00; Profit Tk. 10,680.00.</b>  <b>*January 2012 - December 2012</b>  <b>Total Income - Tk. 23,873.00; Total Expenditure Tk. 2,093.00; Profit Tk. 21,380.00.</b>  <b>*Total loan taken during the project Tk. 20,000.00+10,000.00 = 30,000.00</b></p>									

Source CNRS

## Annex 5

### **Maila Cultivation & Mat making Project , Monthly status** **Owner: Rekha Rani Roy**

Name of Month	Activity	Target Pieces	Achieve Pieces	Income TK	Production Cost Tk.	Loss/ Profit Tk.	Remarks
January'11	1.Knitting and selling mat	100	80	8000.00	2800.00	5200.00	
February'11	1.Knitting and selling mat	100	70	7700.00	2450.00	5250.00	Sale 110/*70 cost35/*70
	Buying <i>Maila</i>	-	-	-	1750.00	(1750.00)	Previous stock end.
March'11	1.Knitting and selling mat	100	40	4000.00	1400.00	2600.00	Busy for Harvesting
	2Harvesting for 1st time	550 bundle	500 bundle	-	1500.00	(1500.00)	Harvesting & Draying labor cost 150/*10
April'11	1.Knitting and selling mat	100	74	7140.00	2590.00	4550.00	Sale 110/*74 cost 35/*74
	2.Harvesting for 1st time	800 bundle	700 bundle	-	1800.00	(1800.00)	Harvesting & Draying labor cost 150/*12
May'11	1.Knitting and selling mat	120	90	9900.00	3150.00	6750.00	Sale110/*90 cost 35/*90
June'11	1.Knitting and selling mat	120	80	8800.00	2800.00	6000.00	Sale 110/*80 cost 35/*80
July'11	1.Knitting and selling mat	120	75	8250.00	2625.00	5625.00	Sale 110/*75 cost 35/*75
	2.Harvesting for 2st time	800 bundle	700 bundle	-	2400	(2400.00)	Harvesting & Draying lab our cost 200*12 Busy for Harvesting
August'11	1.Knitting and selling mat	120	112	12320.00	3920.00	8400.00	Sale 110/*112 cost 35/*112
September'11	1.Knitting and selling mat	120	102	11220.00	3570.00	7650.00	Sale 110/*102 cost 35/*102
October'11	1.Knitting and selling mat	120	70	7700.00	2450.00	5250.00	Sale 110/*70 cost 35/*70
	2.Seed Collection	-	-	-	300.00	(300.00)	Labor cost
November'11	1.Land lease	-	-	-	3000.00	(3000.00)	50 des.
	2.Cultivate <i>Maila</i>	-	-	-	2500.00	(2500.00)	Labor,& Plough cost
	3.Knitting &Selling Mat	120	115	12650.00	4025.00	8625.00	Sale 110*115 cost 35*115
December'11	Knitting & Selling Mat	120	80	8800.00	2800.00	6000.00	Sale 110*80 cost 35*80
January'12	Kitting &Selling Mat	120	100	11000.00	3500.00	7500.00	Sale 110*100 cost 35*100
February'12	3.Knitting &Selling Mat	120	75	8250.00	2625.00	5625.00	Sale 110*75 cost 35*75
March'12	1.Knitting and selling mat	120	60	6600.00	2100.00	4500.00	Sale 110*60 cost 35*60
	2.Harvesting for 1st time	50 Bundle	30 Bundle	1800.00	(1800.00)	Labor cost 150*12	
April'12	1.Knitting and selling mat	120	80	12000.00	2800.00	9200.00	Sale 150*80 cost 35*80

