



Khulna University  
Life Science School  
Forestry and Wood Technology Discipline

**Author(s):** Md. Azmal Hossain

**Title:** Community involvement in forest protection

**Supervisor(s):** Dr. Abdus Subhan Mollick, Forestry and Wood Technology Discipline, Khulna University

**Course No:** FWT 5112

**Programme:** Master of Science in Forestry

---

This thesis has been scanned with the technical support from the Food and Agriculture Organization of the United Nations and financial support from the UN-REDD Bangladesh National Programme and is made available through the Bangladesh Forest Information System (BFIS).

BFIS is the national information system of the Bangladesh Forest Department under the Ministry of Environment, Forest and Climate Change. The terms and conditions of BFIS are available at <http://bfis.bforest.gov.bd/bfis/terms-conditions/>. By using BFIS, you indicate that you accept these terms of use and that you agree to abide by them. The BFIS e-Library provides an electronic archive of university thesis and supports students seeking to access digital copies for their own research. Any use of materials including any form of data extraction or data mining, reproduction should make reference to this document. Publisher contact information may be obtained at <http://ku.ac.bd/copyright/>.

BFIS's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission you may use content in the BFIS archive only for your personal, non-commercial use. Any correspondence concerning BFIS should be sent to [bfis.rims.fd@gmail.com](mailto:bfis.rims.fd@gmail.com).

**Community involvement in forest protection**

**MD. AZMAL HOSSAIN**

**ROLL NO. MS-110502**



---

**FORESTRY AND WOOD TECHNOLOGY DISCIPLINE**

**KHULNA UNIVERSITY**

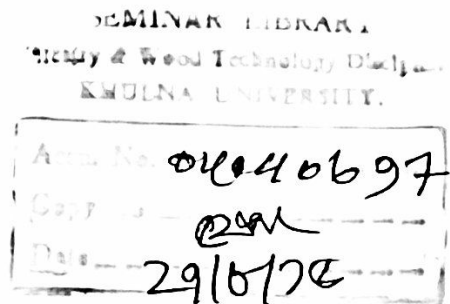
**KHULNA-9280**

**2015**

**Community involvement in forest protection.**

---

**MD. AZMAL HOSSAIN**  
**ROLL NO. MS-110502**



---

**FORESTRY AND WOOD TECHNOLOGY DISCIPLINE**

**KHULNA UNIVERSITY**

**KHULNA-9280**

**2015**

# COMMUNITY INVOLVEMENT IN FOREST PROTECTION

---



**COURSE TITLE: PROJECT THESIS**

**COURSE NO. FWT-5112**

*[This dissertation has been prepared and submitted to the Forestry and Wood Technology Discipline, Khulna University, Khulna-9280, Bangladesh for the partial fulfillment of the degree of M. Sc. in Forestry]*

**Supervisor**

*[Signature]*  
04.06.2015

Dr. Abdus Subhan Mollick  
Professor  
Forestry and Wood Technology Discipline  
Khulna University  
Khulna-9208  
Bangladesh.

**Submitted By**

*[Signature]*

Md. Azmal Hossain  
Roll No. MS-110502  
Forestry and Wood Technology Discipline  
Khulna University  
Khulna-9208  
Bangladesh.

# DECLARATION

I, Md. Azmal Hossain, declare that this thesis is the result of my own works and that it has not been submitted or accepted for a degree in other university.

I, hereby, give consent for my thesis, if accepted, to be available for photocopying and for inter-library loans and for the title and summary to be made available to outside organizations.

**Signature:**

---

---

Md. Azmal Hossain

Student ID:MS-110502

Forestry and Wood Technology Discipline

Khulna University

Khulna- 9208.

**DEDICATED**

**TO**

**MY BELOVED PARENTS**

---

## **ACKNOWLEDGEMENT**

I am very thankful to almighty Allah for successfully completion of my M. Sc. project thesis.

I would like to express my sincere gratitude and profound appreciation to my respectable supervisor Professor Dr. Abdus Subhan Mollick , Forestry and Wood Technology Discipline, Khulna University, Khulna-9208 for his supervision, guidance, inspiration, valuable advices and thoughtful suggestions during the research period. Moreover, without his kind supervision and encouragement I could not come up with this research.

I am grateful to Mr. Md. Mijanur Rahman, Climate Change and Protected Area Management Officer, CREL Project for his inspiration, profound suggestions, encouragement that helped me for conducting this study.

Special thanks to Mr. Gauranga Kumar Kundu and Mr. Md. Jahidul Islam for helping me during different stages of thesis. I express my thanks to all of my friends and well wishers.

## ABSTRACT

The Sundarbans as a World Heritage site is the largest chunk of natural productive mangrove forest in the world. About 3.5 million people inhabiting the surrounding areas of Sundarbans are directly or indirectly dependent on the Sundarbans for their livelihood. But Sundarbans is experiencing illicit felling and overexploitation since many years. Due to lack of alternative income opportunities, education and environmental consciousness most of them are fully or to some extent dependent on the natural resource harvest of the Sundarbans which threatens caption of forest as a whole. Co-management approach might be one of the effectual and judicious alternative income generation options for local communities surrounding the Sundarbans where the local poor people may be engaged indifferent activities which may lead them to earn money and to build environmental awareness to promote conservation and protection of natural resources. This study was undertaken at sundarban and chilla union at Chandpai Range respectively to assess the impact of co-management on forest protection and conservation and to know the reduction of forest dependency by creating alternative livelihood through co-management. Respondents from local community were selected by using random sampling method. Face to face to interview and group discussion were used to collect the require information. It was evaluated that peoples' dependency on the forest for their livelihood was the ultimate hindrance on the ways of conservation and protection of the SRF. Respondents of both sundarban and chilla union expressed very positive attitude toward Co-management as an alternative income opportunities respectively. Proper policy and strategy should be developed to overcome the pitfalls and augment the opportunities to develop co-management activities at the study area.



# TABLE OF CONTENTS

<b>Chapter</b>	<b>Title</b>	<b>Page</b>
	Acknowledgement	i
	Abstract	ii
	Table of contents	iii-iv
	List of acronyms	v
	List of tables	vi
	List of figures	vii
<b>1</b>	<b>INTRODUCTION</b>	<b>1-3</b>
	1.1 Background and justification of study	1
	1.2 Objectives	3
<b>2</b>	<b>LITERATURE REVIEW</b>	<b>4-13</b>
	2.1 Introduction	4
	2.2 What is participation	4
	2.3 Participation as a social process	5
	2.4 Why the participation of local people need to be supported	6
	2.5 Local communities and local people	7
	2.5.1 Local communities are homogeneous entities	7
	2.5.2 Local communities live according to traditional values	7
	2.5.3 Dependency of local people on forest	8
	2.5.4 Local people like the forest and therefore want to protect it	8
	2.5.5 Local people destroy the forest because they did not care about it	8
	2.5.6 Local people have in depth knowledge in environment	8
	2.6 What is Co-management	9
	2.7 Evolution of co-management	10
	2.14 Why co-management?	10
	2.9 Power in co-manmagement	11
	2.10 Conflicts and how to solve it	12

	<b>MATERIALS AND METHODS</b>	<b>14-16</b>
	3.1 Introduction	14
	3.2 Selection of the study area	14
	3.3 Research strategy	14
	3.4 Reconnaissance survey	14
	3.5 Unit of Analysis	14
	3.6 Sampling size and sampling method	15
	3.7 Questionnaire designing	15
	3.8 Data collection	15
	3.8.1 Primary data collection	15
	3.8.1.1 Interview	15
	3.8.1.2 Group discussion	16
	3.8.2 Secondary data collection	16
	3.9 Data processing, analysis and interpretation	16
	3.10 Report preparation and presentation	16
	3.11 Conclusion	16
<b>4</b>	<b>RESULTS AND DISCUSSION</b>	<b>17-25</b>
	4.1 Introduction	17
	4.2 Dependency of respondents on SRF	17
	4.3 Relationship between nature of collection of forest resources and primary occupation of the respondent	18
	4.4 Respondents dependency on SRF and hampering the conservation of natural resources	19
	4.5 Response of people regarding co-management to reduce dependency on forest through creating alternative income opportunities.	20
	4.6 Comparisons of responses about the importance of co- management	21
	4.7 Opinion of people to consider co-management as a promising alternative income source	22
	4.8 SRF is deteriorating	25
	4.9 Lack of job opportunity	26
	4.10 Reduction of entrance into the forest	26

4.11 Knowledge regarding co-management	26
4.12 Funding and incentives for co-management development	27
<b>5 Impact of co-management on livelihood of community people.</b>	<b>26-31</b>
<b>CONCLUSION</b>	<b>32-33</b>
6.1 Conclusion	33
6.2 Recommendations	34
<b>REFERENCE</b>	<b>34-39</b>
<b>APPENDIX</b>	<b>39-42</b>

## **LIST OF Acronyms**

<b>ACF</b>	<b>Assistant Conservator of forest</b>
<b>AIG</b>	<b>Alternative Income Generation</b>
<b>CMC</b>	<b>Co-management Committee</b>
<b>CMC</b>	<b>Co-management Council</b>
<b>CMPA</b>	<b>Co-management Protected Area</b>
<b>CPG</b>	<b>Community Patrolling Group</b>
<b>CREL</b>	<b>Climate resilience and Ecosystems Livelihood.</b>
<b>FD</b>	<b>Forest Department</b>
<b>IPAC</b>	<b>Integrated Protected Area Co-management</b>
<b>IUCN</b>	<b>International Union for Conservation of Nature</b>
<b>NGO</b>	<b>Non-government organization</b>
<b>NSP</b>	<b>Nishorgo support Project</b>
<b>PA</b>	<b>Protected Area</b>
<b>PF</b>	<b>Peoples Forum</b>
<b>SRF</b>	<b>Sundarban Reserve Forest</b>
<b>TK</b>	<b>Taka</b>
<b>USAID</b>	<b>United States Agency for International Development</b>
<b>VCF</b>	<b>Village Conservation Forum.</b>

## LIST OF FIGURES

Figure	Title	Page
4.2	comparative dependency of respondents on SRF	17
4.3	Relationship between nature of collection of forest resources with primary occupation	19
4.4	Respondents dependency on SRF and hampering the conservation of natural resources	20
4.5	Response of people regarding co-management to reduce dependency on forest through creating alternative income opportunities.	21
4.6	comparison of responses about the importance of co-management	22
4.7	opinion of people to consider co-management as a promising alternative income source	23

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background and justification of the study

In Bangladesh, Sundarbans mangrove lies in the delta of the Ganges, Brahmaputra, and Meghna (GBM) rivers on the Bay of Bengal. It is located in the southwest corner of Bangladesh, between 21°30' and 22°30' North and 89°00' and 89°55' East, covering 580000 hectares (Islam, 2010). Most notable services of Sundarbans are acts as barriers against winds and storm surges (Rahman, 2009), serves as coastal defense and reduces coastal flooding and coastal erosion, provide livelihoods of coastal people as well as contributing to the local and national economy (Rahman, 2009; SCBD; 2009, Biswas et al., 2007). Sundarbans is threatened by both anthropogenic and natural factors. Among the natural processes, In this study the major anthropogenic threats were considered.

