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CAN CO-MANAGEMENT BRING CHANGES IN SOCIO-ECONOMIC CONDITION OF FOREST DEPENDENT PEOPLE LIVING IN AND AROUND PROTECTED AREAS? – A CASE STUDY OF LAWACHARA NATIONAL PARK IN BANGLADESH

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DECLARATION

The results submitted in this paper are entirely the author's own investigations and neither any part of the result have not been accepted for any degree, nor it is being concurrently submitted for any degree.

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DEDICATED

TO

MY BELOVED PARENTS AND SWEET SISTER

APPROVAL

This project thesis submitted to the Forestry and Wood Technology Discipline, Khulna University, Khulna, Bangladesh, in partial fulfillment of the requirements for the *B.Sc. (Hon's)* degree in Forestry. I have approved the style and format of the project thesis.

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ABSTRACT

Forest protected area (PA) co-management is a new tool for the sustainable management of forest resources. Through this approach PAs are managed by local communities. This study discusses different responsibilities and benefits of forest resource users involved in co-management of Lawachara National Park. The result of this study indicates that most of the respondents are aware of forest conservation and have been socio-economically benefitted by the co-management approach. This study also reveals that the empowerment of many unemployed people especially women have got earning opportunities and empowered. The life condition of most respondents has been improved since they have joined co-management. Their social and economical power is improved more or less after joining this program. Respondents in this study wish for Lawachara National Park to continue being co-managed with support (both financial and technical) from the government. Sustainable management is dependent upon full participation of all members in all phases of management is argued in this study.

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List of abbreviation

AIGA	Alternative Income Generating Activities
CMC	Co-management Committee
CMO	Co-management Organization
CPG	Community Patrolling Group
FD	Forest Department
FUG	Forest User Group
IPAC	Integrated Protected Area Co-management
IUCN	International Union for Conservation of Nature
LNP	Lawachara National Park
NACOM	Nature Conservation Management
NGO	Non-government Organization
NP	National Park
NSP	Nishorgo Support Project
PA	Protected Area
PAs	Protected Areas
PF	Peoples' Forum
VCF	Village Conservation Forum
USAID	United States Agency for International Development

Chapter 1

Introduction

1.1 Background of the study

Forest covers almost 25% land of the world and is critical in meeting human needs for food, shelter, medicine, fuel wood, fodder and timber. They also provide a vast range of environmental services mainly including biodiversity conservation, watershed protection, soil protection, mitigation of global climate change etc. (Landell-Mills & Porras, 2002; Hirakuri, 2003). Deforestation and biodiversity loss has become a common phenomenon throughout the world in last several decades. And it is much more frequent in developing countries like Bangladesh. During last two or three decades the forest cover of Bangladesh decreased from nearly 20% to 9%. Of late as a signatory of various regional and international conventions, treaties and protocol government has taken several initiatives to address the situation and to ensure the conservation of remaining biodiversity (Brown and Durst, 2003). Protected area (PA) is one amongst them which introduced mainly to conserve biodiversity in its natural context.

Ideally, protected areas should help to conserve the forest and biodiversity. Again, people who live in or near forest areas rely on forest resources for their bread and butter. But with the declaration of these forest areas as PAs, somehow imposes restriction on the access and utilization of forest resources to local livelihoods that they have enjoyed customarily. This situation caused a conflict between PA managers and local forest dependent people. Such misunderstanding is one of the most influential factors of poor and inefficient management of PAs (Borrini-Feyerabend, 2002; Ferrari 2006).

In this situation, to avoid the conflict a new management technique was established where local peoples' support for and involvement in PA management has been treated as an important element of enhanced conservation in recent years, especially in developing countries (Nagothu, 2003). This new intervention, commonly known as collaborative management or co-management in PAs, under the broad canopy of community-based natural resource management, is a major emerging issue for conservation policy in many developing countries that also been widely promoted by international conservation agencies (Kothari et. al., 2000; Fisher, 2003). This strategy enables local people to participate in PA management and most often offers local communities some direct and indirect benefits related to park

management (Nagothu, 2003). As the principle of conservation and sustainable development is linked with the economy and livelihood of local communities, co-management is playing a very crucial role here. This approach not only addresses livelihood security of local communities but also deals with different management functions, rights, responsibilities and the scope of negotiation in a particular area or resources (Rashid et. al., 2013a).

Bangladesh is one of the most densely populated countries of the world with a very little amount of forest land. So far Bangladesh govt. has declared 34 PAs (according to IUCN PA management categories IV and V) comprising about 10.72% of the total forest areas of the country. Among them, 18 PAs have been brought under co-management approach with a view to scaling up natural resource co-management at both policy and operational level. Co-management approach was established in the forest PAs of Bangladesh by Forest Department (FD) with the financial assistance from a donor agency named United States Agency for International Development (USAID) through a project namely Nishorgo Support Project (NSP) in 2004. After successful completion of NSP in 2008, a new project named as Integrated Protected Area Co-management (IPAC) was initiated in 2009 with a view to achieve the goal of conservation of PAs as well as provide alternative livelihood for forest dependent people living in these PAs (Rashid et. al., 2013b).

People living in and around PAs generally depend on the forests and its resources for their livelihood. The supports of NSP and IPAC aimed to reduce this pressure from the forests with the initiative of co-management model, alternative income generating activities, and other public sensitization programs. This study has tried to seek the impacts of co-management in the socio-economic condition of the forest dependent people living in and around PAs.

1.2 Rationale of the study

People living in and around forest areas have become deprived of their ancient rights on the forest resources to maintain their livelihood under traditional PA management system. So, a conflict rose between them and the PA managers which led to the failure of the target of PA establishment. That's why co-management was initiated to conserve the forest as well as to maintain the livelihood of those poor forest dependent people. This study aimed to find out how much this co-management approach has brought changes in the socio-economic condition of these poor forest dependent people living in and around PAs.

1.3 Objectives of the study

Main objective

The main objective of the study was to find out whether co-management brings changes in the socio-economic condition of the forest dependent people or not living in and around protected areas.

Specific objectives

Objective 1: To assess the existing social and economical status of forest dependent people living in and around PAs.

Objective 2: To assess forest dependent people's thinking about livelihood improvement and position change in the society after joining co-management living in and around PAs.

Objective 3: To assess the impact of co-management in creating new job opportunities and empowerment of forest dependent people living in and around PAs.

Objective 4: To assess the change in income level of forest dependent people through involvement in different alternative income generating activities (AIGA) obtained from co-management living in and around PAs.

Objective 5: To assess the change in decision making capacity and influence of forest dependent people in co-management living in and around PAs.

Objective 6: To assess the observation of forest dependent people about forest condition since co-management initiation.

1.4 Research questions

- What is the existing social and economical condition of forest dependent people living in and around Pas?
- Do forest dependent people think that their livelihood and position has improved or not?
- How much co-management effect in creating new job opportunities and empowerment of forest dependent people?
- Is co-management effective in changing income condition of forest dependent people by involving in different AIGA?

- ❖ How much co-management effect in changing decision making capacity of forest dependent people?

1.5 Limitations of the study

The limitations of the study were:

- It was hard to convince the local villagers about the objectives of conducting the study.
- It was little bit tough to find out the respondents who are involved in co-management.
- There was inadequate information available on different groups in the literature or other sources.

Chapter 2

Literature Review

2.1 Protected area

IUCN (1994) defines protected areas (PAs) as 'areas especially dedicated to the protection and maintenance of biological diversity and associated cultural resources, which are managed through legal or other effective means'. From the time of establishment of PAs, it is treated as a key conservation strategy notwithstanding rapid deforestation and biodiversity loss all over the world (Ormsby and Kaplin, 2005; Defries et. al., 2007; Orlovic- Lovren, 2011). The number of protected areas is increasing rapidly worldwide (McNeely and Scherr, 2003; WCPA 2005; Kaimowitz 2007) and currently there are more than 100,000 PAs all over the world comprising nearly 12% of the total land surface (Chape et al. 2003; Scherr et al. 2004).

2.2 Co-management

The World Bank (1999) 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 Conservation Congress defined co-management as "a partnership in which government agencies, local communities and resource users, non-governmental organizations and other stakeholders negotiate, as appropriate to each context, the authority and responsibility for the management of a specific area or set of resources" (IUCN, 1996). Along with these organizations, different scientists have defined co-management in different ways. Berkes et. al. (1991) defined co-management as "the sharing of power and responsibility between the government and local resource users." Singleton (1998) defined co-management as "the term given to governance systems that combine state control with local, decentralized decision making and accountability and which, ideally, combine the strengths and mitigate the weaknesses of each." A well-known definition of co-management was established by Borrini-Feyerabend et. al. (2000) and stated 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."

2.3 Co-management in protected areas

In many developing countries in the tropics, where a big portion of local people mainly depend on natural resources for their livelihood have been expanding their protected area coverage with a view to conserve the biodiversity (Ghimire 1994; Koziell and Saunders, 2001). But unfortunately, in many cases PAs failed to achieve its conservation target due to various reasons like pure ecological focus and poor recognition of local and indigenous people's traditional forest rights and practices (Nepal and Weber 1995; Craig 2002; Ormsby and Kaplin 2005). This created a conflict between PA managers and local forest resource users and result in failure in the meeting the goals of PAs (Borrini-Feyerabend, 2002). In such circumstances, a new management technique was introduced named collaborative management or co-management (Kothari et al. 2000; Fisher, 2003). Since the introduction of co-management, it has become the key issue of environmentally sustainable and culturally suitable development intervention in natural resource management (Berkes et. al., 1991). This management strategy can promote decentralization and devolution of power to bring grassroots and poor communities in decision making process (Kothari, 2006). Co-management ensures the participation of local community in managing PAs and offers local people some direct or indirect benefits from the PA management (Castro and Nielson 2001; Nagothu 2003;). Co-management not only concentrates on livelihood security of local forest resource users but also deals with different management functions, rights, responsibilities, and the scope of negotiation in a given set of area or resources (Kothari et. al.1996).

