

**Facilitating Decentralized Policy for Sustainable Forest
Governance in Myanmar: Lessons from the Philippines**

ミャンマーでの持続可能な森林ガバナンスを目指した分
権型政策の促進：フィリピンからの教訓

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Abstract

Introduction

In Myanmar, people's participation has been prioritized as an imperative of national forest policy in 1995 endorsed by the community forestry instructions (CFIs). Today, there are about 42,148 ha of community forestry (CF) management by 572 user groups (USGs). In CF management, the people are engaging three types of activities: (1) to preserve or improve the production system such as planting trees and promoting the growth of trees, (2) to use forest resources for subsistence needs, (3) to get cash by selling the timber harvested or furniture made by the timber. Initial participation by the people and their continuation of CF activities are considered to be indispensable for sustainable forest management. In practice, however, the improvement of forest management and protection are often threatened because of difficulties in continuing the activities even though initial participation was achieved. Providing secure property rights is among the major factors that contribute to continuing CF activities. Thus the objectives of the dissertation are (1) to find out the factors affecting initial participation of USG members in management activities in Myanmar, (2) to assess the role of property rights in sustaining CF activities in the Philippines, and (3) to draw implications for Myanmar policy in terms of property rights issues from the case of the Philippines.

Analytical framework and data collection

Decentralized forest management is an alternative way for conventional centralized approach that encourages people participation in forest management. For achieving sustainable forest governance in this approach, participation of communities and the role of property rights are among the major factors. In order to investigate important factors for initial participation of local people, which is the first objective of the research, a framework that explores the nature of causal relationships among economic, social /institutional and physical factors was constructed by modifying existing framework. Data were collected from four USGs of agroforestry (AF) type and natural forest (NF) type of CFs in central dry

zone of Myanmar. Semi-structured formal interviews were conducted at household level (15 households from each of sample USG in the AF type, 50 % of households from sample USG in the NF type) to know their social and economic situations. Other data were collected by applying key informant interviews, participant observation, informal interviews and reviews of the meeting records of USGs.

In order to analyze the role of property rights in decentralization that shape sustainable forest governance, the second objective of the study, two concepts are applied as analytical framework: (1) “bundle of rights” consisting of the right of access, withdrawal, management, exclusion, and alienation, and (2) “three levels of rules” such as operational, collective-choice and constitutional rules. Different property rights will achieve different forest governance outcomes in terms of forest resources as well as income. The research is undertaken in 3 systems of community-based forest management (CBFM) located in northern Philippines: central government-initiated program (CGIP), local government-initiated program (LGIP) and traditional forest management (TFM) system. 111 households from 9 villages were randomly selected to collect data such as demographics data, property rights, income from selling crops and numbers of trees on their farms. Key informant and informal interviews with 41 respondents were also conducted.

To facilitate decentralized policy for sustainable forest governance in Myanmar by improving property right issues through lessons from the Philippines, the third objective of the study, property right issues from three CBFM programs in the Philippines and two types of CF from Myanmar were compared by applying SWOT analysis. In SWOT analysis, the policies were regarded as external factors to generate ‘opportunities’ and ‘threats’: the communities such as POs in the Philippines and USGs in Myanmar might have some ‘strengths’ and ‘weaknesses’. Then the policy implication to support strategies to be taken by the USG in Myanmar were proposed by considering how to make use of the ‘opportunity’, how to defend against the ‘threats’, how to promote the ‘strengths’, and how to overcome the ‘weaknesses’.

Factors affecting participation of USG members in the Dry Zone, Myanmar

In AF type CF, performance of USG was measured by the number of trees managed by households in each individual plot. Under the favorable market situations, all respondents have income which encourage initial participation in CF. The study showed that the more the leaders work on the farm, the better their active participation in discharging their responsibilities for supervising, monitoring and decision making which affect rule awareness and cooperation among members in the execution phase. It was found that social/institutional factors can mediate the negative effect of economic factors.

In NF type CF, performance of USG was measured in terms of the proportion of members participating in collective resource management. Under the situation where economic benefits are not yet received, those who had experience as village head could take better coordination and leadership. The achievement of collective action was higher when majority of members participated in decision-making process and vice versa. Additionally, the legal rights of CF motivated the people who have experience in traditional forest management as common property to participate in collective activities. When the institution lacked strong rule enforcement due to the weakness of social/institutional factors, it seemed that physical factor was more important for poor participation.

Property rights issues of CBFM in the Philippines

In both CGIP and LGIP, the people are granted all the five bundles of rights on the individual plots within the CBFM area, or full ownership. They are free to decide species of forest trees, fruit trees or crops as long as making sound ecological practices. Income from AF crops supported livelihoods of the households. In the TFM, the people can decide how to manage their resource and maximize the profit, although individual right holders are prohibited to sell or transfer their private property. Comparing withdrawal right on trees among three systems, the local people in TFM system are granted the most liberal and assured rights because they can devise operational rules in terms of quantity of resource

use, timing of harvesting and harvesting technology, whereas such rules are regulated by higher level actors in CGIP and LGIP.

The local people in CGIP gained operational and collective choice rights on the communal forest. Such devolution from the central government to local organization resulted in good forest management, although there are variations in three associations. On the other hand, LGIP i.e. devolution to local government unit, grant to communities limited operational level-rights and the management of whole watershed area is driven by local government, which weaken the function of the local organization in the long run. In the case of TFM, everybody can access and harvest the trees.

Comparison of the cases of Myanmar with the Philippines

In the Philippines, there were some opportunities: (1) Access, withdrawal, and management rights including marketing of forest products, and exclusion rights has been transferred to PO members; (2) PO members are permitted to rehabilitate the land by planting agricultural crops, fruit trees, trees or by making fish-breeding pond to enhance participation and support food security, and (3) PO members are given access to local financial, technical and seedlings support from other departments. The right to make operational rules, however, was controlled by national authority, which was obvious ‘threats’.

The PO in the Philippines has the ‘strengths’ such as existence of internal regulation to define the powers and authority of the PO leaders and women’s involvement in collective-decision making and ‘weakness’ such as limited collective activities through participation of PO members.

In Myanmar, the ‘opportunities’ were: (1) USGs were allowed to have the rights of access, withdrawal, management and exclusion, (2) Withdrawal rights to harvest naturally grown trees are not regulated, (3) They are not required to distribute any of CF benefits to the Forest Department (FD), and (4) The department provides seedlings of tree to USG. ‘Threats’ were: (1) CFIs did not prescribe the right of commercial harvest of forest products and the procedure involved when extracting forest products, (2) Exclusion rights were not

ensured because there was no strong legal mechanism to punish the encroachers, even they are given the right to exclude outsiders, and (3) Legal status of the USG after termination of the project was fragile, (4) The management rights for the improvement of the land only emphasized on forest trees and, (5) Access to finance was limited for the USG members.

The FUGs have ‘strengths’ such as existence of collective action under strong leadership, and ‘weaknesses’ such as lack of internal regulation to define the authority of the USG leaders and women’s involvement in collective decision making process.

Conclusion and policy implications

Decentralization in Myanmar is likely to be another form of centralization provided with few new benefits and little autonomy, while the approach of CBFM in the Philippines can be considered decentralization without devolution of authority, except TFM system.

In order to overcome the threat of prohibition of commercial harvest of forest trees, the scope of CFIs should allow commercial harvest to supply wood-based industries. FD shall issue additional orders for commercial harvest of forest trees including authorized procedures for obtaining cutting permits. To ensure exclusion rights and secure legal status of USGs, article 15 of forest law, which permit establishing village owned firewood plantation, should be strengthened. Moreover, CFIs should add a section on forest protection and conservation that provides secured and strong institutional power to exercise exclusion right. To improve the management right of USGs, section 19 (e) of CFIs, which concern with property right on how to manage and rehabilitate the land, should provide USGs to decide on how to rehabilitate the land including what type of tree and crops to plant. Lack of financial incentive for USG members can be overcome by providing other incentive including non-forest based alternative livelihood system through institutional linkage with other departments concerned. The existing strength of USGs like collective action under strong leadership can be applied in national programs like the national greening policy e.g. Bago Yoma greening program. In order to overcome the weakness, USGs should modify internal regulations to define authority of leaders and to allow

women's involvement; the FD should create sections of CFI to promote and legalize such internal regulations.

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Abbreviations

AAC	Annual Allowable Cut
AF	Agroforestry Forest
BOWA	Barobbob Watershed Association
CADT	Certificate of Ancestral Domain Title
CBFM	Community Based Forest Management
CBFMA	Community Based Forest Management
CENROs	Community Environment and Natural Resource Offices
CF	Community Forest
CFIs	Community Forestry Instructions
CGIP	Central Government Initiated Program
COMFORT	Community Forestry Training and Extension Project
DAO	Departmental Administrative Order
DENR	Department of Environment and Natural Resource Office
DZGD	Dry Zone Greening Department
ECC	Environmental Compliance Certificate
FD	Forest Department
IP	Indigenous People
JICA	Japan International Cooperation Agency
LGIP	Local Government Initiated Program
LGU	Local Government Unit
MOA	Memorandum of Agreement

MOECAF	Ministry of Environmental Conservation and Forestry
MRP	Muyong Resource Permit
MSS	Myanmar Selection System
MTE	Myanmar Timber Enterprise
NF	Natural Forest
NGOs	Non-government Organizations
NTFPs	Non-timber forest products
PENROs	Provincial Environment and Natural Resource Offices
PGENROs	Provincial Government Environment and Natural Resource Offices
PFE	Permanent Forest Estate
PO	People Organization
PSD	Planning and Statistics Department
RF	Reserved Forest
TFDs	Township Forest Departments
TFM	Traditional Forest Management
SFM	Sustainable Forest Management
SWOT	Strength, Weaknesses, Opportunities and Threats
UNDP	United Nations Development Program
USG	User Group
VPDC	Village Peace and Development Council

Chapter One

General Introduction

1.1 Background Information

Myanmar, one of the South-east Asia countries; is an agriculture-based nation and forests are also important not only for the national economy but also local livelihoods. About 47 % of the country's total land area of 67.6 million ha is covered with natural forests (FD, 2011). In accordance with Htun (2009), forestry sector contributes 50 % of the country's GDP and about 30 % of export earnings. In addition, forests are also the main source of food, income, employment and capital formation for the majority of 70 % of populations living in rural areas.

The Myanmar forest estate was established by the British from 1856 onwards (Bryant, 1996). The country's forest areas are classified into 7 categories of management purposes know as working circle. It consists of 1) Non Wood Forest Products Working Circle, 2) Production Working Circle, 3) Plantations Working Circle, 4) Local Supply/Community Forestry Working Circle, 5) Watershed Forests Working Circle, 6) Mangrove Forests Working Circle and 7) Protected Area System Working Circle.

During the centralized forest management regime, Local Supply Working Circle in Forest District Working Plans was created for the local people who lived near forest reserves to provide fuelwood, pole, post, small timber and a variety of non-timber forest products (NTFPs). This Local Supply Working Circle is directly managed by the Forest Department (FD) which opens up working lots annually to extract forest products. In accordance with Tint et al., (2011), however, most of these woodlots have been encroached or degraded. The 1992 forest law encourages people participation by allowing them to establish village-owned firewood plantations by the village or by transferring FD's owned firewood plantations to the villagers (FAO, 1997). However, this top down approach was failed due to the lack of proper mechanism to transfer the plantations to the local

communities and lack of clarity on land tenure and tree tenure (Kyaw, 2006). Moreover, this law does not have any provisions relating to community forestry (Tint et al., 2011).

In 1995, people's participation was prioritized as an imperative of national forest policy endorsed by the community forestry instructions (CFIs). These instructions were noted as a major breakthrough in forestry sector to promote people participation and decentralization in forest management (Maung and Yamamoto, 2010). In accordance with CFIs, community forestry can be defined as "forestry operations in which local community itself is involved in planting and utilizing the forest products and income under a 30-year legal grant" (FD 1995). The FD thirty-year Master Plan from 2001/2002 to 2013/2031, which foresees the forestry situation in the next 30 years, is targeted to provide about 4 million cubic tons of fuelwood (25 % of the total fuelwood requirement of 16.53 million cubic ton) from CFs. In order to achieve this target and to contribute the rehabilitation of the annual deforestation of 220,178 ha, FD planned to establish CF as an integral part of the strategy and it is estimated to be 2.27 million acres of CF by 2030 (Aung and Thwin, 2003).

Since issuance of the instructions, community forestry programs have been implemented in various forms; FD implemented programs, FD and Donor jointly implemented programs e.g. FD and JICA, FD and UNDP, DZGD CF plantations, and programs under the initiative of international non-governmental organizations e.g. Cooperative for Assistance and Relief Everywhere (CARE) Myanmar as well as local non-governmental organizations e.g. Economically Progressive and Ecological Development (EcoDev). Bakaung (2006) indicated that community forestry movement was often promoted in a top down manner where CF activities are mostly guided by project staffs or government officials. The people participated as labor in establishment of tree plantations which will hand over as community forest. Oo (2004) and Bakagung (2006) suggested the emergence of CF where there is low input from outsiders as well as self-initiation CF.

Compared to 100% donor led community forests (CFs), CFs initiated by Community Forestry Training and Extension (COMFORT) Project has been established with low initial

assistance by outsider. The project was initiated and jointly implemented by JICA and Myanmar FD and the improvement of forests such as planting trees and protection of natural forest was done without financial support. Recently, CF initiatives were started in densely forested area of the country although the forest is degraded e.g. CF activities in Kachin State through EcoDEv and Shalom foundation (local NGOs).

Today, there are about 42,148 ha of CF management by 572 user groups (USGs). Although the proportion of CF sites in Myanmar's total forest land of 34.4 million is low, data show that this approach is expanding in the country. Under the activities of CF, the people are engaging three types of activities: (1) to preserve or improve the production system such as planting trees and promoting the growth of trees, (2) to use forest resources for subsistence needs, (3) to get cash by selling the timber harvested or furniture needs made by the timber (FAO, 1998). Therefore, initial participation by the people and their continuation of CF activities are considered to be indispensable for sustainable forest management. In practice, however, the improvement of forest management and protection are often threatened because of difficulties in continuing the activities even though initial participation was achieved (Tint et al., 2011). In accordance with Yandle (2007) and Katila (2008), property rights can play an important role in building biologically and socially sustainable resource management regime. Similarly, some scholars of community forestry in Myanmar such as Aung and Thwin (2003), Lin (2005) and Tint et al. (2011) indicated that secured property right play a crucial role for enhancement of people participation in forest management. Such real field situations of community forestry initiatives in Myanmar inspired the approach of this research: identifying the factors for participation of USG members in management activities and how property rights affect the continuation of CF activities. And lastly, how can improve community forestry to encourage and sustain community forest management? This dissertation addresses these questions using community forestry initiatives in Myanmar and community based forest management in Philippines as case studies.

Philippines, a South East Asia country with a total land area of 30 million hectares (ha), is selected for this study because it is among the more progressive countries in the world from a structural policy reform perspective. By seeing people as community development partners of the government to achieve sustainable forestry while promoting their socio-economic welfare, community based forest management has been promoted as a national strategy since 1995. The legal frameworks that focus on granting of rights and security of tenure are supported (Pulhin et al, 2008; DENR, 2012). The declared national policy centers on the formation of strong partnerships among key forest stakeholders (e.g. between DENR and local governments, between DENR and local communities). Today, CBFM areas cover about 5.97 million ha of 15.86 million ha of total forest lands (37.6 %) (Balooni et al., 2008). Property-rights-based CBFM approaches, in the form of decentralization with devolution to local government units; devolution to local communities; devolution to indigenous people; the Philippines has attracted considerable positive attention (Pulhin and Inoue, 2008). By evaluating the various property rights regimes and forest policies that shape the rights granted to local communities, research findings from the analysis will provide lessons to improve community forestry in Myanmar in terms of property rights.

1.2 Overall Objectives of the study

- ❖ To find out the factors affecting initial participation of USG members in management activities
- ❖ To assess the role of property rights to continue CF activities in the Philippines, and
- ❖ To compare property rights between Myanmar and the Philippines to get implications for Myanmar policy in terms of property right issues

1.3 Research Framework

Decentralization and participation of local people in forest management are given significant consideration in many countries' forest policies (Katila, 2008). Balooni and Inoue (2007) defined decentralized forest management as “a bottom-up approach designed

to engage the public in forest policy formulation'. Such policy reform had been implemented in different forms, ranging from very limited participation without devolution of authority to collaborative forest management; Joint Forest Management to Community Based Forest Management where forest resources are handed over to the community (Fisher et al., 2000). In order to promote the possibility of sustainable forest governance through decentralization, participation of community members in such community based forest management programs are crucial (Pagdee et al., 2006). In addition to participation, effective decentralization requires that local people are allowed rights to manage resources and make decisions regarding resources use and exclusion (Katila, 2008). Secure long-term property rights provide an incentive for resource users to manage the resource sustainably (Yandle, 2007).

In this study, the two major governance issues in decentralization: participation of communities and role of property rights were investigated in Myanmar and the Philippines. The flowchart in Figure 1.1 represents the research framework for this study. Two case study regions, Philippines and Myanmar, which have interesting contrast in terms of the development of community forestry, were purposely chosen for the study. Philippines is seen as having extensive experience in decentralized forest management, with diverse forms of devolution initiatives (Balooni and Inoue, 2008). In contrast, community forestry in Myanmar, where donor-funded projects have been the main initiator of CF formation to promote people participation in forest management has a slow progress in community forestry movement. Although community forestry was issued to build partnership between the state and local communities, in reality, it has not yet politically identified legislation, policies and institutional linkages. To achieve the people participation for sustainable development of forests, the uncertainty of land tenure and property rights is one of main constraints in Myanmar (Lin, 2005; Tint et al., 2011). Therefore, the contrasting experiences in these two regions provided insights into how can improve community forestry in Myanmar with emphasized on property rights.

For the first objective, identifying the factors affecting initial participation of USG members in management activities, Myanmar cases were used because selected USGs were implementing planting as well as protecting degraded natural forest to improve production system in the future. In order to achieve initial participation in management activities, some scholars such as Wittayapak and Dearden (1999), Lise (2000), Bandyopadhyay and Shyamsundar (2004), Chhetri (2005) and Sundtongkon and Webb (2008) have shown that leadership, dependence on resources, prior experience in collective activities, the decision-making process, proximity to forests and market situations are important economic, social-institutional and physical factors for peoples' involvement in CFs. In this study, a framework that explores the nature of casual relationships among economic, social/institutional and physical factors was constructed by modifying existing framework, as will be discussed in Chapter 3.

For the second objective, assessing the role of property rights to continue community forest activities, Philippines cases were used because large scale timber production was not yet developed in Myanmar (Tint et al., 2011) and selected cases in Philippines were at the stage of continuation as well as harvesting of forest products on a commercial basis. In order to achieve this objective, two concepts are applied as analytical framework: (1) "bundle of rights" consisting of the right of access, withdrawal, management, exclusion and alienation, and 2) "there level of rules" such as operational, collective-choice and constitutional rules. Different property rights will achieve different forest governance outcomes in terms of forest resources as well as income. The research is undertaken in three systems of community based forest management in northern Philippines, as will be discussed in Chapter 4.

For the third objective, property right issues from three CBFM programs in the Philippines and two types of CF from Myanmar were compared by applying SWOT analysis. In SWOT analysis, the policies were regarded as external factors to generate 'opportunities' and 'threats': the communities such as POs in the Philippines and USGs in Myanmar might have some 'strengths' and 'weaknesses'. Then the policy implication to

support strategies taken by the community were proposed by considering how to make use of the ‘opportunity’, how to defend against the ‘threats’, how to promote the ‘strengths’, and how to overcome the ‘weaknesses’.

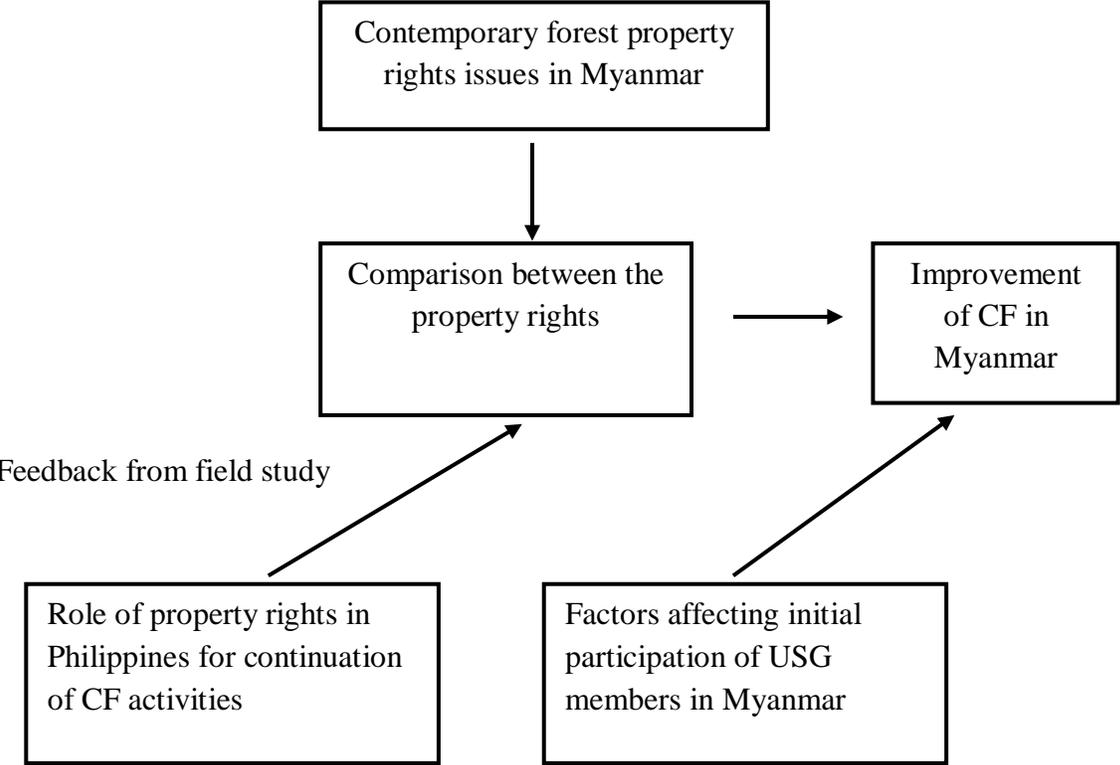


Figure 1.1 Framework of analysis

1.4 Structure of the Dissertation

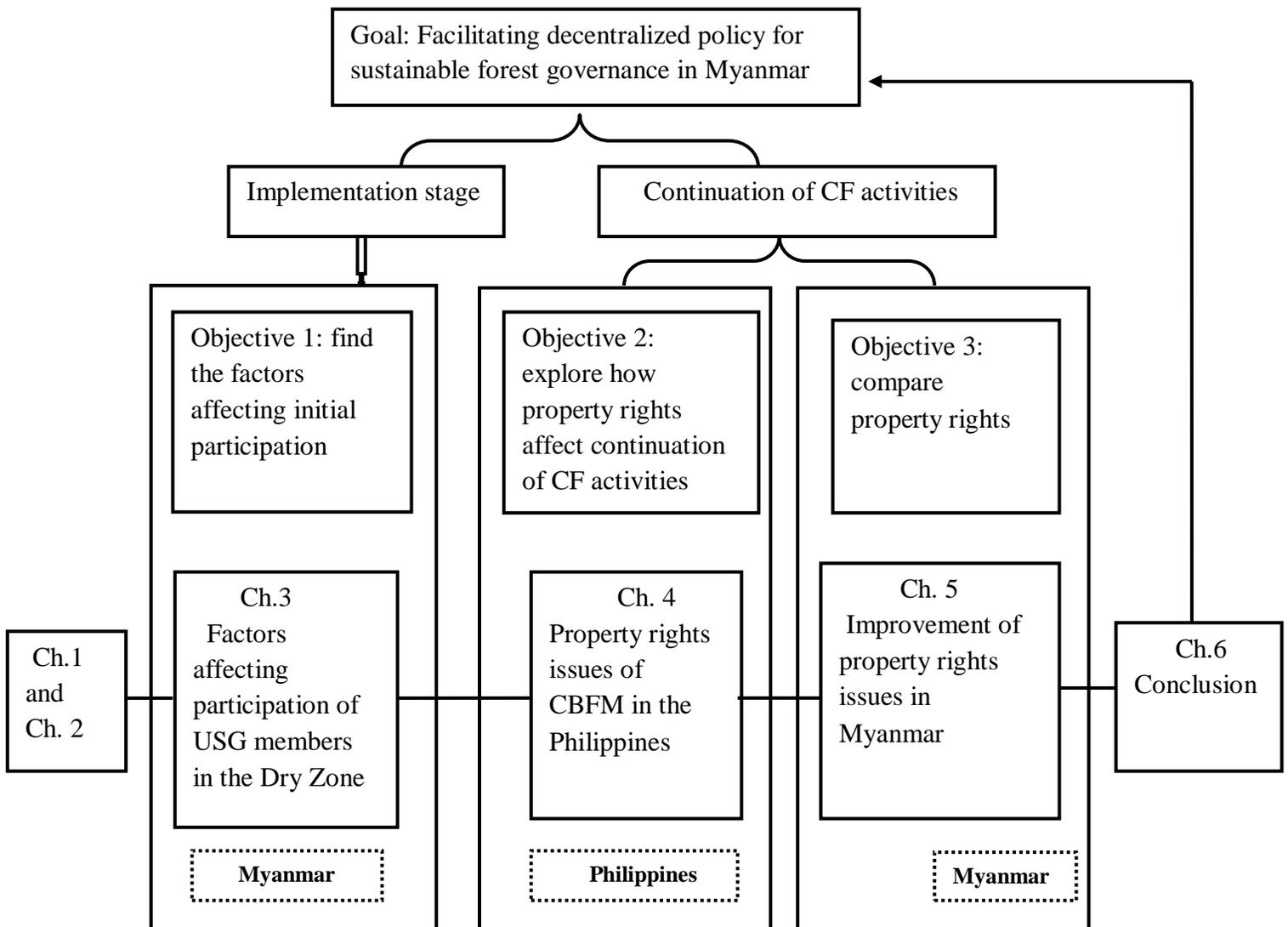


Figure 1.2 Structure of the dissertation

Chapter Two

Myanmar Forest Policy and Decentralized Forest Management

2.1 Introduction

The aim of this chapter is to describe the field of forest policy in Myanmar and to discuss the participation of local people. In accordance with Inoue (2003) and FD (2011), the field of forest policy is segmented into 1) forestry planning; 2) natural forest management; 3) plantation forestry; 4) greening activities in the Dry Zone of central Myanmar; 5) management of biodiversity conservation and 6) environmental restoration measures. Before that, the main institutions under the Ministry of Environmental Conservation and Forestry (MOECAF) are described in Figure (2.1) and their specific duties and responsibilities are explained in Table (2.1).

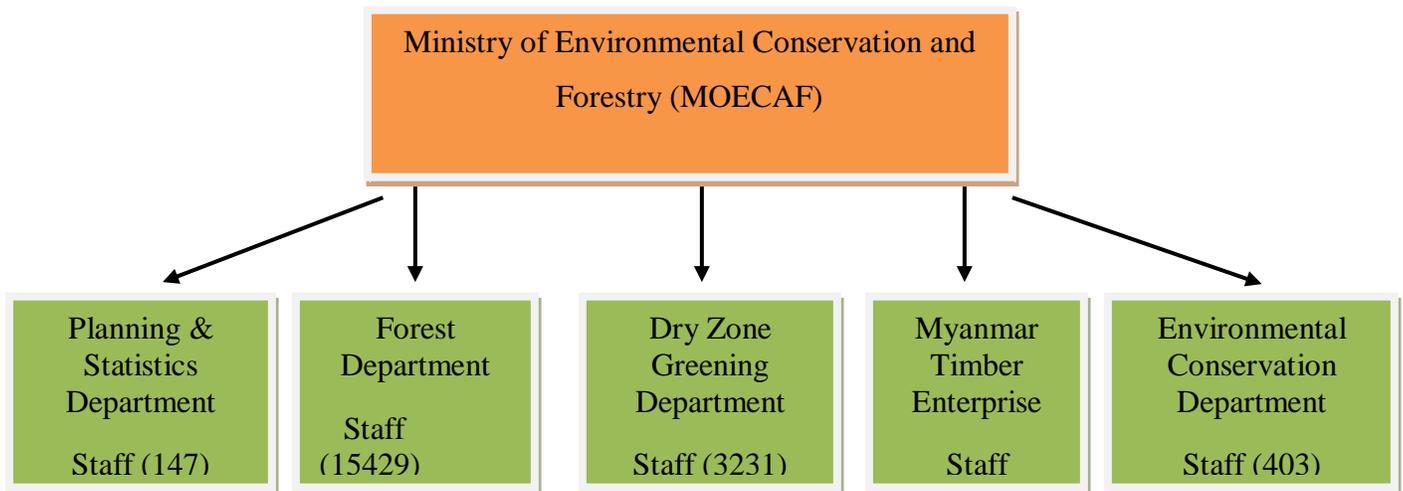


Figure 2.1 Institutional Structure of MOECAF

Source FD (2011)

Table 2.1 Institutional arrangement

No	Name of Institutions	Specific Responsibilities
1	Planning and Statistics Department (PSD)	Coordinates and facilitates the tasks of FD, MTE and DZGD
2	Forest Department (FD)	Protect and Conserve the biodiversity and sustainable management of the forest resources of the country
3	Myanmar Timber Enterprise (MTE)	Timber harvesting, milling and downstream processing and marketing of forest products
4	Dry Zone Greening Department (DZGD)	Reforestation of degraded forest lands, protection and conservation of remaining natural forests, and restoration of the environment in the Central Dry Zone of Myanmar
5	Environmental Conservation Department	Effective implementation of environmental conservation and management

Source (FD, 2011)

2.2 Forest inventory and planning

Myanmar covers a total land area of sixty seven million ha. Today, about 31.77 million ha (47%) are classified as forestlands, 20.11 ha (30 %) are other wooded land, 14 million has (20%) are classified as other land and 1 million ha (3%) are identified as inland water bodies (Figure 2.1). Of the country's total forest lands, forest areas that is designated to be retained as forest land, which is called Permanent Forest Estate has 29.24 % included Reserved Forest, Protected Public Forests and Protected Areas System. The status of Permanent Forest Estate in Myanmar is shown in (Table 2.1). Because of great variation in rainfall, temperature, soil and topography, there are six major forest types: Mangrove forest (1.47 %), Tropical evergreen forest (17.22%), Mixed deciduous forest (38.26 %), Dry

forest (9.8 %), Deciduous indaing (Dipterocarp) forest (4.16 %), Hill and temperate evergreen forest (26.88%) and Scrub land (2.21%).