Millions of people representing a great variety of cultures and land-use practices live in or on the edges of forests. Apart from the fact that they are somehow dependent on natural forest products, these people often do not have much in common. In recent years, however, a large number of them have experienced increasing difficulties in gaining access to local forests and their products owing to deforestation, logging, population pressure or increasing government regulations including declaration of state forests, national parks or wildlife reserves.

With respect to forest protection, participation is often associated with community forestry, which means that a forest is managed or co-managed by people who live close to the forest. Legal, political and cultural settings within which community forestry is practised vary considerably and accordingly, the term covers a range of different experiences and practices. Community forestry is often associated with South and Southeast Asia but it is also found in other regions (Wily 1997). While local participation is important in forest protection, there are situations where it is absolutely necessary, i.e. under high population pressure and resource use conflicts, under communal ownership, and in smaller protected areas because of their vulnerability (Roche and Dourojeanni 1984). In such cases, protection without local participation is doomed to fail. Nevertheless, participation itself provides no guarantee of success. This is because the outcome of participatory processes often depends on additional factors such as an institutional and legal framework or the education and interests of local people and other interest holders. As the case stories presented in this paper show,

governments and their agencies play significant roles in participatory processes by providing - or by not providing - the 'enabling environment'. Indeed, many studies suggest that the optimum formula for conservation is joint control and management by the government and local people (e.g. Singh 1996; Hirsch et al., 1999).

participatory forest management plays a vital role in meeting the needs of rural communities (Adhikari, 2005; Chhetri, 2010). The sustainability of heavily used forests is primarily dependent on the structural characteristics of local forest-governing institutions (Gautam and Shivakoti, 2005). The physical properties of resources have bearing on local people's participation in forest conservation (Smith et al., 2003). Active forest management by local users can increase the regular supply of forest products without degrading forest resources (Chhetri et al., 1993; Nagendra and Gokhale, 2008). Participation can stimulate an ongoing learning process by increasing the awareness of collective responsibility within a community. The greater the control by outsiders, the less local communities tend to be involved at critical decision-making stages (Agrawal, 2001). At the earlier stages of community forestry policy development, there was a general assumption that people at all socio-economic levels would benefit from forest resource conservation activities. Indeed, this assumption has been found unreliable (Upreti, 2000; Jackson and Ingles, 1995). Forest resources have generally improved and continue to do so but conditions for poorer groups have not significantly improved because protection activities do not address broader socio-economic and institutional issues (Varughese and Ostrom, 2001; Malla, 2000; Upreti, 2000).

Co-management is regarded as a tool for natural and cultural resources conservation and protection and it is closely associated with community involvement for community development. Co-management emerges from community development strategy, using local people as a tool to manage the forest along with forest officials. It provides alternative income opportunities which are in essence in rural areas. It has the potentialities to create jobs and generate income opportunities for people from variety of backgrounds, skill and experiences, including rural communities and especially women. It has been implemented in many developing countries often in support of wildlife management, environmental protection and development for indigenous people, protection and conservation of biodiversity.

In Bangladesh co-management came into light through the tropical forest conservation fund Agreement, United States transferred first debt for mature funds in 2004 to protect and ensure the sustainability of biodiversity of the tropical forest in Bangladesh (Khan et al, 2004). In

2004 co-management based project named by Nishorgo Support Project (NSP) was jointly implemented by the Forest Department (FD) and the United States Agency for International Development (USAID) aimed at improving the management and Governance of PAs of Bangladesh (Khan et.al, 2004). Government of Bangladesh adopted community based co-management for the first time in the history of Sundarbans management in 2010 for managing the PAs of the SRF. But, there is no separate management plan for the three PAs (Wildlife Sanctuary) in the SRF. In 2010 a draft integrated management plan was prepared for the entire area of the SRF. The main objectives of present management plan of SRF has been set to: 1) restore, sustain and enhance the biodiversity of the SRF and its surrounding landscape, 2) Provide for resilience-based food security through provision of a variety of subsistent uses , values, benefits, products and services, while ensuring the sustainable supply of these resources for future generations, 3) provide for and enhance ecotourism and recreation opportunities, 4) support and improve community based co-management approaches for the activities taking place in the SRF and its surrounding landscape (FD, 2010).

To succeed in incorporating protection commitment in planning and practice, one must be aware of and involved in the concerns of others. The relationship between forest officials and local people should be developed as well as they need to understand each other. For example success in protecting a landscape in a nation or region depends not just on Government support and local management organization, it also depends on the reaction and involvement of the local population. There are various co-management organizations such as village conservation forum (VCF), people's forum (PF), co-management committee (CMC) and co-management council (CMC) which also stimulate co-management activities. These organizations provide local people with a substantial membership and give opportunity to come closer with higher authority of Forest Department and local administration. These organizations arrange several meeting at weekly basis or monthly basis on some predetermined agenda and discuss how to solve the existing problem based on their own experience. Every member of these organizations has equal scope to talk in the meeting and express their decision making power.



# CHAPTER TWO

## Literature Review

### 2.1 Introduction

This chapter provides an extensive literature review of collaborative management. It starts with the definition of participation, the need of participation for local people etc. The later part of this chapter is described about what is co-management, evolution and why co-management is required.

### 2.2 What is participation:

The concept of participation originally grew out of a radical criticism of the mainstream development projects in the 1960s and 1970s. Critics asked why development projects often did not lead to the expected results and came to the conclusion that lack of people's participation was the problem. Too many projects, it was argued, were designed and implemented without debate and co-operation with people whose lives were affected by the projects. Since then, participation has become one of the buzz words of development jargon. Now it seems that every project descriptions and plans use a "participatory approach", often because this is required by donor organisations for political reasons. Unfortunately, project planners and implementers frequently use the word 'participation' while they continue their traditional style of management without real involvement of local people (Wily 1997). Nonetheless, real participation may lead to more effective conservation of forest resources.

When developers and conservation planners use the term participation, they often mean very different things. Adnan et al. (1992) have defined three basic meanings of participation:

1. Participation is a process in which information on a planned project is made available to the public. This type of participation often involves only community leaders. These people are listened to but the decision-making power rests with the outside planners and project implementers.
2. Participation includes project-related activities rather than mere information flow. This might involve labor from a community or a longer-term commitment by local groups to

maintain services or facilities or even to plan for their future use. However, people are involved but not in control.

3. Participation means that a project is a direct outcome of people's own initiatives. A famous example of this is the Chipko movement, which began in the Himalayas in the 1970s when women mobilized themselves to protect the trees that were vital to their economy (Shiva 1988).

Of course, we find many intermediate forms between these three categories. Some people have also claimed that participation has in reality become a meaningless term, which too often serves to disguise a continuation of top-down planning (Rahnema 1992). Others have argued that it is not reasonable to describe a process as participatory if local people are merely asked to supply information or labor to a project already designed and decided by planners (cf. Gardner and Lewis 1996). In line with these arguments, we only consider participation as real when local people are involved in the planning, organization and decision-making of a project from the very beginning.

### **2.3 Participation as a social process**

If effective participation in conservation means involving people throughout the organization and decision-making processes, the question then arises how to create this kind of participation? To begin with, it is helpful to think of participation as a process. Participation is communicating and working together with different people and groups in order to achieve commonly defined goals. Participation is learning from each other's knowledge and mistakes. It is a process made up of different steps or phases, each of which presents new insights and challenges. Participation is sometimes difficult but the rewards of truly participatory processes are often impressive, as more effective forest conservation is achieved (Wily 1997, World Bank 1996). Conservation of forest resources requires that interest holders trust one another and commit themselves to the task of sustainable forest use. Legal or administrative procedures may have to be changed or power redistributed to build up relations of trust. Mutual trust often needs time to develop, especially if interest holders have no previous experience of sharing decision-making power and management responsibilities. It is the concrete actions made by interest holders in relation to each other - rather than their words or promises - which ultimately determine whether trust evolves or not.

It is important to consider how a conservation process itself may or may not help to catalyze relations of trust and commitment among interest holders. An ambitious timetable of insufficient duration for a given conservation activity may, for example, make it difficult to ensure the trust and commitment of all interest holders. This is not least the case if conservation activities involve outside project personnel. Often, such projects are envisaged to last just a few years before the 'outsiders' leave an area again. If local people have no previous experience with participation and co-operation or if tenure rights are insufficiently secured, the process of building up trust and commitment may take much longer than such a time frame permits. Likewise, if project personnel depart before the positive effects of conservation activities become visible for local interest holders, then the latter are less likely to remain committed to the conservation process.

Donors' preference for large-scale rather than small-scale projects can also inadvertently lead to barriers to trust and commitment. This is especially true if project managers (be they local people or 'outsiders') want other interest holders to commit themselves on a level beyond their capacities and aspirations. Such an approach can make other interest holders insecure, leading to minimal commitment or no involvement at all. In order to avoid such situations, conservation activities need to be organized so that interest holders can commit themselves gradually, task by task, and progressively build up relations of trust. All key interest holders should be involved in conservation activities from the very beginning of the planning process to the actual implementation of forest co-management.

## **2.4 Why the participation of local people needs to be supported**

Recently, it has been recognized that participation of local people is important in the forest management. But sometimes there is no opportunity legally for those people to participate in this process. Even though there is an opportunity to participate in the forest protection, sometimes people could not utilize it effectively or that process generates adverse results. Those results caused by many reason; too complicated procedure, lack of awareness of social and economic problem in the local community, disregard for traditional culture including the management way for natural resources, tenure right etc. That is the reason why it is necessary to support those systems implementing effectively and achieving their purpose. There is an ideal measure already. It is an international treaty called "the convention on access to information, public participation in decision-making and access to justice in environmental,

matters" was adopted on June 1998 in ECE (The Economic Commission Europe). This convention requires parties to support public participation by disclosing information related to environmental matters. In this treaty, government can refuse to disclose information, but people have the right to appeal to court about this decision.

I think this is an ideal measure to support the participation of local people, but I think that the introduction of a such system is possible in only developed countries such as Europe. In Asian and pacific region, the situation is difference from Europe. We have to seek alternative way, which can support the participation effectively in this region.

## **2.5 Local communities and local people**

In protection projects, villages or local communities are sometimes identified rather broadly as a single interest holder. It is important to question this as well as other assumptions about local communities. Below are some frequently held incorrect assumption-

### **2.5.1 Local communities are homogeneous entities:**

Most local communities are, in fact, characterized more by social divisions than by equality in terms of land holding, power, and knowledge. Women and men may have different interests in a forest. Landless people may desire access to the forest and its resources for other purposes than landholders. If only community leaders (who are usually male landholders) are involved in a participatory process, there is a risk that other interest groups within the community are neglected. Failure to consider the views of all community members is a common source of conflict.

### **2.5.2 Local communities live according to traditional values:**

The idea that rural communities do not change or acquire new knowledge, habits and interests is wrong. Social and cultural traditions change as people get new options, ideas, and technology.

### **2.5.3 Dependency of local people on forest:**

It is true that many people living in tropical forest areas are highly dependent on forest resources. However, in many countries infrastructure development and access to urban labor markets have made rural people much less dependent on forest products than they were in the past.