2.4 Co-management in PAs of Bangladesh

Since the 1980s the Bangladesh government has so far declared 34 PAs (according to IUCN PA management categories IV and V) which covers about 10.72% of the total forest area of the country (Rashid et.al. 2013b). A big portion of rural people living in Bangladesh rely on forest resources for their livelihood which is causing a gradual destruction of forest resources in Bangladesh (Roy and DeCosse 2006). In this situation, collaborative management or co-management is very necessary to maintain the degrading forest resources of Bangladesh through sustaining local livelihood (Mukul and Quazi 2009). The concept of co-management is very new in Bangladesh. It was firstly introduced by Bangladesh forest department (BFD) with the financial support of United States Agency for International Development (USAID) in 2002 in five PAs of the country on a pilot basis named as Nishorgo Support Project (NSP) (NSP, 2006; NSP, 2007). After the completion of Nishorgo Support Project (NSP) in 2007, a

new project named as Integrated Protected Area Co-management (IPAC) was launched in 2008 (IPAC, 2009).

2.4.1 Nishorgo Support Project

The government of Bangladesh took the first step after passing the legislation which set aside forestlands as 'Protected Areas'. In 2002, the United States Agency for International Development (USAID) awarded a contract to International Resources Group (IRG) to support this plan by developing a new protected areas management program named as 'Nishorgo'. This program intended to conserve biodiversity of Bangladesh. The main focus of co-management under NSP included protection and conservation of all natural forests and its biodiversity, conversion of the monoculture of exotic tree species with indigenous species, development of co-management agreements with key stakeholders and capacity building of the FD and other key stakeholders to ensure better governance for the PAs (Sharma, 2008).

2.4.2 Activities of Nishorgo Support Project (NSP)

- Establishment of co-management agreements and partnerships for stakeholders to support conservation.
- Facilitating alternative income generation activities for the people who rely on forest resources for their livelihood.
- Helping to upgrade policies for PAs such as revisiting The Wildlife Act, 1974.
- Building constituencies for PAs conservation among public and private groups.
- Supporting institutional capacity development through training.
- Developing essential infrastructure and visitor services, including hiking trails, and signage.
- Working on Ecosystem Regeneration and Rehabilitation (Sharma, 2008).

Table 2.1: Timeline of Nishorgo Support Project

Jan, 2003	Bilateral agreement concerning PA co-management signed between government of Bangladesh and USAID
July, 2003	Steering committee formed by Ministry of Environment and Forests
Feb, 2004	Public inauguration and launch of Nishorgo Program of the FD

Oct, 2004	Pre-ECNEC approval obtained for NSP
April, 2005	ECNEC approval obtained for NSP
Aug, 2005	1st community patrol group formation at LNP to complement FD patrolling
Aug, 2005	Government order issued formally recognizing all Nishorgo pilot site co-management committees and councils
Jan, 2007	Government approves participatory Management Plans for all Nishorgo sites
Oct, 2008	Closing of Nishorgo Support project

Source: USAID, 2012

2.4.3 Integrated Protected Area Co-management (IPAC)

Integrated Protected Area Co-management (IPAC) project contributes to sustainable natural resource management and encroached biodiversity conservation in targeted forest and wetland PAs with the goal of conserving biodiversity of Bangladesh while promoting unbiased economic growth and strengthening environmental governance (IPAC, 2009).

The technical support contract for the Integrated Protected Area Co-management (IPAC) project was awarded on June 4, 2008 by USAID/Bangladesh. IPAC provided technical advisory services and other supports over a five years period (2009-2013) to the agencies of Government of Bangladesh responsible for the conservation of wetland and forest PAs across Bangladesh (IPAC, 2009).

IPAC was implemented with the help of Ministry of Environment and Forests (MoEF), and Ministry of Fisheries and Livestock (MoFL), through a consortium of partners led by International Resources group (IRG) (IPAC, 2009).

IPAC was committed to devising a visible, recognizable, national and integrated system of co-managed PAs with a plan to cover 367,500 ha area to support 2.5 million forest-dependent and wetland-dependent local communities. The project also aimed at increasing the number of PAs to 50 from its current status to establish a strong PA network (Rashid et. al., 2013b).

2.4.4 Co-management council

The co-management council is a general body comprising a maximum of 65 persons representing five different categories of people from the locality. They are (a) representative

of civil society; (b) representative of local public administration; (c) representative of local people like resource user group, resource owning group, local youth, beneficiary and anthropological minority; (d) local NGO representative; and (e) representative from other government departments. The Upazila Nirbahi Officer (UNO) acts as the chairman of the council while the ACF/Range Officer in charge of the respective area acts as the member secretary. The tenure of the council is four years (Rashid et. al. 2013b).

2.4.4.1 Functions of co-management council

- Convene an annual general meeting and at least one meeting in addition to that annual general meeting.
- Provide related suggestions to the Divisional Forest Officer (DFO) on any modification, addition or correction after reviewing the annual work-plan of the PAs.
- Take collective decisions on activities that have adverse effect on areas in and around the PAs.
- Provide required guidance to the co-management committee on PA management.
- Develop policies for distribution of goods and services gained from the PA among the stakeholders and also oversee such distribution among the stakeholders by the co-management committee.
- Provide required approval to the PA annual work-plan developed by the co-management committee.
- Play an effective role in quelling any conflict that arises among the members of the co-management committee (DeCosse et. al., 2008).

2.4.5 Co-management committee

The Co-management committee (CMC) is an executive body of the council, with a maximum of 29 members formed for the purpose of implementing conservation related activities and programmes. The UNO is the advisor (ex-officio) of the committee while the ACF/Range Officer in charge of the respective area acts as Member Secretary (ex-officio). The tenure of the office of the members of the committee is for two years except the Member Secretary and the member from the law enforcement authority. The members of the committee are elected by their respective group in the council. The members of the committee elect a chairman, a vice-chairman and a treasurer from among themselves (Rashid et. al. 2013b).

2.4.5.1 Functions of co-management committee

- Act as the executive body of the council and is accountable to the co-management council for their all activities.
- Communicate with FD officials responsible for management of the PAs on local stakeholders' participation.
- Distribute the proceeds from goods and services from the PAs among the groups or teams linked with management activities according to the guideline developed by the council.
- Support Forest Department in employing labor from groups/teams linked with PA management in development activities undertaken by Nishorgo Support Project for PA management.
- Develop and submit project proposals requesting funds for development of the PA and landscape zone.
- Develop a work-plan for expenditure of funds collected locally through PA management and ensure spending upon approval from the respective Divisional Forest Officer (DFO).
- Maintain proper accounts of all local collection and expenditure from PA management. All accounts needs to be audited by institution/organization as directed by the advisor.
- Take require steps, upon approval from the Divisional Forest Officer, to initiate patrols for maintenance of PA management.
- Play a supportive role in containing any conflict arising between local stakeholders and Forest Department or any other govt./non-govt. organizations (DeCosse et. al., 2008).

2.4.6 Community patrolling group

The community patrolling group is a body of co-management organization comprised with both men and women living in and around PAs and directly depends on forest for their bread and butter. Generally these members represent various tires of co-management organization namely peoples' forum (PF), village conservation forum (VCF), forest user group (FUG) etc. The main objective of the members of community patrolling group (CPG) is in the protection of resources of PAs incorporated with FD (Rashid et. al., 2013b).

2.4.7 People's Forum

Representatives of village protection forum are organized under People's Forum. They play an active role in forming community patrolling group. People's Forum of different villages is discussed and with their consent, member of patrolling groups are selected (Forest department, 2006).

2.4.8 Village conservation forum

Villagers from the people living in and around PAs are selected to form a group named as Village conservation Forum (VCF). One third of the total members of VCF are female members. They play a very crucial role in raising awareness about the importance of protection and conservation of forest resources and sustainability of their livelihood. They organize different dramas, seminars and so many other public shows to spread knowledge about the conservation of forest and forest resources (Forest department, 2006).

2.5 Participatory forest management for reducing forest destruction

Community based forest management is a participatory way of managing forest; where both success and failure stories are present. So many arrangements were designed at providing the community with access to public lands so that they contribute to sustainable natural resources management (Murdiyarso and Skutsch, 2006).

In many countries, the inability of the govt. to control degradation of forests has been recognized recently. Governments are seeing the benefits of handing over forest areas to local communities under a variety of community forest management schemes in Cameroon, India, Nepal, Mexico, Papua New Guinea, Peru, Tanzania and many other countries and it is estimated that around 14% of all forest in developing countries is under this kind of management. Under this strategy, villagers get the formal, legal rights to use and profits from the forest products under jointly agreed management plans which ensures that off-take is kept at sustainable level. Communities organize themselves by setting by-laws and by self-regulation as regards access to forest products (Toupal and Jhonson, 2009).

2.6 Social and cultural life in and around the Lawachara national Park

Bordered by four tea estates and 18 villages of which 2 inside, 4 adjoining and 12 located nearby, the park and its natural resources provide a way of living in varying degree for a population of 27500 (Population census, 2001).

A huge number of labors required for managing Tea estates give rise to tremendous pressure on nearby forests for fuel wood, fodder, timber and other forest products. Adjoining to the south-western boundary of the park, the Tripura tribal villagers mainly depend on the cultivation of lemon and pineapple at the hill slope. Tripura women weave cloth and do household works and sometimes they work in lemon and pineapple farm. The settlers including many migrants in the outside villages are Bangalee and almost all of them are Muslim. Of these households approximately 50% came from Assam, Tripura, during 1965, approximately 30% migrated from Comilla, Noakhali and elsewhere of the country and the rest 20% are local. The households of outside villages have diverse occupational pattern. Most of them depend on agriculture; other occupation includes small business, service, day labor etc. (Hossain, 2007).

Chapter 3

Methodology

3.1 Selection of the study area

Lawachara National Park (LNP) was selected purposively for the study due to the approaches for community based, collaborative management of the protected areas. Land use of the park and its surrounding landscape is being managed based on co-management principles and practices. The main reason for choosing this area as study area is that it is the first protected area in Bangladesh where co-management was launched. Beside this, there is an easy access for conducting this research in this area.