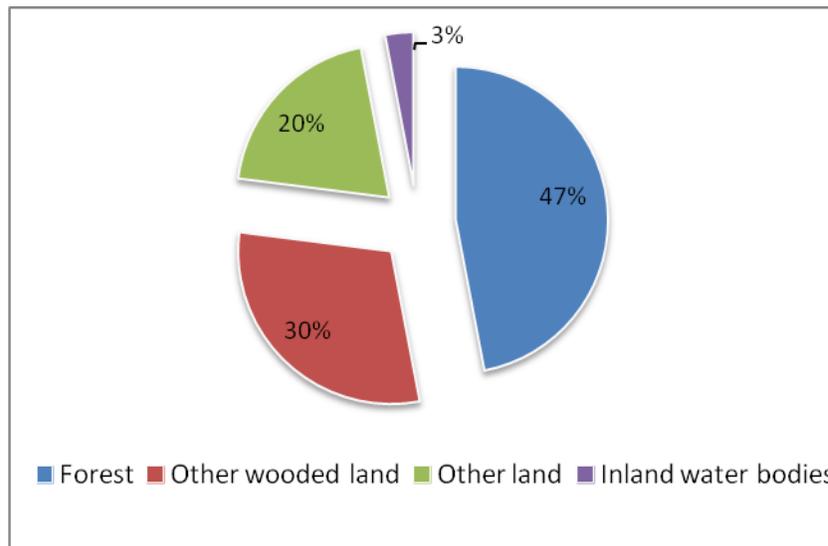


Figure 2.2 Forest covers status in Myanmar
Source: FD (2011)

Table 2.2 Stuuatus of Permanent Forest Estate in Myanmar

Category	Area (km ²)	Percent of Land Area (%)
Permanent Forest Estate	197,999.36	29.24
Reserved Forests	121,842.91	18.00
Protected Public Forests	40,949.60	6.05
Protected Areas System	35,106.85	5.19

Source: (FD, 2011)

In Myanmar, the government owns all land, and reserved forests (RF), protected public forests (PPF) and protected areas system are lands under the FD jurisdiction. RFs are

defined as land for the purposes of production, protection, and local supply as designated under the 1992 forest law. Protected Public Forests and Protected Areas System, which are intended primarily for conservation purposes, fall under provisions found in the Forest Law and Protection of Wildlife and Conservation of Natural Areas Law (1994) respectively.

In managing country's forest resources, there are short term and long term plans. For long-term sustainable forestry development, national forest master plan was developed in 2001. This plan foresees the forestry situation in the next 30 years (from 2001/2002 to 2030/2031) regarding forest activities such as protection of reserved forest and protected public forests, extraction of teak and other hardwoods, management of watershed area for the longevity of dams and reservoirs, exporting other non-timber forest products and promoting ecotourism for earning foreign income (Htun, 2009).

For the short term plans which cover a 10-year period, management plans which consist of several working circles were formulated at every forest district. There are 61 Forest Management Units (District Forest Areas) which were organized in line with civil administrative districts. Each unit comprises various working areas such as production, plantation, watershed, community forest, non-timber forests and natural land (Htun, 2009). In accordance with FAO (2010), the present plans for a period of 2006-07 to 2015-16 include NTFPs Working Circles, Production Working Circles, Plantation Working circles, Local supply/community forestry Working Circles, Watershed Forests Working Circles, Mangrove Working Circles, Protected Areas System Working Circles and Forest areas not included in Working Circles. For the preparation of District Management Plan, inventory data are used especially for identifying working circles.

Although District Management Plan was prepared for a period of 10 years, actual plan of forestry operations are controlled by the FD head office in the form of annual plan of operations. There are thirteen annual forest operations carried out by the FD. They are: teak girdling and green teak marking, selection felling marking, artificial regeneration, natural regeneration, improvement felling, weeding, thinning, Nyaung-bat felling (Ficus-

bound Teak), repairing forest roads, repairing reserved boundaries, repairing compartment boundaries, fire protection and new reservations (FD, 2008; Htun, 2009). These operations were drawn in consultation among head office staff and divisional officers and inventory data while some operations such as teak girdling and selection felling marking of non-teak hardwoods are fixed by negotiating FD and MTE. Other operations are decided by consulting with respective forest states/divisions based on the budget and field staff (FREDA, 2001).

2.3 Natural Forest Management

2.3.1 Management System

The forest management system is focused on the sustainable management of natural teak bearing forests because teak and hardwood timbers are mostly exported for national income (FAO, 1997). Although the sustained yield concept was introduced as early as 1752, the scientific management of the natural forests was started in 1856 with the introduction of Brandis management system which was modified into Myanmar Selection System, MSS in short (Deh, 2004). The concept of MSS is to harvest annual yield on a sustainable basis and to work out estimated future yield (Htun, 2009).

In order to ensure harvesting trees on a sustainable basis, forest lands are organized into felling series, and a felling series is divided into 30 annual coupes based on equal productivity and more or less the same size. Each year, selection felling is carried out in one of the coupes and the whole felling series is therefore worked over a period of 30-year felling cycle. The exploitable girth limit with diameter at breast height varies depending on forest type for Teak and the species for other hardwoods respectively while the extractable volume for each felling is determined by the annual allowable cut. For Teak which is girdled and left standing to dry for three years before felling, exploitable girth limit is 73 cm DBH in moist forest while 63 cm DBH in drier types. For other hardwoods, the trees are felled green. Under the MSS, some trees where stocking of teak is poor; may be

retained for mother trees to produce seed although the size is exploitable as well as unhealthy trees below the girth limits can be removed if they are marketable.

To work out estimated future yield, trees left standing at the time of girdling and SF marking which have 39 cm diameter and above for Teak and 10 cm below the exploitable diameter for other hardwood species. At the time of calculating future yield, the improvement of natural regeneration of teak and protecting immature stock for producing healthy trees are carried out by doing cultural operations such as improvement felling, natural regeneration felling, thinning in congested naturally regenerated stands, felling of nyaungbat (Ficus-bound Teak) and climber cutting (Deh, 2004).

2.3.2 Annual Allowable Cut (AAC)

AAC is a ‘tool that ensures the harvest of timber yield on a sustainable basis’ (FD, 2011). This is because harvesting is regulated based on annual growth and controlled by girth limits. AAC is determined for each felling series and it is periodically revised and fixed based on the updated information (Deh, 2004, FD, 2011).

Annual yield is estimated as

$$AAC = ARR + \frac{CI - \frac{1}{2}FC \cdot ARR}{LP}$$

Source (FREDA, 2004)

where ARR = annual rate of recruitment of Class II trees to Class I; CI = original no. of trees in Class I; FC = felling cycle (i.e. 30 years); and LP = decided period to liquidate original CI trees (usually 60 years)

2.3.3 Harvesting and trade-off

2.3.3.1 Timber

As mentioned earlier, while FD is responsible for girdling of Teak and selective felling marking of hardwood for harvesting, MTE is fully authorized to conduct logging

(harvesting) by itself or through private contractors (FAO, 1997; FD, 2011). Aside from logging, MTE is also responsible for milling, marketing and export of timber and its products. These responsibilities are carried out by 8 departments consists of 1) extraction department, 2) export milling and marketing department, 3) domestic milling and marketing department, 4) wood-based industries department, 5) planning and statistic department, 6) engineering department, 7) budget and accounting department and 8) administrative department (FREDA, 2001; FD, 2011).

In logging extraction, there are two phases: 1) felling is done based on the prescription by the FD ii) skidding or dragging is done by elephants in the rainy season while tracking is conducted in the dry weather. Elephants are used for extracting of logs because it has the least impact on the environment and biodiversity whereas heavy equipment is only used for road construction, loading and unloading of logs and transportation. The MTE has about 3000 elephants and hires about 2000 from private owners for timber extraction (FREDA, 2001).

Regarding with milling and marketing for timber, there are 3 departments in MTE consist of Domestic milling and marketing department, export milling and marketing department and wood-based industry department. Export milling and marketing possess 9 teak sawmills with a total capacity of 714,652 m³ (396,500 tons) while domestic milling and marketing department owns 2 teak sawmills with a total capacity of 21,628 m³ (12,000 tons) and 73 hardwood sawmills with a total capacity of 714,652 m³ (396,500 tons) and wood-based industry department owns 4 Plywood Factories, 2 Veneer Factories, 8 Furniture Factories and 3 Moulding Factories with a total capacity of 44, 640 m³ (24,800 tons) for teak and 208,800 m³ (116,000 tons) for hardwood. Private sector involvement in wood-based industry is encouraged by the government in line with Government's market economy (FD, 2011).

In exporting timber, teak logs are the main export items among wood and about 90 % of exported timber is teak (FREDA, 2001). Only a small portion of the third and second

quality of teak sawn timber is sold in the domestic market. Generally, veneer and high quality sawing logs are exported in the log form while low quality logs are transferred to the saw mills, Plywood Factory, Veneer Factory, Furniture Factory and Moulding Factories. In the case of non-teak hard woods, very little sawn timber is exported to foreign market because of low export price and inadequate to meet domestic requirement. The private sector can purchase teak and non-teak hard woods from MTE tender sales (FREDA, 2001).

2.3.3.2 Non-timber forest products (NTFPs)

Aside from timber, various kinds of non-wood forest products are also produced from the natural forests of Myanmar. These NTFPs play an important role for the livelihood of 70% of rural community for their subsistence income. Depending on the nature of NTFPs and their uses, they can be classified into six major types of NTFPs. They are 1) fiber materials, 2) edible products, herbal and cosmetic materials, 4) extractive resin and oleoresin, 5) non-food animal products, and 6) other miscellaneous products (Htun, 2009).

The trade of NTFPs is permitted to the private sector under the control of FD. Some legally produced NTFPs are Bamboo, Cane, catch, Indwe-Pwenyet, Kanyin (*Pentacme siamensis*) resin, Turpentine, Dani-Thetkye (thatch), Honey, Bee-wax, Bat guano, Orchids, Edible birds' nests, Lac and Thanet-kha (*Lemonia Acidissima*). Most of NTFPs are important for domestic consumption as well as a source of income for local people.

2.4 Plantation Forestry

The formation of teak plantation was initiated in Myanmar as early as 1856 on a small scale by using Taungya method (FD, 2011). During (1896-1941) the average area planted per year was only 1000 ha (FREDA, 2001). In order to meet the increased demand of forest products due to population growth, establishment of more wood-based industries and conversion of forestlands to construct dams and reservoirs, large-scale plantation forestry

began in 1980 and about 30,000 ha of forest plantations have annually established since 1984.

2.4.1 Forest plantations

The strategy of reforestation was adopted by creating four types of plantations forests consists of 1) commercial plantation, 2) industrial plantation, 3) village supply plantation and 4) watershed plantation undertaken by FD on behalf of the State.

Commercial plantation aims to supplement timber production from natural forests and to assure a sustainable supply of teak and other hardwoods for export and domestic market. The most common planted species are Teak (*Tectona grandis*), Pyinkado (*Xylia dolabriformis*), Padauk (*Pterocarpus macrocarpus*). Most of the commercial plantations are established under the departmental taungya system evolved from the original taungya system (FREDA, 2004; Maung and Yamamoto, 2008).

In order to provide fuelwood as well as posts and poles with a short-term period such as 5 years, village supply fuelwood plantations are being established in degraded reserved forest and protected public forest. The planted multi-purpose species are Mezali (*Cassia siamea*), Sha (*Acacia catechu*), Auri-sha (*Acacia auriculiformis*), and Bawzaging (*Leucaena leucocephala*), *Eucalyptus camaldulensis* and Gandasein (*Prosopis juliflora*). The species will vary depend on the ecological conditions (FREDA, 2001; Htun, 2009).

There are three main rivers in Myanmar namely Ayeyarwady, Chindwin and Thanlwin which are flowing from north to south of the country and therefore, there are critical watershed areas which need to properly managed. Recently, Myanmar government constructed more than 100 dams and reservoirs for hydropower generation, irrigation for economic development and poverty reduction (FREDA, 2001). In order to ensure sustainability of watersheds and to protect sedimentation, conservation and rehabilitation of forest areas inside watersheds by establishing watershed plantations has become important

activities of the FD (Htun, 2009). Up till March 2010, 73, 493 ha of watershed plantations have been established by the FD and DZGD.

In the context of industrial plantations, the purpose is to assure supply of raw materials to the industries without relying too much on natural forests and to reduce the transportations costs by establishing plantations near the specific industry (FREDA, 2001). For instance, Sittaung paper mill which produce good quality writing paper use *Eucalyptus camaldulensis* wood from the nearby plantations and bamboo from the natural forest by mixing specific ration. Establishing watershed plantations by FD was started in 1979.

2.4.2 Special Teak Plantations

Aside from normal teak plantation scheme, the special teak plantation program was launched in 1998. The main objectives are to maintain and increase teak production, to reduce pressure of demand for teak from natural forests, to rehabilitate degraded forest lands and to stabilize international trade in teak timber (FD, 2011). Because of this special Teak plantations program, the annual plantation target of about 30,000 ha of Township Forest Departments (TFDs) has added by another 400 ha of special teak plantation (Maung and Yamamoto, 2008; Maung and Yamamoto, 2010). Annually, it is planned to establish about 8,100 hectares of special Teak plantations (FD, 2011). Like in normal Teak plantations, the departmental Taungya system is applied in establishing special Teak plantations (box 2.1)¹. The rotation is fixed at 40 years and clear-felling system will be used.

¹ Taungya is a Myanmar word meaning upland fields or upland farming (Maung and Yamamoto, 2008)

Box 2.1 Departmental Taungya System

Most of the commercial plantations as well as special Teak plantations are established under the departmental Taungya system. Under this system, allocation of plantation budget is controlled by the state while the authority of managing rights and responsibilities transfers to the TFDs. The plantation works such as land preparations, planting operations and maintenance of plantation are done by the help of the Taungya farmers. By establishing large scale plantations by the help of them, there is win-win situation for both FD and local people. For Taungya farmers, they can settle near the plantation area, payment for working Teak plantations and cultivate agricultural crops. Considering the social aspect of Taungya farmers, temporary forest villages including a primary school and waters supply system are also provided in some cases. For the TFDs, Taungya system can help to overcome the problems of insufficient funding to accomplish large areas of planting and labour and to avoid conflicts regarding agricultural encroachment in planned target areas in short terms.

Source: FREDA (2001) and Maung and Yamamoto (2010)

2.4.3 Private Plantations

The private sectors involvement in plantation forestry was initiated in 2005. The purpose of establishing private plantation is to replace the decreasing availability of logs from natural forests, to expand the forest area and to prevent the permanent land use changes from forest land to agricultural land (Maung and Yamamoto, 2010; FD, 2011). In accordance with Maung and Yamamoto (2010), the people who made investment in private plantations will be granted 30 years renewable land lease and plantation works can be completed within 5 years after getting approval from the FD. Therefore, the system is

considerably similar to community forestry instructions. The aim of programs of private plantations which intended for large scale forest operations, however, is different with community forestry which is not allowed large scale forest operations to local communities. Up till 2010 March, 13,127 ha of private Teak plantations and 16,220 ha of non-Teak plantations had been established (FD, 2011).

Maung and Yamamoto (2010) revealed that the private plantations program would not be beneficial for the local people because it is difficult for them to get a place in such profitable enterprise. Moreover, there is no large private land to establish large plantations and therefore private plantations are established on reserved forest or protected public forests where there are forest occupants. This situation makes them to loss their encroachment land because they have no legal right to claim and moving other deep forest lands to engage shifting cultivation become their livelihood options.

2. 5 Greening activities in the Dry Zone of Central Myanmar

In Myanmar, desert like region can be found in the central part of the country which is called Dry Zone area where only dry forest naturally found. In order to carry out greening activities in these regions, a new department, called Dry Zone Greening Department was created in 1997. The regions of Dry Zone area consists of three Divisions, 12 Districts, and 54 Townships with a total of 8166300 (ha). In accordance with FD (2011), the objectives of greening activities included 1) make the arid region lush, green and beautiful, 2) maintain ecology systems, 3) fulfill basic needs of rural people, 4) carry out socio-economic development of the rural people, 5) make the regional people to aware about the value of forest, 6) enhance public knowledge about conservation and promotion of natural environment and its participation, 7) maintain climatic balance with will help cultivation and 8) combat desertification. To achieve these objectives, there are four main tasks implemented by DZGD: 1) establishment of forest plantations for arresting the Dissert-like formation and for local people, 2) protection of remaining natural forests, 3) introducing and promotion of the utilization of wood fuel substitutes and 4) management and development of water resources.

Regarding with forest plantations, about 8,000 ha of forest plantations are established annually. Four types of plantations established are 1) village supply plantation, 2) watershed plantation, 3) plantation for greening of mountain and 4) other greening plantation. In order to protect remaining natural forests, about 80,000 ha of 0.73 million hectares of total degraded natural forest were selected annually. The policy of promoting utilization of wood fuel substitutes was designed to support forest conservation by distributing improved cooking stoves, promoting fuel briquette production and utilization and encouraging using agricultural residues.

2.6 Management of Biodiversity Conservation

The natural forests in Myanmar is endowed with 1,347 species of big trees, 741 species of small trees, 96 species of bamboos, 1,696 species of shrubs, 36 species of rattans and 841 species of orchids. In addition, diverse forest ecosystems are homing nearly 300 mammal species, 360 reptiles and 1,000 bird species. Among the 1,200 species of butterfly, six are identified as rare species even at the global level while 1,071 species of 7,000 plants are endemic (Htun, 2009). In Myanmar, biodiversity conservation has traditionally been prioritized at the national level. The earliest Wildlife Sanctuary was established by the King Mindon near the vicinity of Mandalay Royal City in 1860 while the second one, Pidaung Wildlife Sanctuary was established in Kachin State in 1918. Since then, biological resources has been systematically protected and conserved throughout the country.

Regarding the laws to control the trade and protection of wildlife, the Elephant Preservation Act was notified in 1879 and it was amended again in 1883. In 1902, Burma Forest Act declared 19 wild animals and their parts as forest produce. Specific legislation to protect the wildlife was enacted in 1912 which is called 'The Wild Birds and Animal Protection Act 1912'. In 1936, 'Burma Protection Wildlife Act' was stipulated to effectively protect and extend the Wildlife Sanctuary. This act was replaced by 'Protection of Wildlife and Wild plants and Conservation of Natural Areas Law in 1994. Additionally, 1995 Myanmar forest policy stipulates 5 % of the country's area would be established as Protected Areas. Moreover, Myanmar has been committed the international agreements and

organizations such as i) Global Tiger Forum (1994), ii) United Nations Convention in Biological Diversity (1995) (iii) Convention on International Trade in Endangered Species of Wild Fauna and Flora (1997), (iv) Botanic Gardens Conservation International, England (1998), v) The Cartagena Biosafety Protocol, a subsidiary agreement to the United Nations Convention on Biological Diversity (2001) and v) Ramsar Convention on Wetlands (2005).

By the December 2010, 36 Protected Areas which can generally categorized into national park, marine park, wildlife sanctuary, nature reserve, and zoo park; had been notified which covered 5.60% of total land area (Htun et al, 2011; FD, 2011). These areas are managed by the FD. By collaborating with National and International NGOs, the following activities are being undertaken.

- 1) National Tiger Recovery Program
- 2) Phyto-diversity conservation and sustainable use of plant resources in Natmataug National Park
- 3) Environmental awareness, capacity building and infrastructure development programs in ASEAN Heritage Parks
- 4) Strengthening park management activities of the Lampi Island National Park
- 5) National Biodiversity Strategy and Action Plan
- 6) Establishment of Clearing House Mechanism
- 7) Preparation of Terrestrial Gap Analysis Report in Myanmar
- 8) Establishment of Clearing House Mechanism
- 9) Preparation of Terrestrial Gap Analysis Report in Myanmar
- 10) Myanmar Star Tortoise re-introduction program in Minsontaung Wildlife Sanctuary
- 11) Myanmar Roofed turtle In-situ conservation in Upper Chindwin

2.7 Environmental Restoration Measures

2.7.1 Bago Yoma Greening Project

Bago Yoma, the home of natural teak consists of 31 townships from 8 districts with a total area of 1.96 million ha (Maung and Yamamoto, 2008). Other hardwood species associated with teak are Pyinkado (*Xylia dolabriformis*), Padauk (*Pterocarpus macrocarpus*), Yon (*Anogeissus acuminata*), Thadi (*Protium serratum*), Hnaw (*Adina cordifolia*) and Htauk-kyant (*Terminalia crenulata*). Therefore, this region is famous for extraction of teak as well as other hardwood species. Recently, forests in Bago Yoma have rapidly degraded due to the improved access to remote forested areas, over exploitation of wood and other forest products, agricultural expansion and excessive logging.

In order to rehabilitate the Bago Yoma range, the FD has been implementing Bago Yoma greening project since 2004. The objectives are 1) to maintain the Bago Yoma sustainable as a home of teak growing area, 2) to prevent the Bago Yoma from forest degradation by plantation establishment, forest conservation with suitable silvicultural ways and protection with forest law, 3) to conserve watershed area of constructed dam for supplying water, 4) to support the Bago Yoma greening by establishing community forests with people participation (FD, 2011). The major activities to achieve these 4 objectives are 1) conservation and protection of natural forests, 2) enrichment planting, 3) natural regeneration, 4) plantation establishment and 5) establishment of community forest, 6) conducting forestry extension activities, 7) distribution of cooking stoves for efficient use of fuelwood, 8) development of water resources such as constructing tube wells, check dams and small ponds and 9) Teak nature reservation and forest research activities.

2.7.2 Efforts to Eliminate Shifting Cultivation

Traditional shifting cultivation systems, *Shwe-pyaung taungya* in Myanmar language have been practiced since many centuries ago. It is a traditional way of life for many ethnic groups of the country. In the upland areas of Chin and Shan state, there are about 2.6

million of people who had been practiced shifting cultivation (Htun, 2009). Using long enough rotation periods to make soil fertile for the next cycle of cultivation created sustained traditional shifting cultivation systems in the past. Because of population pressure and restriction on land use, however, the fallow period has reduced without allowing natural recovery of fertile soil which leads to unsustainability. In order to address this issue, Myanmar's FD collaboration with other Department has developed a national level Multi-sectoral Programme of Highlands Reclamation by implementing 5 works: 1) community forestry based on agroforestry systems, 2) provision of improved technologies complementing traditional forest-related local knowledge, 3) recruiting shifting cultivators into routine forestry operations, such as plantation establishment, 4) enhancing income-generating opportunities and 5) provision of awareness raising campaigns and extension services.

2. 7.3 Inlay Lake Greening Project

Inlay Lake, the second largest fresh water lake in Myanmar is located in Southern Shan State. Inlay Lake is surrounded by mountains, villages comprised of clusters of small houses standing on stilts in the lake and the *Intha* fisherman in their tiny wooden boats (Okamoto, 2012). It is also one of the major tourist destinations which are famous for many unique things. One of the most interesting things is the method of rowing boat in which the rower stands on the stern and row the boat by oar using one leg.

Due to the sedimentation caused by deforestation in the mountains as well as the bank of the lake, eutrophication, overuse of chemical fertilizer and insecticides, and expansion of floating garden and shifting cultivation, water surface area of the lake as well as size of the lake had decreased. For instance, it was noted that water surface area is as wide as 100 sq mile before. Recently, it has reduced into 60 sq miles in raining season while 40 sq miles in dry season. In order to response the degradation of Inlay watershed, Inlay Lake Greening project has been implemented from 2008. The forest restoration activities such as protecting natural forest, plantation establishment, bank erosion control measures and

conservation of wild birds are implemented. Establishing community forestry is one of the sub-activities under protection of natural forest.

2.7.4 Conservation of Mangrove Ecosystem

Myanmar has more than 2,000 km coastline along the Bay of Bengal which covers 4 % of total mangrove area of the world. Generally, mangrove forests are found in the Rakine, Ayeyawady Delta and Tanintharyi regions. These forests play three main functions: physical, biological and economical functions. The physical functions protect not only coastal line from abrasion and tight wind but also freshwater from intrusion of sea water. The biological functions mean provision of nutrients for fauna, breeding place for fish, shrimp, prawn, birds etc. and habitat for many biotas. The forests also play an economic function. They provide the local people with food, shelter, small timbers, fuelwood and other forest products (FAO, 1997). Due to the expansion of agricultural lands, over exploitation of fuelwood, mangrove forest areas have been decreasing. By collaborating with international organizations such as UNDP/FAO, JICA and local NGOs, FD has been implementing mangrove forest conservation measures. For example, the project of ‘Integrated Mangrove Rehabilitation and Management Project through Community Participation in the Ayeyarwady Delta’ was jointly implemented by JICA and FD from 2007 to 2013. The major activities are establishment of community forestry, implementation of action research plantations, and construction of Community Forestry Extension and Nursery Centers in the Delta area. Aside from such activities implemented by donor supports, there are also activities undertaken by the FD for the conservation of mangrove forests. They are community forestry, nursery establishment, plantation establishment, seed and seedling distribution, natural regeneration and gap planting, river-bank erosion control measures, distribution of improved cooking stoves and provision of extension services (FD, 2011).

2.7.5 Other activities

Aside from above-mentioned specific activities, there are also other programs such as nation-wide tree planting programme and forestry development in border areas. The nation-wide tree planting program has been launched since 1977-1978 with the aim of promoting public awareness as well as greening in non-forested areas (FD, 2011). In nation-wide tree plantings, many stakeholders: individuals, communities, governmental and non-governmental organizations and civil societies are participated. Tree seedlings distributed by the FD were planted in the compounds of schools, hospitals, offices, monasteries, residential quarters, communal lands and in the vicinity of villages. It was noted that about 17 million seedlings were annually distributed (FD, 2011). Moreover, the programme of planting of 3 Teak and 20 Eucalyptus trees for one household and one acre plantation for each village has been implemented since 2008.

Forestry development in border areas is one of the activities of environmental restoration measures. Myanmar is bordered on the north and north-east by China, on the east and south-east by Laos and Thailand, on the south by the Andaman Sea and the Bay of Bengal and on the west by Bangladesh and India. These border areas, particularly in northwest, north and the east are mostly rugged and mountainous. Regarding improvement of Myanmar's border areas, the Development for the Progress of Border Areas and National Races Department (DPBANRD) has been collaborating with other related governmental and non-governmental organizations from the aspects of social, economic and environmental development tasks. Since 1990s, FD has been implementing forest conservation and restoration works in border areas. The data showed that FD had established about 5,535 ha of various kinds of plantations from 1989 to 2010 (FD, 2011).

2.8 Discussion and Conclusion

The forest policy in Myanmar stated that government has been prioritizing export-oriented logging for earning foreign income while people participation was considered as important strategy for achieving sustainable forest management. From the view point of

people participation in every segment of forest policy, it can be said that District Management Plan as well as annual plan of forest operations were drawn without involving local people (forest dwellers), related government agencies.

Similarly, FD and MTE are the main stakeholders for effective protection and harvesting in natural forest management. Harvesting of teak and hardwood is nationalized by MTE although there was a history of private management in harvesting Non Teak Hardwood. Private sector involvement is only found in wood-based industries. In practice, there are other stakeholders such as shifting cultivators and illegal logging for domestic use and for local wood-based industries (FREDA, 2001).

As for plantation forests, participatory plantation management approach is applied in establishing commercial plantation as well as special teak plantation whereas other types of plantations such as village supply plantation, industrial plantation and watershed plantations are established by the state. In accordance with information collected by conducting interview with local FD staff by phone call, villagers are now starting cutting fuelwood from village supply plantation in some townships under the control of FD. However, the policy is not clearly designed rights and responsibilities of villagers to sustain village supply plantation.

In the context of watershed plantations, while FD could protect natural forest and establish plantations as planned target in every state and divisions (FD, 2008), there is little or no consideration of rural communities who traditionally cultivate various agricultural crops on the slopes of watersheds. FREDA (2001) indicated that watershed management should consider solving the socio-economic problems of such people who practice slash-and burn cultivation on the slopes of watersheds for their livelihood security. Further, the existing strategy of watershed management should adopt multiple land use systems composed of establishing pure reforestation areas, and also agroforestry plots that will maximize production and maintain soil conservation.

As mentioned earlier, participatory plantation management approach has been adopted in establishing commercial plantations and special Teak plantations. Maung and Yamamoto (2010) defined this scheme of Taungya Teak Plantation in Myanmar as decentralization in which the power and functions shifted from a central office to township forest department (TFDs). On the other hand, Kaung and Cho (2003) argued that it is a kind of top-down participatory approach under the situations of lacking opportunity to participate in planning, management and benefit sharing activities of plantations. In this case, Maung and Yamamoto (2010) argued that the aim of government which intends to earn foreign income from establishment of teak plantation through the Taungya method to redress deforestation should be changed by providing not only temporary incentives such as labour cost, temporary settlement near the plantation and rights to cultivate the agricultural crops inside the Teak plantations but also long-term incentives.

In the context of other field of forest policy such as greening of the Dry Zone area, Bago Yoma area, Inlay Lake and Ayewaryady delta area, community forestry is one of the main activities of forest rehabilitation of those areas. This means that government accepted community forestry as an appropriate option to restore the environment through people participation. On the other hand, it is likely to bring limited benefits to communities under the provision of degraded forest lands.

To conclude, the objective of this chapter is to assess the people participation in each domain of forest policy. There has been a long history of prioritizing industrial-scale, export-oriented logging in Myanmar. This might be one of the reasons that government continuing to maintain control over the country's forest resources, in spite of the fact that there is decentralization initiatives in various schemes of environmental restoration. As in many other developing countries, on the other hand, rural people in Myanmar depend on agriculture, forestry and fisheries for their livelihood and food security. According to the existing decentralized policy, community forestry is a strategy that will bring benefits to communities. Therefore, improvement of community forestry is crucial to achieve initial participation as well as sustainability of CF activities.

Chapter Three

Factors affecting participation of USG members in the Dry Zone, Myanmar

3.1 Introduction

In community forest management, economic, socio-political, institutional and biophysical factors are among the important factors that shape ecological outcome of CFs under diverse ecological settings (Agrawal & Chhatre, 2006). According to Pagdee et al (2006), some of the factors for the success of CF management are institutions, community features, incentives and interests and physical features of the resource. Various studies such as Wittayapak and Dearden (1999), Lise (2000), Bandyopadhyay and Shyamsundar (2004), Chhetri (2005) and Suddtongkong and Webb (2008) have shown that there are various economic, social/institutional and physical factors, which make difference in participation. They are: leadership, dependence on resources, prior experiences in collective activities, the decision-making process, proximity to forests and market situations. However, it is a rare study that explicitly incorporates variables into the analysis to study the causal relationships of important variables (Agrawal, 2002; Agrawal, 2007). Further, in studying CF management, a comparative study with two component- AF and NF- is not so common. This chapter attempts to explore the nature of relationships of factors affecting participation of USG members by focusing AF and NF type CFs implemented in the Dry Zone area, Myanmar.

Among seven states and seven divisions in Myanmar, Dry Zone is located in three divisions: Sagaing, Magway and Mandalay which include 13 Districts and 57 Townships. According to Sein (2001) and Lin (2005), most of the CF sites are located in Shan state, Mandalay, Magway and Ayeyarwady Divisions, where severe deforestation and fuelwood shortage have been a prevalent and persistent problem and CF initiatives are rarely found

in densely forested areas of the country (Lin, 2005). Therefore, Dry Zone area is one of the regions where large CF areas covered in Myanmar. This region is a harsh environment which receives annual rainfall is less than 1,000 mm (about 3.2 % of the country's total rainfall) and temperature is as high as 15 to 40 degree Celsius. The land use of Dry Zone area consists of closed forest 19.5 %, degraded forest 8.4 %, shifting cultivation 13.0 %, agriculture 55.5 %, others 2.0 % and water 1.4 %. Dry forest, mixed deciduous forest, and shrub are the major forest types of Dry Zone (FD, 2011).