### **2.5.4 Local people like the forest and therefore want to protect it:**

Indeed, in social groups there often exist different ways of thinking about and acting towards forests, which to outside observers might seem unintelligible or paradoxical. For example, while people may 'like' and treasure the forest in the sense that it provides them with fuel wood, food, medicine, and timber, the forest might at the same time be associated with negative meanings. In Southeast Asia, for example, the forest has traditionally been perceived as the sphere of uncivilised and immoral beings including spirits, wild animals, and ethnic minority groups. As such forests are linked to notions of backwardness and danger, and carries a negative meaning for many people in these countries (Davis 1984, Stott 1991, Isager 2001). They may be keen to clear it and expand agricultural production, which in their view is more civilized and desirable.

### **2.5.5 Local people destroy the forest because they did not care about it:**

This assumption is possibly as common as the previous assumption. Both ideas rest upon the underlying incorrect notion that people's perceptions and feelings about forests are straightforward and unambiguous and make them act in well-defined, standardized ways. In reality, people's knowledge (e.g. on forests) and the relationship between their knowledge and concrete actions are highly complex matters and oversimplification should be avoided (cf. Barth 1993, Bourdieu 1990).

### **2.5.6 Local people have in depth knowledge in environment:**

This assumption is as common as the adverse assumption that local people's knowledge about forest and biodiversity is irrelevant for protection planners. In fact, forest-dwelling people do have considerable knowledge on forest resources and ecology. Government planners or

'external advisors' too often underestimate this knowledge. At the same time, however, it should not be assumed that all people, labeled as local or indigenous, hold in-depth knowledge of their natural environment.

## **2.6 What is Co-management**

Collaborative management or co-management has been defined as 'the sharing of power and responsibility between the Government and the local resource users' (Berkers et al., 1991). But the world bank focuses on equity. The world bank has defined co-management as 'the sharing of responsibilities, rights and duties between the primary stakeholders, in particular local communities and the nation state, a decentralized approach to decision –making that involves the local users in the decision making process as equals with the nation state ' (The world bank, 1999).on the other hand co-management can be understood as a situation in which two or more social actors negotiate , define and guarantee amongst themselves a fair sharing of the management functions , entitlements and responsibilities for a given territory area or set of natural resources (Borrini , 2000).

But the most restrictive definition has been given by Ansell and Gash (2007)"a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal , consensus oriented , and deliberative and that aims to make or implement public policy or manage public programs or assets".

There are various constraints and pitfalls in supporting collaborative forest management was designed by Ingels et al., (1999) :

- Lack of appropriate training, understanding of CFM or commitment by convincing or supporting organizations or individuals.
- Lack of confidence inability of local people to manage resources.
- Mistakes in starting too big and setting physical targets.
- Rushing to start CFM before an appropriate process is developed.
- Provision of CFM support programs of too short life span.
- Imposition of CFM model without adequate participation of interests group.
- Difficulty in accepting error as a learning experience.
- Tendency to overlook local institutions and local perceptions.
- Improper or unskilled design and use of participatory processes.

## **2.7 Evolution of co-management**

The term co-management is relatively recent. Pinkerton (2003) traces the earliest use of the term to the late 1970s, in the management of salmon under the Bolt Decision by the US Treaty Tribes in Washington State. However, the practice of formalized power sharing in resource management goes back to earlier times. In the area of fisheries, the earliest documented legal arrangement seems to be the Lofoten Islands cod fishery in Norway in the 1890s (Jentoft and Mccay, 1995), and Japanese inshore fisheries under Japan's 1901 Fisheries Act and its subsequent revisions (Lim et al., 1995). In the management, government-community partnerships existed in the commui Kumaon Himalayas, India, from the 1920s and the 1930s (Agrawal, 2005), ai forests of Kirinyaga, Kenya, from the 1930s and the 1940s (Castro and Neilson, 2001).

Indian joint forest management started in 1972 in West Bengal State as a revenue sharing arrangement to replant degraded forest areas (Agrawal, 2001). The earliest wildlife co-management started in the 1980s in northern Canada and Alaska (Kendrick, 2003) and in Africa for revenue sharing from safari hunting (Getz et al., 1999). Watershed co-management is probably most advanced in the United States (Brunner et al., 2005) and river basin co-management in Europe (Pahl-Wostl and Hare, 2004; Pahl-wostl et al., 2007). There are early examples of co-management of protected areas, such as the Kakadu National Park in Australia, but protected area co-management did not become widespread until the 1990s (Borrini-Feyerabend et al., 2004)). The early literature depicted co-management as a class of relatively simple partnership arrangements, for example, in the implementation of indigenous land and resource claims (Berkes et al., 1991). However, the wide range of international experience accumulating since the 1980s indicates that co-management has become more complex and dynamic than might be concluded from this earlier literature and evolved in diverse directions (Plummer and Armitage, 2007).

## **2.8 Why co-management?**

A major justification for co-management is the belief that increased stakeholder participation will enhance the efficiency and perhaps the equity of the intertwined common property resource management and social systems. According to this view, people will respond in a positive manner to material and social incentives. A recent publication by the food and

agricultural organizations asserts: "the promotion of collaborative management is based on the assumption that effective management is more likely to occur when local resource users have shared or exclusive rights to make decisions about the benefit from resource use" ( Ingels et al., 1999). The motivation to manage a resource in a sustained manner also depends on peoples ability to be assured of possessing long term access to it. Having security of tenure to, and receiving benefits from, a resource are critical variables for community involvement. The complete devolution of governance responsibility over natural resources to indigenous people and other rural communities offers a means of fulfilling these conditions (Banerjee, 2000). But such far reaching reforms may not be palatable to national governments. co-management may offer a pathway for resource users to obtain a proprietary share in the authority and decision making powers that underwrite management. However, a degree of conflict may be necessary before the state and other stakeholders are willing to enter into negotiations for a co-management agreement.

## **2.9 Power in co-management**

Central to co-management is the issue of power (Pomeroy and Berkes, 1997; Meadowcroft, 1998; Jentoft, 2000). Power is the ability to control, potential to influence, and capability to exercise authority (Pollard, 1994). Jentoft (2000) examines power in the context of the commons suggesting power is "the prerogative of an authority such as the state to deprive fishers of their freedom respecting harvesting practices and investments". Power as a critical element in co-management is identified and examined. Within co-management arrangements power may be retained by existing agencies as cooperative management regimes may at times be contrary to political culture (Meadowcroft, 1998). Power held by various stakeholders is a crucial issue in the establishment and maintenance of collaborative initiatives, because it has a strong impact on why people will or will not participate, and how active participation might be encouraged. Power has often been misused in participatory management contexts by particular stakeholders to ensure that advantages are retained over less powerful groups (see Mearns et al, 1997; Buchy et al, 2000). Unequal power distribution can also exist within interest groups, based on issues such as gender, culture, age or commercial advantage, and can have profound influences on equity and sustainable management of natural resources (see Covers 2000; Gleeson 2000).

Pomeroy and Berkes (1997) identify the scope and Nature of arrangements occurring between a state system of Management and a local system of management. Presented In order



from a government-based system to a community based system, arrangement take the form of informing, consultation, communication, information exchange, advisory role, joint action, partnership, community control, and inter-area coordination (Pomeroy and Berkes, 1997).”

## **2.10 Conflicts and how to solve it:**

Diverging interests and disputes among interest holders sometimes grow into major conflicts. As observed by Ayling and Kelly (1997) there are no more ‘resource frontiers’ in the world and virtually every change of land use or expansion of resource use tends to involve conflict – be it between nations, regions, districts, or individuals. Within villages, divisions along family, gender or clan lines or long-standing personal enmities between individuals can be fuelled by land-use conflicts. Between villages there might be competition over resources. By promoting the interests of one village -or one group of interest holders – conservation activities risk causing resentment among others. For example, external agents such as private companies or NGOs holding interests in an area will often not appreciate the local population mobilizing for purposes that go against their interests and ideas. Conflict is not by definition negative but may lead to positive social or environmental changes. Indeed, conflicts are a natural part of social dynamics and whether they are perceived as negative or positive depends on social position or political standpoint. Having said that it is obvious that conflicts can cause problems for conservation activities if they are not resolved in a constructive way. If conservation activities affect specific groups negatively, this is likely to cause conflict. The risk of conflict will, therefore, be minimised if all interest holders are involved throughout conservation planning and decision-making. However, even the most careful planning will not prevent conflicts from arising. Sometimes conflict may already be present. In this case the conservation managers have to decide whether it is too serious to resolve and whether the site should be abandoned for another.

In some situations interest holders can deal with conflicts without government intervention according to local traditions of conflict management. Otherwise, the following guidelines for conflict management are helpful. The guidelines are formulated specifically to conservation planners by the Foundation of the Peoples of the South Pacific International (Tapisuwe *et al.*, 1998), an organisation working with participation in conservation in Vanuatu (see also FAO 1994; Buckles 1999).

1. All complaints should be taken seriously by planners. Listen to the concerns of both sides. To be sure you fully understand the concerns repeat them in your own words after listening.

Think about the best time and place to discuss complaints. Remember that in many societies women are not supposed to speak up in public hearings and other groups such as poor or landless men may as well for their own reasons remain silent during hearings.

2. Planners should not try to solve the conflicts on their own. Discuss the matter with all interest holders. Discuss why the complaint is being made. What are the underlying issues? What is needed to solve the conflict?

3. If there are many problems or underlying issues that need to be dealt with, it is a good idea to prioritise them in terms of a: magnitude (the amount of people, land, trees affected by a problem), and b: importance (the impact a problem may have on different interest holders).

4. Encourage all interest holders to look for positive solutions to any conflict they meet. Think about how to compensate those who are affected by a problem.

5. Discuss and modify the options until everyone can accept the solution. It should be noted that these guidelines depend on the voluntary participation of all relevant interest holders. Cultural conditions, including people's willingness to publicly acknowledge a conflict, will make the guidelines more or less useful in different parts of the world.

## **CHAPTER THREE**

### **MATERIALS AND METHODS**

#### **3.1 Introduction**

This chapter consists of selection and location of the study areas i.e. rationale of selection of study areas (two Unions). It also describes the methodologies used to use the research objectives including the research approach and process, the selection of respondent, the research population, sample size and sampling method, data analysis procedures and lastly the flow chart of methodology used in the research.

#### **3.2 Selection of the study area**

In this study two unions' sundarbarban & chilla from chandpai range of the sundarbans were selected. chandpai range (under Mongla Upozilla 22°29'00"N to 89°36'30"E and 22.4833°N to 89.608°of Bagherhat administrative district)is one of the four ranges of SRF which is considered as the main entry point to the mangrove forest.

#### **3.3 Research strategy**

The research was conducted based on the social survey technique. This research involves both qualitative and quantitative assessment where qualitative data have been quantified through coding for analysis and representation.

#### **3.4 Reconnaissance Survey**

In order to get insight into the prevailing situation, a preliminary visit to the site was conducted prior to the field survey whilst importance was given to the realization of the problem through candid conversation with local people and direct observation. This was done ID conduct the questionnaire survey appropriately and to identify the variables to be measured with a view to avert digression from the research objectives.

#### **3.5 Unit of Analysis**

The chief earning members of different households were the unit of analysis for this research and were treated as the sampling unit for the research.

### **3.6 Sample size and sampling method**

The objectives of the study require getting information about the perceptions of different local people and key stakeholders on potentialities of co-management at the study area. To fulfill the objective and to get the answers of the research questions it is needed to collect the overall perceptions and expectations of the local people of the area. so the local people were the target group for collecting they require information. The sample size was 100 individuals/respondents (50 respondents for each union). According to Yen (1992), 60-120 samples are handsome enough for evaluating a fact in social survey, the ultimate target of interviewing 100 individuals should be adequate to accumulate significant information from the field. In this study, the sampling units were selected randomly concentrating to the individuals living on the periphery of the sundarbans who are largely dependent on the forest for their livelihood.