3.2 Location of the study area

LNP (in Kamalganj upazila of Maulovibazar district) is located nearly 160 km northeast of Dhaka and approximately 60 km south of Sylhet city. It lies between 24°30′ - 24°32′ north latitude and 51°37′ - 51°47′ east longitude and is nearly 8 km east of Sreemongol town, on way to Kamalganj (NSP, 2006). The LNP and proposed extension comprise of forests of southern and eastern parts of West Bhanugach Reserved Forest within Lawachara, Chautali, and Kalachara Beats of Maulovibazar Range. Current notified area of the park covers an area of 1250 ha and the proposed area includes 281 ha of West Bhanugach Reserved Forest. The total area thus stands at 1531 ha which has been considered for inclusion in the Forestry Sector Project Management Plan. The communication network is very good and both roads and railway passes through the park. It takes 4 hours by road and 5 hours by train to reach LNP from Dhaka and from Sylhet city it takes only 2 hours (NACOM, 2003).

LNP is bisected by a major road, as well as the train line leading from Dhaka to Sylhet. The park is easily accessible by road from Sreemongal, and is a popular destination for nature tours organized to the tea estates and natural areas of the region. The Sreemongal town and adjacent areas also include a number of sawmills and furniture making businesses. Brickfields are less of a threat than in the case of some other PAs. Because of its size, elevation and proximity to the Hail Haor and other wetlands, the water protection functions are critically important (Forest department, 2006).

The LNP has come under intense pressure and is liable to over-exploitation and non-sustainable use from uncontrolled tourism and recreational visitors (picnicking, loud music,

litter, unguided walks); illicit felling including extraction of high value Teak logs and other hardwoods, daily harvesting of fuel wood and other minor forest products and encroachment for agricultural development (Islam, 2009).

3.3 Salient features of Lawachara National Park

Lawachara National Park is one of those few PAs in Bangladesh where one can watch Hoolock Gibbons. It is basically a plantation raised during 1920's for timber production by converting the natural semi-evergreen forest. Over the years, the plantation has taken a structure very similar to natural forests and support wildlife of different types. The park is important in regulating water flows, serves as a watershed forming important catchments. Ecologically semi-evergreen hill forest is a transition between the Indian- subcontinent and the Indo-China Floristic region. The hill forest extends from Teknaf Peninsula north along the Mayanmar border to the Chittagong Hill Tracts and the low hills in Sylhet district. The forest is now uneven-aged and multistoried. The majority of the smaller under-story trees are evergreen but most of the largest dominant trees are deciduous. The wildlife diversity at the Lawachara National Park consists of 460 species; of which 167 are plants, 4 amphibians, 6 reptiles, 246 birds, 20 mammals and 17 insects. This is one of the most popular birding areas of the country and is the best park to watch Hoolock Gibbons (IPAC, 2009).

3.4 History of the park

3.4.1 Establishment

LNP was originally under west Bhanugach Reserved forest of Maulovibazar range. The park was notified in 1996 as per Bangladesh Wildlife (Preservation) (Amendment) Act, 1974, with a total area of 1250 ha (Forest department, 2012).

3.4.2 Vegetation

The vegetation of LNP mainly comprises of 850 ha of long-rotation plantation (Teak, Jarul, Chapalish), 170 ha of short-rotation plantation (Albizia, Eucalyptus, Akashmoni, Mangium, etc.), some undergrowth plantation (21 ha) of bamboo and cane, 130 ha of betel leaf cultivation raised by forest villagers, some agricultural land, forest research area other infrastructures like offices, roads, railway tracks etc. (Forest department, 2012).

3.4.3 Conservation value

Main ecological functions are regulation of water, control of soil erosion, irrigation and carbon sink. Biological values include providing shelter to important flora and fauna, habitat connectivity, presence of threatened and endemic species. Socio-economic values of the LNP are important because a number of communities including ethnic minorities reside within and around the forests on which they depend for their livelihood opportunities (Forest department, 2012).

3.4.4 Management

The Lawachara National Park is one of the five PAs of Bangladesh where Forest Department (FD) initiated co-management approach. Local people and the department worked side by side to conserve the biodiversity as well as support economic development of the area (Forest department, 2012).

3.5 Method

3.5.1 Interview

Interview method was followed in the field with the help of a semi structured questionnaire to get individual respondent's perceptions on different impact of co-management at Lawachara National Park and surrounding areas. The detail of this interview method has been described in the subsequent paragraphs.

3.5.1.1Case study selection

At present there are 34 protected areas in Bangladesh among which 18 are managed under co-management system. It is very time consuming and expensive to conduct research on all these PAs. That's why Lawachara National Park was selected as the case study area as it was one of the five PAs where co-management was firstly initiated (Rashid et. al. 2013a).

3.5.1.2 Sampling technique and sample size

The objective of the study required information about the perceptions of different stakeholders on co-management impacts at LNP and its adjacent communities. To full the objectives and get answers of the research questions it was needed to collect the overview perception and experience of different key stakeholders related to co-management. So, different group of stakeholders related to co-management was interviewed.

For collecting information from different stakeholders, purposive sampling technique was followed. The reason for selecting this technique was to find the potential respondent who are related to co-management and can answer the research questions.

There are 18 villages in and around Lawachara National Park. Among them randomly 10 villages were selected from three different stake levels (major, moderate and minor) for field survey. In total 90 samples were taken for the field survey from these three different stake levels. The selection of village and the number of samples from them are mentioned in table 3.1.

Table 3.1: selection of village from different stake levels and no. of samples taken.

Villages	Rating of stake level	No. of samples taken
Magurchara	Major	5
Doluchara	,,	9
Baligaon	,,	13
Baghmara	,,	12
Radhanagar	Moderate	4
Phulbari	,,	11
Bongaon	Minor	13
Vasaniganj	,,	4
Lnagurpar	,,	9
Tilagaon	,,	10
Total		90

Source: Field survey, 2014.

3.5.1.3 Questionnaire preparation

Interview method was used to collect the required information from the field. Perceptions of respondent on different impact of co-management at LNP and surroundings were collected by using a semi structured questionnaire (Appendix- 1). This questionnaire was developed for conducting and guiding the face to face interview of the respondents. The questionnaire included all the research questions needed to fulfill the objective and had three parts namely general information and status of respondents and perception about co-management.

3.5.1.4 Primary data collection

The study was conducted on the basis of literature review and the interviews with the local villagers, co-management committee and council members, community patrolling group members, village conservation forum members, people's forum member, NGO officials and Forest Department officials. The study area was visited to collect the primary data through field survey using semi-structured questionnaire during May- June, 2014.

A detailed socio-economic survey was conducted to assess educational status, household member, primary and secondary income source, approximate monthly income, housing condition, land ownership etc. along with socio-economic data different types of data regarding co-management were collected like whether the respondent is involved in co-management or not, the role of respondent in co-management, receive any type of assistance or not, changes in their decision making status, changes in their economic condition after involvement, their reason behind joining co-management, their livelihood and social status improved or not, their observation about forest condition after launching co-management, their problems and suggestions regarding co-management.

3.5.2 Secondary data collection

The secondary sources of data included books, journals, various publications of government, institutions, and many other different non-govt. organizations, articles of different newspapers and other different research papers on the same or similar issues have been used for data collection. In addition to this, internet has also been used as secondary source of data collection.

3.6 Data processing and analysis

Data analysis was conducted followed by the data collection. The collected data was analyzed and presented by the graphical representation and tabular forms. Among the collected data, quantitative data were present. For quantitative data analysis SPSS statistics version 16.0 and Microsoft excel software were used.

Chapter 4

Result

4.1 General information of the respondent

4.1.1 Demographic and socio-economic profile of respondent

Respondents were interviewed based on their socio-economic condition. A total of 90 respondents were interviewed from various places like house, field, market etc. A semi-structured questionnaire was used to collect necessary information from the respondents. Wide ranges of indicator were collected in various aspects of socio-economic characteristics. The different social and economic indicator was educational status, land status, sources of income, approximate monthly income, housing condition etc.

4.1.2 Gender and family size of the respondent

The total number of respondent interviewed was 90. Among them 59 respondent (65.6%) were male and the rest 31 respondent (34.4%) were female. The family size of the respondent was categorized into four groups like 1-3 household member, 4-6 household member, 7-9 household member and more than 9 household members in the family of the respondent. Among the respondents only 2 respondents have less than 3 family members (2.2%). The major class of family size is 4-6 household members which comprises 60% of the total respondents. The second major class is 7-9 household members comprising with 34.4% of the total respondents. The percentage of household members of the respondents is shown in the figure 4.1.

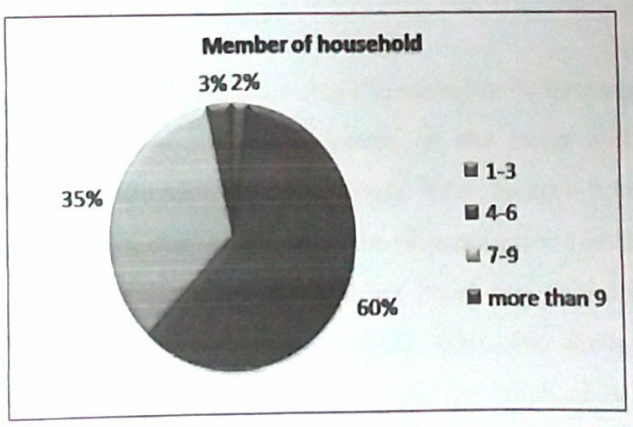

Fig 4.1: Pie chart of household members of the respondent

4.1.3 Educational level of the respondent

Education increases the capability and skill. It is the best indicator of efficient human resource. Education of the people depends on the socio-economic condition, suitable environment, institutional support, and government policy making. Among the total sample population 17.8% are illiterate. On the other hand, 48.9% have studied primary level, 27.8% have studied secondary level. But, unfortunately only 4.4% have completed higher secondary level and only 1.1% has completed graduation. The graphical presentation of educational level of the respondent is shown in the figure 4.2.