In accordance with FREDA (2001), Kyaw (2006) and FD (2009), the total land area covered by CF scheme has increased from 4,000 ha in 2001 to around 35, 000 ha in 2004 and 41, 397 ha in July 2009. Although the data shows that the approach is expanding in the country, it can be said that CF establishment made little progress. In order to promote people participation in forest management via community forestry program, COMFORT project was initiated in Dry Zone area with support by JICA for five years (2001-2006). This project jointly implemented by the FD and JICA was unique for i) covering the whole ecological zone i.e. 54 townships and ii) introducing participatory theory and practice within FD by giving training and extension activities and iii) CFs are established under the CFIs (Yamauchi and Inoue, 2012).

Among the CFs initiated by COMFORT project, 62% located in degraded area of Public land while 38% located in FD owned land. Unlike other projects in Dry Zone area, COMFORT did not implement afforestation project that establish woodlots on barren land. CF located in degraded Reserved Forest area has been used the land for agriculture by local people before project intervention. Therefore, the land had been individually occupied although it is not legal. When the project started, interested occupants were promoted to organize user group (USG) in order to get 30 years legal use rights given by FD. Cultivating crop is the main desire of local subsistence farmers while providing greening environment and fuelwood is the main desire of FD staff. Therefore, Agroforestry (AF) system was replaced in such fallow area of FD owned land (Plate 3.1). In that case,

seedling distribution, fire protection, and boundary making are done collectively, while tree plantings are done individually.



Plate 3.1 Agroforestry Type of CF located in RF forest

According to the land-use system of Dry Zone, 55.5 % of total land area is used for agriculture. Generally speaking, forest area where the soil is not favored for cropping is remained as common resources in some area of Public land in Dry Zone. Local people rely on that forest for collecting fuelwood and grazing. FD staff helped interested local community to get legal rights of CF by collaborating with Settlement and Land Record Department and Local Authority as the land is located in Public land. The activities of tree planting including some edible trees were conducted in scattered area of existing natural forest (Plate 3.2). This type of CF is identified as natural forest (NF) type in which members manage the resources collectively while enjoying benefits individually (Plate 3.3).



Plate 3.2 Tree planting in degraded natural forest area



Plate 3.3 Natural Forest type CF in located in public forest land

In this project, local peoples' continuous participation in implementation of policy was encouraged by providing various incentives such as fuelwood, poles, posts and income

from CF (FD, 2001). Therefore, achieving initial participation is considered to be indispensable for continuing CF activities to enjoy forest benefits. In reality, it has not always come up to the expectations. The USGs have both good and poor features in terms of participation in tree planting and other operational activities (preliminary survey conducted in Meikhtila and Pakokku District). The main objective of this chapter, therefore, is to find out the factors affecting initial participation of USGs members in management activities by comparing AF and NF type of CFs.

3.2 Research Methodology

3.2.1 Conceptual framework

In accordance with Agrawal (2003), there are 33 variables that create enable conditions for sustainability of the commons. These variables are categorized into four set of variables: (a) resources system characteristics (b) group characteristics (c) institutional arrangements and (d) external environment. Any successful resource management possesses one of the four set of variables. Regarding the selection of variables, Agrawal (2003) pointed out that it will depend on selection of cases on a particular context e.g. if selected cases lie in the same ecological zone and represent the same resource type, variables related to resource characteristics may not be very important for case selection. This study analyzed participation of USG members in CF management in Myanmar context of Dry Zone area initiated by the FD and JICA. Therefore, resource system characteristics were not considered the factor that affects participation of USG members in management activities. Depending on the research interest, study sites and my experience in COMFORT project, group characteristics and institutional arrangements were considered the factors that affect participation of USG members in this study context.

With regard to CF management, there are various economic, social/institutional and physical factors, which make difference in participation (Wittayapak and Dearden, 1999; Lise, 2000; Bandyopadhyay and Shyamsundar, 2004; Chhetri, 2005; Suddtongkong and Webb, 2008). Lise (2000) revealed that factors influencing participation in CF are

associated with dependency on resources, low average family education, high respondent education, and involvement of women. Sushenjit and Priya (2004) found that proximity to forest, leadership, and dependency are significant factors in explaining village participation in CF. Heterogeneity, market situation and prior experience in collective activities are not supported in their study context. Chanyut and Edward (2008) argued that the basis for the success of managing forests was that community members enjoy the decision-making process by participating in crafting and modifying the rules, effective leadership, resource dependency, well defined boundaries, and monitoring and assistance by NGOs. Similarly, Wittayapak et al. (1999) concluded that small communities and small areas in close proximity to villages, and individual involvement in decision-making arrangements, are important factors for robust institutions.

In order to assess the objective of this chapter, a framework that explores the nature of casual relationship among economic, social/institutional and physical factors was constructed. The postulated relationships among these groups of variables are shown in figure (3.1). The following section reviews the findings of other studies which appear relevant to the study context of how participation by USG members is affected by economic, social/institutional and physical factors.

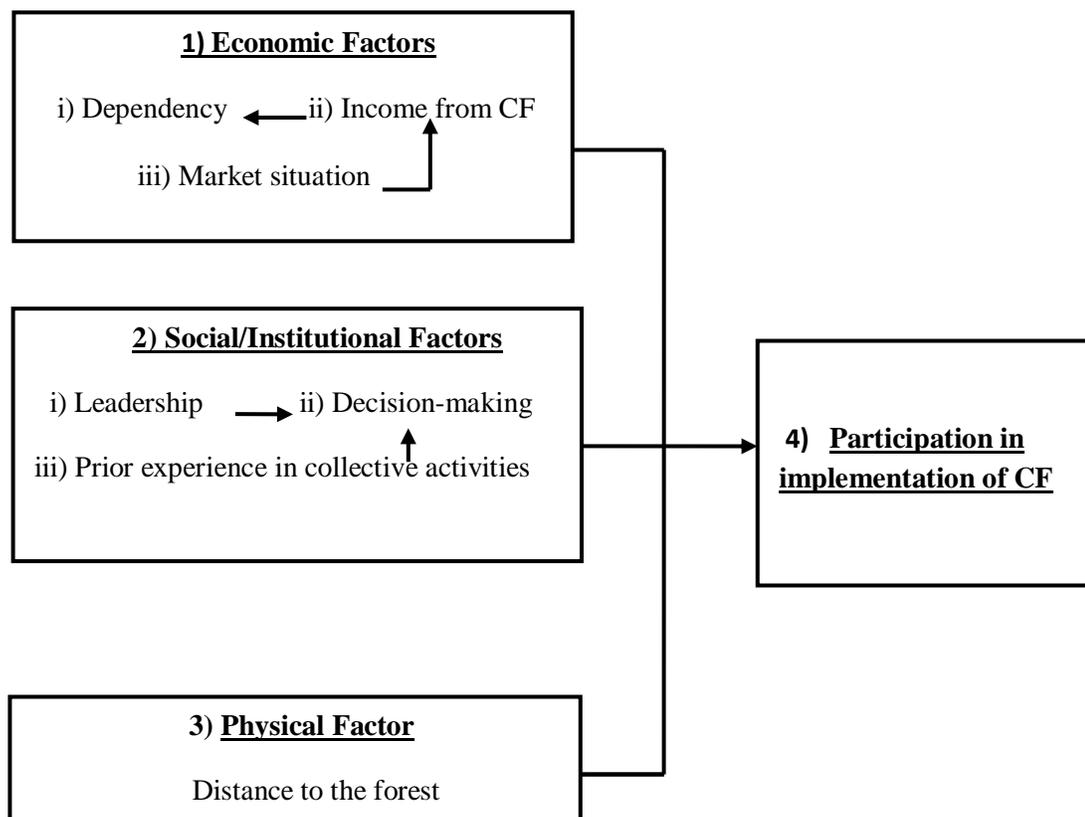


Figure 3.1 Framework of analysis

3.2.1.1 Economic Factors

Economic incentive is one of the characteristics of community forestry to induce people participation in forest management. By involving in management of forest resources, communities are provided timber production and non-timber forest products for both subsistence needs and commercial purposes (RECOFTC, 2005-2006). It is also a practice that helps the community for better meeting of local peoples' needs for forest resources and providing income generation and employment opportunities (Charnley and Poe, 2007). In this study, dependency on resources by community, income from CF and market situation for selling the products are considered the economic factors that affect on participation.

3.2.1.1.1 Dependency on resources

Studies have shown that dependency on resources as important factors in village participation in CF management (Chanyut and Edward, 2008; Sunshenjit and Priya, 2004; Lise, 2000; Guthiga, 2008). Based on their study, dependency on resources was found to have a positive effect on participation when the resource is necessary to their livelihoods and household consumption e.g. fuelwood. Chorpa and Dasgupta (2003) shows for India that household demand for NTFPs arises not only for self-consumption and safety net for the poor but also market demand that generates higher income. Therefore, demand for sale is proportionally related to the market demand. Pagdee et al. (2006), however, views that dependency on resources do not necessarily facilitate the community's ability to continue collective activities. Rather, it is necessary to initiate self-governance.

3.2.1.1. 2 Income from CF

In CF management, generating income is one of the economic benefits by means of participation in management activities (Charnley and Poe, 2007; De Zoya and Inoue, 2008). Ostrom (1999) proposed that if users do not obtain a major part of their income from a resource, their effort to take part in organizing and maintaining the institution may not be worth the cost to invest. Rechlin et al. (2002) highlighted that getting monetary and material benefits from any harvest of CF is needed for the continuance and expansion of CF. Therefore, participation in local forest management is insufficient by itself. Improving the livelihood security is needed to participate in resource conservation.

In practice of CF, however, state devolves the deforestation area rather than commercially valuable forest to local community and policies itself emphasize environmental protection and prohibit commercial production (Charnley and Poe, 2007). Considering the livelihood of forest occupants who are farming in forestlands, community forestry program in some countries involve agroforestry project e.g. Philippines, Bangladesh In that case, Balooni et al. (2008) and Nath et al. (2005) found that agroforestry

interventions in community based forest management have increased farmers' income and their participation under the favorable market situation.

3.2.1.1.3 Market situations

Many economists claim that market is one of the most general tools in managing human behavior. In the case of CF management, households may intensify management of or cultivate forest products where markets are good, a product is valuable, and land and resources tenure are secure (Charnley and Poe, 2007). Market situations varies depending on the demand, distance to market locations, conditions of road networks and the frequency of local market days have effect on selling products (Nath et al., 2005).

RECOFTC (2005-2006), De Zoya and Inoue (2008) emphasized that market reform for forest products is one of the key governance activities for developing community-based forest management. This view is supported by Balooni et al. (2008) and Balooni and Inoue (2007). In the case of Philippines, market situation for selling forest product is one of the important factors to achieve sustainable forest management (Balooni et al., 2008). Balooni and Inoue (2007) revealed that market will greatly influence sustainable forest resource management and performance of the van panchayat institutions (self-initiated forest protection groups managing community forest in India) in coming years more than the community-related factors. Market situations, however, can also create negative effect because the better the markets, such as pricing and demand for a species, the more likely increased harvesting and overexploitation (Charnley and Poe, 2007). The demand for forest produce and non-forest products arises out of market demand which caused forest declination (Balooni and Inoue, 2007).

3.2.1.2 Social/Institutional Factors

In addition to the economic factors, previous studies also highlight the effects of social/institutional factors on participation. For instance, scholars on CF management also point out the attributes of the leaders who assume key decision making roles on behalf of

the USG members at the village level and existing social factor consisting of traditional forest management and cooperation for collecting action in the village.

3.2.1.2.1 Leadership

Several studies have been pointed out the importance of leadership for CF management (Sushenjt and Priya, 2004; Chanyut and Edward, 2008; Colfer, 2005; Gulati et al, 2002; Ostrom et al, 2009; Baland and Platteau, 1996). Based on such studies, good leaders are needed to perform the functions which include i) to show the USG members the good example ii) to convince for getting benefits from action, iii) to mobilize sufficient number for coordinated efforts and iv) to be fare in the designing and enforcing rules and sanction (Baland and Platteau, 1996). Young and educated person is seemed to be good initiator of co-operation for the skills of bookkeeping and local knowledge etc and for providing self-confidence in dealing with the external institutions and villagers (Baland and Platteau, 1996; Colfer, 2005; Chanyut and Edward, 2008). One of the arguments for why Nepal's community forestry has been so successful as compared to other countries relates to the prior experiences of leaders in irrigation management (Shivakoti and Ostrom, 2008). However, leadership failure also appears to be a threat rather than a benefit to a CF, following internal rule violation by USG members (Wittayapak et al, 1999). We examine this argument by looking at how leadership is found to have a negative effect on participation in management activities.

3.2.1.2.2 Decision making process

Ostrom (1990; 2008) revealed that a self-governance resource exists when major appropriators of the resource are involved in rule-making and adapting rules. This view is supported by Wittayapak et al (1999) and Chanyut and Edward (2008) who found that community participation in the decision-making process is one of the factors for the success of CF by allowing majority of members to participate in crafting and modifying the operational rules. Sometimes, members are not allowed to participate in decision-making process because community leaders take most decisions without discussing members

(Wittayapak et al, 1999). Therefore, decision making process reflects the ability of the management committee who assume key decision-making roles on behalf of their USG and the unity of members in CF management (Thaung, 2004). If USG members' are not part of the decision-making process which involves regular interaction between the leaders and the group members, the possibility of their non-cooperation will be high (Gautam and Shivakoti, 2005; Sekher, 2001).

3.2.1.2.3 Prior experience in collective activities

Past successful collective action is an important social capital for a village society because it is encapsulated in a convention of cooperation (Baland and Platteau, 1996; Gulati, 2001). In addition, Ostrom (1999) revealed that prior experience with other form of local organization will greatly enhance the skills of rule formulating and achieving other forms of regulation. In the case of CF management, experienced in traditional forest management motivates a local community to engage in CF by securing formal rights to access and manage forest resources (Soriga and Mahanty, 2008; Conroy et al., 2002). Helberg (2001) and Chopra and Dasgupta (2003) suggested that joint forest management in India should be based on pre-existing institutions. However, Sushenjit and Priya (2004) did not consider pre-existing institutions as an important factor but instead paid more attention on others such as leadership and dependency on resources.

3.2.1.3 Physical factors

Previous studies also pointed out that physical feature of the forest such as distance to the forest, forest type and ecological complexity are related to participation of USG members in forest management activities (Pagdee et al, 2006, Chhetri, 2005). However, Agrawal (2002; 2003) revealed that variables related to resource characteristics may not be very important for case selection if selected cases lie in the same ecological zone and represent the same resource type. In this study, all sampled groups are located in the same ecological zone and the same resource type. In the following section, therefore, the effect of distance to the forest on participation is reviewed.

3.2.3.1 Distance to the forest

Guthiga (2008) found, based on the perception analysis of existing forest management regimes of a Kayan rainforest that distance from the forest had a negative influence on people's perception of involvement in forest management. It is generally supposed that people are likely to have less interaction with forest management if the distance from the forest to household is increased. In the study of Wittayapak et al., (1999), the distance from the forest to village; 0.5 to 2 km was found to be close while 5 to 6 km was far. Due to the forest is closed to the community; the forest can be easily monitored. If a user member lives within one or two hours' walk of the relevant forest, he/she may be able to participate in resource mobilization including attending meeting, planting new trees, patrolling and so on (Ostrom and Poteete, 2004).

3.2.1.4 Participation in management activities

Pagdee et al (2006) clarified that CF management program seems to become more successful when the majority of members participate in a management program. Lise (2000) and Chhetri (2005) defined participation as the involvement of the household in CF management where participation consists of forest protection, resource utilization and decision making. In this study, decision making process participated by majority of members for formulating operational rules and their expectation for resource utilization are considered some of the incentives for people participation in tree planting activities, fire protection and pruning.

3.2.2 Study Site Selection

The COMFORT project was implemented in twelve Districts located in three Divisions: Shwebo, Monywa, Sagaing, Myingyan, Kyuakse, Nyuang-Oo, Meikhtila, Pakokku, Minbu, Magway and Thayet Districts. Of the 12 Districts, CFs had been certified in 10 Districts after the project. This study was undertaken in Meikhtila and Pakokku Districts because these two Districts have large coverage of CF, more than other Districts (Figure 3.2). Further, all CFs of Meikhtila Districts were located in RF while all CFs of

Pakokku Districts were located in Public land. Therefore, the management objectives are generally the same.

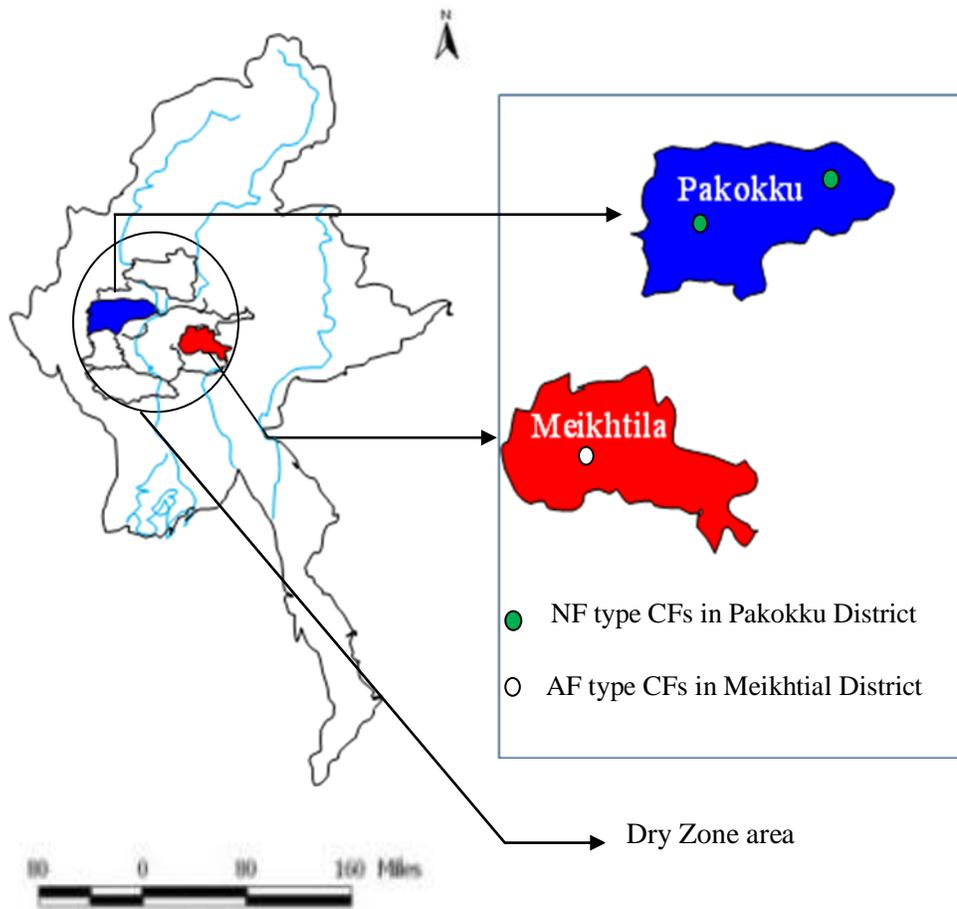


Figure 3.2 Map of study site location within Myanmar

Source: Modified from Oo (2008)

Before deciding the study villages, a total of 9 USGs in two Districts were visited in preliminary survey to review CF management. After that, groups with good participation and poor participation were selected. In the case of AF type CF, groups A and B were purposely chosen for the case study because of the similarity in ecological and socioeconomic settings, and the different in terms of participation in tree plantings. The two villages are closely located to one another (about 5 minutes walk) in Natsinkone village tract and Mahlaing Township of Meikhtila District. CF areas of villages A and B are located in the Maenyotaung RF which covers 4,563 acres consisting of 80% of plantations, 5% community forestry, 5% home gardens, 0.5% farmlands and the rest with other land uses (Mandalay Division forestry department office documents). The forest type is dry Forest naturally regenerated with dominant species like Than *Terminalia oliveri*, Dahut *Tectona hamiltoniana*, Supyu *Acacia arabica*, Sha *Acacia catechu* and underground bush species.

In NF type CFs where economic benefits are yet to be enjoyed, groups X and Y were selected based on the difference in their difference in the proportions of members participating in collective resources management. The two villages are located in Pakokku Districts, Yesagyoo and Pakokku Township Respectively. In group X, the trees on village communal land are managed as common property from 1920 to 1994. After 1994, FD prohibited villagers' access on forest resources though it is supposed to *de-facto* open access because of the government policy for the greening of Dry Zone. A part of that land was certified as CF. In group Y, it was initiated to constitute Protected Forest around 493 ha included CF area by forest law in 1961 though it was not declared. Because of agricultural conversion of forest land, 89 ha of degraded forest area, mainly used for grazing were remained. When the project initiated, FD staff handed over it to group Y included 16 ha of private agricultural land as CF. A comparative profile of the CF management in the four villages is shown in Table 3.1.

Table 3.1 Comparative profile of the study villages

Attribute	AF type		NF type	
	Group A	Group B	Group X	Group Y
Forest Size (ha)	36	24	105	19.2
Size of forest USG (household)	34	23	18	30
Forest Type	Fallow land		Degraded dry forest	
Classification of the land	Reserved forest		Public forest	
CF management activities	i. Intercropping ii. Fire Protection		i. Enrichment planting ii. Pruning	
Characteristics of management	Individually		Collectively	
Participation in management activities	Good	Poor	Good	Poor
Year of establishment	2004	2004	2005	2004

Source (Field Survey 2008, 2009)

3.2.3 Data Collection

A preliminary survey was conducted at 9 USGs to collect necessary information through interview with FD staff, USGs' leaders, Village Peace and Development Council (VPDC) members. Based on the data collected in a preliminary survey and secondary documents, semi-structured questionnaires were developed for household survey.

In AF type CFs where management and use rights were assigned individually, participation in forest management activities was measured by the number of trees managed by households in each individual plot. To compare individual member participation, 15 households were randomly selected in each USG, and forest inventories and household interviews were conducted. For forest inventories, two plots of 20 m by 20 m each were established in random locations of every sampled household plot. In each plot, stems of 10 cm DBH or greater were identified, counted and heights measured. Stumps were also counted and the reasons for felling were determined in household interviews. Forest inventories were conducted by local FD staff members, some USG members and the researcher. In NF type CFs where all forest management was done collectively, participation was measured in terms of the proportion of member participation in management activities, which was determined with the help of records kept by leaders, documents from the project and FD Township offices, key informant interviews, household interviews and informal interviews with some USG members

In both AF and NF types CFs, a full socioeconomic survey at the household level (15 households from each of sample USG in the AF type, 50 % of households from each sample USG in the NF type) was undertaken using semi-structured interviews. Households were selected using simple random sampling method to obtain information on crop production, land holding, fuelwood collection, meeting attendance, participation/ awareness of the household on community forest management activities and leaders' involvement in farm work. Also, data were collected by using key informant interviews, participant observation, informal interviews, and reviews of the meeting records. Principal informants

included community leaders, village head, and local officials, particularly FD personnel initiated CF in sampled groups. Collected data were qualitatively analyzed by using the findings of past studies as a guidance framework.

3.3 Results and Discussion

3.3.1 Agroforestry type of community forest

Performance in AF-type CF was indirectly measured by the number of trees managed by households in each individual plot. Selected depended variables representing participation in tree planting is shown in Table 3.2. The T-test result (T value: 0.93; P value: 0.0005) showed that there was 5 % level of significant difference between average numbers of trees per hectare i.e. 246 trees for group A and 137 for group B. The reason for the difference of participation is explained below.

Table 3.2 Selected Dependent Variables Representing Participation in Tree Planting

Variables	Group A	Group B
Average planted trees per ha (as per document)	444	539
Number of Stem in total sampled plots (400m ² ×30)	296	165
Average density of trees (stems/ha)	246	137
Average basal of trees (m ² /ha)	3.7	2.4
Species richness (number of planted species)	6	6

Source (Field Survey, 2008, 2009)

3.3.1.1 Economic Factors

3.3.1.1.1 Dependency on resources

USG members get year-round production from AF-type CF (Plate 3.3). There were no significant differences between A and B with respect to percentages of respondents (households) who depend on the diversified benefits of AF-type, with all members being dependent on the crops, fodder, and fuelwood from within farm boundaries in both communities, while the figures were 33% and 26% on *Thetke* (*Cylindrical imperator*), respectively. *Thetke* is used for house roofing material. However, there was variation in fuelwood collected from planted trees. Sixty percent of the respondents in group A used it for household consumption, while none in group B used it.



Plate 3.4 Intercropping pattern in Agroforestry type

3.3.1.1.2 Income from community forests

In AF-type CF, USG members were allowed to raise seasonal crops. Although there

is a slight difference in average income — 520,440 kyats (520\$) in B and 406,600 kyats (406\$) in A — all respondents obtained income by selling the products from the agroforestry site (Table 3.3). This income from CF became another major source of income for their livelihood, and it contributes to household expenditures to some extent in comparison with monthly household expenditure: roughly 150,000 kyats (150\$) for four or five family members (household survey). All respondents from both group said income from crops stimulated their initial participation in CF. Although income from Thetke is comparatively low, it creates employment opportunities for women in the off-farm season. Because of fodder supplies, time taken for fodder collection has generally lessened, particularly benefiting women. In addition, it saves money by reducing the cost of fodder in the dry season. The reason that group B obtained higher income from selling crops can also be attributed to their poor participation in planting seedlings, which left more space to plant agricultural crops.

Table 3.3 Marketable products and Income from AF type of CF (n=15)

AF products	Total Products ^a		Market value ^b (kyats) ^c		Total income (kyats)		Average income per household	
	A	B	A	B	A	B	A	B
Sesame	130	155	20000- 25000	20000- 25000	2600000- 3250000	3100000- 3875000	195000	232500
Pigeon pea	143	211	15000- 18000	15000- 18000	2145000- 2574000	3165000- 3978000	157300	232100
Green gram	41	45	12000- 15000	12000- 15000	492000- 615000	540000- 675000	36900	40500
Chili	50	27	1800	1800	90000	48600	6000	3240
Thetke	5000	5500	2-4	2-4	10000- 20000	11000- 22000	1000	1100
Fodder	52	55	3000	3000	156000	165000	10400	11000

^a Basket load basis is used for the amount of total products for Sesame, Pigeon Pea and Green gram (common crops for every household because of price and market) while Viss, Byit and Cow cart is used for Chili, Thetke and Fodder respectively. ^bMarket value was derived as per respondent's responses during the field survey. ^c1\$=1000 kyats

3.3.1.1.3 Market situation

As both groups are located in the same locality, there is no difference in terms of access to market as well as demand. Ninety-three percent of respondents in both group mentioned that they sell their crops in the city market about 12 miles from the village, after fulfilling their own needs. Although there is a daily market in township capital, local people

from surrounding villages sell their farm products once a week, which is locally, called a seven-day market. At the market, they sell crops to retailers who buy goods from many producers, and then take all these products to the wholesale shops which supply the goods to different national markets. Villagers mostly used public trucks which commute the villages and city once a week; to carry farm products to sell, and to haul purchased food and commodities for daily life. A few of them used bicycles or motorbikes to carry loads. Access to the market is possible throughout the whole year. The remaining respondents said they sell directly to local middlemen without going to the city market. Crops are sold on a basket-load basis, not by weight. In the case of forest products, USGs can market surplus forest products to areas outside their villages according to CFIs. Tax is levied by the FD at specified rates. Group A has the potential to both use and sell in the market owing to their good tree planting participation. In order to achieve continuous participation in AF-type CF, the FD should help USG members in providing information regarding the use and sale of forest products. Otherwise, members might convert their land into monoculture crops because of the market situation and their livelihoods.

3.3.1.2 Social/Institutional Factors

3.3.1.2.1 Leadership

In the case of community forestry in Myanmar, there are five leaders in every USG composed of Chairman, Secretary and three Members selected by USG members' consensus. The leaders are the facilitators between the FD and USG members and they take key decisions making role on behalf of their USG.

In group A, all leaders worked in the field during the implementation stage (2004–2006). Leaders therefore visit their agroforestry sites very frequently particularly in the farming season, which induced them to perform their role for supervising and participating in the collective activities of fire protection, seedling distribution, and monitoring. Meeting records and informal interviews showed that leaders supervised seedling distribution well by recording households and numbers of seedlings distributed. Before planting for 2006,

leaders checked individual plots to determine which households needed to plant more seedlings, and distributed them according to that priority in 2006. They also played an exemplary role by planting more trees on their own land. Leaders said that they had encouraged USG members' initial participation in tree planting by promoting rule awareness, monitoring, and planting themselves. When the members saw trees that had grown up in their plots, they valued the trees they had planted. All respondents said they participated in tree planting and maintenance because leaders did the monitoring and planting. USG members are satisfied with leaders' activities in group work.

In group B, leaders were less involved in motivating their groups in the project implementation period. The CF site was not visited on a daily basis by the leaders, as only the secretary and member 2 worked in the field, while the chairman and members 1 and 3 hired laborers or had their family members do the work. Member 1 was the village head, so he was mostly involved in other administrative work on behalf of the village. Although he is reluctant to participate in CF field work, meeting records showed that he participated in decision-making. In addition, the group chairman worked one year outside the village in 2005. Overall, this situation created less cohesiveness among leaders because they are just position holders. Unlike group A, leaders did not supervise seedling distribution or monitor tree seedlings. Thirty-three percent of respondents said that leaders came to the CF site to monitor tree seedlings only when FD personnel came. Leaders planted very few seedlings in the plot allocated to them. Moreover, the chairman assumed that because they had certification, the FD could not revoke their right to cultivate even if they plant no trees.

When examining the underlying causes of different leader performance in terms of the age, the average age of group A leaders is 46 years old while the group B leader is 47 years old. Therefore, there is no difference in average age. In the case of education level, good performing group, group A leaders completed only monastery education except one leader who finished primary education while group B leaders completed middle school education and primary education. Rather, the most important attribute affecting participation is involvement of leaders in farm work. The more the leaders work on the

farm, the better their active participation in discharging their responsibilities or decision-making, supervising, and monitoring. Other reasons for different leader performance may be the short-term benefits of crops and the market situation, and the lack of sanctions by the FD. It is also related to leaders' previous experiences working with the FD, which has changed leaders' attitudes on tree planting and maintenance. The group A chairman worked as a volunteer forest worker to prevent illegal loggers in the natural forest area (about 121 ha) in Maenyotaung RF seven years before project intervention. He was also previously hired as a fire watcher for an industrial plantation located near the CF site by the Mahlaing Township FD. During this time, local plantation participants were allowed to raise crops for two years inside the plantation. He also led these participants. On these occasions, local people recognized him as a person with influence over forest resources.

3.3.1.2.2 Decision-making process

In group A, decisions were initiated and discussed among the leaders. The general decisions made by the leaders involve i) nursery establishment, ii) boundary marking, iii) fire protection, iv) carrying seedlings from the FD office and distributing them, and v) planting dates. Meeting records and interview results show that all leaders participated in each decision process. Dates of activities and procedures were decided ahead of time. USG meetings were held in the chairman's house, where participants deliberated on all decisions initiated among the leaders. For example, they decided in a meeting to make an inner fire line (3 feet), an outer fire line (6.5 feet), and a natural boundary by collecting and heaping big stones at all corners of the CF site. Interview results show that all respondents attended the meeting and helped to make decisions. Before planting the trees in each plot, leaders deliberated on the planting deadline. There were 25 meetings (2004-2006) to make decisions and discuss information related to management activities, which were attended by at least 60% and at most 82% of USG members. USG members who could not attend meetings received information from other farmers who attended. Leaders said that the possibility of cooperation in management activities was high because frequent meetings encourage rule awareness and regular interaction between leaders and USG members. All

respondents were aware about the rules for planting crops and trees.