### **3.7 Questionnaire Designing**

A semi-structured Questionnaire was designed for the field survey. Prior to preparing the Questionnaire, an extensive review of the literature was carried out with a view to making the Questionnaire appropriate and avoiding any digression from the objectives of the study.

### **3.8 Data collection**

The data collection was done by the following ways:

#### **3.8.1 Primary data collection**

##### **3.8.1.1 Interview**

Face to face interview technique was followed to collect the required information (as per the Questionnaire) from the respondents. Firstly they were given a short brief by the interviewer in a way that they understand the topic and can facilitate the interview. It may be noted that the brief was neutral to avoid any bias in the interview. From this point of view, though the interview was carried out following a semi -structured Questionnaire, it was frank, tactful and not rigid to make the respondents guileless and free. The interview was flexible following issues that were raised by the respondents to get a clear idea about strengths, weaknesses, Opportunities and threats on co-management at the study area.

### **3.8.1.2 Group Discussion**

Group discussion was carried out to have a view to the response of the local people in groups to express their perceptions and feelings freely and to make consensus. For each of (he villages, one group discussion was conducted and these groups were organized with the help of a local member of the Union Parishads.

### **3.8.2 Secondary Data Collection**

Data of secondary type were collected from different literatures, internet sources, newspapers and government offices (Forest Department) for this study.

### **3.9 Data Processing, Analysis and Interpretation**

Data collected for the study were compiled, tabulated and analyzed in accordance with the objective of the study. After completion of data collection, the responses to the questions of interview schedule were transferred to a master sheet to facilitate tabulation. The qualitative data were converted into quantitative form by means of suitable code and score whenever needed to facilitate analysis of the data and its presentation. Data obtained from empirical studies were interpreted methodologically in the light of existing theory in the way to explaining feasibility of co-management in the study area.

### **3.10 Report Preparation and Presentation**

Final report (Thesis paper) has been prepared by using the results of the analyzed information obtained from the research in accordance to the objectives and research questions of the study.

### **3.11 Conclusion**

In fact co-management is a new concept to the respondents. Very few were familiar with the concept, its benefits and pitfalls. So before face to face interview they were given a neutral brief by the interviewer so that they can respond easily. The same strategy was followed while conducting group discussion to have meaningful response from the respondents.

## CHAPTER 4

### RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter reveals interpretation of the perception of the local peoples regarding co-management, assessment of relationship between co-management and natural resource conservation and protection of SRF. For this study information were collected from the respondents through questionnaire survey to study the feasibility of co-management as an approach to facilitate the protection and conservation of forest.

#### 4.2 Comparative dependencies of respondents on SRF

The people living around the SRF are dependent on the natural resources of SRF either directly or indirectly. A few educated people especially who are in service and other people belonging to the profession of business, day labor etc are not dependent on forest for their livelihood. According to the respondents there is no opportunity for permanent work in both the study areas due to lack of cultivable land, electricity , small scale industries to provide them with a minimum income to live a sustainable life .so they have no other way to go to SRF to harvest natural resources to earn their livelihood.

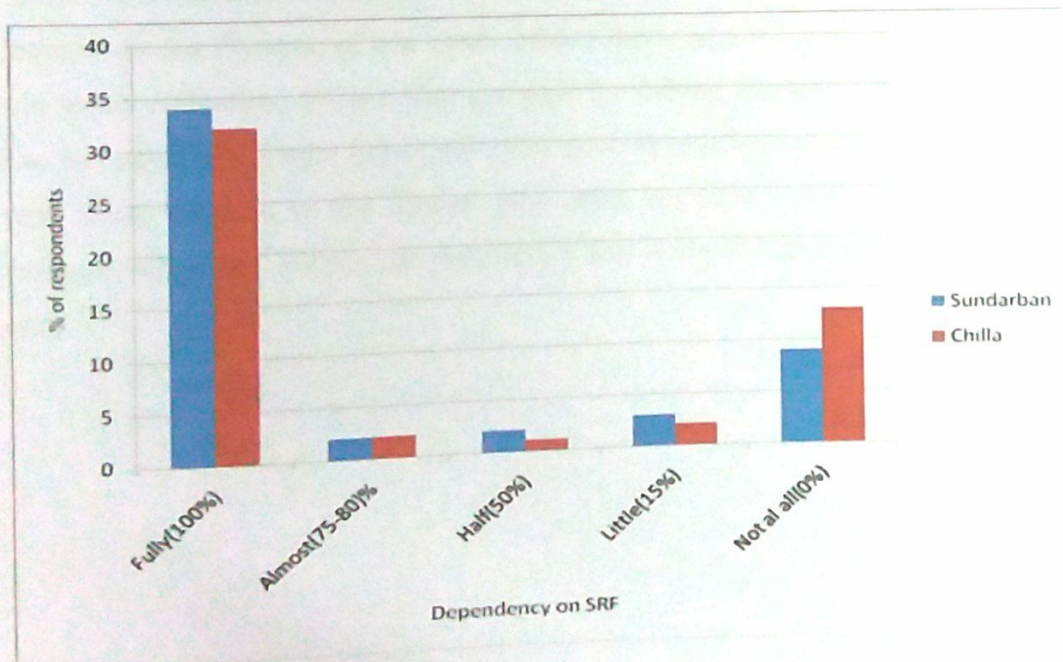


Figure 4.2: Comparative dependency of respondents on SRF

It was found from the study that 68% and 64% respondents are fully dependent on natural resources of SRF at sundarban and chilla union respectively. Overall results of the two union shows that 66% are fully dependent, 45 almost, 3% half, 5% little and 22% are not at all dependent on SRF. Apparently the percentage of dependent people on SERF at sundarban union is higher because have settled down to the union from outside and hence found SRF as their ultimate source of their income. The lower income respondents are in the profession of fishing, bawali, moulli day labor mostly dependent on SRF for their livelihood. People like businessman, service holder have their little dependency on SERF because of their higher income level. Thus co-management may be an income generating tool for this lower income people that will ultimately reduce their dependency on the natural resources of the sundarban.

#### **4.3 Relationship between nature of collection of forest resources and primary occupation of the respondent**

People can not but depend on the natural resources of SRF for their livelihood due to extreme poverty and insufficient job opportunities in the study area. During the study while interviewing the respondents they did not hesitate to express the actual cause of their illegal entrance into the forest. According to them legally they are permitted to enter into the forest after collecting the pass from the forest station for which they have to pay considerable amount of money fixed by FD taka 147 and 165 for fish and crab respectively for duration of one week. Now a day's pass is being issued only for fishing and honey collection. People who get pass for fishing illegally extract forest resources like fuel wood along with fishes and crabs as compensation at the charge of the pass. The same thing happens to the mouali who often becomes unrestricted to exploit forest resources when they getting adequate honey that is beyond the cost involved in issuing a pass.

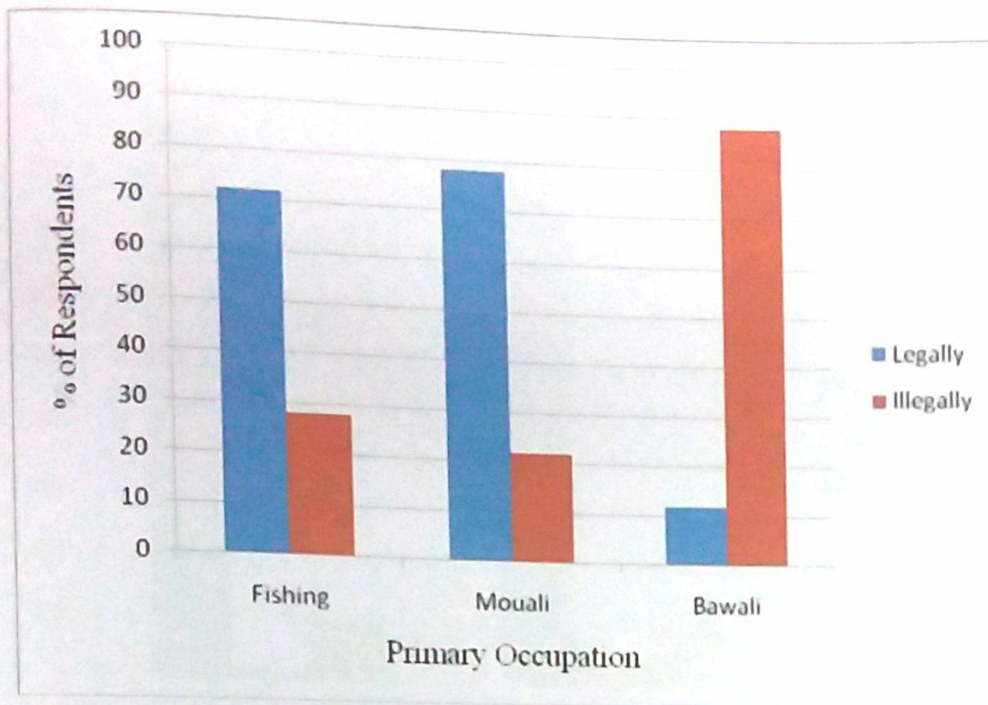


Figure 4.3: Relationship between natures of collection of forest resources with primary occupation

It was found from the study that people who illegally collect forest resources most frequently (88%) are under occupation of bawali. They collect forest trees illegally such as fuel wood, pole post fencing etc. since there is no pass for fuel wood extraction they use the pass issued for fishing in this purpose. In the fishing category 72% respondent collect forest resources as legally and 28% collect forest resources as illegally. 78% respondent under mouali collect forest resources as legally and 22% collect forest resources as illegally.

#### 4.4 Respondents dependency on SRF and hampering the conservation of natural resources

Respondents of sundarbnan and chilla consider SRF as an important source of natural resources. All respondents of both union agreed that SRF was deteriorating in terms of forest health, marine resources (shrimps, crabs and other sea fishes etc). 88% respondents of sundarban union believed that protection and conservation was at risk due to their dependency and they explained that it was due to their extreme poverty, lack of job opportunities in the village. Of the respondents only 2% people were not agreed with this and 10% were confused to respond this regard.