Name of Month	Activity	Target Pieces	Achieve Pieces	Income TK	Production Cost Tk.	Loss/ Profit Tk.	Remarks
	2.Harvesting for 1st time	50 Bundle	20 Bundle		750.00	(750.00)	Labor cost 150*5
May' 12	1.Knitting and selling mat	120	100	13000.00	3500.00	9500.00	Sale 130-*100 cost 35/*100
June' 12	1.Knitting and selling mat	120	80	10400.00	2800.00	7600.00	Sale -130*80 cost 35/*80
	2.Harvesting for 2nd time	40Bundle	30 Bundle		1500.00	(1500.00)	Labor cost 150*10
July' 12	1.Knitting and selling mat	120	110	13200.00	3850.00	9350.00	Sale 120-*110 cost 110*35
August' 12	1.Knitting and selling mat	120	100	12000.00	3500.00	8500.00	Sale 120-*100 cost 100*35
September' 12	1.Knitting and selling mat	120	90	11400.00	3675.00	7725.00	Sale 120-*95 cost 95*35
October' 12	1.Knitting and selling mat	120	110	13200.00	3850.00	9350.00	Sale 120-*110 cost 110*35
	2.Seed Collection	-	-	-	200.00	(200.00)	Labor cost 20*10 Basket
November' 12	1.Land lease	-	-	-	3000.00	(3000.00)	100 des.
	2.Cultivate <i>Maila</i>	-	-	-	1250.00	(1250.00)	Labor cost 5*250
	3.Knitting & Selling Mat	120	100	12000.00	3500.00	8500.00	Sale 120-*100, cost 100*35
December' 12	1.Knitting & Selling Mat	120	85	10200.00	2975.00	7225.00	Sale 120-*85, cost 85*35
	2.Cultivate <i>Maila</i>	-	-	-	1750.00	(1750.00)	Labor cost 7*250
<b>*January 2011 - December 2011</b> <b>Total Income - Tk. 106,480.00; Total Expenditure Tk. 47,830.00; Profit Tk. 58,650.00.</b> <b>*January 2012 - December 2012</b> <b>Total Income - Tk. 133,250; Total Expenditure Tk. 48,925.00; Profit Tk. 84,325.00.</b> <b>*Total loan taken during the project Tk. 19,000.00+17,000.00+3,000.00 = 39,000.00</b>							

Source CNRS

## Annex 6

### **Maila Cultivation & Mat making Project, Monthly status** **Owner: Bishakha Rani Roy**

Name of Month	Activity	Target Pieces	Achieve Pieces	Income TK	Production Cost Tk.	Loss/ Profit Tk.	Remarks
January'11	1.Knitting and selling mat	120	112	5950.00	2625.00	3325.00	Small Size
February'11	1.Knitting and selling mat	100	80	4250.00	1875.00	2375.00	
March'11	1.Knitting and selling mat	100	50	2656.00	1172.00	1484.00	
	2.Harvesting for 1st time	200 bundle	75 bundle	-	300.00	(300.00)	Harvesting & Draying labour cost 150/-*2
April'11	1.Knitting and selling mat	100	60	6600.00	2100.00	4500.00	Sale 110/-*60 cost 35/*60
	2.Harvesting for 1st time	800 bundle	675 bundle	-	1500.00	(1500.00)	Harvesting & Draying labour cost 150/-*10
May'11	1.Knitting and selling mat	120	75	8250.00	2625.00	5625.00	Sale 110/*75 cost35/*75
June'11	1.Knitting and selling mat	120	80	8800.00	2800.00	6000.00	Sale 110/*80 cost35/*80
July'11	1.Knitting and selling mat	120	70	7700.00	2450.00	5250.00	
	2.Harvesting for 1st time	1200 bundle	1500 bundle	-	3000.00	(3000.00)	Harvesting & Draying labour cost 200/*15
August'11	1.Knitting and selling mat	120	50+62	8070.00	2670.00	5400.00	Sale 110/*62,25*50 cost 35/*62*10*50
September'11	1.Knitting and selling mat	120	125+15	4775.00	1775.00	3000.00	
October'11	1.Knitting and selling mat	120	70	7700.00	2450.00	5250.00	Sale 110/*15,25*125 cost 35/*15*10*125 Bishakha got 3rd Time Loan
	2.Seed Collection	-	-	-	500.00	(500.00)	Sale 110/*70 cost 35/*70
November'11	1.Land lease	-	-	-	8000.00	(8000.00)	200 des.
	2.Cultivate Maila	-	-	-	5000.00	(5000.00)	Labor cost
	3.Knitting & Selling Mat	120	112	2800.00	1120.00	1680.00	Labor,& Plough cost
December'11	1.Knitting & Selling Mat	120	50+40	6000.00	2150.00	3850.00	Sale 25/*112 cost 25*10
	Seed & Seedling			1000.00		1000.00	Sale 100/*50,25*40 cost 35/*50*10*40
January'12	1.Knitting & Selling Mat	120	60+50	7250.00	2600.00	4650.00	8 basket Seed 50*8 Seedling 600/-
February'12	1.Knitting & Selling Mat	120	35+40	4500.00	1625.00	2875.00	Sale 100/*60,25*50 cost 35/*50*10*40