In group B, decisions were initiated by the chairman or member 1 (the village head) at the request of FD personnel. General decisions included: i) nursery establishment, ii) carrying the seedlings from the FD office, and iii) planting tree seedlings. But there was no meeting or consensus among the leaders. In addition to this, USG meetings to deliberate on decisions were rarely held, specifically about eight times during from 2004 to 2006, only when FD personnel and project members came. This affected rule awareness and cooperation in the execution phase because meetings allow USG members to interact directly with other members and exchange information about where the organization is heading. Forty percent of the respondents were not aware of the rules for planting crops and trees. It is assumed that all respondents are not sufficiently familiar with operational rules. Unlike group A, there were no meetings to announce seedling distribution and planting dates. Respondents answered that they informally received information heard from others. In the case of collective activities, fire protection was performed in 2005, but 50% of the respondents said they participated while the other 50% said they did not know about this activity because it had not been discussed. It seemed that there is limited participation of USG members in project management, that in fact they are unaware of group activities, and that there was less involvement of leaders.

3.3.1.2.3 Prior experience in collective activities

In the case of agriculture, farmer A might request help from farmers B and C in ploughing fields instead of hiring wage laborers. Later, farmer A has to pay back this labor to farmers B and C when they plough their land. This system relies on kinship or networks similar to friendship. Only one respondent said he had used this system in tree planting. In the case of collective CF activities such as fire protection and boundary marking, leaders organize small working groups depending on land location. Therefore they do have prior experience in collective agricultural activities, although it is not related to CF.

2.3.2.4 Physical factor

The CF site is a mile from the village for the two groups. All 100 respondents from both groups said that one mile is not a problem for them. According to the farming schedule of USG members, they went to the CF site everyday to cultivate crops. Distance was therefore found to make no difference in participation of USG members in management activities.

3.3.2 Natural forest type of community forest

In NF type CF, participation was directly measured in terms of the proportion of members participating in management activities. In group X, the good-performance group, all members participated twice in gap planting and pruning. In group Y, 50% of the members participated in the first planting, and 46% the second time. Only 33% participated in pruning. Moreover, only 10 households of 18 have continued participating since 2006, and no activities have been carried out since 2007. Below we discuss the reason for differing participation in collective resource management.

3.3.2.1 Economic Factors

3.3.2.1.1 Dependency on resources

Currently, there is no relationship between USG member participation and direct dependency on the forest being managed because the USGs collected their needed resources from places other than the CF site. From the household survey, it can be seen that 80% of respondents in group X collected from private woodlots located inside their farm, 20% collected from the trees such as *Sha* (*Acacia catechu*) and *Dahut* (*Tectona hamiltoniana*) grown in public land located around the village. Group Y members commonly used pigeon pea crop residue as an important household energy source. Fuelwood from trees on farm boundaries provide an additional source of energy. However, all respondents in both groups expect to use forest products in the future.

3.3.2.1.2 Income from CF

Income from CF is not yet received by the two groups because the forests are under protection to improve forest cover. The survey result shows that the average density of trees (stems/ha) is 1529 and 870 in X and Y, respectively. In both groups, the leaders' perception is that the forest has improved and the trees are bigger after five years of conservation. Wild animals such as rabbits and deer are sometimes observed near the stream. The group X secretary said marketable size is about one foot in girth, which will necessitate conserving the trees another four or five years before cutting. In this case, the stability of property rights is crucial to sustaining CF for generating income.

3.3.2.1.3 Market situation

Although the forest has yet to provide forest products that generate income, group Y leaders have tried to access the market for fuelwood (*Htamin-chat Htin*) collected when pruning in 2006. Activities were not performed collectively, and they hired workers for cutting and transportation. As such, proceeds from the sale did not cover costs and generated no income. In their local market, there are three types of fuelwood which can be sold in the market: (1) *Oake Htin* (for baking brick; *Htin* means fuelwood), which commands the highest price, (2) *Mokephote Htin* (for use in food processing), and (3) *Htamin-chat Htin* (for cooking). Local intermediaries visit sellers' homes to buy the first two types. *Htamin-chat Htin* can be sold only in the city market, about 12 miles from the village. In group X, jaggery makers need about one cart of fuelwood per day to make 30 viss of jaggery. Fuelwood is bought from small-scale sellers who collect from communal land, private wood lots, or surrounding villages that own large private wood lots. Demand is all year, although jaggery makers buy and store large amount of fuelwood in January and February. Therefore, both groups have the potential for selling forest products, although distance to the market, demand, and local price differ according to locality. Currently, however, there is no connection between USG member participation and the market situation.

3.3.2.2 Social/institutional Factors

3.3.2.2.1 Leadership

In NF-type CF, the leaders of the two groups participated in managing resources collectively, although there is a difference in USG members participation. The difference between the average ages of the leaders (X, 58 years old; Y, 50 years old) was about eight years. Group X, the good-performance group, was found to have older leaders. This was at variance with the common literature, which favors young and educated leaders. Likewise with education, leaders in group Y were more educated than group X. The difference between the groups is leader (chairman) experience as village head. In Myanmar, the village is the smallest government administrative body. The Village Peace and Development Council (VPDC), which comprises village heads, secretaries, and clerks had executive powers for all affairs of the study villages, and was expected to support social and economic development such as agriculture, forest conservation, education, and health. Of the VPDC members, the village head is politically authorized to preside over the villagers, making him a village political leader. Networking with other villages and township-level government administrative units must be done by the village head. He is male and an influential member of the community in terms of property, knowledge, and dignity because villagers respect such people. A person who is a village head is expected to have better administrative and organizational skills than other ordinary villagers.

The leader of group X is a past village head, and he therefore had experience in communicating with government personnel and neighboring villages. Other leaders and USG members respect him as a USG leader. This attribute was found to contribute to better coordination than in group Y. In contrast, the leader of group Y is not a past village head and not a respected person in the village for his property or dignity. The leader said that villagers obey only the instructions of the village head. It seems that the leader himself is reluctant to organize the USG members to participate in management activities. This was found to affect his coordination capacity to achieve a collective outcome. In addition,

collaboration between political leaders and CF leaders is needed to legitimize their leadership and to prevent illegal cutting by outsiders. In villages X and Y, existing village head are not CF members. During the field survey, we observed that group X leaders collaborate more with political leaders than do group Y leaders. It is important to achieve continuous participation in CF at the village level. This collaboration can be enhanced by the FD if it maintains contact with USGs.

3.3.2.2.2 Decision Making Process

The general decisions made by group X include: (1) Nursery establishment (2005), (2) digging holes for planting (2005), (3) selecting members to check and monitor digging and planting seedlings (2005), (4) gap planting (2005, 2006), and (5) pruning (2006, 2007). The leaders said that they make contact with FD personnel as planting time approaches in order to get seedlings and technical support for planting. Leaders originated the idea of pruning according to forest conditions. Therefore, decisions were self-initiated by the leaders. It might be related to the ability of the management committee. For example one of the leaders (secretary) had previous experience as a plantation worker on departmental plantations including those of the FD and other departments, while another leader voluntarily planted shade trees along a highway. After decisions were made by leaders, they were discussed by USG members to decide the dates of activities and how to share the workload among members. The leaders said that they convened meetings to make final decisions related to labor distribution and dates of activities whenever management activities were done. The majority of members participated in these meetings, and the leaders consulted with them on final decisions. For example, the leaders said that decisions on number of digging holes per household for planting tree seedlings in gaps was finalized based on the opinions of members attending the meeting. Respondents gave the same answer in household interviews with leaders. All USGs participated in collective actions. Unlike group Y, the village head was not involved in the decision-making process although he also was a member of USG in group X.

In group Y, FD staff originated the idea of operational activities and informed the village head and leaders that, for example, there would be two gap planting in 2005 and 2006, and pruning for generating income in 2006. When carrying the seedlings from the village to the CF site, the village head requested that leaders ask USG members who have oxcarts, and the leaders did so. The practice of calling regular meeting to deliberate on and discuss the decisions on management activities was almost non-existent. The village head disseminated information in the village in the conventional manner with loudspeakers for participation in planting tree seedlings because he assumed that his function was to encourage USG members to engage in CF activities because CF establishment is one of the village affairs. Nevertheless, he did not participate carrying out decisions. Participation of USG members might be achieved if the village head participated in both making and implementing decisions. As prescribed for leadership, leaders themselves are reluctant to request the USG members for participation in management activities, so leaders and a few members participate in implementation. Consequently, institutional performance lacks strength in enforcement and unity. According to records and key informant interviews, leaders implemented management activities until 2006 even though participation by most USG members was not achieved. The conclusion is that non-participatory decision-making process is likely to contribute the lack of participation in management activities.

3.3.2.2.3 Prior experience in collective activities

Historically, from 1920 to 1994 group X village had managed its forest resources on communal land including the CF area through traditional unwritten rules. There was no regulation for amount of resource use although timing was regulated by village head by announcing opening and closing season of cutting. The timing of harvesting is from October through the first week of March (before the rain) because felling at this time provides good coppicing and survival conditions. A person caught cutting trees after closing season was fined. However, this happened to only one or two persons per year, and all villagers followed the rules. It was unclear how the traditional knowledge of harvesting technique which used coppice system was initiated. It might be that local people

traditionally relied on their forest to supply fuelwood not only for cooking but also for their livelihood in jaggery production. For this reason, they formed good management practices.

The reason of using coppice system might be related to their traditional assumption on the nature of the trees: Sha (*Acacia catehu*) and Dahut (*Tectona hamiltoniana*) which can stop its growth if the trees are not coppiced in mature stage. After cutting, coppices emerge around the main trees. The best coppice is maintained for future use such as agricultural tools or house construction. Others are harvested and used as fuelwood. By carrying on such traditional practices for sustainable production, they managed the forest, including private woodlots on their farms. An elderly person who was one of the leaders said that forest conditions in communal land were better than those in surrounding villages because villagers have been utilizing forest resources in accordance with traditional knowledge. This common property region functioned for a long time although village head changed occasionally, perhaps once every two or three years in the village.

As mentioned above, the CF area is a part of communal land that is managed traditionally. Therefore, USG members were happy to get legal rights for CF from the FD. All respondents said this motivated them to participate in collective activities. The current village head said that non-members including him want to join the program if there is an opportunity in the future because the forest has improved and the authorities recognize CF rights. In addition to forest management, for the last 50 years there has been cooperative work in repairing village roads. Nobody forces them or asks them to do so. All households near roads cooperated, performing repairs when road conditions deteriorate.

In group Y, there was no previous experience of collective action. Instead of voluntary action, the village head ordered the performance of village tasks such as road maintenance. In this community, hiring labor for agriculture is very common, and income from being hired is one source of income for households. Half of the respondents earn subsistence income from daily agricultural labor.

3.3.2.3 Physical Factor

It was found that the distance from the village to the CF site is different for the two groups: group X is close at 0.49 mile, while group Y is far at about 1 mile. All respondents in group X said because the site is very close everyone participates in management activities. In group Y, 38% of the respondents said the site is far. Those respondents are the leaders who mainly participated in management activities. It seemed that distance was the reason for poor participation in NF-type CF when institutional performance lacks strong rule enforcement due to the leadership, decision-making process and past experience in collective action, particularly in forest management in which forest benefits are not yet received.

3.3.3 Relationship among selected variables and participation

In AF-type CF, income from selling crops that contributed a major part of the participants' livelihood was found to be an important incentive to participate in CF and to continue under the favorable market conditions. However, when analyzed from the viewpoint of a win-win situation in which the project intended not only to improve their livelihood but also to produce forest products, group A participated more in forest management than group B. This is related to group leadership. Unlike group A, in which the leaders were exemplary by planting more trees on their land, the leaders of group B did not do much work by assuming that the FD could not revoke their right to cultivate even if they plant no trees because they had certification and economic incentives of the crops. This makes for less participation of USG members in forest management. However, chairman of group A is volunteer forest worker of FD and local people recognized him as a person with influence over forest resources. Therefore, leaders' participation in tree planting in their plot can also change the attitude of other members to plant the trees. In addition, because group A leaders worked at the CF site, they had made frequent visits by the time the farming season started. That facilitates monitoring the activities of USG members, and explains the difference in member interest in participating in forest

management. Only two group B leaders worked at the CF site, and they visited the site only when FD personnel came. Consequently, they could not monitor other members and could not intervene actively in group work. In group A there were 25 times as many meetings, which were attended by the majority of members. This created rule awareness because the chairman used the meetings to inform members of the rules and create awareness, the reason being that if USG members do not follow the rules, their use rights will be revoked. Moreover, decisions related to group work were discussed well in the meetings. Therefore, USG members participated in group work and tree planting because they were aware of the rules. Group B leaders and USG members rarely met in meetings, and this usually happened on the eight occasions when FD personnel visited (2004-2006). Group B leaders did not follow the rules themselves and did not try to make members aware of them. This created less participation in forest management.

In NF-type CF, even if USG members do not get benefits from the forest now, the hope that they will benefit in the future was found to be an incentive in both groups. However, the percentage of member participation in management activities was different between the two groups. The first factor contributing to this difference was group leadership. The group X leader was a past village head, and was respected for his great efforts to coordinate the group. The group Y leader had not been a village head, and was not a respected person owing to his low income and his previous political position, by virtue of which he lacked the capacity to coordinate the group. In addition, group X made decisions by consensus with a majority of the members in attendance. USG members therefore participated in rule enforcement collectively because rules were made in their own interest. In group Y, decisions were made by the village head and chairman. There was no decision-making process involving leaders and members. Moreover, group X had long experience in traditional forest management as common property, which played a positive role in encouraging participation of USG members in circumstances where economic benefits are yet to be enjoyed.

3.4 Conclusion and Policy implications

This chapter has analyzed the important factors influencing USG members' participation in management activities within an explicit framework of how economic, social/institutional and physical factors are related to each other.

In the case of AF system where performance of USG was measured by the number of trees managed by households in each individual plot, initial participation of USG was at first triggered by economic incentives. However, this factor also results in less participation in tree planting because forest trees are long term benefits, and market situations for selling crops are favored for higher income. In that case, the achievement of participate in tree planting is good when the leaders involved in the farm work. The active participation of the leaders in discharging their responsibilities for supervising and monitoring and decision making which affect rule awareness and cooperation among members in the execution phase can motivate USG members' participation. Therefore, it can be said that social/institutional factors can mediate the negative effect of economic factors.

In the NF type, in which economic benefits are not yet received, performance of USG was measured in terms of proportion of members participating in collective resource management. In that case, social/institutional factors play a motivation role for collective resource management. It was found the leaders who had experience as village head could mobilize USG members for coordinated efforts and for dealing with political leaders. Consequently, the decision making process is reflected by USG members' participation and therefore the achievement of collective action was higher. Further, the study showed that the legal rights of CF could motivate the people who have experience in traditional forest management as common property to participate in collective activities. Participation by most USG members was not achieved when institutional performance lacks strong rule enforcement and unity due to the co-ordination capacity of leaders, non-participatory decision-making process and past experience in collective action. In that case, physical factor seems to be a contributing factor of poor participation in NF-type CFs, particularly for the USG members who mainly participated in management activities.

Based on comparative case studies with AF and NF types of CFs, it can be concluded that social/institutional factors are the most influential factors in both types, while economic factors are directly related to USG member participation in the AF type alone. The reason might be related to the nature of decentralized policy as well as socio-economic conditions of local communities. For instance, USG members in AF system are allowed to plant crops and trees, they are not free to decide how to rehabilitate the designated land. This is because the policy is emphasized on tree conservation rather than considering food security of local communities. USG members are also eager to plant the crops because of short-term income. As such situations, social/institutional factor is important to show the USG members the good example and to convince for getting benefits from action, as postulated in theory.

The results show that traditional management systems should also be given due emphasis. In villages where traditional forest management or past experience in collective action does not exist, degraded forest on public land should be under the control of village head, particularly in the Dry Zone because the villagers rely on such forest for fuelwood and grazing and they follow the instructions of village head including forest conservation.

In order to achieve continuous participation of USG members in CF management, the FD should have regular contact with USGs to check on the status of CFs and USG members. Through this frequent interaction between the FD and the USGs, the FD should help USG members by providing information on the use and sale of forest products from AF type CFs. Furthermore, the village head and other villagers will better recognize the legitimacy of the USGs. Especially for NF-type CFs, the FD should maintain frequent communication with the members to provide incentives, especially regarding assurance of the property right they have for potential benefits from the forest.

Chapter Four

Property rights issues of CBFM in the Philippines

4.1 Introduction

The forest principles which were developed in the United Nations Conference on Environment and Development held in 1992 highlighted that forests have to be managed sustainably to meet a diverse set of human needs as well as to address environmental conservation. In order to achieve these goals, forest governance and tenure systems are some of the required factors that need to pay attention (Wilkie et al. 2003). The issue of property rights is one of the salient aspects of forest governance (Pagdee et al, 2006) and it should give closer attention in studies of decentralization (Larson and Soto, 2008).

Several studies (e.g. Meinzen-Dick et al, 1997; Katila, 2008; Markussen, 2008) pointed out the role of property rights in managing natural resources. Based on such studies, it can be concluded that it is not easy for users to sustain the resources condition without getting rights to manage and exclude others from it. By defining the rights to access, use, and manage forests; by giving decision making authority over the resource, property rights increase incentives to participate in forest management. Without a system of property rights, managing resources will not be functioned for coordinating users, enforcing rules and adapting to changing environmental conditions. And it also plays a motivation role because it affects the time horizon for resources use, and the incentives for conservation as well as for investment in improving the resource. The resources outcomes i.e. the condition of the forests and livelihood outcomes are conditioned by demographic and cultural factors, technology and markets, resource characteristics and biophysical factors (Agrawal, 2001; Pagdee, 2006; Katila, 2008). The nature of property rights may be central to outcomes (Agrawal and Ostrom, 2001; Larson and Soto, 2008) because it mediates the effects of other factors (Katila, 2008).

The outcomes of decentralized forest property rights are likely to be sure only if local communities are involved in making operational rules (Agrawal and Ostrom, 1999; Agrawal and Ostrom, 2001). In practice, the authority to make operational rules is retained by higher-level actors, which also influences the flow of forest benefits to communities (e.g. Larson et al., 2010). In order to understand diverse kinds of property rights that affect how forests are to be used, managed and sustained, therefore, it is essential to understand who can make decisions about what at what level of analysis (Agrawal and Ostrom, 1999; Agrawal and Ostrom, 2008). Moreover, tenure system not only defines the bundle of rights but also the rules that require particular actions in exercising those property rights (ITTO, 2009). Among the South-East Asia countries, Philippines is one the advanced countries in decentralized forest management. Therefore, this study focuses on analyzing the bundle of forestry property rights as well as three levels of rules to assess the role of property rights to continue CF management activities based on the Philippines.

A major approach to decentralization involves decentralization with devolution to upland communities using community-based forest management agreements (CBFMAs) issued by the Department of Environment and Natural Resources (DENR), devolution to local government units (LGUs) using co-management agreements, and devolution to indigenous peoples (IPs) by issuing certificates of ancestral domain title (CADTs) (Guaing et al., 2008). Under CBFMA and co-management schemes, organized communities called people organizations (POs), whose members live inside forests or in adjacent areas, obtain 25-year renewable leases on state forest lands, while CADTs grant land title rights to IPs (Pulhin et al., 2007; Charnley and Poe, 2007; Pulhin et al., 2008). Besides such statutory systems, there is also a customary tenure system determined at the local level in accordance with oral agreements which has been practiced for many generations, e.g., the *muyong* system in Ifugao (Butic and Ngidlo, 2003). Borlagdon et al. (2001) and Pulhin and Inoue (2008) recommended that such traditional forest management systems should be enhanced.

A number of research studies have been conducted about CBFM in the Philippines. Initial studies focused on historical reviews of forest management and trends in the social

forestry movement (Kummer, 1992; Liu, 1993; Gauld, 2002; Pulhin and Pulhin, 2003; Seki, 2003). Some studies have identified the positive contributions of CBFM, including increased forest cover by reforestation and reduced timber poaching (Pulhin et al., 2008). Most recent research has analyzed devolution policies (Gauld, 2000; Dugan and Pulhin, 2006; Dahal and Capistrano, 2006; Pulhin et al., 2007; Pulhin and Inoue, 2008; Balooni et al., 2008; Guiang et al., 2008). Despite these studies analyzing the effectiveness of devolution policies, limited attention has been directed at analyzing CBFM policies from the perspective of property rights, and there are few comparative empirical examinations of statutory systems and customary tenure systems. Dahal and Capistrano (2006) emphasized the weakness of devolution policies and found that property right is one of the main issues requiring attention in order to achieve the desired policy outcomes. Also required to address and improve property rights issues in the Philippines is a review of regulations and practices that restrict afforestation, and finding means that can improve those restrictive rules (Harrison, 2003). In order to understand the property right issues of CBFM in the Philippines, this study therefore attempts to address the following research questions:

- ❖ What are the individual and collective property rights held by communities?
- ❖ What regulations and practices restrict property rights and the impact of those regulations on forest resources and socioeconomic conditions of communities?
- ❖ What possible ways are there to improve CBFM policies with emphasis on property rights?

4.2 Analytical framework

To assess the property rights issues of CBFM in the Philippines, the analytical framework was constructed based on literature reviews. Figure 4.1 provides the flow of analytical framework.

4.2.1 Devolution Types

Decentralizing property rights from state control to user communities has encouraged the people's participation in forest management. The movement of forest rights devolution in Asia is more slowly than Latin America but substantially than Africa. Balooni and Inoue (2007) indicated that decentralized forest management is an alternative way of conventional approach which has led forest degradation in developing countries. They defined the decentralized forest management as "a bottom-up approach designed to engage the public in forest policy formulation". According to Fisher et al. (2000), this approach can be classified into three basic types: decentralization without devolution, decentralization with devolution to local government units, and decentralization with devolution to local communities. In this research, decentralization refers to "the relocation of administrative functions away from a central location" and devolution means "the relocation of authority from a central location to local government or local communities" (Fisher et al., 2000). In accordance with White and Martin (2002), it is estimated that 200 million hectares of world forest lands have shifted from state owner.

A basic principle of decentralization is to bring the government closer to people (Shivakoti and Ostrom, 2008). Additionally, this approach is likely to enhance sustainable forest management and to harvest more benefits by local communities when combined with other enabling conditions and incentives (Anderson, 2000). This is because decentralization initiatives allow local communities greater access to forest resources, higher level of use and consumption (Agrawal and Ostrom, 2008). The greater the share of use, management and others rights of forests to the people who live and work in and near forests, the greater the possibility of achieving sustainable forest management and improvement of livelihood

of forest communities. As mentioned earlier, there are diverse forms of devolution types. Depending on provisions from government policies, programs implementing them, members of society involved, and rules or agreements; property rights systems will differ (ITTO, 2009). The following sections review the theory of property rights.

4.2.2 Theory of property rights

4.2.2.1 Categories of property right regimes

The management of common pool resources can be open access, state property, common property and private property (Heltberg, 2002). In the past few decades, decentralized forest governance in developing countries which is for example called community forestry in Nepal, joint forest management in India and community based forest management in Philippines, creates opportunities for forest communities to participate in managing state forest lands by transferring forest use rights and management authority to communities (Charnley and Poe, 2007). In Nepal, (Acharya, 2005) stated that even though the legal framework provides a mechanism for collective arrangements, communities have developed various alternative options based on specific locations. In the case of Philippines, CBFM area is composed of individual area and communal area. The government granted individual tenure for individual plot while mother tenure is granted for the whole CBFM as a group. Below, I explain the nature of bundle of property rights in common property, private property and open access.

Under the open access regime, everyone is permitted to access and harvest the resources. Therefore, the resources can inevitably lead to degradation under the unregulated open access.

Private property may be held by individual persons as well as vested in group of individuals (McKean and Ostrom, 1995). Generally, private property rights are recognized and enforced by the state and rights are usually exclusive and transferable. Therefore, owners of private property have an incentive to protect resources and make investment

because they can be assured that they will be the one who will harvest the benefits (Feeny et al., 1990; Acheson, 2006). On the other hand, Acheson (2006) reviewed that over exploitation of resources in private property can occur when the future value of forest is quite low, people are poor and considered only for today's consumption, resources are uncertainty because of climatic effect and it is needed long term investment to be mature.

McKen and Ostrom (1995) defined common property as “a way of privatizing the rights to something without dividing into pieces”. It can also emerge to secure control over a resource, to exclude outsiders or to regulate the individual use by members of the community (Feeny et al., 1990). The rights are shared as a group. Through the study of Fenny et al (1990), it can be said that legal recognition of exclusive rights is crucial for the success of common property regime. This exclusion right is likely to collapse because of population growth, new market opportunities or other political reasons. To be successful common property regime for forests, McKen and Ostrom (1995) have indicated institutions for managing very large systems need to be layered to small components and users must have the right to modify their use rules over time are among the favorable factors in common property resource management.

4.2.2.2 Bundle of property rights

Rights refer to particular actions that are authorized on that property (Schlager and Ostrom, 2001). Tenure systems not only define the bundle of rights but also the rules that require particular actions in exercising those property rights (ITTO, 2009).

According to Schlager and Ostrom (2001), property right consists of access, withdrawal, management, exclusion and alienation (Table 4.1). Access rights identify right of entry to a resource and enjoy non-subtractive benefits. For instance, recreational users of national parks are required to pay entrance fee to enjoy the natural beauty of the park, yet they are not allowed to harvest forest products (Schlager and Ostrom, 1992; Ostrom, 2003 Katila, 2008). Withdrawal rights define the authority to harvest a resource system (e.g. forest, fish) and this rights can include how and/or when harvesting should be done based

on the purpose of harvesting (Schlager and Ostrom, 1992; Katila, 2008).

Management rights determine the right to manage a forest patch and the authority to regulate the use pattern and make improvement. They hold the authority to devise withdrawal rights and how the structure of the resource may be changed (Schlager and Ostrom, 1992; Ostrom, 2003). Exclusion rights define who may have access and withdrawal rights. Enforcement of exclusion rights also depends on type of resource. For instance, migratory nature of the resource such as fish or wildlife is difficult to exclude others without legal recognition of communal rights whereas forest or grazing land can be successful (Feeny et al., 1990). Alienation rights allow the rights holders to sell or lease either or both of the rights of management and exclusion to others.

As Schlager and Ostrom (1992) noted, property right holders can be classified into four groups: authorized users, claimants, proprietors and owners. Authorized users possess rights of access and withdrawal which are also called operational-level rights. Claimants possess these operational rights and management rights while Proprietors hold the same rights as claimants, in addition to the right of exclusion. Rights holders who attain all five bundles of rights are called the owners.

Table 4.1 Bundle of rights associated with positions in relation to forest resources (adapted from Schlager and Ostrom, 1992)

Bundle of rights	Positions			
	Owner	Proprietor	Claimant	Authorized user
Access and withdrawal	×	×	×	×
Management	×	×	×	
Exclusion	×	×		
Alienation	×			

4.2.2.3 Three level of rules

In accordance with Ostrom and Agrawal (1999), there are three levels of rules that determine the aforementioned right and regulation in devolution of forest governance. Operational rights are determined by operational rules such as quantity of resource use, harvesting technology, and timing of harvests. Those rules are devised by others, who hold the collective-choice rights of management and exclusion by collective actions (Schlager and Ostrom, 1999; Ostrom, 2000). Such actions are undertaken under a set of collective-choice rules that determine who may participate in making rules and the level of agreement required to or change the rules (FAO, 1997; Schlager and Ostrom, 1999; Agrawal and Ostrom, 2008). The powers and authority of collective choice right holders are defined by constitutional rules including rules on how those persons are selected (FAO, 1997). Therefore, collective choice decision determines the operational rules, and constitutional choice decisions define the collective choice situations (Larson and Soto, 2008). In relation to forestry, *'regulations are rules prescribed to control the use of forest resources and to assure that the management of these resources conforms to government-defined standards'* (Fay and Michon, 2003, p. 11).

In order to change forest conditions or the relationships between state and community actors, communities should obtain not only operational-level rights but also collective-choice rights to make collective-choice decisions (Agrawal and Ostrom, 2001). In practice, the authority to make operational rules is retained by higher-level actors, which also influences the flow of forest benefits to communities (e.g. Larson et al., 2010). Although there is much literature on analyzing property rights in the context of decentralization, few studies have considered the nature of regulations on using forest resources (Pulhin et al., 2010), and understanding the level of decision making is important to achieve the outcomes of decentralized forest management (Agrawal and Ostrom, 2008). This study therefore focuses on analyzing the bundle of forestry property rights as well as three levels of rules using the analytical tool adopted from Schlager and Ostrom (1992).

4.2.3 Forest Governance Outcome

As Schlager and Ostrom (2001) notes, the five property rights are classified into four classes of property-rights holders: authorized users, claimants, proprietors and owners. Authorized users possess rights of access and withdrawal; claimants have operational rights and management; proprietors hold the same rights as claimants and rights of exclusion; and owners belong to all five property rights. The achievement of forest governance outcome is different depending on property rights they have (Agrawal and Ostrom, 2008).

Among the four classes of right holders, property rights studies often assume that the right of alienation is the strongest incentive to maintain a resource because it allows the holder maximum control over that resource (Schlager and Ostrom, 1992; Meinzen-Dick et al., 1997). However, it does not guarantee the sustainability of resources in the long run (Schlager and Ostrom, 1992). The outcome of benefits is reasonably assured for the owners and proprietors for having rights to devise withdrawal rights and to exclude outsiders from using resources. For the claimants, the benefits is assured when there are no other groups who interested in using resources or physically isolated from other populations. When there is rival group to compete resource consumption, there is possibility of common-pool resource dilemmas without having rights of exclusion. For authorized users, the outcomes depend upon the institutional design skills of collective choice holders who participate in collective choice action because they could not design the rules. Sometimes, authorized users may engage in a game with rule enforcers for getting benefits as much as possible.

In relation to forest governance outcome which emphasized on property rights issues, some studies used to assess the impact of forest resources and income using “before and after studies” (e.g. Larson et al., 2010) while some scholars examine the direct relationship of bundle of rights and outcome (e.g. Agrawal and Ostrom, 2001). The following section will review the findings of previous studies.

4.2.3.1 Impact on forest conditions

Decentralizing property rights can make forest conditions improve or decline (Dahal and Adhikari, 2008). In relations to property rights issues and its impact on forest conditions, Coleman (2010) which analyzed the data from 326 user groups in 13 countries, illustrated that property rights will make different outcomes in the presence of rival users. For instance, forest conditions will be worsened for the groups of management right holders if there are a number of rival users. This is because management rights can create the rules which can only be enforceable within their group to control harvesting of forest resources. However, those rules will be less enforceable for non-members of the group. In such case, exclusion rights will give them authority to exclude others from the benefits. As noted by this study, alienation right can have negative impact on forest conditions where there are some disturbances in resources investment or no immediate political obligations to do. User group would decide to sell the asset to provide short-term income rather than reinvestment in forest if the group has other priorities.