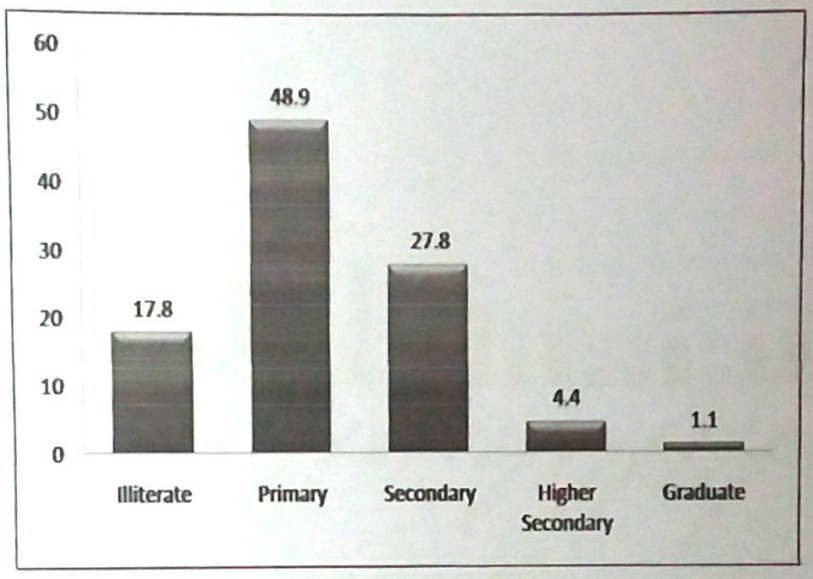

Fig 4.2: Bar chart of educational level of the respondent

4.1.4 Income source of the respondent

The local people living in and around LNP are involved in different professions for earning their livelihood. These people created pressures on the forest and its resources due to maintain their daily livelihood. To know about their income sources to lead to their livelihood, field level survey was conducted. The respondents are involved in different types of profession like agriculture, business, day labor, betel leaf cultivation, tea estate worker, lemon cultivation, shop keeping, cottage industry, govt. and non-govt. job etc. for their primary source of income. Again many respondents are involved in agriculture, fuel wood collection, poultry farming, animal husbandry, cottage industry, eco-guide and many other professions as secondary source of income. Among 90 respondents, 13.3% respondents are

involved in agriculture, while 12.2% are involved in small business, 8.9% as tea estate worker, 7.8% in shop keeping, 4.4% in cottage industry, 5.6% as day labor, 3.3% in lemon cultivation and so on. Most of the women respondents are housewives (20%). In case of secondary source of income, 16.7% respondents are involved in fuel wood collection, 8.9% in agriculture, 6.7% as eco-guide, 4.4% in poultry farming, 3.3% in animal husbandry, 4.4% in cottage industry and other some other different professions. Among 90 respondents 45 respondents (50%) don't have secondary source of income. The graphical representation of primary and secondary source of income of the respondents is shown in figure 4.3a and 4.3b.

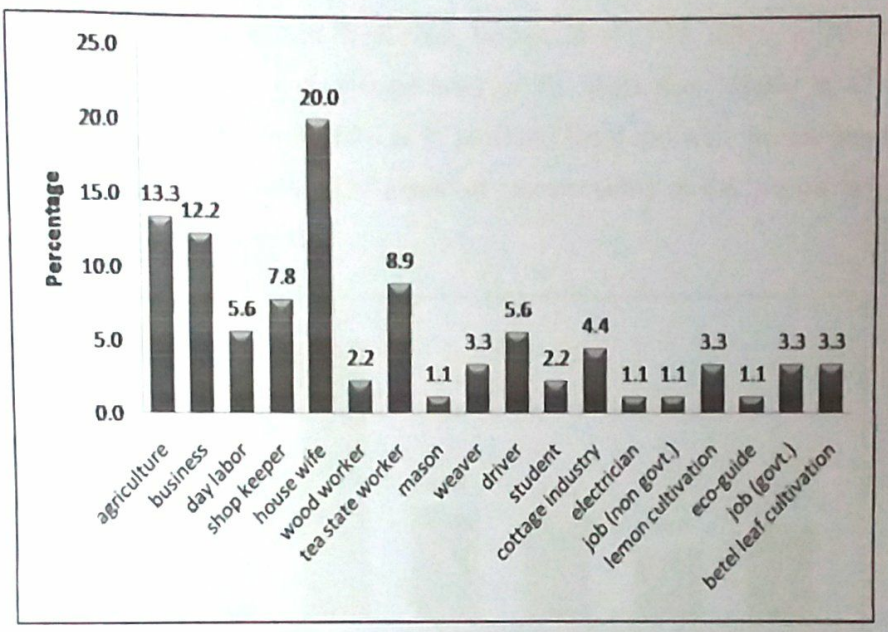

Fig 4.3a: Bar chart of primary occupation of respondents

Fig 4.3b: Bar chart of secondary occupation of respondents

4.1.5 Income level of the respondents

Income level data of the local villagers in and around the LNP was collected to find out how much they were dependent on forest resources. Comparatively lower income of the respondents might mean that people were more dependent on the forest to maintain their livelihood. On the other hand, higher income group might mean that people were less dependent on the forest to maintain their livelihood. During field survey, it was found that income of the majority of the local people fell into Tk. 3001/- to Tk. 5000/- which comprises 37.8% of the total respondent, whereas income level of Tk. 5001/- to Tk. 7000/- occupied the second place (15.6%) in the income level class. Income level of Tk. 7001/- to 1000/- placed in 3rd position (14.4%) along with income level of Tk. More than 15000/- at 4th position (13.3%), level of Tk. 10001/- to 15000/- at 5th position (10%) and with income less than Tk. 3000/- in the last position (8.9%). The graphical representation of the income level of the respondents is shown in figure 4.4.

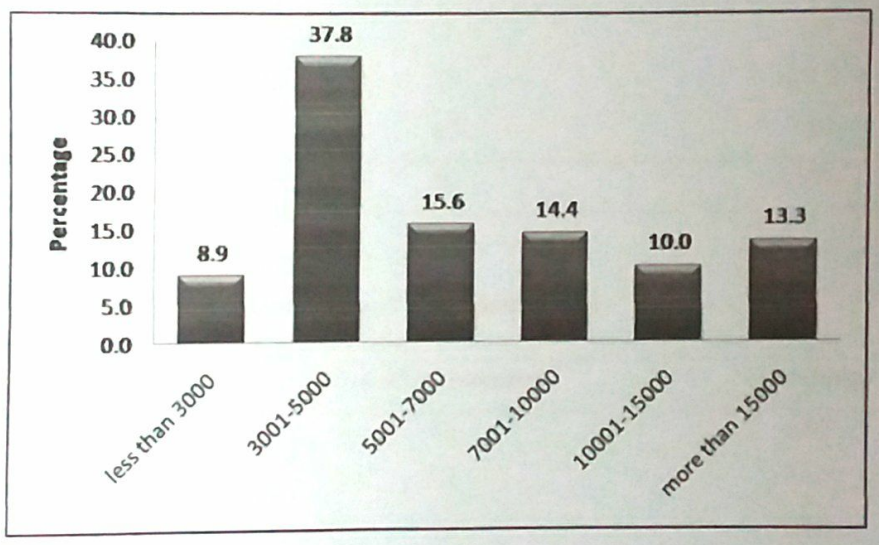

Fig 4.4: Bar chart of income level of the respondents

4.1.6 Housing condition and land ownership of the respondents

The condition of the respondents of sample population was divided into three sections namely building, tin shed and mud. And land ownership classified as homestead land and agricultural land. The homestead land category was divided into five different classes namely landless, below 15 shotangsho, 16-30 shotangsho, 31-50 shotangsho and more than 50

shotangsho. And the agricultural land was divided into six different classes namely as landless, below 25 shotangsho, 26-50 shotangsho, 51-75 shotangsho, 75-100 shotangsho and more than 100 shotangsho. Among the 90 sample population, most of the respondent dwells in mud house which comprises 72.2% of total population. And only 20% respondent live in tin shed house and 7.8% respondent live in building (Table 4.1). In case of homestead land ownership, 48.9% respondents don't have their own homestead land and live in khas land. 24.4% respondents have below 15 shotangsho, and 20% respondents have 16-30 shotangsho homestead land. Only 5.6% respondents have more than 50 shotangsho homestead land (Table 4.2). In case of agricultural land ownership, 75.6% respondents don't have any agricultural land. 11.1% respondents have 26-50 shotangsho agricultural land and 5.6% respondents have more than 100 shotangsho agricultural land (Table 4.3).

Table 4.1: Housing condition of the respondents

Housing type	No. of respondent	Percentage
Building	7	7.8
Tin shed	18	20.0
Mud	65	72.2
Total	90	100%

Source: Field survey, 2014.

Table 4.2: Homestead land ownership of the respondents

Ownership category	No. of respondents	Percentage
Landless	44	48.9
Below 15 shotangsho	22	24.4
16-30 shotangsho	18	20
31-50 shotangsho	1	1.1
More than 50 shotangsho	5	5.6
Total	90	100%

Source: Field survey, 2014.

Table 4.3: Agricultural land ownership of the respondents

Ownership category	No. of respondents	Percentage
Landless	68	75.6
26-50 shotangsho	10	11.1
51-75 shotangsho	2	2.2
76-100 shotangsho	5	5.6
More than 100 shotangsho	5	5.6
Total	90	100%

Source: Field survey, 2014.

4.2 Perception of respondents about co-management

4.2.1 Thinking about livelihood improvement and position change of forest dependent people in the society after participating co-management

The objective of involving forest dependent people in co-management was to ensure their alternative and better livelihood and their more respectable position in the society. From the field survey it was found that different groups of co-management think differently about livelihood improvement and position change in society after joining co-management. In case of thinking about livelihood improvement of forest dependent people, among the CMC members 77.8% stated that the livelihood of forest dependent people have been improved and the other 22.2% stated it negative. Among CPG members 72.2% stated that the livelihood of forest dependent people have been improved and the other 27.8% stated it negative. Among the VCF members 63.1% stated that the livelihood of forest dependent people have been improved and the other 36.9% stated it negative. Among PF members 71.4% stated that the livelihood of forest dependent people have been improved and the other 28.6% stated it negative (Fig 4.5a). In case of thinking about position change of forest dependent people in the society, among the CMC members 88.9% stated that the position of forest dependent people in the society have been improved after joining co-management and the other 11.1% stated it negative. Among the CPG members 88.9% stated that the position of forest dependent people in the society have been improved after joining co-management and the other 11.1% stated it negative. Among the VCF members 94.8% stated that the position of forest dependent people in the society have been improved after joining co-management and the other 5.2% stated it negative. All the PF members stated that the position of forest dependent people have been improved in the society after joining co-management (Fig 4.5b).