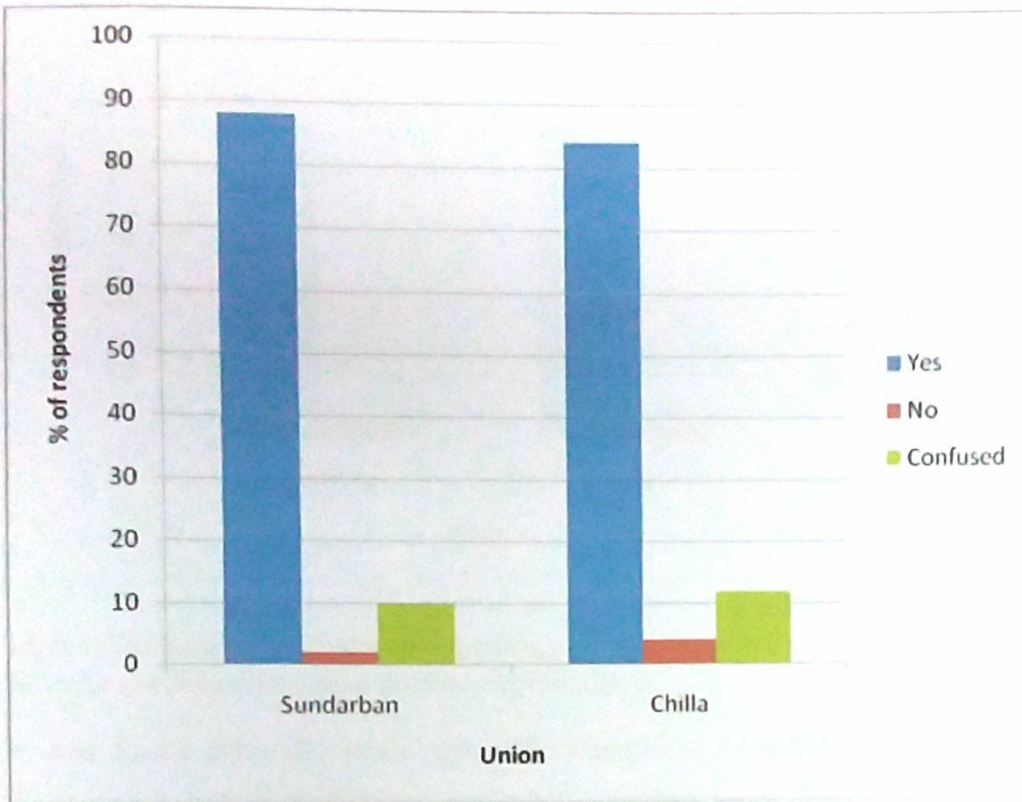


Figure 4.4: Respondents dependency on SRF and hampering the conservation of natural resources

Of the respondents of chilla union 84% considered their dependency as casual factor for deterioration of SRF forest while 4% were not agree with that and 12% were confused to respondent this regard. This confusion portion of people claimed Forest Department for it's destruction through their ambitious attitude for making money. People of both the union thought that only way to conserve the natural resources as well as protect the forest was create alternative job opportunities in the locality.

#### **4.5 Response of people regarding co-management to reduce dependency on forest through creating alternative income opportunities.**

It was found from the study that people's dependency on forest for their livelihood was the ultimate hindrance on the way of protection and conservation of the forest. So it was important to evaluate their perception regarding co-management as an alternative income opportunity to reduce their dependency on the forest.

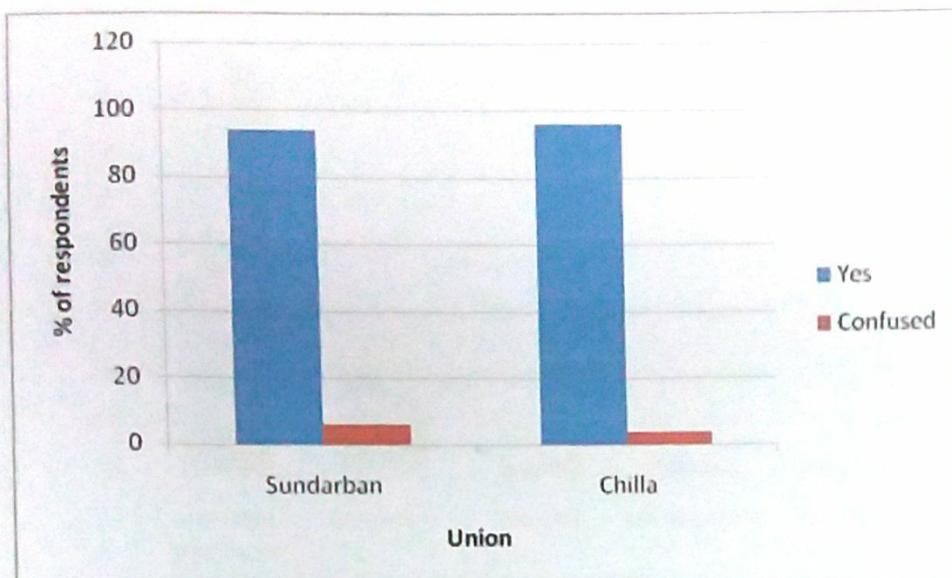


Figure 4.5: Response of people regarding co-management to reduce dependency on forest through creating alternative income opportunities.

It was found from the study that 94% respondent of sundarabn union consider co-management will create income opportunity to reduce forest dependency on the forest but 6% respondent of sundarabn union confused about the co-management either can create income opportunity or not. On the other hand 96% respondent of chilla union consider co-management will create income opportunity to reduce forest dependency on the forest but 4% respondent of chilla union confused about the co-management either can create income opportunity or not.

#### 4.6 Comparisons of responses about the importance of co-management

It was found that most of the respondents have enough knowledge about co-management through various training and motivational program of various organizations. Today they realize the concept of co-management and its ultimate long term benefits they become optimistic and responded rigorously. About 72% and 73% respondent of sundarban and chilla union respectively felt co-management is strongly important. They perceived co-management with it's potentiality of involving themselves in community activities through creating alternative income opportunities rather than traditionally depending fully on the forest. A considerable portion 20% at sundarban and 16% at chilla union of the respondents considered co-management as important for their overall livelihood development. So, total 92% and 90% respondents of sundarban and chilla union respectively perceived co-management is important in this regard.

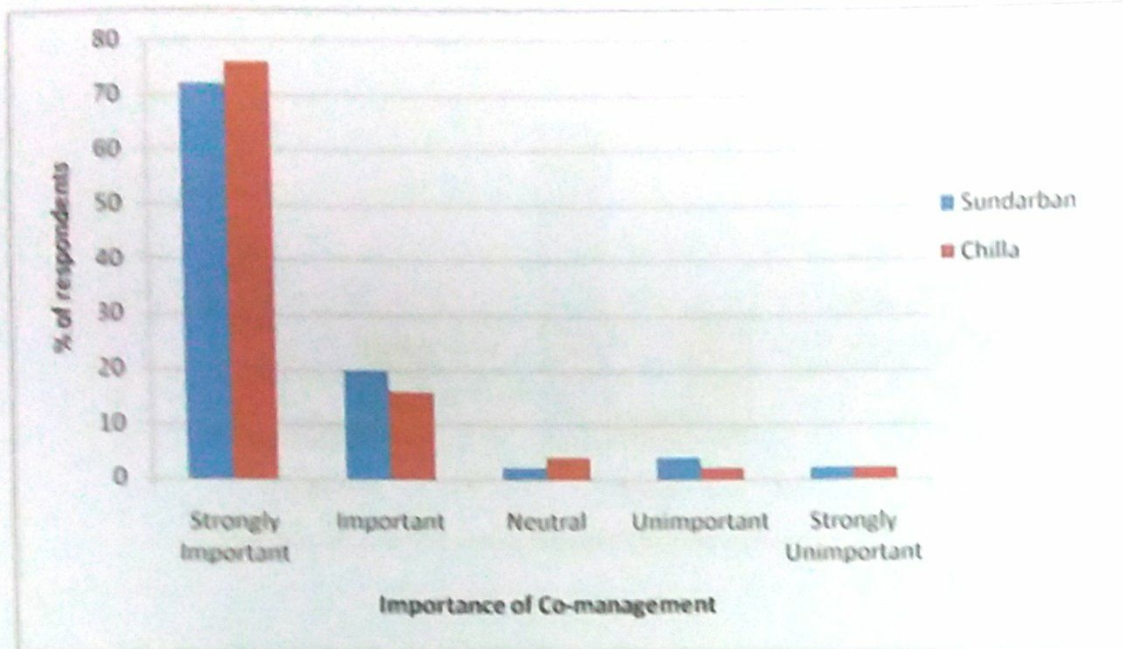


Figure 4.6: comparisons of responses about the importance of co-management

On the other hand, 4% and 2% of the union respectively perceived co-management as unimportant. 2% and 4% people in these unions respectively were neutral as they were confused about the prospect of co-management to develop their livelihood at their unions.

In both unions, the percentage of people considering co-management as strongly unimportant were 2%. People who felt co-management as strongly unimportant for their livelihood development believed that co-management would never be developed to improve the livelihood condition of them. This portion of people was older in age and they argued that in the past various income generating initiatives were taken by several NGOs but all were vain. They were not also satisfied the performance of co-management organizations.

#### 4.7 Opinion of people to consider co-management as a promising alternative income source

Most of the shows their earnest willingness to keep themselves away from extracting natural resources of SRF if they were provided with a promising alternative income source. In this regard, a considerable portion of the respondents of both the unions showed very positive response towards co-management (72% and 64% at Sundarban and Chilla union respectively). Particularly Sundarban union was more interested and optimistic about the prospect of co-management.

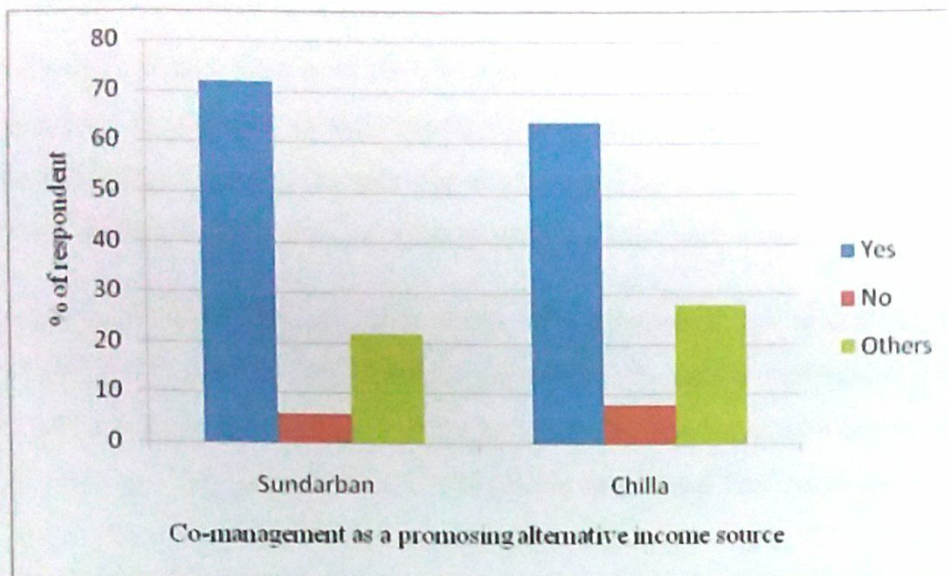


Figure 4.7: opinion of people to consider co-management as a promising alternative income source

According to few respondents, several NGOs (both national and international) and co-management organizations took several initiatives to create alternative livelihood opportunity but due to lack of institutional linkage and different attitudes of local Government those were not successful. From this point of view 6% and 8% at sundarban and chilla union respectively showed pessimistic attitudes towards co-management. Some respondents have no idea and confused about the prospect of co-management categorized as others.

#### 4.8 SRF is deteriorating

It was found from the study that all the respondents agreed that SRF was deteriorating. Most of them considered frequent illegal entrance of people into the forest as the most important reason for its destruction. Extraction of woody materials from SRF has been banned since 1989 by the Government to keep the natural balance of the country. But it is not good enough to keep the poor people away from collecting minor forest products like goran, golpata, honey, fish, crabs etc. people are supposed to issue a pass for collection of fish and crabs that costs Tk.147 and 165 respectively for duration of one week. It is the official money fixed by FD. When they do not get enough fish crabs they collect fuel wood or other forest products as a compensation for the pass. Seasonal natural calamities and corrupted forest officials are also responsible for the overall deterioration of forest.