Other studies such as Agrawal and Ostrom (2001) and Nagendra and Gokhale (2008) compared diverse forms of decentralized forest management in India and Nepal from the perception of property rights and its governance outcome. These two studies look at the role of property rights and impact on forests by investing seven schemes of community based forest management such as decentralization and forests in Kumaon, community forestry, buffer zone management, leasehold forestry, joint forest management, leaf manure forests and kans (historical sacred forests). Based on their studies, it can be said that weak enforcement of exclusion rights will increase encroachment of non-members on forest resources e.g. lease hold forestry. In contrast, Thomas (2006) indicated that forests conditions have fairly improved in his study area of Nepal. This is because of exclusion rights that enable to exclude other potential users, coupled with internal rule enforcement and sanctioning. Government policies emphasize on overall control over management (Agrawal and Ostrom, 2008). There is close association between flexible management approaches that fit local ecological and social conditions and the outcome in

terms of forest conditions (Nagendra and Gokhale, 2008). The continuation of forest conservation by communities is likely to decline if they have no authorities to devise management activities. To be effective decentralization, it is required to transform local users into claimants and proprietors. Then, decentralization initiatives should delegate them collective decision making skills for better changes in forest conditions or the relationship between state and communities actors (Agrawal and Ostrom, 2001).

4.2.3.2 Impact on economic conditions

Household benefits play a motivation role for creating economic incentive for successful natural resource management which will accrue from forest management related jobs, revenue sharing with the government and selling timber and non-timber resources (Ghate and Shyamsundar, 2011). But in practice, harvesting rights of fuelwood, non-timber resources and timber products for commercial purposes are controlled by government (Agrawal and Ostrom, 2001; Larson and Pulhin, 2012) and communities rarely have policy-supported access to forest or the market that would make increased income possible (Ribot, 1998). There are few before and after studies such as Larson et al (2010) that assess the income impacts of community based forest management after the decentralizing property rights. They concluded that three variables such as the quantity and quality of forest resources, national regulations which required exercising property rights and market conditions.

In this research, income was taken as one of the economic livelihood benefits. The amount of income generated from each of the livelihood activities of the households was used to assess the contribution of community based forest management because the measurement of variables such as income at the micro-level should include households as units (Oyono et al, 2012).

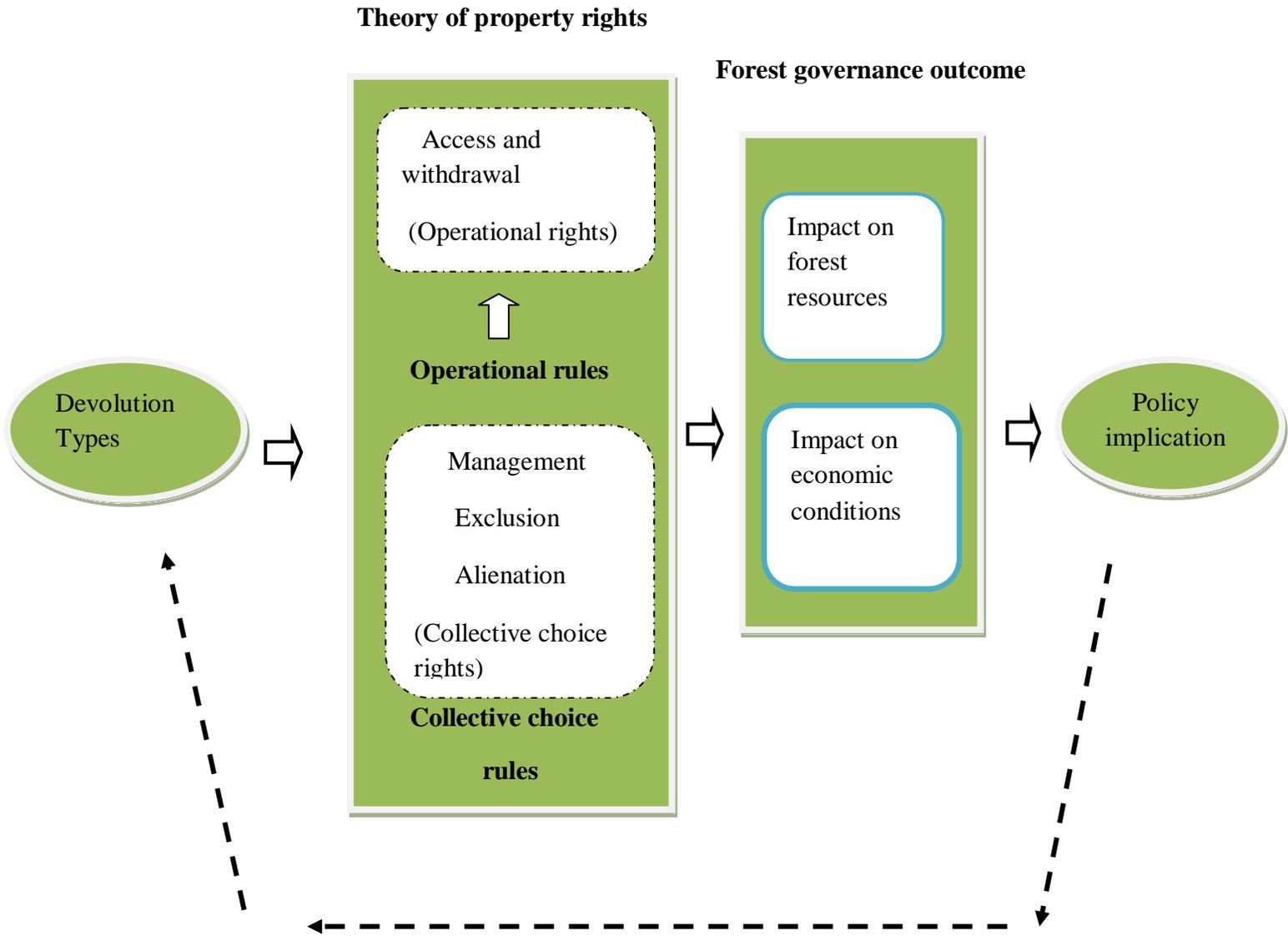


Figure 4.1 Analytical framework

4.3 Study Area

Nueva Vizcaya and Ifugao Provinces was selected for central government initiated program and local government-initiated program and traditional forest management system respectively (Figure 4.1). DENR data show that Nueva Vizcaya has more tenured area, i.e., more CBFMA and beneficiaries than most other provinces in the Philippines (DENR, 2009). In addition to central government programs, Nueva Vizcaya is well known for initiating co-management agreement between the local government unit (LGU) and the community. Support personnel availability during field research is another criterion for study site selection. CBFM sites in Nueva Vizcaya Province were selected in consultation with University of Los Banos academics, NGO personnel, and DENR and LGU personnel. Regarding traditional forest management systems, the Municipality of Banaue, Ifugao province was selected because of its successful forest management tradition described by Pulhin et al (2001) and Butic and Ngidlo (2003). To enrich our understanding of CBFM issues, a total of eight CBFM sites consisting of three central government programs, three local government programs, and two traditional *barangay* (village) forest management systems were visited.

Based on preliminary survey, the federation of Buenavista (DENR/ITTO-initiated site), Barobbob Watershed Association (LGU-initiated site), and traditional forest management systems in two barangays were purposely selected for case studies to compare the extent of property rights accorded by government CBFM policies with the traditional bundle of rights inherited from ancestors. The ability to observe and analyze regulations and practices that restrict property rights, particularly withdrawal rights, was the main selection criteria. Buenavista federation received a resource use permit (RUP) for commercial harvesting of trees from the DENR Regional Office in 2010, while Barobbob Watershed Association (BOWA) had been using an individual RUP from its LGU since 2007. Other selection criteria were site proximity to market, over 10 years of experience in CBFM implementation, availability of secondary data about the communities, forest management activities, accessibility, and other relevant information. All sites varied in

terms of the government entity which has the power to shape the bundle of rights, particularly harvesting rights, in terms of community structure, and in terms of the local autonomy to practice the property rights they have. Following sections briefly explain the nature of three CBFMs.

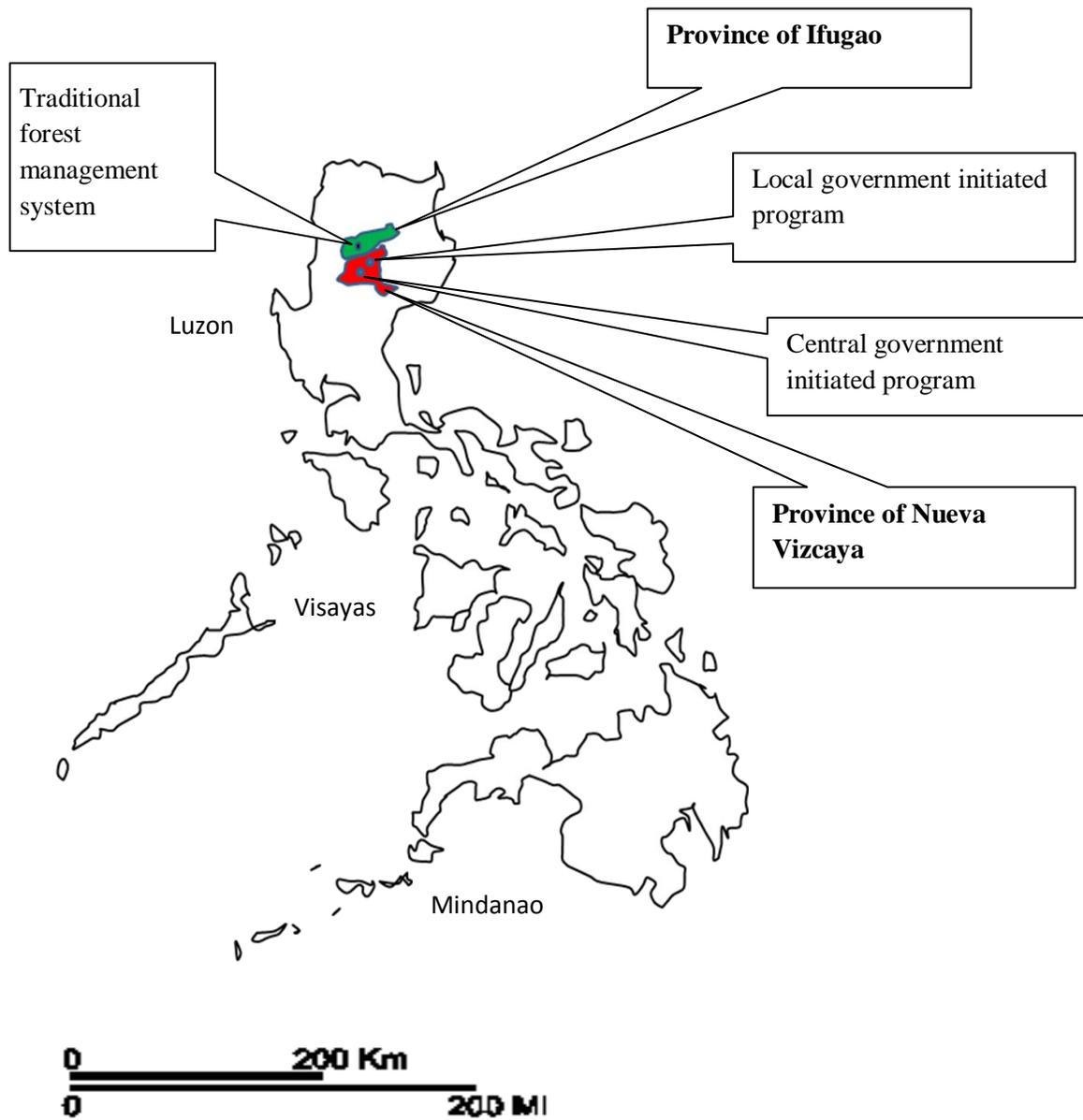


Figure 4.2. Case study sites in Nueva Vizcaya and Ifugao Provinces in the Philippines

4.4 Data collection and analysis

A preliminary survey was conducted at eight CBFM sites of CGIP, LGIP and TFM system to collect necessary information through interview with DENR and LGU personnel, PO leaders and muyong owners. Based on the data collected in preliminary survey and secondary documents, semi-structured questionnaires were separately prepared for each system (see Appedix VI). The sample included 111 households from nine sitios (coded A to I), comprising three sitios (A, B, C) from CGIP, two sitios (D, E) from LGIP and four sitios (F, G, H, I) from TFM, were randomly selected to collect data on demographics, property rights, income from selling crops and fruit trees, numbers of trees on farms, numbers and purposes of harvested trees, and rules and regulations on tree harvesting.² Some households mentioned above in each sitio were also visited by the researcher (corresponding author) to observe forest conditions. To assess the rules enforced by each institution, the logic behind crafting these rules and forest conditions in communal areas, key informant interview with 8 persons were conducted. Data were counter-checked through informal interviews with 33 persons. The respondents are from DENR central office, Provincial Environment and Natural Resource Offices (PENROs), Community Environment and Natural Resource Offices (CENROs), Provincial Government Environment and Natural Resources Offices (PGENROs), barangay officers, PO leaders and elderly persons. Table 4.2 shows the profile of respondents in three systems of CBFM. The property rights regime was analyzed using the framework of Scholar and Ostrom (1992). Almost all departmental orders, executive orders, and memoranda related to operational rules defined at the national, local administrative and community levels, were analyzed to determine the regulations and practices defining property rights in selected CBFM sites.

Table 4.2 Profile of respondents in three systems of CBFM

² A sitio is a sub-unit of a barangay (village)

System	Types of interviews	Respondents	Totals
CGIP	Household interviews	PO members	50
	Key informants	PENRO-DENR personnel, federation leaders, secretaries of POs	3
	Informal interviews	PENRO-DENR personnel, CENRO-DENR personnel, local foresters, secretary of Kalongkong association, retired teacher, barangay officers, charcoal makers	12
LGIP	Household interviews	PO members	31
	Key Informants	PGENRO officers, treasurer of BOWA, past PO president	3
	Informal interviews	Past PO officers, religious leader, elderly people (also indigenous leaders), <i>Park</i> leaders, PGENRO personnel, <i>barangay</i> officers, secretary of BOWA	11
TFM	Household interviews	<i>Muyong</i> owners	30
	Key informants	Son of tribal leader, CENRO employee	2
	Informal interviews	CENRO personnel, wood carvers, elderly people who were past <i>barangay</i> captains, son of tribal leader, four elderly persons, <i>barangay</i> captain	10

Source (Field survey, 2011, 2012)

4. 5 Results and Discussions

4.5.1 Three types of CBFM programs

4.5.1 Central government initiated program (CGIP)

The federation of Buenavista comprises three POs of upland sitios: A, B and C. Sitio A is located adjacent to an area of CBFM while B and C are located inside a CBFM area. The CBFMA tenure was awarded to the federation including ITTO-funded plantation areas and residual Dipterocarp forests, for the purpose of protecting forests with the community's help in accordance with CBFM policy in 1999. Among the total area of 3,000 ha, land not owned by individuals became communal area, which is estimated to be 1,500 ha of residual forest that is the federation's communal property, while areas of about 50 ha, 100 ha, and 80 ha are under the associations A, B, and C, respectively.

Generally, PO members from B and C are migrants from other provinces and they practiced agroforestry in their individual lots because cropping is their main livelihood. In contrast, the majority of forest occupancies by A were contract labourers of the Family Approach to Reforestation program and they locally claimed the land and occupied the reforestation area. But they did not rely on crop production for their primary means of livelihood at that time because they had lowland farming as well as other income sources (interview with local forester). When the project came, community organizers explained the sharing of the government-funded plantation, and the local people accepted it.³

4.5.2 Local government initiated program (LGIP)

In Nueva Vizcaya, Barobbob is one of the major watersheds supplying drinking

³ For government-funded plantations, 75% of the gross income from sale goes to the PO while 25% goes to the government to pay back the loan from the Asian Development Bank and sustain government efforts in reforesting denuded forestlands (DENR, 1998). PO members are in turn required to share 25% of their share with the federation, 25% with the association, and 5% with the barangay because the federation considers individual farm lots to be under the stewardship of the farm lot owner, association and federation.

water and irrigation water and also headwater of the Magat River, which feeds the Magat Multipurpose Dam for irrigation and hydropower (Plate 4.1). It is also home to a local community of about 151 households which depend on upland farming. Over 50% live within the watershed called sitio E, while others lives in the area adjacent to the watershed, sitio D. As a part of the devolution initiative under the 1992 local government code, DENR (represented by the Regional Executive Director) devolved about 439 ha of Barobbob watershed area to the Nueva Vizcaya provincial government in 1993. Instead of persuading local occupants to be resettled into other areas, the provincial government and local community entered into a co-management agreement by awarding Memorandum of Agreement (MOA) to those settlers of sitios E and D which are organized into a PO named in BOWA.

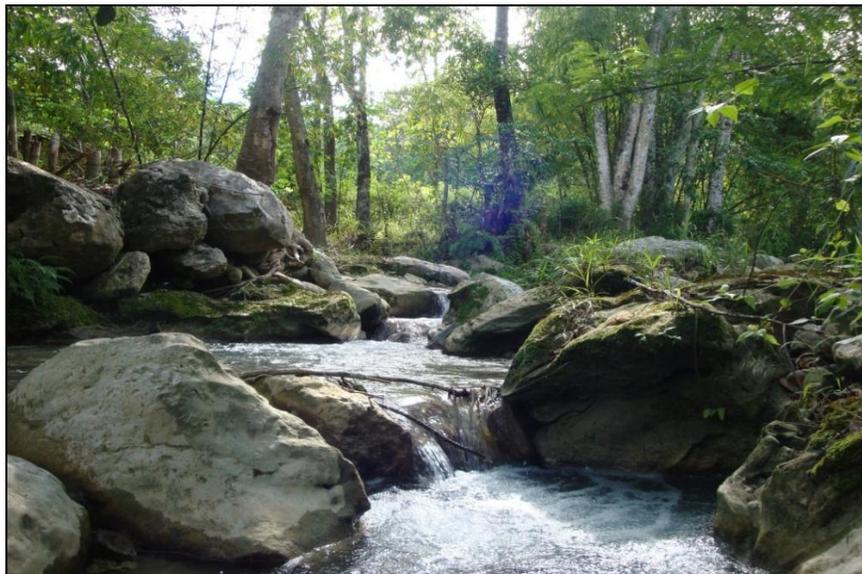


Plate 4.1 Barobbob Watershed Area

4.5.3 Traditional forest management (TFM) system

In the Ifugao dialect, *muyong* means ‘forest’ and if the forest is owned privately it is called ‘private *muyong*’, or *pinugu* in the Ifugao language, while the forest managed as

communal property is called ‘communal *muyong*’ , or *hinugu* in the Ifugao language. This communal practice is also known as the *ala-a* system. Although there are no records when the practice of maintaining *muyong* began, interviews with elderly people indicated that it had been practiced since before the 1950s. The DENR and JICA study (2004) reported that *muyong* have been privately managed for at least three generations even though the areas fall within state-owned forest land. According to Borlagdan et al. (2001), most private *muyong* are located in the upper portion of agricultural plots and *payoh* (rice fields) (Plate 4.2 and Plate 4.3). The idea is that there will be no water for rice fields without trees.



Plate 4.2 Overview private *muyong* (forest) and rice field in Ifugao



Plate 4.3 Private Muyong

4.5.1 Individual and Collective property rights

4.5.1.1 Central-government initiated program

For individually owned property, CSC holders act as stewards of the land to develop, protect, manage, and utilize the land and the resources on a sustainable basis. PO members who are CSC recipients have the rights to possess and cultivate the land, and to manage and work the land (Plate 4.1). PO members are allowed to sell or transfer CSCs to people who live within the CBFM project provided that 50% of the CSC area has been developed into productive land use, i.e., planted with agricultural crops or trees, or having fish ponds, although the ownership of forest land is retained by the state (DENR Administrative Order No .45, Series of 1998) (Rule 29, 1996). Because of this recognition of individual property, all respondents answered that they have strong rights to exclude outsiders from using resources on that land.

For crops and fruit trees, all respondents answered that they have full management rights to decide how, when, or what resources they will use in the future. Under CSCs, all income derived from the land through cultivation of agricultural crops including fruit shall

accrue to CSC holders.



Plate 4.4 Individual property area of CGIP within CBFM

For communal property, federation officers and association officers have rights of access, withdrawal, management, and exclusion of non-members. The issuance of a CBFMA gave secured exclusion rights to the federation and the CBFM policy granted full management rights for the development of forest areas. The right to enforce the exclusion right is relatively strong, which is why CBFMAs were issued. If non-members illegally cut trees or grow crops inside CBFM areas, the federation settles the offense with the collaboration of barangay officers.

4.5.1.2 Local-government initiated program

In the LGIP, PO members who are MOA recipients have the rights to develop the land, utilize the products, and exclude others. As indicated in MOAs, land right-holders can transfer or mortgage their MOAs in the event that money is badly needed for

hospitalization. As in the CGIP, members can use or sell any of its products without getting permits either from the PLGU or BOWA for crops and fruit trees. In addition, PO members also have full management rights to decide how, when, and what resource use will take place in the future.



Plate 4.5 Individual Property area of LGIP within CBFM

With regard to communal property, forests are jointly managed by PGENRO and BOWA, which jointly hold the operational level rights of access. Operational rights of withdrawal are decided by ENERO personnel and past PO officers. There are no informal operational rules created at the community level by the PO officers and management of the watershed such as reforestation appears to have always been driven by PGENRO (multi-sectoral protection committee, 2009). Unlike the CGIP, there is no communal tenure granted to BOWA to define exclusion rights.

4.5. 1.3 Traditional forest management system

Traditionally, bundles of rights are passed on from one generation to the next. Butic and Ngidlo (2003) revealed that “ownership is simply defined by inheritance and this mode of ownership transfer is highly respected and recognized by everybody within the cultural vein.” Depending on the type of *muyong* — private, clan-owned, and communal — the nature of ownership varies considerably. All clan members are granted the bundle of rights as long as no specified person owns the land. In the case of private *muyong*, only the heir has the full bundle of rights, while either family members or clan members are allowed to access and harvest the trees after asking permission from the heir, particularly for home construction. With regard to alienation rights, the first child is more likely to inherit land or other property according to custom because it is assumed that the first and second children will care for their aged parents. Therefore, the third or fourth child may inherit property that was added as new property by parents, or they may not inherit if the parents have little land, either *payoh* (rice fields) or *muyong*. Nowadays, some *muyong* owners have altered this traditional concept of inheritance as some children are not interested in *muyong* because of urbanization or migration. Thus, they will likely consider the degree to which their children want to inherit *muyong*. Under TFM, selling customary land to someone outside is prohibited. Interview results indicated that it is very shameful to sell their forefathers’ property. People might say, “Why do you sell? It is shameful,” because they emotionally value property inherited from their grandfathers. Their parents teach them “to buy other property to add our property.” In the event one must sell, the clan should be first considered as the buyer because property from one’s forefathers should be kept within the family or clan.

4.5.2 Nature of regulation and practices

4.5.2.1 Central-government initiated program

Forest trees can be classified into natural forests and plantations. CSCs issued by

PENRO-DENR do not allow cutting wild trees within and adjacent to individually owned plots. Since 2011, the state regulated natural forests by Executive Order 23 with the aim of preserving biodiversity, allowing natural regeneration of residual forests, and developing plantation forests. For plantation trees, the state crafted the operational rules, but the authority was devolved to the Regional Environment and Natural Resource Office-DENR. Those operational rules are too bureaucratic and include: 1) An agreement letter which signifies the interest of individual landholders in harvesting trees, 2) Community Resource Management Framework and five-year work plan, which are required for the issuance of an Environmental Compliance Certificate (ECC) and a checklist of utilization documented in Community Resource Management Framework and RUP, 3) total inventory of trees, 4) ECC to ensure a rational balance between socioeconomic development and environmental protection for the benefit of present and future generations, 5) Criteria and Indicators), which serve as a tool for performance evaluation for the concerned CENRO, and 6) clearance from the barangay chairman or municipal or provincial governor. Aside from such bureaucratic requirements, the Regional Executive Director, who is authorized on the national level, regulates the quantity of resource harvesting, harvest timing, and harvesting technology.

At the community level, informal operational rules are created by the Federation of the three associations of three sitios as well as each association because the federation's constitutional laws allow it to develop its own operational rules. For instance, PO members are required to pay 20 pesos per tree in B and C, but 50 pesos per tree in A to cut one indigenous tree. It was observed that because of Executive Order 23 (2011), PO officers and the federation president are reluctant to share their locally crafted rules on wild trees. The federation also created *de-facto* operational rules on planted trees for household consumption. PO members are required to pay 5 pesos to the association to cut one tree, and three trees are allowed in one year. The reason for this regulation is to conserve the environment (secretary of C Association), to legitimate and control cutting and to obtain funds for buying supplies such as pens and notebooks (secretary of B Association), and to maintain the tree population for sharing benefits with the government because it is

government-funded (local forester from A). The federation president said that the local DENR office (CENRO) verbally agreed to those rules because officials believed that the federation will not abuse its power. *De-facto* charcoal-making policy is set by Association C. An interview with charcoal makers indicated that they formulated this rule because it is their subsistence income source. In order to monitor enforcement of locally crafted operational rules, Association B, which has one ethnic group, imposed its traditional sanctions. In Association C, which comprises a different ethnic group, if any members of Associations cut trees or make charcoal without paying 5 pesos to the association, penalties are 100 pesos for the first offense, 200 pesos for the second offense, and 1000 pesos for the third offense.

4.5.2.2 Local-government initiated program

In relation to trees, MOAs did not prescribe rules that prohibited harvesting wild trees inside individually owned plots, but it clearly stated that the agreement covers the use of planted trees. However, there are no rules for de jure withdrawal rights enforced at the national level.

Instead, by virtue of the Local Government Code (1991), the provincial governor crafted operational rules to enforce de jure withdrawal rights in 2007. To exercise these rights, PO members must 1) send a request letter to the BOWA president, 2) have the BOWA president send an endorsement letter to the PGENRO, 3) obtain certification from the BOWA president, 4) obtain certification from the *barangay* chairman to prove trees are within the production zones, 5) receive an inspection report signed by the concerned PGENRO and DENR, 6) receive an inspection report signed by the concerned PGENRO and DENR, 7) get a PGENRO recommendation to the governor for the approval of a permit under the condition that every tree cut shall be replanted, and that BOWA officers and PGENRO will jointly decide the number of harvestable trees, which is not to exceed 50% of total planted trees.

In practice, land managers cannot legally use and sell forest products because the

resource use permit legal process stops after the tree inventory by PGENRO and DENR personnel. Under the harvesting guidelines approved by the provincial governor, the governor is authorized to issue resource use permits. Nevertheless, there is no legal document which authorizes the governor to approve permits at the national level, although a document (DAO-37 series of 1999) clearly states that the power to issue permits to “operate sawmills, transport timber, lumber, and other forest products was not shared and is held exclusively by DENR.” As such, DENR does not want to devolve it. Another reason is that the Barobbob watershed is a critical watershed area which is intended to be managed and protected.⁴ However, Executive Order 318 (2004) and guidelines for CBFM projects within watershed reservations state (DENR Administrative Order No. 41, 1998) that non-timber species, abandoned logs, fallen timber, dead trees, planted timber species, and lesser-used species may be extracted.

4.5.2.3 Traditional Forest Management System

Under the TFM system, operational rules are created by muyong owners. There were no external regulations until 1996. Trees are harvested for firewood, home consumption, and woodcarvings. After the 1970s sales of woodcarvings boomed and Ifugao’s woodcarvers exercised de facto timber processing rights defined at the CENRO-DENR level to legalize transport permits for finished products (e.g., carvings, handicrafts, and novelty items) to Manila and other cities until 1994. Having acknowledged the customary practices of sustainable forest management, the state legalized the processing rights for woodcarvings through the issuance of interim guidelines governing the issuance of muyong resource permits in Ifugao in 1996. This is also a kind of external regulation defined by the state to control forest resource use such as by prohibiting clear cutting, banning the cutting of pine trees, limiting resource use, requiring the planting of 10 seedlings for every tree cut, and requiring that all resources harvested are processed within the municipality. The state devolved the authority to the PENRO to issue muyong resource

⁴ Barobbob watershed is a proclaimed watershed area covered by the National Integrated Protected Areas System (Act of 1992), and is therefore excluded from logging and other operational activities.

permits with the recommendation of the concerned CENRO. De jure requirements for muyong resource permits, such as location of muyong, number of trees, certification from the barangay captain, and the amount of raw material needed for wood carvings are defined by the state.

4.5.3 Forest Governance Outcome

4.5.3.1 Impact of regulations on forest conditions

To encourage participation of upland dwellers in forest management, the number of trees to be planted in the CGIP is not regulated on either the community or national level as long as PO members develop the allocated land using sound ecological practices. Similarly, the MOA does not specify the number of trees to be planted in the LGIP. Therefore, the average numbers of trees per household as well as average number of trees per hectare (ha) is the largest in sitio A where farm lots are covered with forest plantations funded by government reforestation projects (Table 4.3 and Table 4.4). Table 4.5 also shows that there were no respondents who had fewer than the 100 trees in sitio A because all respondents' plots were planted with trees and they followed the regulations of their association. In sitio D, 50% of respondents' farm lots are covered with DENR watershed reforestation projects, so the average number of trees in terms of per household and per ha is the second-largest among the two government-initiated programs.

In sitios B, C, and E, where mostly crops are planted and located inside CBFM areas, there are fewer trees than in A and D, which are located adjacent to CBFM areas. Of these three, sitio B has larger number of trees than C and E because selling timber is very rare and the trees are cut only for home consumption because they have regular income sources such as mining. C has the lowest number of trees per household (Table 4.3). It might be that its association formulated *de-facto* rules which allow making charcoal, one major product for subsistence livelihoods; and average land holding is lower than that of B and E. Income from selling timber is occasionally a coping mechanism for some respondents in C and E when money is urgently needed, as for hospitalization.

In sitio E, a few members had already harvested trees for selling. Interestingly, two logging workers who remained in BOWA after the logging ban planted more trees and conserved more wild trees than new migrants. E therefore has more trees per household than C, although there are fewer households that planted few trees than in B and C. Nevertheless, average number of trees per ha is the lowest among the sitios where crops are mostly planted although total number of area (ha) is the largest (Table 4.4). This might be that new migrants who buy the land from original MOA members conserved only a few trees on their plots and there are no informal operational rules which control harvesting at the local level. The most popular planted species in both CGIP and LGIP are Melina (*Gmelina arborea*) and Mahogany (*Swietenia macrophylla*).

The respondents from the TFM system indicated that there were no internal or external regulations on tree use before 1996. This full range of tree rights without requiring permission from forest authorities allows communities to plant and protect trees through the generations to conserve water for rice fields, firewood for cooking rice, house-building materials, and making woodcarvings. Interview results indicated that no respondent had fewer than 100 trees (Table 4.5) although average number of trees per household and per ha is relatively different.