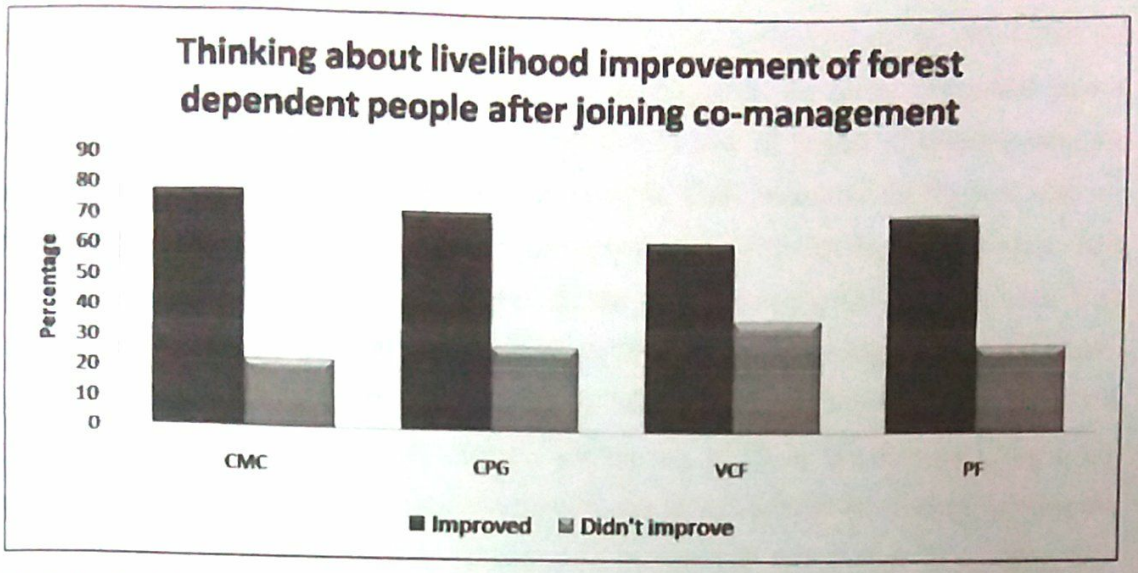

Fig 4.5a: Thinking about livelihood improvement of forest dependent people after joining co-management.

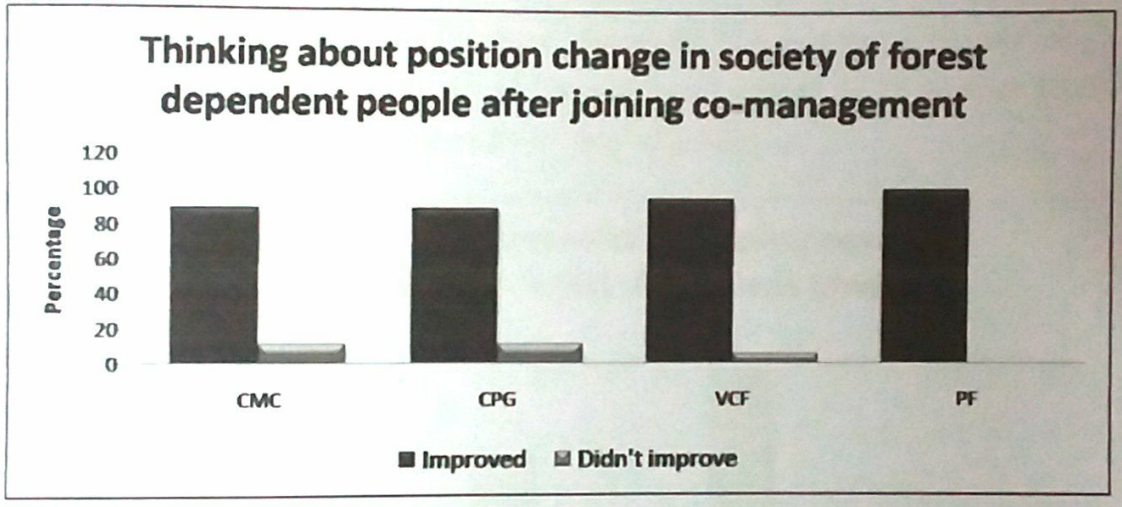

Fig 4.5b: Thinking about position change in society of forest dependent people after joining co-management.

4.2.2 Impact of co-management in creating new job opportunities and empowerment of forest dependent people

A major target of co-management at LNP was to create new job opportunities and empowerment of local people so that their forest dependency reduces and can protect the forest from destruction. Since from its' establishment, co-management organization have been trying to involve more local people; especially local women in it and provide them alternative income source, so that their social and economical empowerment can be achieved.

From the field survey it was found that different groups of co-management has mentioned the impact of co-management in creating new job opportunities for forest dependent people differently. From the field survey it was found that in case of impact of creating new job opportunities for forest dependent people, among the CMC members 66.7% said that co-management has brought almost change in job opportunities of forest dependent people. And the other 33.3% said it as 'average'. Among the CPG members, 66.7% mentioned it as 'average', 27.8% as 'almost' and the rest 5.5% as 'not so much'. Among the VCF members, 89.5% mentioned it as 'average' and 10.5% as 'almost'. Among the PF members 42.9% mentioned it as 'almost', 42.9% as 'average' and the rest 14.2% as 'not so much' (Fig 4.6a). In case of creating more economic opportunities and empowerment for women, among the CMC members 44.4% said that co-management has brought full change in creating new economic opportunities and empowerment of forest dependent women. And 55.6% mentioned it as 'almost'. Among the CPG members, 5.6% mentioned it as 'fully', 61.1% mentioned as 'almost' and 33.3% as 'average'. Among the VCF members, 7.9% mentioned it as 'fully', 50% as 'almost' and the rest 42.1% as 'average'. Among the PF members 85.5% mentioned it as 'almost' and the rest 14.2% as 'fully' (Fig 4.6b).

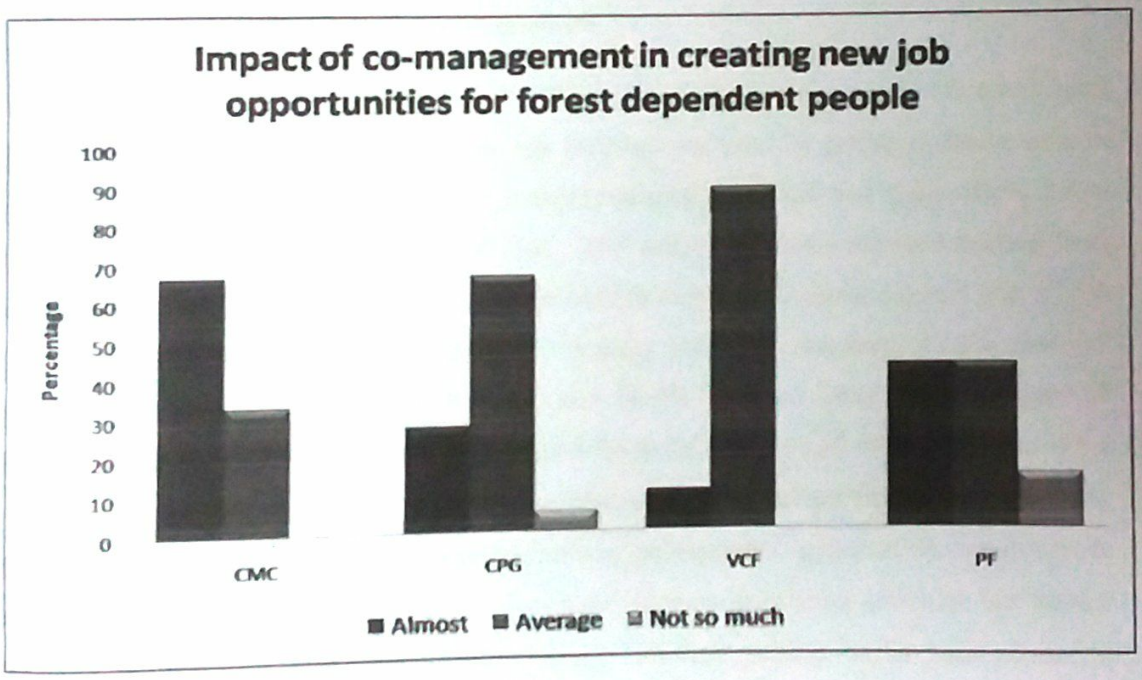

Fig 4.6a: Impact of co-management in creating new job opportunities for forest dependent people.

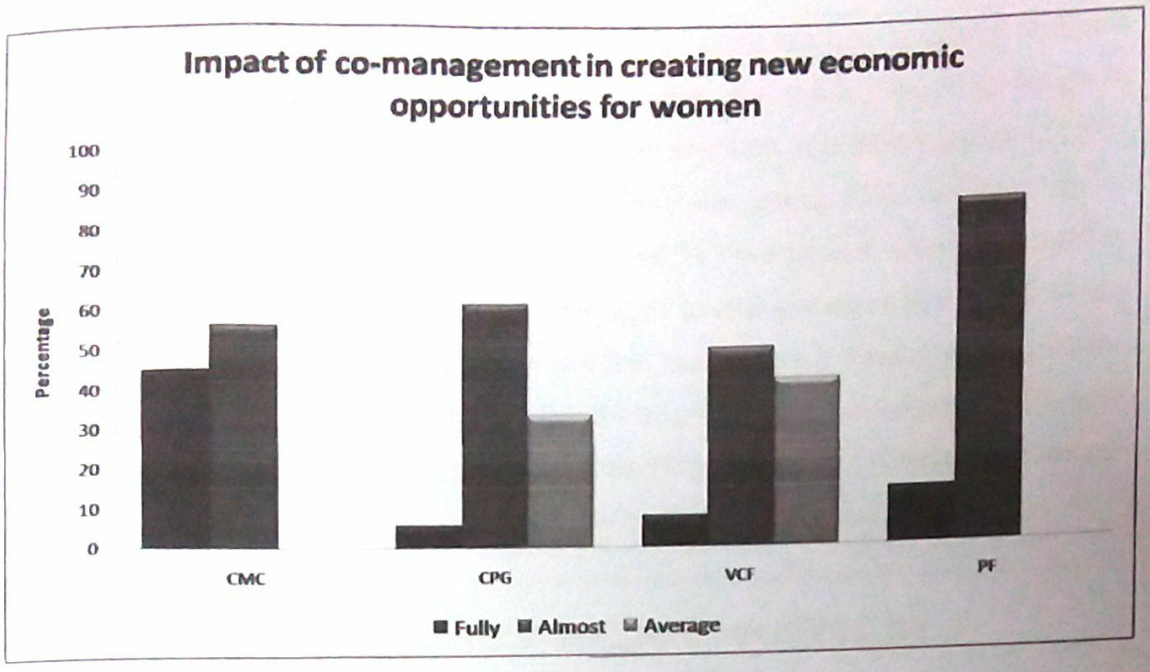

Fig 4.6b: Impact of co-management in creating new economic opportunities for forest dependent women.