#### **4.9 Lack of job opportunity**

The study depicts that both the union chilla and sundarban are located very close to SRF and there is no touch of development yet to provide the poor people with sufficient job opportunity all the year round. The overall livelihood condition is very poor. There is no work facility for the local community people all the year round.

Among 50 respondents of chilla union, 78% considered lack of cultivate land as the most important reason for their extreme poverty, 19% people considered lack of industries, mills and other business enterprises as crucial reason for unavailability of permanent job opportunity. Of the respondents, 9% people mentioned that the production of agricultural crops was not possible due to excessive salinity. Again the devastation of natural calamities like sidr, ayla have added to meet their daily needs. They always seek alternative work facility to earn their livelihood.

The scenario was also found at sundarban union. Based on the comments of the respondents, It was found that most of the villagers had settled down from different parts of the country, so a vast majority of people had no land of their own. Therefore they were not able to lead their life with agriculture. People had some seasonal jobs like day labors when any project was being implemented. After that they remain jobless until next project launched and the rest of the time they had to depend on SRF to earn their livelihood. No small scale mill or industry was established at that area due to lack of electricity and good communication problem. Ultimately, almost all the respondents in both the unions believed insufficient job opportunity as the most important reason for the destruction of forest.

#### **4.10 Reduction of entrance into the forest**

The people from both the unions were optimistic to reduce their entrance into forest by involving themselves in alternative job opportunities. They argue that they collect forest resources to earn their livelihood taking high risk and even sometimes they had to sacrifice their lives. Therefore obviously they had no hesitation to be involved in alternative job facility so far as their lives.

#### **4.11 Knowledge regarding co-management**

Though co-management is a new concept in the context of Bangladesh, almost all the people around the forest are very popular about this concept. The local people are well known about the formation and objectives of co-management organization. It is possible through various community based support project like NSP (Nishorgo support project), IPAC (Integrated Protected area Co-Management) and CREL (Climate Resilience and Ecosystem Livelihood) whose are funded by USAID. These projects arranged a lot of motivational program to aware local people about co-management. Motivational program has not finished yet. Along with forest officials, various NGOs also encourage local people to go for co-management. FD, community based support project and various NGOs also organizing lot of training program to enhance local people knowledge and capabilities to work with them.

#### **4.12 Funding and incentives for co-management development**

During the study FD, union parishad, NGOs and other donor agencies were also considered as important stakeholders as they can play a vital role in co-management and their perception regarding co-management was also studied to have a consensus. All of them show positive and supportive attitude ensuring financial and logistic support, capacity building and motivating the local people. A number of NGOs named Sushilon, Uttaran, World Vision, Rupantar etc were interviewed in the study area to get their views in this regard. It was found from the study that funding is not good enough for creating alternative livelihood as well as improves the life standard of local people

## **Chapter Five**

### **Impact of co-management on livelihood of community people.**

#### **5.1 Introduction:**

This chapter reveals the impact of co-management on community involvement in forest protection. Here most of the people are involved with forest department through regular meeting , resolution implementation procedure by the assistance of co-management organizations and co-management related NGOs. This chapter also reveals Discussion of proper distribution of livelihood option to the right people and AIG involvement status.

#### **5.2 Regular meeting:**

Co-management organizations have arranged regular meeting at regular interval. Local people get real opportunity to communicate directly with forest department. Main themes of these co-management organizations and co-management related NGOs to motivate local people how to alienate dependency on forest and to create alternative income opportunities. Those meetings were held at certain place at certain date.

#### **5.3 Resolution implementation procedure:**

Every meeting has definite agendas to discuss during the meeting period. These agendas were determined before the meeting started. In my field survey I obtained that the date of meeting, the agendas of meeting, the person who conducted and attended the meeting were recorded in a khata properly. These khatas are preserved at safe places provide it when it is necessary.

#### **5.4 Empowerment of local people:**

Local people display their requirement and ask the questions about something in which they don't know directly without any kind of hesitation. Local people can not face any obstacles while they express their opinion rather they are stimulated by the higher authorities (both forest department and co-management organizations). The local people can realize their responsibilities through the meeting. While they feel anything that occur problem for forest and suffering from own problem communicate at once to the responsible authority without

waiting for meeting. In this case they select a representative who deals with above matters. Opinion of every member considered equally in the meeting.

### **5.5 The pattern of participation in decision making:**

The member of the co-management council and committee they are assigned to carry some specific job like preparing six-monthly plan of action, meet bi-monthly to review the status of the planned activities, problem encountered etc. The survey on the pattern of participation in discussion on 6 specific agendas like planning (year planning), implementing the planned activities, financial-budget matter, benefit sharing discussion, community development and conflict resolution finds that their participation varies agenda to agenda.

The informations were given by the respondent reveals that members are relatively less active and less influential in the financial and budget related discussions than the other discussions like year planning or community development. But overall the process (in average) the majority of the respondents (30.73%) think the members of the committee can actively participate in the meeting but ultimately they cannot influence the decision-making process. 16.1% respondents think they actively participate and also can make influence. 7.85% participants think the members have nominal or no participation, 8.35% think they have passive participation. 28% of the respondent did not answer as they don't have enough idea what actually happen in the meetings.

### **5.6 Public opinion on the proper implementation of co-management**

The informations were given by the co-management authority that livelihood option is properly distributed to the right people. But, when I went in the field, I obtained that some people were said something different from that opinion. In sundarban union, 64% people are agree, 16% people are moderately agree and 10% people are disagree about that opinion. In Chilla union, 68% people are agree, 14% people are moderately agree and 18% people are disagree about that opinion.



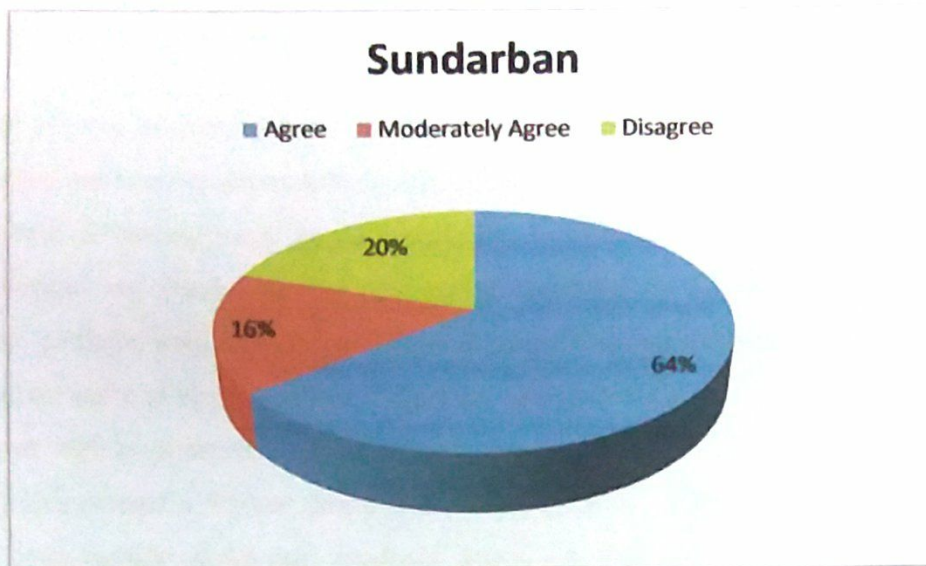


Fig: public opinion on the proper implementation of co-management in Sundarban union

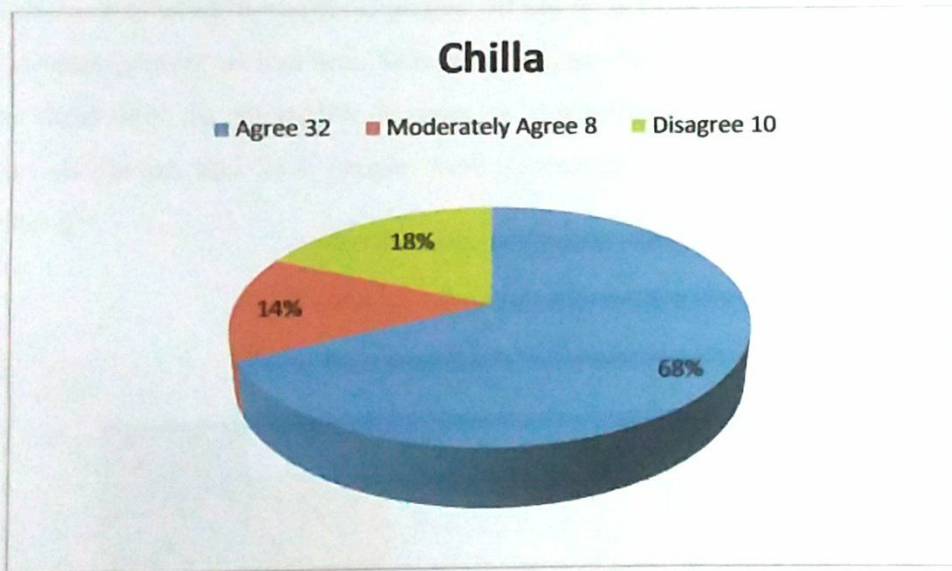
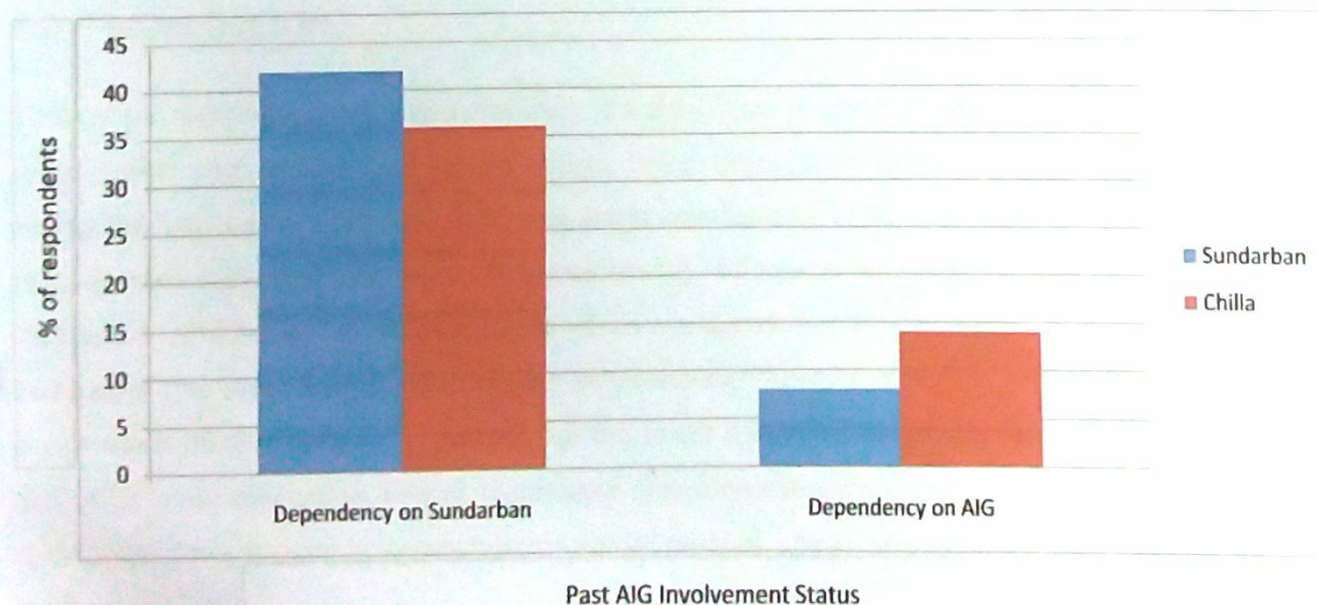