Trees can be classified into planted trees such as Pine (e.g., *Pinus kesiya*), Mahogany (*Swietenia macrophylla*), Alnos (e.g., *Alnus formosana*), and Melina (*Gmelina arborea*), and indigenous wild tree species such as Oak, *Omug*, *Ban* (for woodcarvings), *Labo* (wood carvings and house-building), *Almit* (fruit is food for wild animals), *Hanagti* (for firewood), and *Lacho* (for wooden posts). Each respondent had on the average planted and protected as many as 2898 pine trees, 1980 Alnos, and 1466 Melina. In accordance with MRP guidelines, cutting pine trees, either planted or wild, is prohibited.⁵ Executive Order

⁵ The guidelines for MRP do not specify why cutting pine trees is prohibited. In accordance with Calub (2005) and DENR Administrative Order 21 issued in 2000, benguet pine trees are classified as one of the premium hardwood species, for which harvesting and utilization is regulated, even on titled private land. Hence, DENR may want to conserve pine trees whether planted or wild.

23 prohibited commercial cutting of premium species. This might be unfair to the Ifugaos because they had been planting and using diverse indigenous species they wanted before government law was introduced.

In the communal property area of CGIP, the Federation regulates individual harvesting while the state regulates cutting indigenous trees since the Federation conserved the residual forest area. Interview results indicated that no respondent harvests trees from the communal area, except a few respondents who collect fuelwood. Trees are extracted for communal purposes such as building a school in sitio B and building a day care center in C. Because of strong exclusion rights enforced by cooperation among barangay officers, forests are well protected and maintained in the communal area (focus group discussion with barangay officers, 2010). According to inventory data lists (2010), 3891 planted trees (about 1875.55 cubic meters) will be harvested from the communal area of the three associations. CENRO-DENR thanked the federation for helping protect the remaining natural forests located inside the CBFM area (document from CENRO, 2012).

Under the co-management scheme, communal forests are managed jointly. In contrast to the CGIP, no tenure legitimates the whole watershed, so exclusion rights are not as strong as in the CGIP. Moreover, no local policies were created by PO leaders to manage the whole watershed (evaluation team report, 2009). Additionally, re-election of LGU officials in 2013 will weaken forestry regulation enforcement because officials have paid more attention getting re-elected than to enforcing rules to prevent illegal poaching. This situation creates a more open access regime particularly for residual forest areas and the area under the Program for Forest Ecosystem Management. One of the respondents, who live near a protected zone in the main watershed area, explained the residual forest situation as follows: *“There are fewer trees than before. They are smaller because the mother trees are felled. There was one tree per 3 m × 3 m area before. There is now one tree per 20 m × 20 m area”*. One of the PO officers reported that because it is impossible to enforce the law when circumstances favor illegal cutting, they would willingly return management rights for communal areas to government officials, either from LGU or DENR.

In the case of communal muyong, an interview with the son of a tribal leader indicated that people observed traditional unwritten rules not only in private muyong but also in the communal area, when he was young. Forty-seven percent of the respondents say their livelihood is woodcarving. Of those, 30% collect timber from communal and private muyong, while 21% collect from communal muyong only, 21% from private muyong only, and 14% from communal muyong and lowland. One 70-year-old respondent said that he harvested about five trees at a time from the communal area for woodcarving and planted five trees to replace them. In total he had planted more than 100 trees in the communal area. Interview results indicated that woodcarvers harvested trees as large as 30–50 cm in diameter, while some respondents harvested smaller trees for home construction. Traditional unwritten rules are likely to be abandoned by younger generations because of urbanization or more emphasis on utilization for income. All respondents said that forest resources in the communal area have degraded and trees are smaller because of continuous cutting.

Table 4.3 Descriptive statistics on number of trees per household

Sitios	N	Maximum	Minimum	Average	Std. Deviation
A	21	2142	120	705	278
B	16	3600	20	429	929.68
C	13	960	25	204	251.62
D	13	4000	32	702	1337.91
E	18	3000	12	325	709.37
F	8	2410	110	865	829.01
G	3	1250	250	677	515.88
H	10	1620	170	468	418.37
I	9	1306	102	452	419.77

Source (Field Survey, 2011)

Table 4.4 Number of trees per hectare

Sitios	N	Total area (ha)	Total number of trees	Number of trees per ha
A	21	30.47	14803	486
B	16	38	6857	180
C	13	22.37	2656	119
D	13	31.56	9128	289
E	18	56.33	5855	104
F	8	25.75	6919	269
G	3	5.5	2030	369
H	10	19.05	4678	246
I	9	6.85	4068	594

Source (Field Survey, 2011)

Table 4.5 Number of respondents with tree number ranges

System	Sitios	Tree number ranges per household															
		≤100		101-700		701-1300		1301-1900		1901-2400		2401-3000		3001-3600		3601-4200	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
CGIP	A	-	-	13	62	7	33	1	5	-	-	-	-	-	-	-	-
	B	10	63	3	19	1	6	1	6	-	-	-	-	1	6	-	-
	C	5	38	7	54	1	8	-	-	-	-	-	-	-	-	-	-
LGIP	D	4	31	8	61	-	-	-	-	-	-	-	-	-	-	1	8
	E	12	67	3	17	2	11	-	-	-	-	-	-	1	5	-	-
TFM	F	-	-	4	50	1	12	1	12	1	12	1	12	-	-	-	-
	G	-	-	2	67	1	33	-	-	-	-	-	-	-	-	-	-
	H	-	-	9	90	-	-	1	10	-	-	-	-	-	-	-	-
	I	-	-	7	78	1	11	1	11	-	-	-	-	-	-	-	-

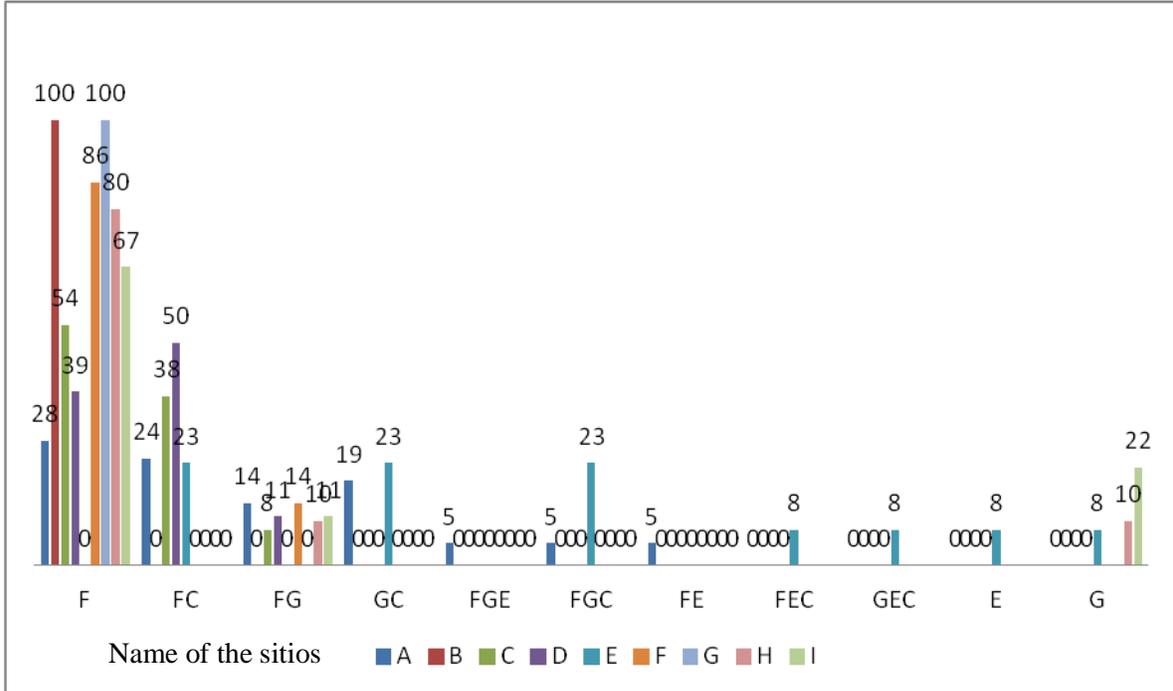
Source (Field Survey, 2011, 2012)

4.5.3.2 Impact of regulations on economic conditions

CBFM is fulfilling subsistence needs from daily consumption and household income from selling agricultural crops, fruit trees and forest products. Regarding subsistence needs for daily consumption, the respondents are dependent on fuelwood for daily cooking and crops and fruits for home consumption. In the context of fuelwood, sitios A and E which are located adjacent CBFM area has less dependent on fuelwood because they used other alternative energy such as charcoal, electricity and gas (Figure 4.2). In contrast, fuelwood is main fuel for household consumption for other villages which are located inside CBFM area: B, C and E and villages from TFM system. Interview results

indicated that 100 % respondents in village B depend on fuelwood for daily cooking and they collect it from their individual area. As mentioned earlier, there is informal property right to make charcoal in village C. Therefore, 38 % of respondents used not only fuelwood but also charcoal while 54 % used only fuelwood which are collected from individual area (Figure 4.2). In village E, majority of respondents used the fuelwood for daily cooking.

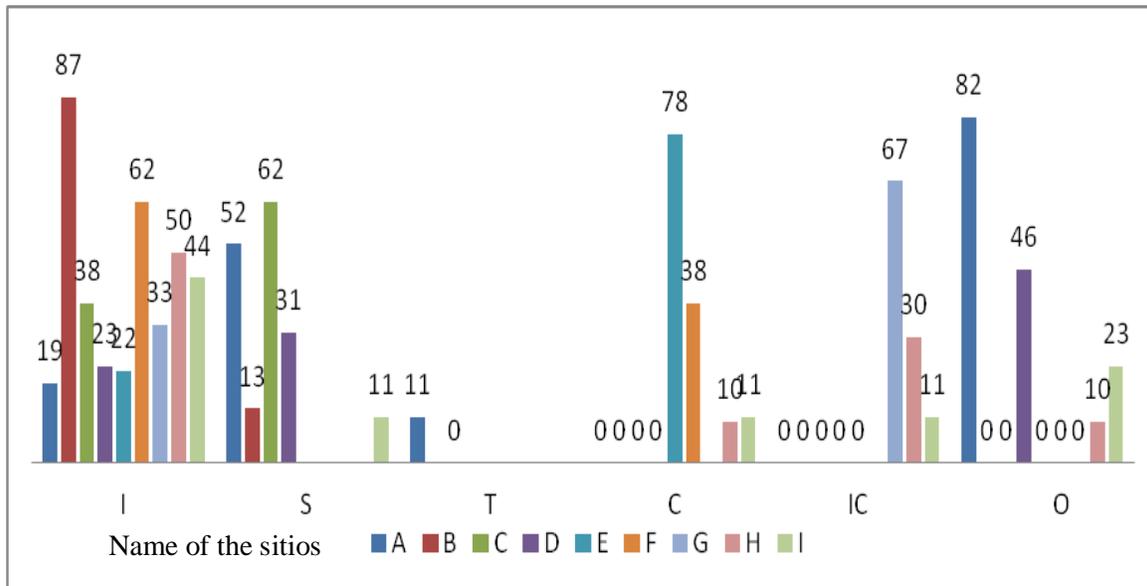
Unless respondents in CGIP whose collected fuelwood from individual area, the respondents in village E collected it not only from individual area but also from communal area (Figure 4.3). This is because there are *de-facto* rules in CGIP which regulate individual harvesting in communal area while there are no operational rules crafted at the local level in LGIP. In the context of TFM, majority of respondents depend on fuelwood for internal consumption and they collected it not only from private muyong but also from communal area because it is open access.



F= fuelwood, FC=fuelwood and charcoal, FG=fuelwood and gas, GC=gas and charcoal, FEG=fuelwood, electricity and gas, FE=fuelwood and electricity, FEC=fuelwood, electricity and charcoal, GEC=gas, electricity and charcoal, E=electricity, G=gas

Figure 4.3 Percentage of household energy consumption

Source (Field Survey, 2011, 2012)



I=individual plot (CBFM area), S=surrounding area, T=title land, C=communal area (CBFM area), IC=individual and communal area, O=others (charcoal, gas and electricity)

Figure 4.4 Percentage of household fuelwood collection from different sources

Source (Field Survey, 2011, 2012)

In the case of food consumption, the forest contributed non-cash income by providing food through AF system although self-consumption percentage is lower than selling (Table 4.6). As mentioned earlier, two government-initiated programs have given full range of tenure rights to crops and fruit trees and there are no regulation imposed on harvesting. Therefore, benefits go directly to the communities although average percentage of annual income per household is different. The data showed that income from selling crops is the largest income source for B, C, and E, whereas agroforestry is the main practice. Sitio D has some farm plots which are not plantation forest, so income from crops is larger than in A, where all respondents' plots are planted with trees. It was observed that in TFM crops are planted in very small plots (e.g., 0.002 ha or 0.003 ha) located near rice terraces or areas adjacent to muyong particularly for household consumption, except for one respondent of sitio G who plants cash crops.

Table 4.6 Consumption and selling percentage of crops derived from CBFM

Sitios	Self-Consumption (%)	Selling (%)	Total Product (kg)
A	35	65	52.76
B	8	92	3346.75
C	8	92	3120.70
D	5	90	535.54
E	10	90	1491.62
F	100	0	40.00
G	100	0	100.00
H	38	62	40.00
I	100	50	50.00

Source (Field survey, 2011, 2012)

Related to forest trees, there was a *de-facto* rule that allowed charcoal for subsistence income in sitio C. Therefore, the income percentage for charcoal is the highest among the study areas, while there are very few such respondents in other groups and no respondents under the TFM system (Table 4.7). In addition, 77% of respondents in sitio C sell lumber in furniture shops for subsistence income because they have no regular income sources like those in A and B e.g. mining. Hence, income percentage from selling lumber is higher than A and B.

For commercial tree harvests, communities must seek permission from the authorities. In the context of CGIP, the federation applied for resource use permits for 37 CSC holders and the communal property area in 2010. To guide this harvesting operation, the federation submitted all sets of required documents to the CENRO-DENR then the Environmental Management Bureau and Forest Management Bureau of PENRO and

RENRO-DENR. Although rules and regulations for implementing CBFMA issued in 2004 say that CRMF and the resource-use plan are the basis for issuing Environmental Compliance Certificate, in reality the initial environmental examination checklist formatted by Environmental Management Bureau is required (DENR, 2004). The total cost for processing all requirements for obtaining a permit for 37 CSC holders which applied in 2010 was 53,000 pesos (USD 11,778), including transportation, data encoding, inventory and official payment to PENRO-Environmental Management Bureau.⁶ Because of such bureaucratic requirements, the cutting permit was issued seven months after applying, even though it should have been issued within 15 days.

Aside from bureaucratic and technical requirements, harvesting technology crafted at the national level such as DENR-registered chain saws must be used, buffalos may be used to haul trees, and chain saws are permitted for converting logs into lumber to reduce environmental impact has limited on tree harvesting. At the local level, for instance, only 10 buffalos, each of which can only transport 9 or 10 logs per day, are available to hire because buffalos are shared with farming and there are a few households which hire buffalo. Therefore, larger trees of 35 cm DBH and above were prioritized for harvest and the actual volume harvested was 35.10 cubic meters from the total harvestable volume of 500 cubic meters (document from CENRO-DENR, 2011). Consequently, not all PO members included in inventory lists could get cash income from selling timber, but a few realized some cash income.

The regulations in LGIP are simple and easy to follow, and PO members can apply RUPs individually. There are no technical requirements such as ECC and criteria and indicators. Therefore, time required (about 1 or 2 weeks) for getting permits and processing costs (about 22 USD) is less than in the CGIP, and it is possible to create more favorable conditions for the flow of forest benefits to communities if DENR would legalize the

⁶ The exchange rate is 1 US \$ \approx 45 pesos as at 2011.

permits. The records of PGENRO indicated that there are 29 MOA members who applied for cutting permits through PGENRO from 1999 to July 2011. Because of the locations of planted trees, DENR does not want to issue permits formally; instead, cutting is verbally approved by PGENRO personnel. One respondent said that because of this informal system they legitimated cutting only after securing a certificate from the barangay office without following the guidelines, as they can sell lumber to furniture shops in the barangay. Some PO members, particularly households which transport lumber to other townships, directly applied to DENR in the name of title land as they are aware that an MOA is not allowable. Therefore, although interviews indicated that sitio E has the largest percentage of income from selling lumber (Table 4.7), the income is from illegal sources because they are not authorized users.

Insecure harvest rights might affect incentives for future tree planting. One of the past PO presidents, who had harvested trees in 2009, 2010, and 2011, described his experience in this way: *‘A National Bureau of Investigation employee wanted to inspect and have a share of timber after hauling the harvested trees, so policy should be clear not only on paper but also in practice, and paying 100 pesos to the barangay office is a large amount for him.’* Moreover, one of the PO leaders, who planted trees herself, stated: *‘Trees are not planted by the government. I paid 1000 pesos to DENR to use my harvest rights. It is expensive because I can buy one cavan (about 65 kg) of rice for that amount.’*

In the TFM system, people could decide the species and timing of a harvest whenever they needed wood for household consumption, and they could sell without any documents or permission until 1996. Therefore, benefits went directly to the muyong owner, either by selling timber or making woodcarvings, although there is *de-facto* control by CENRO-DENR over transport permits for finished products. After 1996, the state controlled resource use, and the total processing cost for muyong resource permits is about 49 USD. In accordance with the lists of permittees from CENRO-DENR in Lamut, CENRO processed the 221 applications for issuing cutting permits from 1996 to September 2011. However, Hangdann (2004) noted that most of the permits issued were for the

woodcarving industry or for the livelihoods of those engaged in the forestry industry. In the study area, interviews with woodcarvers indicated that the only people who applied for muyong resource permits were woodcarvers who live by the road and businessmen who transport finished products to other cities. People don't otherwise want to apply for muyong resource permits because of the cost and time limits, and because they own the trees. Three of the 30 TFM respondents sold trees and earned 30,000, 5000, and 80,000 pesos, respectively, based on number of trees without requiring any permission.

Table 4.7 Average percentage of household annual income per income source

System	Sitios	N	Average percentage of annual income per income source per household				Total	Total
			Selling crops	Selling charcoal	Selling lumber	Others	%	income (pesos)
CGIP	A	21	1.1	0.5	0.3	97.7	100	136,054
	B	16	61.0	1.9	0.1	37.0	100	149,491
	C	13	56.9	3.7	4.0	35.3	100	117,532
LGIP	D	13	13.5	0	2.2	84.3	100	151,931
	E	18	29.2	0.3	5.9	64.6	100	113,258
TFM	F	8	0	0	7.9	92.2	100	33,250
	G	3	0	0	3.1	96.3	100	22,666
	H	10	4.4	0	9.9	85.6	100	58,000
	I	9	0	0	0	100	100	45,150

Source (Field Survey, 2011, 2012)

4.6 Conclusion and policy implications

This chapter identifies role of property rights in decentralized forest management by

investigating individual and collective property rights in different devolution types held by communities; by assessing the nature of regulations and practices using three levels of rules. Then, the impacts of regulations on forest resources as well as socio-economic conditions of communities are analyzed.

Findings of the study confirms that central government as well as local government grants an individual all five of the rights which in turn, it can be said that local users are given full ownership rights which is the strongest form of devolution. They are empowered to manage the designated forest land as long as making sound ecological practices. The evidence from cases studies shows that CBFM programs support not only cash income but also non-cash income derived from consumption of crops and fuelwood. Income from AF crops supported livelihoods of the households. In the case of TFM, the people can decide how to manage their resource and maximize the profit although individual right holders are not allowed for selling or transfer of their property inherited from ancestors.

Comparing withdrawal rights for harvesting trees among government initiated programs and TFM system, the authorities for making constitutional, collective and operational rules for de-jure withdrawal rights are retained by the state in CGIP although Regional Director can make decisions on the amount of annual harvests. In the context of LGIP in which some responsibilities of forest management are transferred from the central government to local government by the virtue of local government code, the Provincial Government crafted the operational rules defined at the local administrative level. Nevertheless, partial devolution has taken place and the authority to make decision on issuing cutting permits has not clearly defined at the national level. Therefore, there is conflict between central actors and local government at the operational level. Among the three systems, the local people in TFM system are granted the most liberal and assured rights because they can devise operational rules in terms of quantity of resource use, timing of harvesting and harvesting technology. This make them sure the full range of tree rights.

On the communal forest areas, the cases showed that CGIP i.e. devolution to local communities, assign not only operational-level rights but also collective choice rights of

management and exclusion and communities also control the use of their forest at the local level. Such devolution from the central government to local organizations resulted in good forest management although there are variations in three associations. On the other hand, LGIP i.e. devolution to local government unit, grant to communities limited operational level-rights and the management of whole watershed area is driven by local government, which makes organizations non-functional in the long run. In the case of TFM system, everybody can access and harvest the trees. For continued existence of CBFM, case study confirms that devolution approach should allow local users not only rights but also authorities to modify operational rules at the local level.

Based on the cases of CGIP and LGIP, this study confirms that the authority of resource management would be given to the smallest unit in the hierarchy possible (Acheson, 2006). For instance, operational rules defined at the national level involve complex, costly processes to obtain permits which are issued by DENR regional director after checking of the required technical documents by 6 institutions, and therefore approval takes time. In contrast, if collective-choice decisions are made at the local administrative level, rules are simple and easy to follow because the policy is designed for a particular location.

The study reveals that one way to promote sustainable forest management is to address property right issues that constraint the flow of forest benefits to the local households and communities. One way to improve property right issues in CGIP is for the CBFM policies as defined at the national level to be enforced at the local level. For example, issuance of cutting permits should strictly follow the prescribed time frame (in accordance with policy, 15 days), and the Community Resource Management Framework should serve as the basis for issuing Environmental compliance certificate. Likewise, cutting permit authorization should be devolved to the PENRO-DENR to facilitate communication between PO leaders and DENR.

For the case of LGIP, study illustrate that policy should be clear not only on paper

but also in practice because MOA members are aware that harvesting planted trees is allowed. Insecure harvesting right discourages tree planting and may lead to informal rule-enforcement institutions, which could lead to excessive harvests because of high local timber demand. For instance, some respondents applied to DENR for cutting permits in the name of title land although it is planted inside the MOA area, while some members were allowed to cut timber after securing a certificate from the barangay office. Therefore, because timber harvesting happens anyway in a very unsystematic, ad hoc manner, DENR should issue cutting permits for planted trees when LGU endorse applications even though the land is a watershed area. This will require revisions of the law when it is beyond the autonomy of the DENR.

In relation to the TFM system, government officials should consider local people's traditional values and customary practices in the forest because some regulations may be unfair for the Ifugaos because they had been planting and using whatever the species before government law. Examples are DENR memorandum circular No. 02, which states that planted and wild pine trees are to be preserved (DENR, 1996) and Executive Order 23, which prohibits commercial harvesting of premium species.

Chapter Five

Comparison of the cases of Myanmar with the Philippines

5.1 Introduction

As mentioned in Chapter one, Philippines is one of the most advanced countries in terms of decentralization. In contrast, Myanmar where most of the Community Forestry initiatives had been conducted with the aids of the donors has slow progress. To achieve the people participation for sustainable development of forests, the uncertainty of property rights is one of the main constraints in Myanmar. Therefore, the contrasting experiences in these two regions which are located in South East Asia provided insights into how can improve community forestry in Myanmar with emphasized on property rights (Figure 5.1).

In this chapter, the third objective of getting policy implications for Myanmar in terms of property rights issues from the field experiences of Philippines were discussed. By applying SWOT analysis, property right issues from three CBFM programs- CGIP, LGIP and TFM - in the Philippines and two types of Community Forestry from Myanmar – AF and NF types were compared. The policies were regarded as external factors to generate opportunities and threats while the internal environment of POs in the Philippines and USGs in Myanmar represented strengths and weaknesses. The objective of SWOT analysis is 1) to compare the two countries cases and 2) to generate the strategy for the USG and PO.

SWOT analysis stands for ‘strengths, weaknesses, opportunities and threats’ (Table 5.1). SWOT analysis is a ‘convenient way of conducting a situation analysis or a diagnostic analysis of factors influencing a particular decision’ (Masozera et al., 2006). It is also an analysis of internal (strength and weaknesses) and external assessment (opportunities and threats) (Hill and Westbrook, 1997). It is crucial to identify the threat factors for any

collective entity or organization to ensure that these threats do not affect the sustainability (Viruthiyel and Kumar, 2008). In this study, the SWOT analysis is an approach used in the analysis of CBFM in the Philippines and community forestry in Myanmar through the analysis of POs and USGs' internal and external environment.

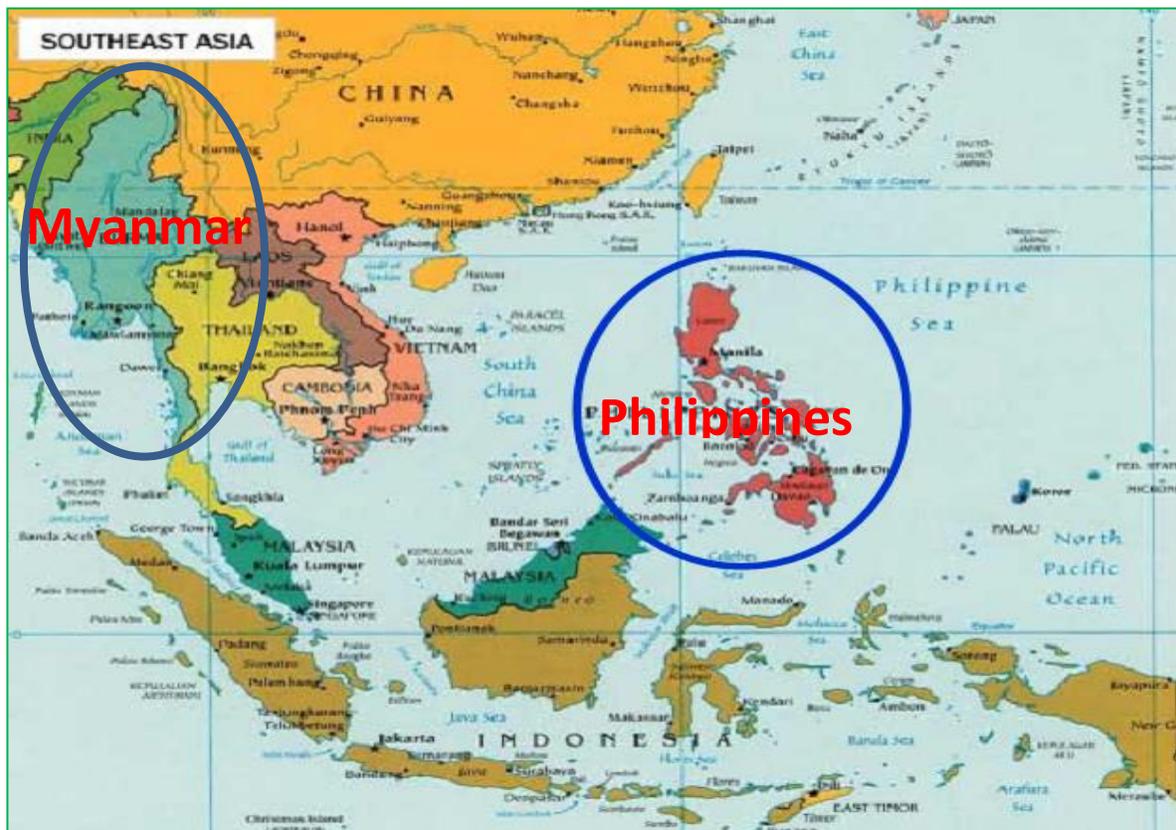


Figure 5.1 Locations of the Philippines and Myanmar

Source: Modified from Pulhin 2007

A strength=a resource or capacity the organization can use effectively to achieve its objectives	A weakness=a limitation, fault or defect in the organization that will keep it from achieving its objectives
An opportunity=any favourable situation in the organization’s environment	A threat=any unfavorable situations in the organization’s environment that is potentially damaging to its strategy

Table 5.1 Elements of a SWOT analysis (adopted from Karppi et al., 2001)

5.2 SWOT analysis on the cases of Philippines and Myanmar

5.2.1 Strengths

5.2.1.1 Central Government Initiated Program

In CGIP, three sitios (POs) are organized into one federation. The seven PO leaders, known as ‘Executive Officers, are composed of President, Vice-president, Representative President, Executive Secretary, Treasurer, Auditor and Project Manager. The functions and powers of the PO leaders are defined by community organizer, local DENR staff as well as PO members. These rules also involve how those persons are selected. Depending on the nature of collective decision-making process, there are three assemblies: general membership assembly, general assembly and executive assembly.

All decisions made by collective choice body must be approved by communities in general assembly which is held every twice a year (June and December). There are resolutions, policies, rules and regulations of federation such as benefit sharing, harvesting trees and conflict resolution mechanism. Operational rules concerning harvesting planted and naturally grown trees in private in both individual and communal areas are defined by collective-choice body of the federation. In making some operational rules e.g. charcoal

making, not only the members of collective choice body but also the members who derived their livelihood from charcoal making are also participated in making rules. Developing such internal regulations is one of the requirements defined at the national level.

In collective decision making body, women are empowered to participate. Presently, there are five women who are executing leaders.

5.2.1.2 Local Government Initiated Program

In LGIP, two sitios are organized into one Association, called Barobbob Watershed Associations. Like the organizational structure of CGIP, there are also seven PO leaders: President, Vice-President, Representative President, Executive Secretary, Treasurer, Auditor and Project Manager. Similarly, the functions and powers of the PO leaders are defined by constitutional rules. Rules are clear about selection of committee members and timing of election. In selecting PO leaders, women are also empowered to participate in election.

5.2.1.3 Traditional Forest Management System

Unlike PO members in government initiated programs, people in Ifugaos are not the migrant people who encroaches forest lands. They had been living in their village since they were born. They personally value on muyong because they inherited them. In addition, they look for the forest not only for present generation but also for future generation. In their mind set, they have been inspired by the parents to plant and nurture trees by saying: 'Having only rice terraces is not enough,' 'How can you cook your food?' 'You cannot eat without fuelwood,' and 'We have to plant for the next generation so they can use it when they build houses.' Moreover, people in Ifugao have strong sense of ownership of tree, for which they plant it; maintain it; they have liberty to make operational rules of how much individual can harvest, when and where they may exploit and what tools they will use without reference to any higher collectivity.

5.2.1.4 AF and NF types of CFs

AF types of CF, in which CF area is divided into plots and each member has his/her owned plot, tree plantings are done individually while seedling distribution, fire protection and boundary making were done collectively. In this case, leaders divided 36 USG members into small working groups depending on the location of individual lot to carry out forest operations. For USG in NF types of CF where forests are managed collectively, all forest operations are carried out by sharing workload among 30 members of USG. Depending on the nature of the work, the nature of collective action is different. For example, each member in group Y of NF type CF was assigned to dig 45 holes per household based on collective decisions for planting tree seedlings. Some USG members could not join the specific time set up by the group because they have another work on that day. In such case, those people could do their quota when they are free. In the case of pruning, there was no specific workload sharing among members. In this case, all members helped each other with activities when some households were not able to join together.

5.2.2 Weaknesses

5.2.2.1 Central Government Initiated Program

As mentioned in Chapter 4, land not owned by individuals became communal area, which is estimated to be 1500 ha of residual forest that is federation's communal property, while areas of about 50 ha, 100 ha, and 80 ha are under three associations respectively. Because of the existence of internal regulation, each association has the right to modify their use rules over time. In carrying out forest operations, however, collective activities by PO members was rarely practised. For example, federation applied cutting permits to harvest the exploitable trees in private property area as well communal area in 2010. The total harvestable trees from communal area were about 1875.55 m³ (CENRO, 2011). In selecting and measuring the trees which have desirable girth limit for harvesting, PO leaders arranged to hire the labour for both private and common property area without involvement of PO members in any harvesting activities.