4.2.3 Improvement of income level of forest dependent people through involvement in different AIGA obtained from co-management

From the field survey, it was found that with the involvement in co-management, local forest dependent people got opportunities to change their income level by getting different support from co-management organization like financial, training, technical and many others. From the field survey it was found that all the CMC, VCF and PF members received training from co-management organization. 11.1% CMC members received financial support and 33.3% received other different types of support. Among the CPG members 83.3% received financial support, 86.1% received training, and 16.7% received other different types of support. Among VCF members 47.3% received financial support and 10.5% received other different types of support. Among the PF members, 28.6% received financial support (fig 4.7a). With the financial support obtained from co-management organization, many people have been involved in different types of alternative income generating activities like animal husbandry, poultry farming, vegetable cultivation, rickshaw pulling, buffer zone plantation etc. From the field survey it was found that, among 90 respondents, 58 respondents (64.4%) are involved in different AIGA. And the rest 32 respondents (35.6%) are not involved in any AIG activities. Among the respondents, 30 respondents (33.3%) are involved in animal husbandry, 33 respondents (36.7%) are involved in poultry farming, 27 respondents (30%)

are involved in vegetable cultivation, 3 respondents (3.3%) are involved in nursery work and 3 respondents (3.3%) are involved in buffer zone plantation (table 4.4). With the profit obtained from these AIGA, the economic condition of members of different groups of CMO has been changed. From the field survey it was found that among CMC members, 66.7% members' economic condition is 'savings' and the rest 33.3% members' economic condition is 'solvency'. Among CPG member, 55.6% have equal income and expenditure, 27.8% have 'temporary insolvency' and 8.3% have both 'solvent' and 'savings'. Among VCF members, 73.7% have equal income and expenditure, 10.5% have temporary insolvency, 13.2% have solvency and the rest 2.6% have savings. Among the PF members, 14.3% have equal income and expenditure, 57.1% have solvency and the rest 28.6% have savings (Fig 4.7b).

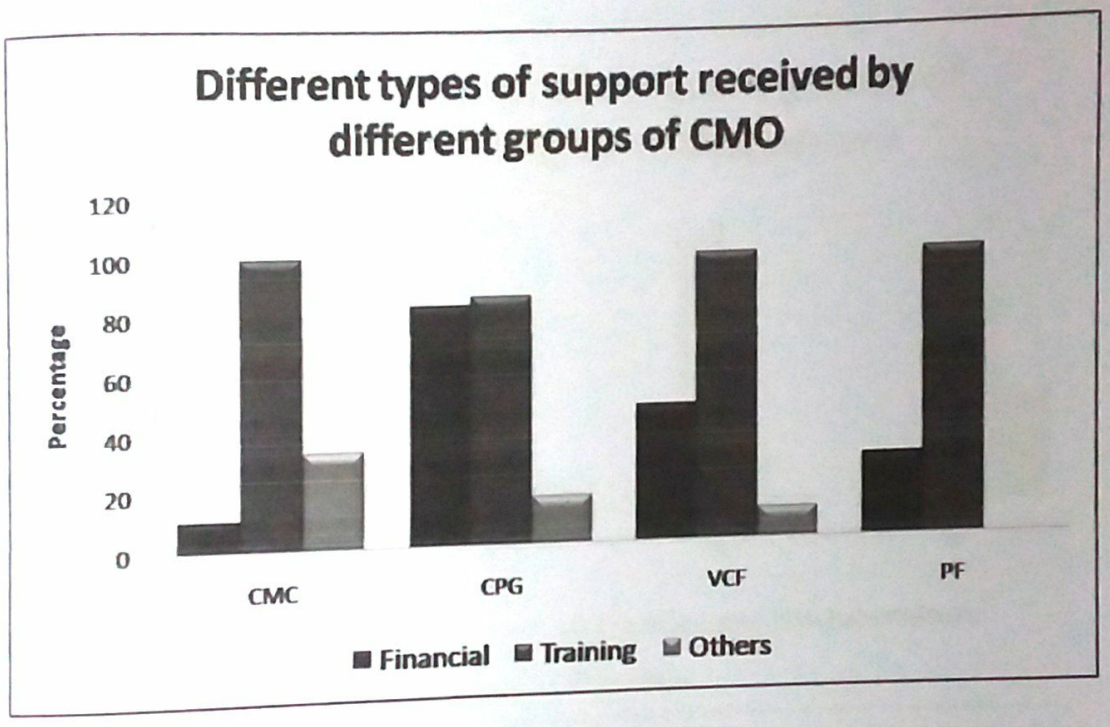

Fig 4.7a: Percentage of received support by different groups of co-management organization.

** Due to multiple support receiving percentage didn't added up to 100%.

Table 4.4: Respondents' involvement in alternative income generating activities

Types of AIG	No. of respondents	Percentage
Animal husbandry	30	33.3
Poultry farming	33	36.7
Vegetable cultivation	27	30.0
Nursery work	3	3.3
Buffer plantation work	3	3.3

Source: Field survey, 2014.

** Due to multiple involvements in AIG activities percentage didn't added up to 100%.

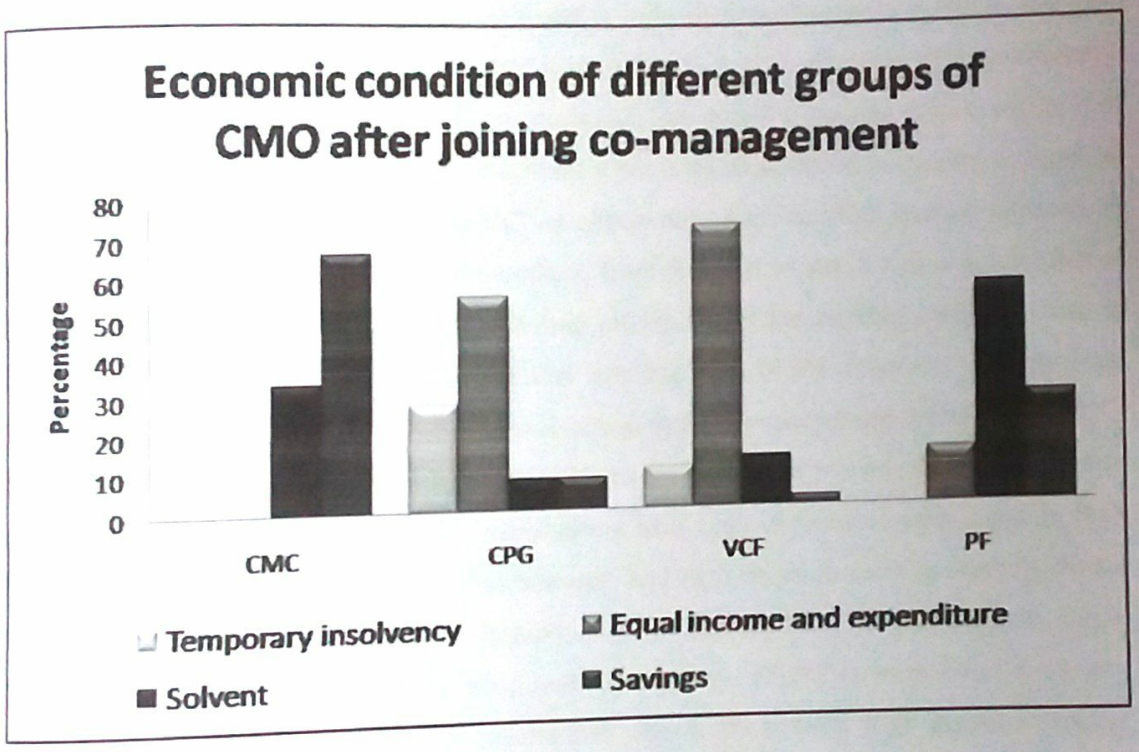

Fig 4.7b: Economic condition of different groups of CMO after participating co-management.