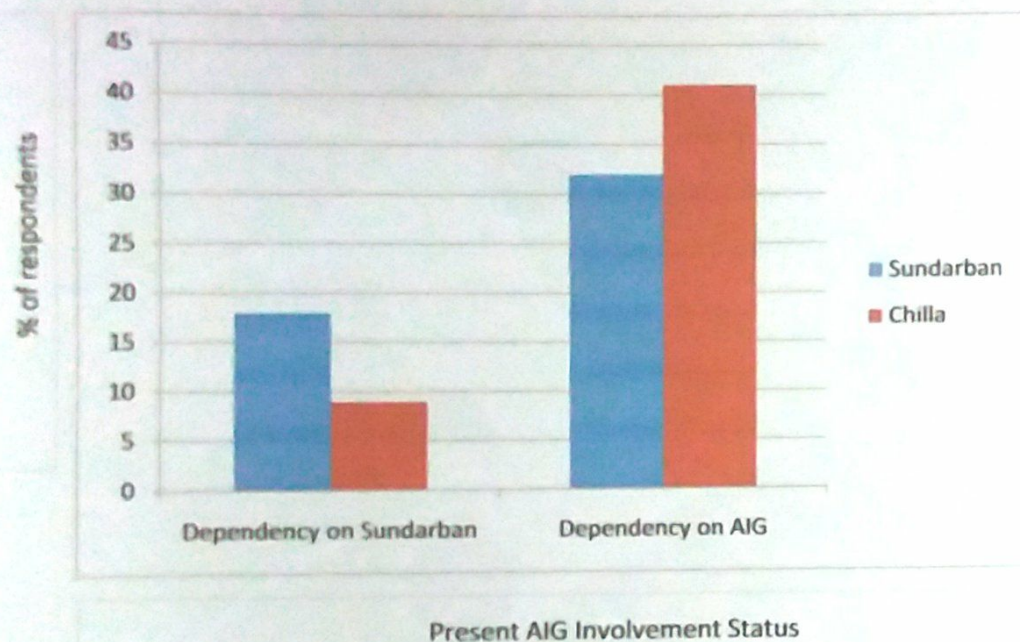
Fig: public opinion on the proper implementation of co-management in Chilla union

## 5.7 AIG involvement status:

According to FD and co-management organizations at past most of the people of Sundarban and chilla union are heavily dependent on sundarban for their livelihood option. But the main goal of FD and co-management organizations are to minimize the dependency of heavily dependent people on Sundarban through co-management by finding alternative income opportunities. In these way, at one hand reduce dependency on forest and other hand obtain lot of alternative income opportunities. At first co-management authority select a person from VCF who was well experienced and renowned person in that area. By the assistance of that person they constructed a farmer group and producer group. They provide lot of technical training to both farmer group and producer group for their skill development. Then co-management authority distribute loan for the poor farmer for their cultivation. They also provide microcredit to the entrepreneur. They also encourage the poor women to prepare handicrafts for their selfemployment. They also create a market for buying and selling the product which are produced by the local people. In my field survey I obtained that before the activity of co-management in that area 84% people were dependent on sundarban and 16% people were dependent on alternative income in sundarban union and 72% people were dependent on sundarban and 28% people were dependent on alternative income in chilla union respectively.



I also obtained that after the activity of co-management in that area 36% people are dependent on sundarban and 64% people are dependent on alternative income in sundarban union and 18% people were dependent on sundarban and 82% people were dependent on alternative income in chilla union respectively.



## 5.8 Forest health:

87% of the respondents expressed that there is a significant positive changes in regard of the forest health such as reducing deforestation, forest degradation, enhancing bio-diversity during the last several years and they have active involvement to bring this change. The FD officials also expressed that Sundarban was heavily deforested and degraded but after the declaration of PA and the enhancement of co-management activities there is significant changes in this area. Forest coverage has increased significantly especially with the active involvement of the community people. But the forest users also expressed that the positive situation is not continuing, illegal logging and other unsustainable extraction have increased again if the co-management organizations can not provide adequate livelihood option for the local people.



Climate-Resilient Ecosystems and Livelihoods (CREL) Project



## Livelihoods Interventions and its facilitation process

## CHAPTER SIX

### CONCLUSION

#### 6.1 Conclusion

Considering the overall discussion about feasibility of co-management to conserve natural resources of SRF, it may be assumed that except a few, most of the people in both the unions have very positive attitudes towards co-management as an alternative livelihood opportunity. Peoples of both the unions were very optimistic and they showed their earnest desire that if they were provided with minimum working facilities in locality they would no longer go into the forest in spite of high risk of their valuable lives. From this point of view, there is an indication of protection and conservation of SRF through co-management.

In reality both the villagers are characterized by extreme poverty, lack of cultivable land, natural calamities, human-tiger conflict, lack of electricity, lack of pure drinking water, poor transportation system, high population growth, river side are some of the common severe problems prevailing very badly in both the unions. No effective initiative has been taken so far to generate alternative livelihood opportunity and incentives given by the concerned organizations are also negligible. That is why an effective initiation of alternative income generating tool like co-management is a demand for which people are eagerly waiting for.

Though co-management has not created alternative livelihood for all people yet, rather it has a great prospect to make people employed. Co-management based support project, co-management organizations and various NGOs work with consolidate to strength co-management. Proper policy and strategy should be developed to overcome the pitfalls and augment the opportunities to develop co-management.

## 6.2 Recommendations

- Government should take a holistic approach to uplifting the quality of life of the people living around the SRF. The priorities of the people should be reflected in the following policy reviewing process. Based on the policy forest law should be amended supporting collaborative management in the SRF.
- A sustainable funding source is very urgent for the sustainable CMC. CMC should be provided with more rights instead of merely consulting about the issues around the forest. The ambiguity in the revenue sharing process should be removed and brought in to the light. Moreover, some tourist spot can be established according to the need of the local people.
- Sustainable livelihood for all people has not created yet. It is very difficult to reduce dependency without creating full employment opportunity for the local people. Various organizations should be taken necessary steps for creating alternative livelihood to enhance forest protection.
- Uniform representation of the stakeholder is very urgent, unless the total picture of the SRF will not be presented in the CMC. It might be an obstacle for co-management success.
- The conflict between forest officials and NGOs should be mitigated. It is very important for success of co-management to maintain friendly relationship between them. They should co-operate each other in their particular work.
- A skilled mediator is essential for building trust among the key stakeholders of the SRF. Without trust all the effort is undermined.
- There should remain equitable distribution of products to the stakeholders. No biasness is accepted in the beneficiary selection. Those people need to be selected as beneficiaries who have little opportunity to earn.
- Accountability of the forest officials, employees of NGOs and co-management based project and higher authorities of co-management organization (PF, VCF, and CMC) should be ensured.
- No patrolling groups are found in the SRF for direct protection from illicit cutting, poaching etc. Though some people go to protect the forest as a labor, this particular involvement is not good enough for protection. So it is very important for forming a community patrolling group for forest protection.

## REFERENCE

- Adnan, S. (ed.) 1992. People's Participation, NGOs and the Flood Action Plan: An Independent Review. Dhaka: Oxfam.
- Armitage, D., Berkes, F., and Doubleday, N., 2007. Adaptive Co-management: Collaboration, Learning and Multi-level Governance. University of British Columbia Press, Vancouver.
- Bahuguna, V. K., 2001. Production, protection and participation in forest management: An Indian perspective in achieving the balance. Forests in a changing Landscape. 16<sup>th</sup> Commonwealth Forestry Conference, Fremantle, Western Australia, 18-25 April 2001. pp. 1-16.
- Banarjee, A. K., 2000. Developing forest management in Asia Pacific countries. In: Enters, T., Patrick, B., Durst, P. B., Victor, M. (Eds), Decentralization and Devolution of Forest Management in Asia and Pacific. Food and Agriculture Organization of the United Nations and RECOFTC, Bangkok. pp. 39-52.
- Barbier, E. B., 2007. Valuing ecosystem services as productive inputs. *Economic Policy* 22: 177-229.
- Biswas, S. R., Choudhury, J. K., Nishat, A., and Rahman, M., 2007. Do invasive plants threaten the Sundarbans mangrove forest of Bangladesh? *Forest Ecology and Management* 245: 1-9.
- Borrini-Feyerabend, G., 1996. Collaborative management of protected areas: tailoring the approach to the context. IUCN-The World Conservation Union.
- Borrini-feyerabend, G., Farvar, M. T., Pimbert, M., Kothari, A., and Renard, Y., 2004. In sharing power. Learning by doing in co-management of natural resources throughout the world. IIED and IUCN /CEESP and Cenesta, Tehran.

- Briggs, M. R. P., and Funge-Smith, S. J., 2003. *Unsustainable Shrimp Culture, Causes and Potential Solutions from experience in Thailand*, Overseas Development Administration, Washington DC.
- Brunner, R., Steelman, T., Coe-Juell, L., Cromley, C., Edwards, C., and Tucker, D., 2005. *Adaptive Governance: Integrating Science, Policy and Decision Making*. Columbia University Press, New York.
- Buchy M., Ross, H. and Proctor, W., 2000. Enhancing the information base on participatory approaches to Australian natural resources management. In: *Natural Resources Management: People and Policy: Research from the social and Institutional Research Program of Land and Water*, Australia, Canberra.
- Burke, F. M., 1968. Citizen Participation strategies. *American Institute of planning Journal* 34: 287-294.
- Davis, R. 1984. *Muang metaphysics: a study of Northern Thai myth and ritual*. Bangkok. Pandora. 324 p
- FAO, 1995. *Integrated resources management plan of the Sundarbans reserved forest-final report*. UNDP/FAO Project BGD/84/056, FAO Rome.
- FAO, 2001. *Forest resources in Bangladesh: country report*. FAO Forestry department, Rome.
- FAO, 2010. *Global Forest Resources Assessment 2010*. FAO Forestry Paper 163. Food and Agriculture Organization of the United Nations Rome, Italy.
- Getz, D., and Jamal, T., 1994. The Environment Community Symbiosis: A Case of Collaborative Tourism Planning. *Journal of Sustainable Tourism* 2: 152-173.
- Gardner, K. and D.Lewis, 1996. *Anthropology, Development and Post-Modern Challenge*. Pluto Press. London.