5.2.2.2 Local Government Initiated Program

The watershed management plan generally defines operational rules for common property area such as the place where communities can exploit the resource, the season of harvesting and kinds of resources. Those rules are defined by the PLGU personnel and Past leaders but these are not changed since it has been formulated. Even though there are internal regulations in LGIP developed by communities, they are not working rules. Unlike CGIP, there are no resolutions, policies, rules and regulations of federation such as benefit sharing, harvesting trees and conflict resolution mechanism developed by the PO. It might be that communities are not empowered to manage the communal forest area and the management of watershed area is driven by local government.

5.2.2.3 Traditional Forest Management System

In the context of TFM, individual household work specific areas within the framework of the territory for their needs of forest products and conservation of water. Regarding indigenous knowledge of forest conservation, parents taught the children while they were working in *muyong* since they were young and therefore they had been nurtured by their parents to plant and maintain the trees for generations. This existing strength may disappear in the future because of urbanization and other alternative job opportunities. In accordance with traditional concept of inheritance, *muyong* will be inherited by the first or second child without trying to consider the perceptions of other third or fourth child. This is because it is assumed that the first and second children will care parents when they are aged. Therefore, the third or fourth child may inherit property that was added as new property by parents, or they may not inherit if the parents have little land, either *payoh* (rice fields) or *muyong*. Again, only the heir has the full bundle of rights, while other family members are allowed to access and harvest the trees after asking permission from the heir. This situation may hamper to maintain the traditional concept of learning together with parents and children if the heir has other alternative work e.g. government staff.

5.2.2.4 AF and NF type of CF

At the community level, there is collective-choice decision making body designed by CFIs which is called “Management Committee” composed of Chairman, Secretary and three Members. Therefore, there are five leaders in each USG of community forestry. The leaders of group A and group Y in AF and NF type of CFs could function well the leadership role in implementing management activities. However, there are no internal rules which prescribe the authority of each leader, the frequency of elections, who can run and who can vote which are required for succession of local leadership. Moreover, CFIs do not prescribe any section to legalize such internal regulation and women involvement in collection choice body.

5.2.3 Opportunities

5.2.3.1 Central Government Initiated Program

By issuing CBFMA, PO members are granted rights of access, withdrawal, management and exclusion. Under the mother tenure of CBFMA, individual PO members are granted full ownership rights by awarding CSC. In order to make the best use of these granted rights, the legal framework of CBFM creates favorable environment for adoption CBFM at the local level.

In the case of access and withdrawal rights, it can be said that POs members have opportunity to access not only degraded forest area but also commercially valuable forest because about 1,500 ha of communal forest area in CGIP are Dipterocarpus forest where there are many valuable species. Forest products are allowed to harvest not only for subsistence needs but also for commercial purposes. For commercial harvest of planted forest trees, authorized procedure for obtaining cutting permits had been clearly stated in Regional Memorandum 01 because the authority was devolved to the Regional Director of DENR.

As for management rights, PO members are permitted to rehabilitate the land by planting agricultural crops, fruit trees, trees or by making fish-breeding pond to enhance participation and support food security. In order to ensure such rights, section 24 of DAO 29 provide the POs to decide appropriate land use system with the assistance of the CENRO. Community level as well as national level does not regulate number of trees to be planted as long as PO members develop the allocated land consistent with sound ecological practices (documents from individual CSC). Interview results with DENR personnel from PENRO and CENRO indicated that they accept planting fruit trees (e.g. Orange, Mango) as forest trees because communities will get not only fuelwood but also food and income. Moreover, it is ecologically good because people will not cut the fruit trees as long as it generates income. These broader objectives of CBFM at the national level as well as local level created flexible management rights and the management goal is moving beyond the subsistence needs although the policy is not allowing *Kaingin* (shifting cultivation) and clear cutting.

Based on the field survey in three sitios of CGIP, it was observed that communities manage the communal area with their own decisions because they have authority to modify the management options to maximize the resource use to suit local conditions, although the Community Resource Management Framework is jointly prepared by CENRO concerned, project member and PO members. Section 28 of DAO 29 also allows the POs to develop the portions or the entire CBFM area consistent with the Community Resource Management Framework by entering into agreements or contracts with private or government agency.

Exclusion rights are ensured because PO members are able to exclude or control the access of outsiders to the resource. In order to support legal mechanism and strong institutional power to exclude outsiders, section 26 of DAO 29 states that the DENR shall deputize qualified PO members as Deputy Environment and Natural Resources Officers to apprehend illegal loggers and confiscate illegally cut timber. Additionally, the barangay officers as well as local DENR recognize the power of the federation to apply their internal

rules to PO members as well as outsiders. The government creates section under the activities in the implementation stage to legalize such internal regulations.

In case of above granted rights are terminated without the fault of the PO members, section 26 of DAO 29 clearly spell out compensation that all improvements made in CBFMA area holders will be compensated as per market value assessed by government assessors or qualified third party.

To support livelihood activities of PO members, DENR-CENRO provided income generating projects by contracting different development activities with POs with the financial assistance from the government. Example of such activities are: reforestation and agroforestry project from the Pro-Poor project and Upland Development Program where the scheme was household/family-based in 2009 and Integrated Agroforestry and Bamboo Plantation where the scheme was community-based by supporting P 1,067,000.00 in 2011. Training on bamboo propagation and team building was also conducted by the DENR. In addition, the federation established institutional linkage with Local government units, department of agriculture, department of public work and highways, and academy such as the Nueva Vizcaya State University and Saint Mary's University to get technical and financial and seedlings support. The government creates section 2 and 37 in DAO 29 which mentions DENR, LGU and other government agencies to support local communities in managing forest by collaborating NGOs and other private entities and to provide financial assistance.

5 As a part of the devolution initiative under the 1992 local government code, the Regional Director of the DENR devolved to the Nueva Vizcaya provincial government in 1993. In accordance with one of the objectives of CBFM, promoting equitable distribution of forest benefits among communities and occupants of forestlands; forest occupants in watershed areas are realized as the partner of Provincial Government under co-management scheme (document from MOA, 1997). Under this scheme, PO members are permitted rights of access, withdrawal, management, exclusion and alienation on individual plots whereas communal areas are jointly managed. Of the total CBFM area of 439 ha, there are about

152.62 ha of individual plots whereas others lands such as residual forest (about 167.10 ha), plantation forest (7.9 ha), reforestation area (11.65 ha) and grasslands (45 ha) are communal areas (PGENRO, 1998).

As for individual plots, PO members can harvest variety of Agroforestry products such as crops, rice, fruit trees and planted forest trees for both subsistence needs and commercial purposes. Section 3-1 and 3-2 of MOA legalize de-jure withdrawal rights of extracting such products. The authorized procedures for obtaining cutting permits are simple and easy to follow for PO members because they are defined at the local administrative level for a particular location.

As for the management rights, PO members are allowed to develop the designated portion of forest lands within their decisions. Although watershed management program prepared in 1989 proposed the cropping patterns depending on topography, PO members can modify the desired species as they need. It was unnecessary to endorse the local government as well as the PO leaders for any changes of improvement. Exclusion rights to exclude others from using resources are one of the privileges of PO members. As per Article VI of MOA, PO members are permitted to transfer or mortgage the right in case of money is badly in need. In case of granted rights are terminated not due to the lack of PO members, they will receive compensation on all improvements as per market value assessed by government assessors or qualified third party.

In the context of communal areas, the co-management scheme generates opportunities for the PO members to extract specified forest products and collaborate in management and protection of watershed area. Section 7 of MOA legalizes such rights and responsibilities of the PO while watershed management program identifies harvestable forest products. As a forest management incentive opportunity, PGENRO gave financial support from 20 % development fund through ENRO for reforestation activities of communal watershed areas. From this 20 % development fund, PO members who participated in reforestation activities are provided by labor costs.

5.2.3.2 Local Government Initiated Program

As a part of the devolution initiative under the 1992 local government code, the Regional Director of the DENR devolved to the Nueva Vizcaya provincial government in 1993. In accordance with one of the objectives of CBFM, promoting equitable distribution of forest benefits among communities and occupants of forestlands; forest occupants in watershed areas are realized as the partner of Provincial Government under co-management scheme (document from MOA, 1997). Under this scheme, PO members are permitted rights of access, withdrawal, management, exclusion and alienation on individual plots whereas communal areas are jointly managed. Of the total CBFM area of 439 ha, there are about 152.62 ha of individual plots whereas others lands such as residual forest (about 167.10 ha), plantation forest (7.9 ha), reforestation area (11.65 ha) and grasslands (45 ha) are communal areas (PGENRO, 1998).

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5.2.3.3 Traditional Forest Management System

In the context of TFM, the rights of access, withdrawal, management and exclusion are inherited from the ancestors and transfer of rights is traditionally respected by communities within the cultural vain. Unlike individual right holders of government initiate programs who have full ownership right, selling or transfer of right is traditionally prohibited in TFM. People in the TFM system have harvested the trees for home consumption, selling lumber and woodcarvings since the time of their ancestors. After the 1970s, sales of woodcarvings boomed and there was *de-facto* control by CENRO over transport permits for finished products (e.g., carvings, handicrafts, and novelty items). The issuance of DENR memorandum Circular No. 02 in 2006 is an opportunity to legalize processing rights for woodcarvings.

5.2.3.4 AF and NF types of CF

In Myanmar, USGs are granted rights of access, withdrawal, management and exclusion by the issuance of ‘CF Certificate’. The CFIs do not impose restrictions on cutting naturally grown trees although a standing *Teak (Tectona grandis)*; on any land is the property of the government as stated in forest Law 1992. The marketing of planted trees

or naturally grown trees could be permitted with a permit from the FD although digging minerals, sand, stones and soil is prohibited. Additionally, benefits derived from CF are not necessary to share to the government even though there are some forest plantations funded by the international donor and FD. USGs in both AF and NF types of CF are provided seedlings. To provide such supports, section 17 (a) and (b) of CFIs are created.

5.2.4 Threats

5.2.4.1 Central Government Initiated Program

As mentioned earlier, PO members have opportunity to access not only degraded forest areas but also commercially valuable forest because about 1,500 ha of total CBFM area of 3,000 ha is residual Dipterocarpus forest. After over 10 years of protection, the forest conditions in natural forest have improved and the forests remains intact (CENRO, 2011). As the national forest policy related to harvesting wild trees, however, change frequently and POs are not allowed commercial harvest of wild tress as per Executive Order 23 since 2011.

In the case of planted trees, obtaining resource use permits involved preparing six technical documents and the approval takes about seven months, because it is issued by the Regional Director. POs are needed to submit all set of required documents to the CENRO, then the Forest Management Bureau and Environmental Management Bureau of PENRO and Regional Environment and Natural Resource Office. Consequently, the total cost for getting approval is as high as USD 11,778. Also, there is a threat that harvesting technology crafted at the national level has limited tree harvesting because of its regulations to reduce environmental impact. They are: DENR-registered chain saws must be used, buffalos may be used to haul trees, and chain saws are permitted for converting logs into lumber.

5.2.4.2 Local Government Initiated Program

The cases of LGIP shows that operational rules such as authorized procedure, amount of harvest and harvesting technology, for planted trees on individual plots are defined by the Provincial Governor in line with local government code. However, devolution does not determine who have the power to issue resource use permit although local government unit has the authority to create new collective choice units for the management of small watershed area and communal area. Because of lack of clarity about devolving cutting permit at the constitutional level, there is power conflict between the central government and local government at the operation level because central actors don't want to devolve the authority. Such situations create threat to individual PO members to utilize forest trees legally although section 2 of MOA stated that the management agreement covers to utilize the planted trees.

According to the section 7-1 of MOA, POs are supposed to implement the Barobbob watershed management plan prepared by the PGENRO and past PO officers. Then, PLGU will assist in the rehabilitation of critical areas and reforestation of denuded areas under the co-management scheme. In practice, the management of watershed area is dominated by PGENRO and PO members are not provided to modify the management options to suit local conditions. Either Section 7 of MOA or watershed management plan does not legalize such authority. The multi sectoral team which evaluated on the performance of this CBFM program revealed that lack of local policies formulated by PO leaders to manage the whole watershed area weakens the function of organization in the long run.

In addition, PO members are not supported legal mechanism and institutional power to exclude outsiders from using resources on communal areas ; whereas, section 7-3 of MOA stipulates that BOWA have obligations to co-ordinate with PGENRO to prevent unauthorized exploitation of natural resources.

5.2.4.3 Traditional Forest Management System

The DENR memorandum circular No. 02, which is also called MRP) guidelines, provides legal opportunity to process finished products, albeit, regulations incorporated with this right will harm the traditional practices of muyong owner. This is because the policy prohibited cutting pine trees either planted or wild. The policy may hamper the sustainability of muyong because Ifugao people had been plating and using diverse indigenous species before government law was introduced.

As per MRP, in addition, communities are requested to produce and plant 10 seedlings of forest trees for every tree cut. Informal interview with woodcarvers indicated that local people do not like such external rules because it is not appropriate with local conditions. In accordance with the nature of muyong system, tree seedlings are not required to plant after cutting the trees.

5.2.4.3 AF and NF types of CF

USGs have the rights to manage marketing of surplus forest products that can be sold out to non-members of the village, outside of the village and also transportation of forest products in accordance with forest law section 23. Although USGs are allowed to harvest the forest products, the concept of community forestry defined in section (2) is not allowed large scale forestry operations to supply wood-based industries. In addition, there are no clear regulations defined at the constitutional level, which define the authorized procedure, the kinds of trees; what tools and techniques are permitted in harvesting has not yet designed.

Regarding with management rights, section 19 of CFIs stipulated prohibited activities inside CF area. In line with this section, USG cannot clear fell the forest and cannot change in land uses in terms of digging minerals, building living house and gardening or shifting cultivation whereas agroforestry was allowed. In practice, however, it was regulated spacing of trees including agricultural crops is to be not less than 12 feet (COMFORT News Letter, 2004). Through involvement in COMFORT, it was also learnt

that communities prefer to plant fruit-trees or non-timber trees for income while FD personnel prefer to plant forest trees. This regulation may narrow the *de-jure* management of communities over the improvement of forest land to enhance food security as well as intermediate income. Furthermore, CFI stated that if USG violate the instructions issued for the CF, forest laws and regulations periodically issued by the FD, FD will terminate the managerial powers of community forestry.

The section 25 and 26 of CFIs stated that income derived from CF could be mainly used for the development of CF and only surplus income could be used for social welfare and economic development of members of the USG in line with the wish of the members.

In the case of exclusion rights, “Community Forest Establishment Certificate” serves as legal document to exclude outsiders from using resource for both AF and NF types of CFs. In Myanmar, CFIs a departmental order and community forestry has not yet stipulated in forestry law which is required to be secured and ensured rights and responsibilities of USG. Even CFIs do not prescribe about the authority related to protection and conservation of CF area. As a consequence, there is uncertainty of exclusion rights as well as legal status of USGs particularly after termination of the project was fragile. For example, management right in AF type CF is granted to individual member so each user has the right to exclude others. In NF type, management right is vested in a community thus the USG has the right to exclude non-members from the use of resource. NF types of CFs were located in public forest land areas of the Dry Zone where there is rival groups to compete resource in terms of fuelwood or grazing area. Therefore, the enforcement of *de-jure* exclusion right plays a crucial role to continue CF activities than AF types of CF. However, this *de-jure* exclusion rights is uncertain because there was no legal mechanisms to settle the disputes either encroachment of the land or illegally cutting of forest trees. Moreover, non-members in group X are getting interest in CF because authority recognizes the management and exclusive use rights. During the project, enforcement of exclusion right was relatively strong with the co-ordination with village head as well as support from FD. After the termination of the project, however,

enforcement of exclusion rights are threatened due to the lack of strong enough power at the local level. The village head himself become rival user to compete the rights.

5.3 Discussion

5.3.1 Philippines cases

Among the three cases in the Philippines, PO members in CGIP and LGIP are granted bundle of property rights through adoption of CBFM policies whereas people in TFM system are inherited. Comparing two government initiated programs: central government and local government, the nature of policy which support opportunities as well as create threats to the POs varies.

Following the Executive Order 263 and Executive Order 318 formulated at the national level, the legal framework for CBFM had been designed by issuing DAO 29 in CGIP. This guideline clearly identified secure legal rights: what are the rights are, the issue of compensation in case of rights is taken away, legal recognition of power of the POs, providing legal authority to apply credits, subsidies, enter into contracts with outsiders, collect fees and enforce rules, and legal power to protect outsiders. In addition, POs are provided flexibility in planning and management of both individual and communal areas. Despite of such opportunities, the rules of cutting trees are defined by the national level which hampers flow of forest benefits to the POs because of too much instructions and regulations.

The PO in CGIP has the ‘strengths’ such as existence of internal regulations which define the authority of collective choice holders, how persons holding collective choice decisions are selected and therefore rules are clear for local leadership succession. As a consequence of collective choice action, locally crafted rules to govern the forest resources which can change over time has resulted good management. Another strength is the women have authority to be take part in collective choice action. Even though PO in CGIP posses above mentioned strengths, implementing management activities collectively was very rare.

In the context of LGIP, the DENR devolved CBFM area to the Nueva Vizcaya Provincial Government by the virtue of local government code 1992. Unlike the CGIP which accompanied clear guidelines for implementing CBFM, there are no such guidelines defined at the national level in LGIP. Following the Executive Order 263 calls for promotion of equitable distribution of forest benefits among communities and occupants of forestlands, PO members are granted full ownership rights on individual plots, for which MOA is awarded to each individual. Based on the cases of LGIP, however, it can be said that co-management strategy is designed to share management and protection obligations to POs without giving authority to modify management options and providing legal power to prevent outsiders. Further, authorized procedure related to issuing cutting permits does not specify in devolving authority to local government units.

The PO in LGIP also has the strengths such as existence of internal regulations which define the authority of collective choice holders, how persons holding collective choice decisions are selected. Therefore, the rules are clear for succession of leadership. On the other hand, there are no internal regulations devised by PO leaders in LGIP; and they are not authorized to make collective choice decisions on governing communal area.

In the case of TFM system in which rights of access, withdrawal, management and exclusion are inherited from ancestors, the most obvious opportunity is legal processing rights for finished products by providing muyong resource permit. Although the policy is favor for the livelihood of communities, however, this opportunity may also hamper the customary practice of muyong by regulating cutting pine trees, one of the most common species in muyong and by introducing external rules which is not suitable with existing natural regeneration. In the case of communal area, the traditional unwritten rules of muyong are threatened by urbanization or more emphasized on utilization for income.

Unlike the cases of CGIP and LGIP in which private property is managed under the common property framework, communities in TFM system work on specific area individually and therefore there are no internal regulations among individuals. The

important strengths of muyong observed are sentimental value on the land which is culturally and environmentally important, consideration on future generation and sense of ownership on trees. The weakness is that the practice of learning together with parents and children is likely to decrease because of alternative livelihood options.

5.3.2 Myanmar cases

In Myanmar cases, both of AF and NF types of CF were initiated by the FD and JICA following the CFIs although patterns of management are different. In AF type, rights of access, withdrawal, management and exclusion are granted to individual member while these rights are vested in a community in NF type. The CFIs provides opportunities such as seedlings supports, exploiting forest products, allowing agroforestry in designated portion of forest lands and prevent outsiders from using resources. Nevertheless, CFIs do not clearly design to support secure legal rights: what rights are allowed to USGs, the issue of compensation in case of termination of CF without the fault of USGs, legal mechanism to protect outsiders and authority to make and enforce rules. Further, USGs are not provided to decide on how to rehabilitate the land including what type of trees and crops to plant. Although there are such threats in CFIs that need to overcome, participation of USG members in management activities are ensured by strong leadership. The weakness is that there are no internal regulations which define succession of leadership and the authority of collective choice holders. Further, women's participation in collective choice body is rare.

5.3.3 Philippines and Myanmar cases

In the Philippines, CBFM has clearly enunciated as national strategy in the sustainable development of country's forestlands (Banerjee, 2000). Additionally, Executive Order 318 empowers local communities to plant both of high-value trees and non-timber trees crops with the aim of improving economic as well as ecological benefits. A change in political will has been accompanied with clear rules and regulations for exploiting opportunities for the POs. According to the basic principles of designing legal framework described by Lindsay (2000), it can be said that the legal framework for CBFM has been

attempted to design secure legal rights and flexibility in planning and management. For example, the rights granted to POs are clearly defined in DAO 29; the issue of compensation is addressed in section; legal authority was supported to protect outsiders from using resources; Executive Order 263 and section DAO provide a way for the POs for applying other incentives through institutional linkage with other departments concerned or entering into contracts with outsiders; POs are provided authority to modify management options that fit local physical and socio-economic conditions; recognizes the formulation of internal regulations. On the other hand, the authority to modify operational rules is regulated by the national authority and some policies defined at the national level are not enforceable at the local level; which are regarded as external 'threats' to enhance the possibility of achieving SFM.

In the case of Myanmar's policies which are regarded as external factors to provide opportunities to USG, community forestry has not yet spelled out in the legal body of forest law enacted by the General, Chairman of the State Law and Restoration Council as well as forest rules approved by the Ministry of Forestry. The existing community forestry instructions were issued by the FD and the existing instructions itself did not provide secure property rights to USGs. As a result, even though USGs have opportunities such as 1) seedlings and technical support from the FD, 2) benefits are not necessary to share to the FD and 3) no regulation on harvesting naturally grown trees, there are some threats. They are: 1) CFIs did not prescribe clearly about the commercial harvest of forest products and authorized procedure to issue resource use permit, 2) management decisions are emphasized on forest trees without considering the needs of USG members, 3) There was no legal mechanism to punish the encroachers, even they are given the right to exclude non-members 4) CFIs did not recognize the power of the USG to apply its internal rules to outsiders.

In the context of communities, both of PO in the Philippines and USG in Myanmar have the leaders, who are called 'People Organization Officers' and 'Management Committee' respectively. In this case, PO has internal regulations which defined the

authority of leaders and how persons holding collective choice decisions are selected, whereas such rules are not existed in Myanmar. Moreover, the women have authority to take part in collective choice decisions in PO while role of leaders is dominated by man in USG. Comparing collective activities between PO and USG, the forest management activities carried out by collection action was very rare in Philippines, whereas, the management tasks are implemented by sharing workload among USG members.

5.4 Conclusion

To conclude, decentralization with devolution to local communities in Philippines seems decentralization without devolution of authority in which communities are granted rights and responsibilities, but they are given little or no authority for the commercial harvest of forest resources use, except TFM system prior to government intervention. Because of strong political will of the government in the Philippines, the strategy is favourable for adoption of CBFM at the local level when combined with internal strengths. In order to increase the chance of SFM, however, the obvious threats of regulation on resources use should be improved, which are also important for continuation of forest management activities.

In the case of Myanmar, CFI stipulated the rights of access, use, management and exclusion, yet, withdrawal rights is limited for subsistence needs. Additionally, community forestry has not yet legitimated at the national level so exclusive use rights at the national level is unsecure. In Myanmar case, it could be said that decentralization was another form of centralization with little autonomy and few new benefits which emphasized on environmental conservation. In order to improve community forestry in Myanmar, strong political will of the government is an important prerequisite. Then the existing strategy of community forestry should be improved by overcoming the threats and weaknesses. The proposed strategy through this study will be discussed under the policy and implications sections of Chapter (6).

Chapter Six

Conclusion and Policy implications

6.1 Initial participation in CF activities

To assess the initial participation of USG members in management activities, analytical framework that distinguishes four groups of variables; economic, social/institutional and physical factors that appear relevant to study area of Myanmar context were developed. Under the AF type, initial participation was firstly conditioned by economic factors because of its immediate benefits under good market conditions. On the other hand, this also creates less participation in tree planting because forest trees are long term benefits. Research showed that these negative effects of economic factors are mediated by social-institutional factors by promoting rule awareness of planting crops and trees through decision making process and functioning by good leadership which is affected by leaders' involvement in farm work that requires monitoring and participation in group work and setting an example in tree planting.

Under the NF type of CF, in which economic benefits are not yet received, the level of collective resource management correlates with respected leaders, participatory decision-making processes and prior experience in traditional forest management. Without such pre-conditions, physical factors seem to be a contributing factor of poor participation in NF types, particularly for the USG members who mainly participated in management activities.

6.2 Role of property rights for continuation of CF activities

As mentioned in Chapter 4, many studies indicated that property rights play an incentive to continue forest management activities as well as to make long term investment (Meinzen-Dick et al, 1997; Hanna, 2001; Agrawal and Ostrom, 2001; Pagdee, 2006; Katila, 2008). This study assessed how property rights affect continuation of forest management activities by comparing three systems of CBFM in the Philippines: CGIP i.e.

decentralization with devolution to local communities, LGIP i.e. decentralization with devolution to local government units through co-management scheme and TFM systems. Comparing three systems, communities in CGIP and LGIP have over 10 years experience in CBFM plantation, whereas, communities in TFM system have experienced in forest management for many generations.

In accordance with Schlager and Ostrom (1992), there are five bundle of rights: access and withdrawal (operational rights), management, exclusion and alienation (collective choice rights) and the person who holds the collective choice right of management and exclusion can devise the operational rights. This concept is realized in TFM system and therefore the local people in TFM system have the most liberal and assured rights particularly in relation to tree ownership.

Comparing with CGIP and LGIP in which *de- jure* rights are granted by the central government and local government respectively, CGIP have well-defined property rights regime than LGIP. This is because central government devolves not only operational rights but also collective choice rights of management and exclusion to communities, whereas, such collective choice decisions in LGIP are driven by the local government under co-management strategy. The difference in such devolution between CGIP and LGIP has resulted in good forest management in CGIP which would be able to help SFM. On the other hand, limited devolution in LGIP has weakened the function of local organization on the long run although the initial participation was good. If good forest management continues, the possibility of SFM would increase in CGIP, but it is difficult to predict at this moment because they could not devise the operational rules for commercial harvests, which is controlled by higher level actors.

6.3 Getting implications for improvement of property rights issues

SWOT analysis between CBFM in the Philippines and Myanmar indicated that state law should be designed to develop the strategies which will promote continuous participation in CF activities. Lindsay (2000) revealed that the state laws and legal

institutions may only marginally effect on the success or failure of CF management compared with others political, social, economic and ecological variables, but ‘community-based management systems almost never exist in a state of pristine isolation’. Today, the formal legal environment becomes increasingly important because natural resources are the focus of increasing conflicts around the world as well as growing threats from outside or within communities. Based on the lesson learnt from the Philippines, therefore, the following sections will provide policy implications to improve the threats and weakness of community forestry in Myanmar.

6.3.1 Policy implications for improvement of Community Forestry Instructions

In order to make the best use of existing ‘opportunities’ of community forestry such as USGs are not required to distribute any of CF activities to the FD and the Department provides seedlings of trees to USGs, community forestry program should allow not only fuelwood plantations but also commercial plantations to USGs. Some communities are interested in establishing commercial Teak plantations (Tint et al., 2011). Although the government promotes citizens’ participation in plantation forestry, only large scale organization participates whereas it is difficult for local people to get a place in such profitable enterprise (Maung and Yamamoto, 2010). By allowing commercial plantations in community forestry, it will enhance the lives of local people from selling timber as well as it will promote equitable distribution of forest benefits to forest occupants.

Despite of CFIs allow withdrawal rights for harvesting forest products to USGs, commercial harvesting is prohibited. According to the CFIs (1995), community forestry means forestry operations in which the local community itself is involved; such as: 1) establishment of woodlots where there is insufficient fuelwood and other products for community use and 2) planting of trees and exploiting of forest products to obtain food supplies, consumer products and incomes at farmers level. This concept of community forestry is not allowed commercial harvest of forest trees. Further, CFIs mention that community forestry is not a large scale forest operation. In order to overcome the ‘threat’ of prohibition of commercial harvest of forest trees, therefore, the scope of CFIs should

allow commercial harvest to supply wood-based industries. If necessary, FD shall issue additional orders for commercial harvest of forest trees and NTFPs including authorized procedures for obtaining cutting permits and regulations to control over-harvesting. Based on lesson learnt from the Philippines, nevertheless, too much instructions and regulations reduce the flow of forest benefits to communities.

To expand the *de-jure* management of communities over the improvement of forest land, initiatives of CF need to go beyond the production of fuelwood and the improvement of designated forest land should not emphasize only on forest tree. For example, in the case of AF type of CF, it was regulated to plant 200 forest trees species per hectare and agricultural crops between the spacing of 12 feet and 12 feet. To provide intermediate income to communities and to enhance food security, the establishment of CF should integrate agriculture, livestock breeding and fisheries into forestry and FD should accept fruit trees as forest trees e.g. Mango and Jack Fruit. Horticulture, which was prohibited in CFIs, should be allowed. To improve such management right of USGs, section 19 (e) of CFIs, which concern with property right on how to manage the land, should provide USGs to decide on how to rehabilitate the land including what types of tree and crops to plant.

In accordance with FAO (2011), the presence of government legal structures is a minimum requirement to work community forestry in the field. In Myanmar, CFIs was issued by the Director General of FD following the Myanmar forest policy 1995 and it has stipulated yet in the forest Law. To ensure exclusion rights and secure legal status of USGs, therefore, article 15 of forest law, which permit establishing village owned firewood plantation; should be strengthened. CFIs should add a section on forest protection and conservation that provides secured and strong institutional power to exercise exclusion right. In accordance with nature of legal structure in Myanmar, forest regulations are stipulated to implement forest law. In the future, therefore, community forestry instructions should be promoted into rules and regulations for implementing community forestry.

Also, to enhance secure rights, it is necessary to add section which describes the issue of compensation in case of termination of CF without the fault of USG members. Further, FD should create section to promote legal recognition of USGs by giving freedom for formulating internal regulations. Section 28 of CFIs related to management of USG's fund should give fully authorized to communities.

Currently, CFIs lack collaboration strategy with other department concerned. In order to enhance institutional linkage with other departments concerned, CFIs should create sections which mention institutional linkage and financial and technical support of other departments to USGs. It also should provide a way for USGs members for applying credits, subsidies or by entering into contracts with outsiders. To provide the livelihood opportunities to the USGs, it would be beneficial if various livelihood schemes incorporate into the different community forestry initiatives. In this case, the livelihood approach incorporated into CBFM projects in Philippines can be applicable in Myanmar.

CBFM policy has integrated agriculture, livestock and fish-breeding into forestry to provide short-term income to communities. Then, some kinds of income-generating activities are attached to the CBFM program. A common approach of livelihood scheme is 'to contract out the different site development activities to a PO, such as reforestation, agroforestry, assisted natural regeneration, and timber stand improvement' (Pulhin and Pulhin, 2003). In support of such activities, credit and marketing cooperatives have organized. Depending on the programs, the livelihood schemes will be either household/family based or community based. For example, PO members in CGIP received various projects from the DENR-CENRO such as reforestation and agroforestry project from the Pro-Poor project and Upland Development Program (UDP) where the scheme was provided for 48 households (PO). It is one of the government strategies for sustainable forest development for poverty alleviation in the upland communities. In 2011, an income generating project called Integrated Agroforestry and Bamboo Plantation project was awarded to the communities by providing P 1,067,000 under CBFM, CARP fund by the DENR. Other supports are training on bamboo propagation and team building. There are

also other income-generating projects like livestock dispersal and money and agricultural inputs lending.