4.2.4 Changes decision making capacity and influence of forest dependent people in co-management

Co-management was initiated at LNP with the aim of involving local forest dependent people in forest conservation and empowering them in any type of decision making related to forest management and ensure their livelihood. When co-management was firstly launched, only the local elite, govt. officials and donor agency officials had power in any type of decision

making related to co-management. But with the change of time and involvement of more local people in co-management, the capacity of local people has been somewhat improved. But unfortunately, from the field survey it is observed that till now the decision making capacity of local poor forest dependent people is very low or zero. From the field survey it is observed that the decision making capacity in co-management of different groups has changed differently. Among the CMC members at past 33.3% had low, 11.1% had medium and 55.6% had high decision making capacity. And at present all the CMC members possess high decision making capacity (100%) in co-management. Among the CPG members at past 83.3% respondents had no capacity and only 16.7% respondents had low decision making capacity in co-management. And at present 83.3% CPG members don't have any decision making capacity while 5.6% possess low and 11.1% members possess medium decision making capacity. In case of VCF members at past 92.1% had no decision making capacity, which is at present 89.6%. 7.9% VCF members had low decision making status, which is at present 5.2%. And another 5.2% VCF members possess medium decision making capacity at present which was previously 0%. No VCF members have high decision making capacity in co-management at LNP. In case of PF members, from the field survey it was observed that at past 71.4% members had low and 28.6% had medium decision making capacity. And at present 85.7% PF members possess medium and the rest 14.3% members possess high decision making capacity (Fig 4.8a). Again decision making capacity and influence in CMO formation varies with the different profession. From the field survey it was found that in case of decision making capacity, only the businessmen have high decision making capacity both at past and at present. At past 36.4% businessmen had high decision making capacity which is at present 63.6%. At present 8.3% farmers possess high decision making capacity while 16.7% possess medium and low decision making capacity. 58.3% farmers don't have any decision making capacity. In case of housewives only 5.5% possess high decision making capacity while the rest 94.5% housewives don't have any decision making capacity. In case of day labor, tea state worker, cottage industry worker, driver, non-govt. officials, betel leaf cultivator, student don't have any decision making capacity. In case of weaver 33.3% possess high, 33.3% possess medium and 33.3% possess no decision making capacity in co-management. In case of lemon cultivator, 66.7% possess medium decision making capacity and the rest 33.3% don't have any power (Fig 4.8b). In case of influencing CMO formation again the businessmen has high influence. Among the businessmen 54.6% have high influence, 36.4% have medium and rest 9.1% have low influence in CMO formation. In case of farmers 8.4% have high influence, 25% have medium, 33.3% have low and the rest 33.3%

don't have any influence in CMO formation. Among the housewives 5.5% have high influence, 16.7% have low influence. And the rest 77.8% don't have any influence. In case of shopkeeper 28.6% have medium influence and 71.4% don't have any influence. In case of cottage industry worker, 25% have low influence and the rest 75% don't have any influence. In case of lemon cultivator 66.7% have medium influence. Non-govt. officials, day labor, betel leaf cultivator don't have any influence in CMO formation (Fig 4.8c).

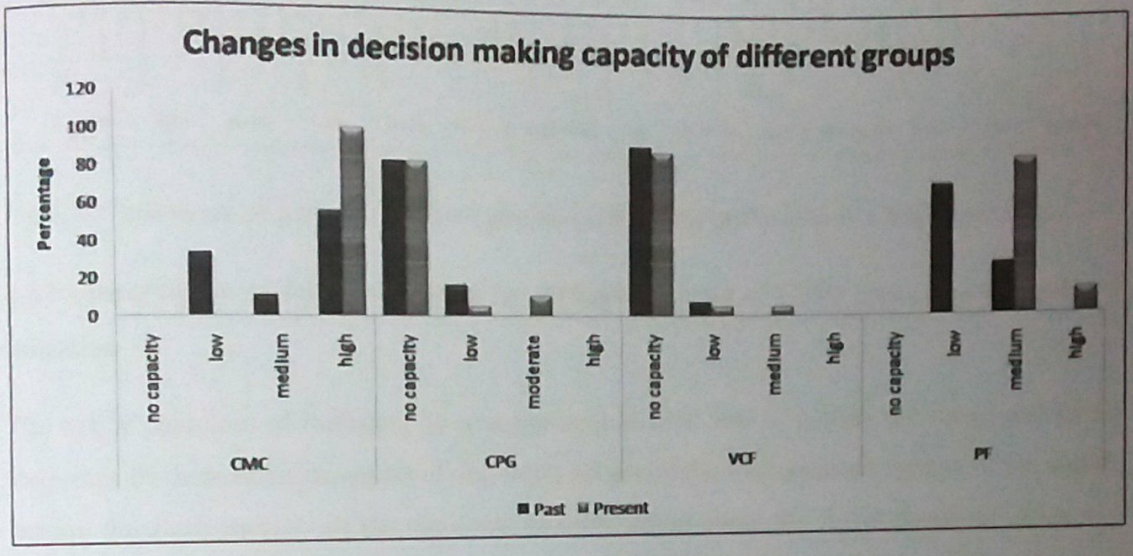

Fig 4.8a: Changes in decision making capacity of different group of members of co-management.

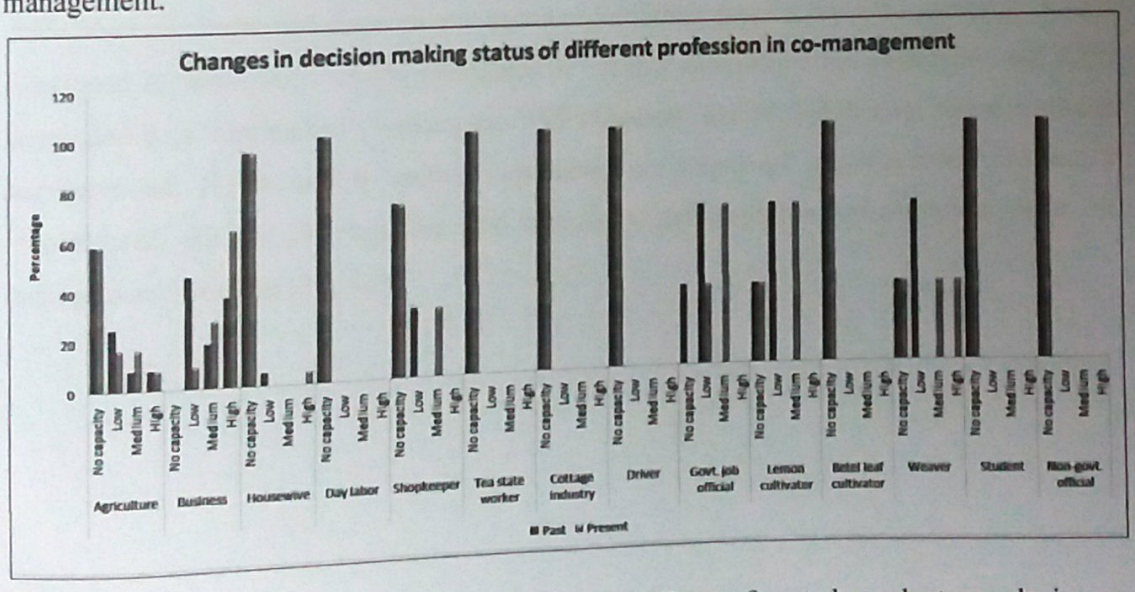

Fig 4.8b: Changes in decision making status of different forest dependent people in co-management according to profession.

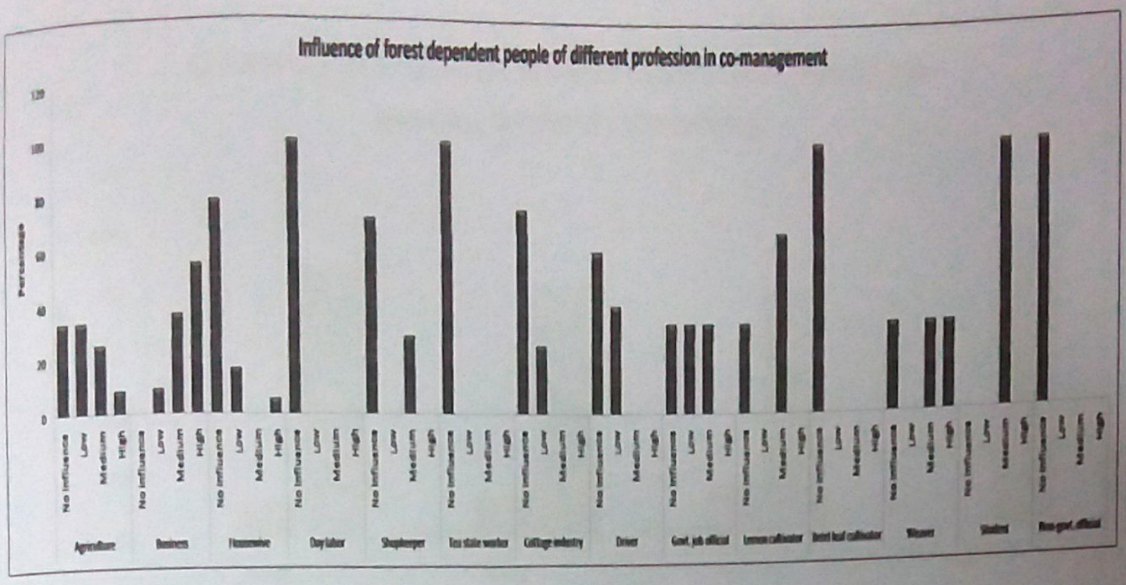

Fig 4.8c: Influence of forest dependent people of different profession in CMO formation.

4.2.5 Observation of forest condition by different groups of CMO since co-management initiation

The major objective of initiating co-management at LNP was to protect the forest and forest resources from destruction by involving local people in the management system of the forest. During the field survey, all the respondents were asked about the forest condition since co-management has started. From the field survey it was found that, among CMC members 88.9% said that the condition of forest have been improved and 11.1% said that it has neither diminished nor improved since co-management initiation. Among the CPG members, 83.3% mentioned it 'improved', 13.9% mentioned it 'neither diminished nor improved' and 2.8% mentioned it as 'diminished'. Among the VCF members, 81.6% said that the forest condition has improved, 15.8% said it 'neither diminished nor improved' and the rest 2.6% said it 'diminished'. All the PF members said that the forest condition has improved since co-management initiation (Fig 4.9).