- Getz, W. M., Fortmann, L., and Cumming, D., 1999. Sustaining natural and human capital: villagers and scientists. *Science* 283: 1855-1856.
- Gilman E, L., Ellison, J., Duke, N. C., and Field, C., 2008. Threats to mangroves from climate change and adaptation options: A review. *Aquatic Botany* 89: 237-250.
- Giri, C., Pengra, B., Zhu, Z., Singh, A., and Tieszen, L.L., 2007. Monitoring mangrove forest dynamics of the Sundarbans in Bangladesh and India using multi-temporal satellite data from 1973 to 2000, Estuarine, coastal and shelf. *Science* 73: 91-100.
- Glaser, M., and Oliveria, R. S., 2004. Prospects for the co-management of mangrove ecosystems on the north Brazilian coast: Whose rights, whose duties and whose priorities? *Natural Resources Forum* 28: 224-233.
- Gleeson, T., 2000. Participation in research development for natural resource management. Synapse Agricultural and rural consulting. Commissioned research under the Land and Water Australia's Social and Institutional Research Program, SYN1.
- Ingels, A. W., Musch, A., and Hoffman, H., 1999. The participatory process for supporting collaborative management of natural resources. An overview. Food and agriculture Organization, Rome.
- Isager, L. 2001. People and History of North Thailand. In: Poulsen et al.: Forest in Culture. Culture in Forest. Chapter 8. Research Centre on Forest and People in Thailand. Danish Institute of Agricultural Sciences. Research Centre Foulum, Denmark.
- Isager, L. and I. Theilade. 2001. People's participation and the role of governments in conservation of forest genetic resources. In: Forest genetic resources conservation and management. Volume 1:  
Overview, concepts and some systematic approaches. FAO/DFSC/IPGRI
- Hall, M. V., 2006. Evaluation of co-management in national parks: the case of Retezat national park, Romania. M.Sc. Thesis, Wageningen University.

- Haley, M., 2001. Community forests: from dream to reality in the British Columbia. In: Forests in a changing Landscape. 16<sup>th</sup> Commonwealth forestry conference, Fremantle , Western Australia, 18-25 April 2001. pp. 217-220.
- HMG., 2000. Statistical pocket book. National planning commission , Kathmundu Nepal. Communities and forest management in south Asia . A Regional profile of the working Group On Community Involvement in Forest Managemnt. IUCN , Gland, Switzerland. pp. 162.
- Holmes, E., Lickers, H., and Barkley, B., 2002. Critical assessment of 10 years of on-the-Ground sustainable Forestry in Eastern Ontario's settled Landscape. Model Forests Program, Ontario, Canada.
- Iftekhher, M. S., and Islam, M. R., 2004. Managing Mangroves in Bangladesh: A Strategy Analysis. *Journal of Coastal Conservation* 10:139-146.
- Islam, S., 2003. Sustainable Eco-tourism as a practical site management policy. AHDPH, Dhaka, Bangladesh.
- Islam, K. M. N., 2010. A study of the principal marketed value chains derived from the Sundarbans reserved forest. USAID, Bangladesh.
- Jeanrenaud, S., 2001. Communities and Forest Management in Western Europe. A Regional profile of the Working Group on Community Involvement in Forest Management. IUCN , Gland, Switzerland. pp. 148.
- Jentoft, S., Mccay, B.J., 1995. User participation in fisheries management. Lessons drawn from international experiences. *Marine policy* 19: 227-246.
- Kendrick, A., 2003. Caribuo Co-management in Northern Canada: Fostering Multiple Ways of knowing. In: Berkers, F., Colding, J., Folke, C., (Eds.). Navigating Social Ecological Systems. Cambridge University Press, Cambridge. pp. 241-267.
- Khan, N. A., chowdhury, J. K., & Huda, K. S., 2004. Forestry sector review report. Bangladesh forest department, Ministry of Environment and forest, Dhaka, BD.

- Kunstadlar, P., Bird, E., and Sabhasri, S., 1985. *Man in Mangroves* , United Nations University, Singapore.
- Kusel, J., and Adler, E., (Eds.) 2001. *Forest Communities, Community Forestry: A Collection of Case Studies Of Community Forestry*. For the 17<sup>th</sup> American Forest Congress Communities Committee, CA USA. pp. 220. A Version is Also <http://www.FCResearch.Org>.
- Luetz, J., 2008. *Planet Prepare: Preparing coastal communities in Asia for future catastrophes*. Asia Pacific Disaster Report.
- Mearns, R., Leach, M., and Scoones, I., 1997. *The Institutional Dynamics of Community Based Natural Resource Management: An Entitlements Approach*. Institute of Development Studies, University of Sussex, UK.
- Meadowcroft, J., 1998. Co-operative management regimes: a way forward? In: Glasbergen , P., (Eds.) *co-operative Environmental Governance*, Kluwer, Dordrecht, Netherlands. pp. 21-42.
- Mohal, N., Khan, Z. H., Rahman, N., 2006. *Impact of Sea level Rise on Coastal Rivers of Bangladesh*. Institute of Water Modelling (IWM) Assessment conducted for WARPO, an organization under Ministry of Water Resources.
- Mukherjee, M., 1996 . Collaborative management as a strategy of participation of local people. *Science* 275: 26-27.
- Oli, K. P., 1999. *Collaborative management of protected areas in the Asian region* Kathmundu: IUCN Nepal. pp. 284.
- Pahl, C., Craps, M., Dewulf, A., and Tabara, D., 2007. Social Learning and water Resources management. *Ecology and Society* 12(2): 58-72. Available from: <http://www.ecologyandsociety.org/vol12/iss2/art5/>.
- Pinkerton, E., 2003. Toward specificity in complexity: understanding co-management from a social science prespective. In: Wilson, D.C., Nielson, J.R., Degnbol, P. the fisheris co-management experience. Kluwer, Dordrecht. pp. 61-77.

- Plummer, R., and Fitzgibbon, J., 2004. Co-management of natural Resources: A Proposed Framework. *Environment Management* 33(6): 876-885.
- Pomery, R.S., and Berkes, F., 1997. Two of tango: the role of Government in Fisheries Co-management . *Marine Policy* 21(5): 465-480.
- Rahman, A. A., 2009. Seal the Deal in Copenhagen: The Most Vulnerable Communities Demand Tearfund.
- Salam, M. A., Lindsay, G. R., and Malcom, C. M., 2000. Eco-tourism to protect the reserve mangrove forests the sundarbans and its flora and fauna. Institute of Aquaculture, university of stirling FK9 4LA , Scotland, U.K. 11(1): 56-66.
- Shiva, V. 1988. Staying alive: Women, Ecology and Development. Zed Press. London.
- Siddique, N. A., 2001. Mangrove Forestry in Bangladesh. Institute of Forestry & Environmental Sciences, University of Chittagong.
- Valiela, I., Bowen, J. L., York, J. K., 2001. Mangrove forests: One of the worlds threatened major tropical environments. *Bioscience* 51: 807-815.
- Walters, B. B., Rönnbäck, P., Kovacs, J. M., Croma, B., Hussain, S. A., Badola, R., Primavera, J. H., Barbier, E., Dahdouh, G. F., 2008. Ethnobiology, socio-economic and management of mangrove forests: A review. *Aquatic Botany* 89: 220-236.
- Wilcox, D., 1994. The Guide to Effective Participation. Partnership Books Brighton.
- Wily, L. 1997. Villagers as Forest Managers and Governments "Learning to Let Go". The case of DuruHaitemba & Mgori forests in Tanzania. Forest Participation Series No. 9. International Institute for Environment and Development. Forestry and Land Use Programme.

## APPENDIX

### Part- A (For local respondent)

#### General Information

Name of the respondent	
Male or female	
Address of the respondent	
Education	
Age	
Occupation	
Income level	

1) To what extent you are dependent on Sundarbans?

1. Fully    2. Almost    3. Half    4. Little    5. Not at all

2) other professions of local people who are not fully dependent on forest:

Pattern of profession	Number	Average
Agriculture		
Fishing		
Boating		
Business		
Others		

3) Which kind of product you extract from the Sundarbans?

Utilization	Gora n stick s	Golpat a	Gras s	Hone y	Wa x	Fis h	Shrim p	Pole s	Crab s	Timbe r	Fuel woo d
Collect											
Househol d											
Market											
Both											

4) What may be the monetary value (Yearly) of the forest products that you collect from the Sundarbans?

5) How do you collect resource from forest?

1. legally    2. Illegally

6) Is sundarban reserve forest is deteriorating?

1. Yes 2. No

7) What do you consider the most frequent reason for degradation of sundarban and why?

8) Do you think your dependency on SRF is hampering the protection and conservation of natural resources of sundarban?

1. Yes 2. No 3. Not sure/ Confused

9) Do you have sufficient job opportunity all the year round?

1. Yes 2. No

10) If no, why?

11) Do you think insufficient job opportunities surrounding the sundarban as an important reason for its destruction?

1. Yes 2. No

12) If you are provided with alternative job facilities in your locality , will you reduce your entrance into forest?

1. Yes 2. No 3. Not sure/ Confused

13) Have you any idea about co-management and co-management organization?

1. Yes 2. No

14) How much you know about co-management ?

1. Very well 2. well 3. Moderate 4. Little 5. not at all

15) Do you know about VCF?

1. Yes 2. No

If yes, do you know how it is formed and what are the activities of it?

16) Do you know about PF?

1. Yes 2. No

If yes, do you know how it is formed and what are the activities of it?

17) Do you know about co-management committee?

1. Yes 2. No

If yes, do you know how it is formed and what are the activities of it?

18) Do you know about co-management council?

1. Yes 2. No

If yes, do you know how it is formed and what are the activities of it?

19) Have you any interest about co-management?

1. Yes 2. No

If yes, do you know how it is formed and what are the activities of it?

20) If yes, why you are interested

Reason	Number	Average
Aesthetic value		
Employment opportunity		
Food & fodder supply		
Protection & conservation		
All		

21) Does co-management organization take any awareness raising programme?

1. yes 2. No 3. others

22) If yes, then please explain?

23) Do you think co-management has an impact on forest protection and conservation?

1. Yes 2. No

24) If yes, then please explain how?

25) Do you think co-management can reduce such dependency on forest through creating alternative income opportunity?

1. Yes 2. No 3. Not sure/ Confused

26) Do you consider co-management as a promising alternative income source?

1. yes 2. No 3. May be 4. No idea 5. Confused

27) Do you think co-management organizations can mitigate conflict between their members?

1. yes 2. No

28) Do you think co-management organization can encourage their members to go for protection and conservation of forest?

1. yes 2. No

28) Do you consider co-management can ensure proper allocation of resources?

1. yes 2. No

29) What do you think about the prospect of co-management in your area?

1. Excellent 2. Good 3. Satisfactory 4. unsatisfactory 5. Not at all

30) Do you have any suggestion about co-management in forest protection and conservation ?

**Part B (For NGOs & GOs)**

1) Do you appreciate co-management in your area?

1. yes 2. No

2) If yes how can it facilitate?

1. Financially 2. Technically 3. In other ways

3) If no , why?

4) Is your institution interested in co-management?

1. yes 2. No

5) Is your institution continuing co-management activities?

1. yes 2. No

6) Is your institution aware people about the importance in forest protection and conservation?

1. yes 2. No

7. Is your institution ake any initiative to reduce forest dependency?

1. yes 2. No

8) Is your institution interested to spend money for creating alternative livelihood?

1. yes 2. No

9. Do you think local people are interested about co-management as well as participated in co-management activities?

1. yes 2. No

10) what do you think about the prospect of co-management?

1. positive 2. Negative 3. no comment



11) If positive how can you contribute to co-management?

1. Through financial support
2. through capacity building of the local community
3. motivating local people
4. In other ways.