Name of Month	Activity	Target Pieces	Achieve Pieces	Income TK	Production Cost Tk.	Loss/ Profit Tk.	Remarks
March' 12	1.Knitting and selling mat	120	70	7000.00	2450.00	4550.00	Sale 100/-*70 cost 70*35
	2. Harvesting for 1st time	100	10Bundle		750.00	(750.00)	Labor cost 150*5
Aprial' 12	1.Knitting and selling mat	120	80	12000.00	2800.00	9200.00	Sale 150-*80 cost 80*35
	2. Harvesting for 1st time	100	70 Bundle		1500.00	(1500.00)	Labor cost 150*10
May' 12	1.Knitting and selling mat	120	100	13000.00	3500.00	9500.00	Sale 130*100 cost 100*35
June' 12	1.Knitting and selling mat	120	80	10400.00	2800.00	7600.00	Sale 130*80 cost 80*35
	2. Harvesting for 2nd time	60	50 Bundle		1500.00	(1500.00)	Labor cost 150*10
July' 12	1.Knitting and selling mat	120	100	12000	3500.00	8500.00	Sale 120-*100 cost 100*35
August' 12	1.Knitting and selling mat	120	95	11400	3325	8075.00	Sale 120-*95 cost 95*35
September' 12	1.Knitting and selling mat	120	105	12600	3675	8925.00	Sale 120-*105 cost 105*35
October' 12	1.Knitting and selling mat	120	100	12000.00	3500.00	8500.00	Sale 120-*100 cost 100*35
	2.Seed Collection	-	-	-	300.00	300.00	Labor cost 20*15 Basket
November' 12	1.Land lease	-	-	-	6000.00	6000.00	200 des.
	2.Cultivate <i>Maila</i>	-	-	-	1250.00	1250.00	Labor cost 5*250
	3.Knitting & Selling Mat	120	80	9600.00	2800.00	6800.00	Sale 120-*80, cost 80*35
December' 12	1.Knitting & Selling Mat	120	90	10800.00	3150.00	7650.00	Sale 120-*90, cost 90*35
	2.Cultivate <i>Maila</i>	-	-	-	5000.00	(5000.00)	Labor cost 20*250
<b>*January 2011 - December 2011</b> <b>Total Income - Tk. 74,551.00; Total Expenditure Tk. 44,112.00; Profit Tk. 30,439.00.</b> <b>*January 2012 - December 2012</b> <b>Total Income - Tk. 122,550.00; Total Expenditure Tk. 52,025.00; Profit Tk. 70,525.00.</b> <b>*Total loan taken during the project Tk. 16,000.00+10,000.00+10,000.00 = 36,000.00</b>							

Source CNRS

# Annex 7



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Fax (204) 269-7173  
[www.umanitoba.ca/research](http://www.umanitoba.ca/research)

## APPROVAL CERTIFICATE

August 15, 2011

**TO:** **Mohammad M. Khan** (Advisor E. Haque)  
Principal Investigator

**FROM:** **Wayne Taylor, Chair**  
Joint-Faculty Research Ethics Board (JFREB)

**Re:** **Protocol #J2011:081**  
**"Green Microcredit & its Implication on Sustainable Livelihood"**

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

**Please note:**

- If you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to the Office of Research Services, fax 261-0325 - please include the name of the funding agency and your UM Project number. This must be faxed before your account can be accessed.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

**The Research Ethics Board requests a final report for your study (available at: [http://umanitoba.ca/research/ors/ethics/ors\\_ethics\\_human\\_REB\\_forms\\_guidelines.html](http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html)) in order to be in compliance with Tri-Council Guidelines.**