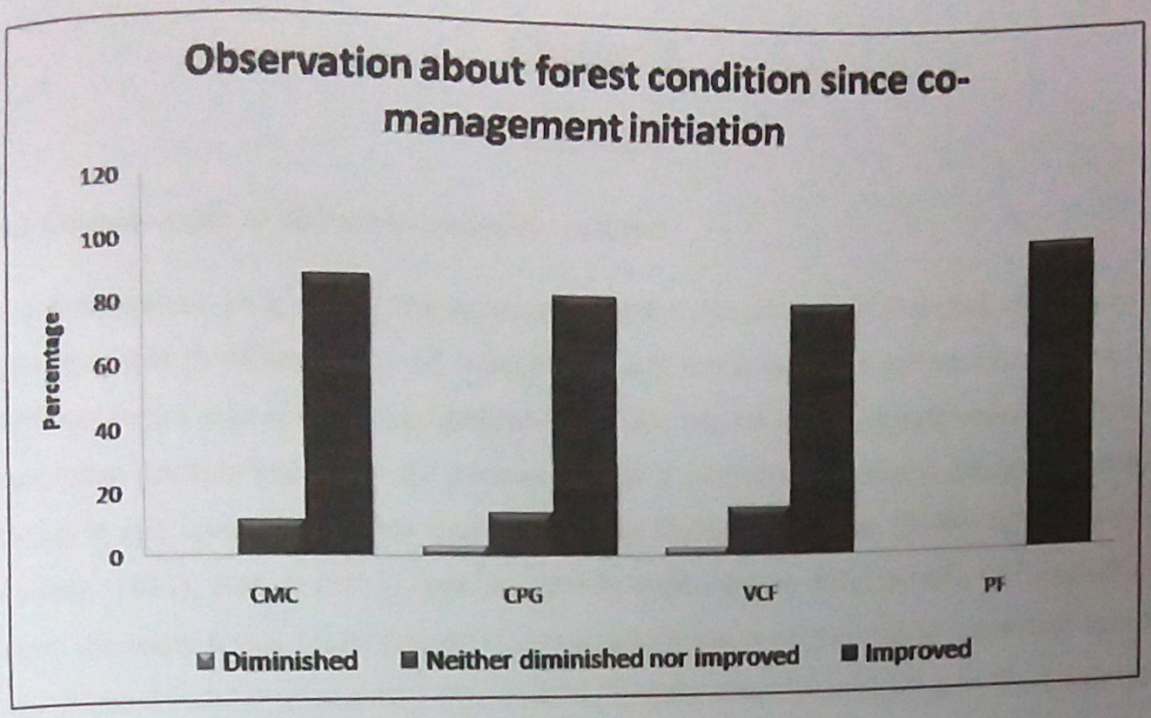

Fig 4.9: Observation about forest condition by different groups of CMO since co-management initiation.

4.2.6 Problems faced by respondents related to co-management

Different groups of co-management organization face different problems in their respective work sectors of co-management. Among them, Community Patrolling Group (CPG) faces more problem than any other groups. The major problem faced by CPG members are the conflict with illegal fellers and forest resource smugglers. Another severe problem is the lack of security while working. They also stated that their honorarium allowance is very low. They also mentioned that, a lot of previously charged court cases are still pending against them sued by the FD. Other different groups stated different problems like lack of proper implementation of rules, lack of transparency, lack of proper monitoring, political problem, corruption, bribe taking tendency of senior forest officers, non-member conflicts etc.

Chapter 5

Discussion

5.1 Co-management and socio-economic condition

Co-management is a recent management approach introduced in Bangladesh. Since its establishment in different PAs of Bangladesh, different researchers conducted research on different topics related to co-management. This study reveals that co-management has created somewhat positive impact on the socio-economic condition of the forest dependent people living in and around PAs. This study signify the findings of Hoque (2008), Momi (2011), Sultana (2011), Begum (2011), and Das (2013); conducted on different PAs of Bangladesh. From the study it was found that the decision making status of poor forest dependent people has changed somewhat to a very little extent. From the establishment till now the maximum decision making capacity belongs to the local elite (CMC and PF members), where the poor CPG members and a big percentage of VCF members still now don't have any decision making capacity. Only very few of them have achieved this capacity. This finding is more or less similar to the finding of Momi (2011). The study reveals a more positive thinking about the livelihood improvement and more respect in the society of forest dependent people after joining co-management. A very of the forest dependent people think that their position in the society didn't improve because of the oppose of non-involved people. This study has reveals that, co-management has brought a major changes in creating new job opportunities and empowerment of forest dependent people living adjacent to the PAs. A major portion of the members of different groups mentioned about it. Co-management has created a much more impact on the women's economic opportunities and thus their empowerment living in and around PAs. A major portion of respondents said that co-management has changed the economic condition and empowerment of women fully or almost. This study signifies the finding of Shewli (2008) and Subhani (2008). This study also reveals that the members of different groups of CMO receive different types of support among which almost all of them receive training to raise awareness about forest conservation. Many of them also receive financial and other type of supports. But unfortunately there is mismanagement in distributing financial and other supports. Some poor members don't have agri-lands, but they are provided with seedlings of vegetables. The economic condition of members of different groups has changed. But it is somewhat not so much highlight-able. Because most of the members who have solvency or savings, they are mainly the local elite and this didn't affect

them much. The condition of root level has mainly changed to permanent or temporary insolvency to equal income and expenditure. This finding of this study is similar to the findings of Hoque (2008) and Das (2013). This study also expresses the observation of forest condition since co-management initiation. Most of the members of different groups stated that the condition of forest has improved since co-management was established at LNP. Only a very little percentage of members of different groups of CMO have said that the condition of forest has diminished.

Chapter 6

Conclusion and recommendation

6.1 Conclusion

The objective of this study was to identify whether co-management bring changes in socio-economic condition of forest dependent people living in and around PAs or not. Establishment of PAs and applying co-management program there can offer different types of benefits like forest conservation and ensure sustainable livelihood of the people living in and around PAs. In Bangladesh, Many scientists have researched on different topics related to co-management and found many positive results. In my study at LNP, it is clear to me that most of the people who are directly involved in co-management have been benefited from this management system. The living conditions of many people have been improved since they have joined co-management. But unfortunately, the benefits of co-management is not fully achieved by the local poor due to various reasons like proper monitoring, lack of liability and transparency in the management system, top level officials corruption etc. Again those who are not involved in co-management can't get the benefit from it. These people also cause damage to forest resources like illegal felling, poaching of wildlife etc. This situation can be overcome by engaging more local people into co-management.

The main target of PA establishment can't fulfill until meeting the basic needs of local people. This can be obtained by providing more alternative income sources which keep them away from the destruction of the forest. In my study, it is clear that when the local people will have a better socio-economic condition, then they will stop going to the forest and destructing of forest resources. During the field survey I observed some problems related to co-management and have some recommendations which I think can be helpful for the success of co-management in PAs and to improve the living condition of the poor forest dependent people.

6.2 Recommendation

- All types of managerial problems like lack of transparency, lack of liability, lack of proper monitoring should be controlled.

- The honorarium allowance for the CPG members is very low. If it can be increased then, they will give more effort in protecting the forest. Again this will ensure their better livelihood opportunities.
- Seeds of different vegetables are provided to many landless people as an alternative income source. But those people don't have any land to cultivate this. It's a mismanagement problem. It should be solved and provide these landless people any other different AIG source.
- Income from PA must be distributed properly and transparently for the development of community people and stakeholders. It will motivate all the stakeholders and lead to a sustainable forest conservation.
- Introduction of corporate social responsibility program in support of conservation of LNP and sustainable development of surrounding communities.
- Promotion of many more AIG activities to the jobless poor people, so that they stop destructing forest resources for their livelihood.
- Provide more training and workshops related to AIG activities so that the local people get chances to improve their skills in different AIG activities.
- A detail study should be conducted with the aim of finding the mechanism by which the earned revenue from the forest can be reached to the forest depended people either in cash or as infrastructure development.

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Appendix

CAN CO-MANAGEMENT BRING CHANGES IN SOCIO-ECONOMIC CONDITION OF FOREST DEPENDENT PEOPLE LIVING IN AND AROUND PROTECTED AREAS? – A CASE STUDY OF LAWACHARA NATIONAL PARK IN BANGLADESH.

Field survey questionnaire

A. General information of respondent

1) Name:
2) Gender: (1) Male (2) Female
3) Occupation:
   Primary: Secondary:
   Others:
4) Address:
   Village: Union:
   Thana: District:
5) Household member:
6) Educational qualification:

B. Status of respondent

1) Economic status:
   i. Approximate monthly income:
      Before involvement:
      After involvement:
   ii. Housing condition:
   iii. Homestead land:
   iv. Agricultural land:
   v. Others:
2) Social status:

C. respondent's perception about co-management

1) Are you involved in co-management?
   i. Yes
   ii. No
2) If yes, from when you are involved in co-management? (Yr…..m…..d…..)

3) In which group of co-management you are involved?
   i. Forest user group (FUG)
   ii. Community patrolling group (CPG)
   iii. Co-management committee (CMC)
   iv. Co-management council
   v. Village conservation Forum (VCF)
   vi. People's Forum (PF)
4) What is your role in co-management?
5) What was your profession before involving in co-management?
6) From whom you came to know about co-management?
7) How you were involved in co-management?
8) Are you involved in any alternative income generating activities? (Yes / No)
9) If yes, what type of alternative income generating activities you are involved?
   i. .....
   ii. .....
   iii. .....
   iv. .....
   v. .....
10) Do you get any type of assistance from forest department or NGOs?
   i. Yes
   ii. No
11) If yes, what type of assistance do you receive?
   i. Financial
   ii. Training
   iii. Technical
   iv. Others
12) What is your status in decision making about co-management?
   i. At Past:
   ii. At present:
13) How much influence do you have in selecting new members of co-management?

No influence	Low	Moderate	High

14) What is your economic condition after joining co-management?

Permanent insolvency	Temporary insolvency	Equal income and expenditure	Solvent	Savings

15) What is the reason of your joining co-management?

Social reason	Economical reason	Environmental reason

16) Does co-management bring changes in more educational opportunities for local people at LNP?

Fully	Almost	Average	Not so much	Not at all

17) Does co-management increase the quality of life of local people by better food, cloth, medical facilities etc.?

Fully	Almost	Average	Not so much	Not at all

18) Does co-management create new job opportunities for local people of LNP?

Fully	Almost	Average	Not so much	Not at all

19) Does co-management create more economic opportunities for women of LNP?

Fully	Almost	Average	Not so much	Not at all

20) Do you think your livelihood has improved after participating in co-management?

Yes	No

21) Do you feel your position in the family or community is more respected since you've joined co-management?

Yes	No

22) What is your observation about the condition of the forest since co-management has started?

Diminished	Neither improved nor diminished	Improved

23) Do you know about the legislation for conducting co-management in this area?

Yes	No

24) Is there any stake-holder absolutely necessary in order to secure co-management?

Name of stakeholder	Means of power	Reason

25) Whom do you trust in case of anything about co-management?

Name of stakeholder	Reason

26) Is co-management necessary for the conservation of forest?

i. Yes

ii. No

27) What type of problem and risk you face during your work?

Social problem	Professional problem

28) Do you have any suggestion for the betterment of co-management in this area?

.....

Name of the interviewer:

Signature:

Date