SWOT analysis shows that implementing CF management activities by collective action is a profound USG 'strength'. FD should apply this strength in implementing national rehabilitation programs such as Bago Yoma Greening Program and Efforts to eliminate shifting cultivation. In implementing environmental restoration measures in such areas, protecting remaining natural forest and establishing community forest are common activities. As noted in Chapter 2, the government takes the responsibilities of protecting natural forest while community forest is established by devolving authority to forest occupants. In this case, the government should consider reducing areas of jurisdiction on natural forest by devolving authorities and responsibilities to USGs like in the cases of Philippines. For example, individual forest occupants in CGIP are granted individual rights and incentives while adjacent area of natural forests are devolved to POs for the purpose of protecting forests with the community's help in accordance with CBFM policy.

In order to overcome the 'weakness', USGs should modify internal regulations to define powers and responsibilities of leaders, the process for decision making, the procedure for conducting meetings and management of USGs fund and the procedure for settling internal disputes. The FD should create sections of CFIs to promote and legalize such local decisions. At the same time, the FD should also give a large degree of freedom for making internal regulations to USGs. To enhance women's participation in decision-making process, USGs should allow women's involvement; CFIs also should encourage women to take a role in management committee.

6.3.2 Policy implications for other domain of forest policy related to decentralization

In Myanmar, the government's interest in community forestry has resulted from a reform process of forest policy as a response to forest degradation, increased demand of forest products and international strategy of sustainable forest management. The forest policy, stipulated in 1995, highlighted promotion of people participation in forest

management by means of community forestry. Although community forestry has gained some recognition, it remains relatively little known within the government and little progress has been achieved. The reasons of why there is only limited interest in community forestry within the country are:

- There has been a long history of export-oriented logging and forestry sector still contributes 50 % of the country's GDP and about 30 % of export earnings
- There remains a desire within government to maintain control over the country's forest resources although there is a process of decentralization e.g. plantation forest
- As noted by Lin (2005), the nature of power such as the protection of state land and resources, issuance of forest production permits and collection of forest revenue vested to the local FD staff made for them not only powerful but also socially distant from local communities whose forest is their main livelihood. Consequently, there is unwillingness among local FD staff to lose their existing power and opportunities because CF is designed to promote people participation.

Even though industrial forestry is dominant practice, involving people in tree plantation programs on public and private lands have recognized as an important approach for rejuvenating degraded forests and increasing the forest cover. In the future, people participation can be an effective tool to alleviate forest poverty in Myanmar. This is because: 70 % of rural population heavily depend on the forest their basic needs such as non-wood forest products, fuelwood, fodder and food; 22.8 % of the forested area was devastated due to the rising practice of shifting cultivation; increased demand of forest products along with the population increased and severe forest degradation (Than, 2003; Htun, 2009; Maung and Yamamoto, 2010).

As noted in Chapter 2, government has been initiated different approach of decentralized forest management. They are: decentralization initiatives in plantation forestry such as establishing commercial plantations, special Teak plantations and village supply plantations; decentralization with devolution of authority in private teak plantation and

community forestry (Maung and Yamamoto, 2010). In accordance with Kaung and Cho (2003), Maung and Yamamoto (2010), and Tint et al (2011), there is a need to facilitate decentralized policy for sustainable forest governance in terms of improvement of property rights issues. Based on the previous research in Myanmar and lesson learnt from the Philippines, the following policy implications are proposed:

- Participatory plantation management approach has been adopted in establishing commercial plantations and special Teak plantations. The aim is to minimize shifting cultivation and implement large scale reforestation schemes with low cost labour. To develop better plantation management strategy, decentralization of plantation management should be considered to identify rights and responsibilities between the plantation workers and the FD. Maung and Yamamoto (2010) proposed that the FD should allocate the land to plantation workers not only for Teak plantations but also for establishing CF with AF for providing short-term income and sustainable socio-economic situations.

- As mentioned earlier, 22.8 % of the forested area was devastated due to the rising practice of shifting cultivation. For achieving good forest governance outcomes, the policy should consider providing state forest lands by accompanying land-use rights and autonomy.

- In order to support the needs of fuelwood, village supply plantations are established by using the government's fund. There are 215, 088 ha (22.23 %) of total plantation areas of 967,477 ha. To ensure the sustainability of those plantations with the participation of villagers, FD should clearly define rights and responsibilities of villagers.

- As noted in Chapter 2, the government implements environmental restoration measures to restore the most environmentally fragile areas such Bago Yoma, Inlay Lake, Dry zone area and Mangrove area. In implementing rehabilitation programs, devolution of forest governance, which is called community forestry in Myanmar, is one the common approach; while conservation and protection of natural forest and plantation establishment is under the control of the government. As such, the government should consider reducing the management control by decentralizing property rights not only degraded forest area of

community forest occupied by local people but also natural forest areas with commercially valuable species. By doing so, the government will reduce the cost of protecting natural forest while community will get more benefits.

- With the aim of sustainability of watershed areas defined by the FD, 73,493 ha of watershed plantations have been established by the FD and DZGD from 1980s to 2010. Taking consideration of local people who practice slash-and burn cultivation on the slopes of watershed, FREDDA (2004) suggested that watershed management should design not only establishing plantations but also agroforestry practices for those forest-dependent people. In Bago Yoma areas, for example, construction of dam also attracts landless people, fishermen and jobless people to migrate into reserved forest area for cultivation, fishery and harvesting timber and fuelwood (Than, 2003). In this regard, it is necessary to acknowledge that forest occupants are one of the main stakeholders in watershed management; the FD should consider developing guidelines for community forestry in watershed areas; institutional linkage with other departments such as Irrigation Department, Myanmar Agricultural Service and NGOs are also recommended to introduce proper land use system for local communities.

- There are also local people who extract forest products such as fuelwood, timber and other forest products from protected areas (FERDA, 2004; Htun et al., 2012). To address the human needs, management of protected areas system should consider decentralization of forest rights to local people.

- Government should also recognize *de facto* practices of private woodlots conserved around the private farm. For instance, case study in NF type of CF indicated that 80 % of respondents in group X collected firewood from private woodlots located inside their private farmland. Communities are protecting and using forests in a *de-facto* manner because of the government policy for the greening of Dry Zone although trees are on their private land. People from that village shared that allowing *de-jure* rights on such forestland would be an effective policy for environmental conservation of Dry Zone area (Field survey, 2008).

6.3.3 Policy implications through lessons from other countries

- According to the SWOT analysis, enforcing exclusion rights and legal status of the USG in Myanmar was relatively strong with the co-ordination with village head as well as support from the FD during the project period. Nevertheless, it was uncertain after termination of the project because rights and responsibilities of USGs were not yet included in the higher level of regulatory framework. In contrast, legal protection of community forestry user groups is one of the opportunities of community forestry policy in Nepal. This is because communities are provided legal identity and a high degree of autonomy under the Forest Act 1993. Ojha and Chhatre (2009) concluded that this legal protection allowed Community Forest User Groups to sustain CF activities in situations where the government was not responsive or even absent. In addition, independent legal status of community forest user groups enable them to search for collaboration with any civil society or private-sector organization rather than solely relying on the FD for the various supports.

- Additionally, such regulatory framework to support policy changes for people participation in forest management should be designed to have facilitating role in assisting local peoples' efforts than being completely restrictive. For example, the Mongolian Government granted local residents to lease and use forest resources for periods of 15 to 60 years (FAO, 2010a). However, the regulatory framework focused on passing responsibilities for local people with complete prohibition of them from benefiting from the forest timber. Therefore, local users could not generate income from forest management. Consequently, some communities were discouraged from establishing forest users groups while some groups were terminated (FAO, 2011).

- Through experiences from Nepal and India, it can be learned that the more the empowering of local people in managing and appropriate utilization of natural resources, the better the possibility of increasing sustainable forest governance . In Nepal, community forest user groups are empowered over forest management and use, and access to forest resources at the community level. Aside from two timber species that collected 15 per cent

tax on two timber species in the Southern Terai region, all timber and non-timber benefits are provided to communities both for subsistence and for sale. They can mortgage their standing forest products with financial institutions to obtain loans. Moreover, they can establish enterprises and make profits (Agrawal and Ostrom, 2001; Ojha and Chhatre; 2009; Ghate and Shyamsundar, 2011).

In contrast, communities in India gained limited withdrawal rights because all NTFPs such as Beedi, Sal and Tendu leaves are not allowed sell in the open markets; timber products unless the wood is dry or fallen to the ground is not allowed to harvest; communities get limited share of benefits from timber harvests. State formulates the rules for governing the use and management of forest resources and FD get involved in day-to-day management of village forest under the JFM program. Regarding exclusion rights, only 7 of 22 states had the right to punish the violator of the rules (Behera and Engel, 2006).

Comparing these two countries, property rights arrangements in Nepal allowed community forest user groups to actively manage the forest resources successfully whereas insecure and incomplete transfer of rights to communities in India is likely to reduce community incentives for sustainable forest management (Behera and Engle, 2006; Ojha and Chhatre, 2009).

- Limited management rights emphasized on environmental conservation and limited accesses to finance are some of the other constraints of community forestry in Myanmar. In order to improve these constraints, lessons from Nepal will also be useful because community forestry in Nepal was also initially focused on forest protection rather than livelihood improvement (Dev et al., 2003). Since 2000, community forestry policy and institutional innovations contribute to improved welfare and livelihood security in Nepal has been changed through two strategies: 1) directly increased household access to forest food products, and 2) indirectly through positive impacts on household incomes, employment and entrepreneurial opportunities, livelihood diversification and community development activities (Ojha and Chhatre, 2009). Examples include raising fund from selling forest products; lending community forest user group funds with low interest rate

for income generation schemes (e.g. goat and pig bearing, vegetable growing); allocating patches of CF to women, landless or nearly-landless members to plant medicinal herbs or others; subsidies in prices of forest products; and scholarship to children from poor families (Joshi et al., 2006; Ojha and Chhatre, 2009; Bhattarai, 2009).

- One of the weaknesses of Myanmar CF was identified through SWOT analysis is limited participation of women. This is also similar to Nepal where gender concerns have long been ignored in community forestry (Buchy and Subba, 2003). In accordance with Acharya et al., (2008) and Ojha et al., (2009), there are three strategies that Myanmar can adopt to empower women participation in community forestry. These are:

1. Instead of earlier practice of including only male household head, the names of women are also included in the lists of Community Forest User Group members.
2. Women's exclusive groups have also been formed.
3. CF has introduced a system of at least 50 % of women in all committees. Moreover, community forestry program which incorporate with income generation, saving and credit created women's participation in financial assets. USGs in Myanmar should also introduce such strategies to realize gender equity in forest management because gender equity issue is one of the fundamental elements in achieving sustainable livelihood (FAO, 2011).

References

- Acharya KP (2005) Private, collective, and centralized institutional arrangements for managing forest commons in Nepal. *Mountain Research and Development* 25 (3): 269-277
- Acheson JM (2006) Institutional failure in resource management. *Annual review of Anthropology* 35: 117-34
- Agrawal A (2002) Common resources and institutional sustainability. The drama of the commons (pp. 41–85). Washington, DC: National Academy Press, Washington DC, pp 41-85
- Agrawal A (2003) Sustainable governance of context, common-pool resources: context, methods, and politics, *Annual Review of Anthropology* 32: 243-262
- Agrawal A, Chhatre A (2006) Explaining Success on the Commons: Community Forest governance in the Indian Himalaya. *World Development* 34(1), pp. 149–166
- Agrawal A and Ostrom E (2001) Collective action, property rights, and decentralization in resource use in India and Nepal. *Politics and Society* 29(4): 485-514
- Agrawal A and Ostrom E (2008) Decentralization and community-based forestry: learning from experience. In: Webb EL and Shivakoti GP (eds) *Decentralization, forests and rural communities: policy outcome in South and Southeast Asia*. SEGE Publications Inc, New Delhi, pp 44-67
- Anderson J (2000) Four considerations for decentralized forest management: subsidiary, empowerment, pluralism and social capital. In: Enters T, Durst TPB and Victor M (eds) *Decentralization and Devolution of forest management in Asia and the Pacific*. RECOFTC Report N.18 and RAP Publication 2000/1. Bangkok, Thailand, pp 7-10

- Aung M and Thwin KZ (2003) A study on the development of Community Forestry, Forest Department, Ministry of Forestry
- Baland JM, Platteau JP (1996) Halting Degradation of Natural Resources: Is There a Role for Rural Communities? Oxford: Clarendon Press
- Balooni K, Inoue M (2007) Decentralized forest management in South and Southeast Asia.' *Journal of Forestry* 105 (8): 414: 420
- Balooni K, Pulhin MJ, Inoue M (2008) The effectiveness of decentralization reforms in the Philippines's forestry sector. *Geoforum* 39:2122–2131
- Banerjee AK (2000) Devolving forest management in Asia-Pacific countries. In: Durst T PB and Victor M (eds) Food and Agricultural Organization of the United Nations, Regional Office for Asia and Pacific, Bangkok and RECOFTC, Bangkok
- Bista R, Gurung A, Karki R, Shrestha S and Uprety DR (2012) Opportunities and challenges of adopting community forestry: a case study of Nepal, *Scientific Journal of Agriculture* 1 (6):156-163
- Borlagdan SB, Guaing ES and Pulhin JM (2001) Community-based forest management in the Philippines: A preliminary assessment, Institute of Philippines Culture, Atendo de Manila University, Quezon City
- Butic M and Ngidlo R (2003) Muyong forest of Ifugao: assisted natural regeneration in traditional forest management. In: Dugan P B, Durst D J, Ganz P J and Mckenzie (eds), *Advancing assistant natural generation (ANR) in Asia and the Pacific*, Food and Agricultural Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, pp 18-23
- Calub FS (2005) DENR rules and regulation governing timber and timber products planted on private land. *Annuals Tropical Research* 27(1): 91-96

- Charnley S and Poe MR (2007) Community forestry in theory and practice: where are we now? *Annual Reviews of Anthropology* 36:301-336
- Chanyut S, Edward LW (2008) Outcomes of state- vs. community-based mangrove management in Southern Thailand. *Ecology and Society* 13 (2): 27
- Chhetri B. B. K (2005) Community forestry program in the hills of Nepal: Determinants of user participation and household dependency. PhD Thesis
- Chopra and Dasgupta, 2003. The Nature of household dependency on common pool resources: an econometric study for India. Working paper series No E/232/2002, Institute of Economic Growth, Delhi, India
- Coleman EA (2010) Common property rights, adaptive capacity, and response to forest disturbance. *Mitigation and Adaption Strategy and Global Climate Change* 15: 263-282
- Colfer, P. C (2005) *The complex forest, Communities, Uncertainty, and Adaptive Collaborative Management*. PFF Press book
- Conroy C, Mishra A, Rai A (2002) Learning from self-initiated community forest management in Orissa, India. *Forest Policy and Economics* 4: 227–237
- Dahal GR and Capistrano D (2006) Forest governance and institutional structure: an ignored dimension of community based forest management in the Philippines. *International Forestry Review* 8(4): 377-394
- Dahal GR and Adhikari K (2008) Trends and impact of forest tenure reform in Asia: cases from India, Indonesia, Lao PDR, Nepal and the Philippines. *Journal of Forest and Livelihood* 7 (1): 19-26
- De Zoya M, Inoue M (2008) Forest governance and community based forest management in Sri Lanka: past, present and future perspectives. *International J of Social Forestry*, 1(1): 27–49

- Department of Environment and Natural Resource (DENR) (1996) Memorandum circular for interim guidelines governing the issuance of 'Muyong' resources permit in the Province of Ifugao, Manila
- Department of Environment and Natural Resource (DENR) (1998) Guidelines on the establishment and management of community-based forest management projects within watershed reservations, Manila
- Department of Environment and Natural Resource (DENR) (1999) Manual of operations for development forest management functions, Manila
- Department of Environment and Natural Resource (DENR) (2004) Revised rules and regulations for the implementation of executive order 263, otherwise known as the community based forest management, Manila
- Department of Environment and Natural Resource (DENR) and Japan International Cooperation Agency (JICA) (2004) The master plan study for watershed management in upper Magat and Cagayan river basin, final report volume III, Quezon City
- Department of Environment and Natural Resource (DENR) (2005) Setting-up a local-level system monitoring criteria and indicators of sustainable forest management. ITTO project PD 21/97 Rev. 2 (F), Manila
- Department of Environment and Natural Resource (DENR) Region II, Cagayan Valley (2008) Regional Memorandum No (01): supplementary guidelines on the harvesting and transporting of plated trees/timber cut in plantation forest covered by forestry tenurial instrument, Manila
- Department of Environment and Natural Resource (DENR) (2009) Lists of community based forest management, Manila
- Dorji L, Webb EL and Shivakoti GP (2006) Forest property rights under nationalized forest management in Bhutan. *Environmental Conservation* 3 (2): 141-147

- Fay, C. and G. Michon. 2003. The contribution of plantation and agroforestry to rural livelihoods: Redressing forestry hegemony-where a forestry regulatory framework is best replaced by an agrarian one. Paper presented at International conference on rural livelihoods, forests and biodiversity. Bonn, Germany. May 19-23, 2003
- Feeny D, Berkes F, McCay BJ and Acheson JM (1990) The tragedy of the commons: twenty-two years later. *Human Ecology* 18 (1): 1-17
- Fisher RJ, Durst PB, Enters T and Victor M (2000) Overview of themes and issues in devolution and decentralization of forest management in Asia and the Pacific. In: Enters T, Durst TPB and Victor M (eds) *Decentralization and Devolution of forest management in Asia and the Pacific*. RECOFTC Report N.18 and RAP Publication 2000/1. Bangkok, Thailand, pp 7-10
- Food and Agricultural Organization (1997) *Crafting institutional arrangements for community forestry*, <http://www.fao.org/docrep/w7483e/w7483e03.htm>. Accessed 24 June 2012
- Food and Agricultural Organization (1997) *Country report Asia-pacific forestry sector outlook study working paper series: country report, Myanmar*. Working paper No: APFSOS/WP/08
- Food and Agricultural Organization and Ministry of Forestry (2009) *Stakeholder workshop for community forestry: its experiences and future in Myanmar*. Yangon, Myanmar
- Food and Agricultural Organization (2010) *Global forest resources assessment 2010, country report, Myanmar*, Rome: FAO
- Food and Agricultural Organization (2011) *Reforming forest tenure issues, principles and process*, FAO forestry paper 165, ISBN 978-92-5-106855-7
- Forest Department, Myanmar (1995) *Community Forestry Instructions*

Forest Department, Myanmar (2001) Project document. Community Forestry Training and Extension Project in the Dry Zone

Forest Department, Myanmar (2009) Monitoring and Evaluation of forest operations for the budget year of 2007-2008

Forest Department, Myanmar (2009) Lists of community forests. Planning and Statics Division

Forest Resource Environment Development and Conservation Association (2001) Forestry sector study for Myanmar. Technical Paper No. 28, Yangon, Myanmar

Gate R and Shyamsundar P (2011) Rights, responsibilities and resources: examining community forestry in South Asia. South Asian Network for Development and Environment Economics (SANDEE) Working Paper No. 59-11

Gautam AP and Shivakoti GP (2005) Conditions for successful local collective action in forestry: some evidence from the hills of Nepal. *Society & Natural Resources* 18 (2): 153–171

Gauld R (2000) Maintaining *centralized control* in community-based forestry: policy construction in the Philippines. *Dev Change* 31: 229-254

Gibson CC, Williams JT and Ostrom E (2005) Local enforcement and better forests. *World Dev* 33 (2): 273-284

Gualti A, Raju KV, Meinzen-Dick R (2002) What affects organization and collective action for managing resources? Evidence from canal irrigation systems in India. *World Development* 30 (4):649–666

- Guiang ES and Castillo AG (2006) Trends in forest ownership, forest resources tenure and institutional arrangements in the Philippines: are they contributing to better forest management and poverty reduction?
- Guiang ES, Esguerra F and Bacalla D (2008) Devolved and Decentralized forest management in the Philippines: triggers and constraints in investments, www.cifor.cgiar.org/publications/pdf-files. Accessed 25 June 2011
- Guthiga, P.M., (2008) Understanding local communities' perceptions of existing forest management regimes of a Kenya Rainforest. *International Journal of Social Forestry*, 2008, 1 (2):145-166
- Gyi KK and Tint K (1998) Management status of natural teak forests www.fao.org/docrep/005/ accessed on November 29, 2012
- Hangdann D V (2004) A re-entry plan improving the processing and issuance of Muyong resources permit within the coverage area of CENRO Lamut, Ifugao. Master Thesis, Ifugao State College of Agriculture and Forestry, Nayon, Lamut, Ifugao
- Harrison S (2003) Property rights issues in small scale forestry in the Philippines. *Annual Tropical Research* 25(2): 77-87
- Heltberg, R. (2001) Determinants and impacts of local institutions for common resource management. *Environment and Development Economics* 6: 183-208
- Heltberg R (2002) Property rights and natural resource management in developing countries. *Journal of Economic Surveys* 16 (2): 189-214
- Htun Khin (2009) Information note on the Asia-Pacific Forestry Sector Outlook Study II, Myanmar, Bangkok, Thailand
- International Tropical Timber Organization and Rights and Resources Initiative (2009) *Tropical forest tenure assessment: trends, challenges and opportunities*

- Karppi I, Kokkonen M and Smith KL (2001) SWOT-analysis as a basis for regional strategies, Nordregio Working Paper 4, ISSN 1403-2511, Stockholm, Sweden
- Kitla P (2008) Devolution of forest related rights: comparative analysis of six developing countries. Tropical Forestry Report (33), University of Helsinki, Viikki Topical Resource Institute, Helsinki, Finland
- Kuang B and Cho KM (2003) Forest plantation management between centralized and participatory planning-A case study of East Pegu Yoma Project (EPP), Myanmar
- Kyaw WM (2006) A study on effects of community forest on micro climate and socioeconomic conditions with special reference to central Dry Zone of Myanmar. Master Thesis
- Kummer DM (1992) Deforestation in the post-war Philippines. Quezon city: Ateneo de Manila University Press
- Larson AM, Barry D and Dahal GR (2010) New rights for forest-based communities? Understanding processes of forest tenure reform. *International Forestry Review* 12 (1): 78-96
- Larson AM and Soto F (2008) Decentralization of natural resource governance regimes. *Annual review of Environment and Resources* 33: 213-239
- Larson AM and Pulhin JM (2012) Enhancing forest tenure reforms through more responsive regulations. *Conservation and Society* 10 (2): 103-113
- Lindsay AM (2000) Creating legal space for community-based management: principles and dilemmas. In: Enters T, Durst TPB and Victor M (eds) *Decentralization and Devolution of forest management in Asia and the Pacific*. RECOFTC Report N.18 and RAP Publication 2000/1. Bangkok, Thailand.

- Lise W (2000) Factors influencing people's participation in forest management in India. *Ecological economics* 34: 379–392
- Liu DS, Iverson LR and Brow S (1993) Rates and patterns of deforestation in the Philippines: application of geographic information systems analysis. *For Ecol Manag* 57: 1-16
- McKean M and Ostrom M (2005) Common property regimes in the forest: just a relic from the past? *Unasylva* 46 (180): 3-15
- Marukssen Thomas (2008) Property rights, productivity and common property resources: insights from rural Cambodia 36 (11): 2277-2296
- Maung TM, Yamamoto M (2008) Exploring the socio-economic situation of plantation villagers: a case study in Myanmar Bago Yoma. *Small scale forestry* 7: 29-48
- Maung TM, Yamamoto M (2010) The pattern of decentralization regarding forest plantation and its effects in Myanmar. *Journal of Forest Economics* 56 (1): 59-68
- Meinzen-Dick RS, Brow LR, Feldstein HS and Quisumbing AR (1997) Gender, property rights and natural resources, *World Development* 25 (8): 1303-1315
- Moe TT (2006) An analysis of the factors affecting the participation of local communities in Community forestry program aided by JICA afforestation project in Central Dry Zone, Myanmar. A case study in Nyaung Oo District. Master Thesis
- Multi-sectoral protection committee (2009) Report of the multi-sectoral assessment team on Barobbob co-management agreement implementation, Province of Nueva Vizcaya, Philippines
- Nagendra and Gokhale (2008) Management regimes, property rights and forest biodiversity in Nepal and India. *Environmental Management* 41: 719: 733

- Nath TK, Inoue M, Myat H (2005) Small-scale agroforestry for upland community development: a case study from Chittagong Hill Tracts, Bangladesh. *Journal of Forest Research*, 10(6): 130–142
- Ojha H, Persha L and Chhatre A (2009) Community forestry in Nepal: a policy innovation for local livelihoods. International Food Policy Research Institute Discussion Paper 00913
- Okamoto Ikuko (2012) Coping and adaption against decreasing fish resources: case studies of fishermen in Lake Inlay, Myanmar. IDE discussion paper No. 329
- Oyono PR, Biyong MB and Samba SK (2012) beyond the decade of policy and community Euphoria: the state of livelihoods under new local rights to forest in rural Cameroon, *Conservation and Society* 10 (2): 173-181
- Oo TN (2004) A comparative study on Community Forestry Development activities in three Different Agro-ecological zones: a case study of Kyaukpadaung, Nyaung shwe and Laputta Townships in Myanmar. Yezin, Myanmar: Forest Research Institute
- Ostrom E (1990) *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press, Cambridge
- Ostrom E (1999) Self-governance and forest resources. Occasional Paper No. 20. Center for International Forestry Research. ISSN 0854-9818
- Ostrom E (2000) Collective action and the evolution of social norms. *J Econ Perspectives* 14 (3): 137–158
- Ostrom E (2008) Design principles of robust property-rights institutions: what have we learned? W08-19. (Working Paper)
- Ostrom E, et al. (2009) A general framework for analyzing sustainability of social-ecological systems. *Science* 325

- Ostrom E and Agrawal A (1999) Collective action, property rights and devolution of forest and protected area management. <http://www.capri.cgiar.org/pdf/agrawal.pdf>. Accessed 25 April 2012
- Pagdee A, Kim Y, Daugherty PJ (2006) what makes community forest management successful: a meta-study from community forests throughout the world. *Society and Natural Resources*, 19: 33-53
- Proceedings of the annual conference on Tropical and Sub Tropical Agricultural and natural resource management, Gottingen, Germany, 8-10 October 2003
- Pulhin JM (2007) Politics of Community Forestry Tenure in the Philippines, International Community Forestry Workshop, Munk Centre for International Studies, Toronto
- Pulhin JM and Pulhin P (2003) Community-based forest management in the Philippines: retrospect and prospects. In: Inoue M and Isozaki H (eds), *Forest and people-policy and local reality in Southeast Asia. The Russian Far East and Japan*, Kluwer Academic Publishers, Dordrecht, Boston, London, pp 139-156
- Pulhin JM and Inoue M (2008) Dynamics of devolution process in the management of Philippines forests. *International Journal of Social Forestry* 1(1): 1-26
- Pulhin JM, Larson AM and Pacheco P (2010) Regulations as barriers to community benefits in tenure reform. In: Larson A M, Barry D, Dahal G R and Colfer C J P (eds), *Forests for people: community rights and forest tenure reform*. Center for International Forest Research, The Cromwell press, London, Earthscan, pp 139-159
- Pulhin JM et al., (2008) Tenure reform on Philippine forest lands: assessment of socio-economic and environmental impacts. UP Los Banos, Philippines: CFNR-Forest Lands: Socio-economic and Environmental Impacts. College of Forestry and Natural Resources, University of Philippines, Los Banos

RECOFTC Annual Report (2005-2006)

Rechil MA, Hammett AL, Burch WR, and Song Y (2002) Sharing the Wealth. *Journal of sustainable forestry* 15 (2): 1–23

Ribot JC (1998) Decentralization, participation, and accountability in Sahelian forestry: legal instruments of political-administrative control. Berkeley workshop on environmental politics, institute of international studies, UC Berkeley

Schlager E and Ostrom E (1992) property-rights regimes and natural resources: a conceptual analysis. *Land Econ* 68(3): 249-62

Seki Y (2003) Adaptability of community-based forest management for ex-logging workers in the Philippines. In: Inoue M and Isozaki H (eds) *Forest and people-policy and local reality in Southeast Asia, the Russian Far East and Japan*, Kluwer Academic Publishers, pp 287-298

Sein M (2000) Participatory Forest Management: Implications for policy and human resources' development in Myanmar. ICIMOD, 2000. Volume 3, *Participatory Forest Management: Implications for policy and human resources' development in the Hindu Kush- Himalayas*

Sekher M (2001) Organized participatory resource management: insights from community forestry practices in India. *Forest Policy and Economics* 3: 137–154

Soriaga R, Mahanty S (2008) Strengthening local forest governance lessons on the policy practice linkage from two programs to support community forestry in Asia. *International Journal of Social Forestry* 1 (2): 96–122

Sushenjit B, Priya S (2004) Fuelwood consumption and participation in community forestry in India. World bank policy research paper 3331

Shivakoti GP, Ostrom E (2008) Facilitating decentralized policies for sustainable governance and management of forest resources in Asia. SEGA Publications Inc

- Than MM (2003) Land use changes of BagoYoma, home of natural Teak. Case Study 2, Forest Department, Myanmar
- Thomas AC (2008) Community control of resources and the challenge of improving local livelihoods: a critical examination of community forestry in Nepal. *Geoforum* 39:1452-1465
- Tint K, Springate-Baginski O and Gyi MKK (2011) Community Forestry in Myanmar: progress and potentials. Ecosystem Conservation and Community Development Initiative, Yangon, Myanmar
- Turner M (1999) Philippines: from centralism to localism. In: Turner M (eds) Central-local relations in Asia-Pacific: convergence or Divergence? Macmillan Press LTD, pp 71-97
- Viruthiyel J and Jonsson G (2008) Strengths, weaknesses, opportunities, threats of HCFP self-help groups, Haryana community forestry project, Forest Department, Government of Haryana
- White A and Martin A (2002) Who owns the world's forests? Forest tenure and public forests in transition. Forest Trends, Washinton, D.C: Forest Trends and Center for International Environmental Law
- Wilkie ML, Holmgren P and Castaneda F (2003) Sustainable forest management and the ecosystem approach: two concepts one goal. FAO working paper FM 25. Rome, Italy
- Wittayapak, Chusak, Dearden and Philip (1999) Decision making arrangements in community based watershed management in Northern Thailand. *Society & Natural Resources* 12 (7): 673–691
- Yamauchi H and Inoue M (2012) Contribution of community forestry in the central dry zone of Myanmar to achieving sustainable and equitable forest management. *Tropics* 20 (4): 103-113

Yandle T (2007) Understanding the consequences of property rights mismatches: a case study of New Zealand's Marine resources. *Ecology and Society* 12 (2): 27

Zaw NH, Nobuya M and Shigejiro Y (2012) Determinants of local people's perceptions and attitudes toward a protected area and its management: a case study from Popa Mountain Park, Central Myanmar. *Society and Natural Resources* 25 (8): 743-758

Zin MT (2005) Developing a scientific basis for sustainable management of tropical forest watershed: case study from Myanmar. Phd Thesis

Appendix

Appendix 1

Household Survey Questionnaires (Myanmar cases)

--Agroforestry type—

Household number:.....

Date:

1. Household information

i. Name

ii. Family Size: -----Number

vi. Education level:.....

v. Income sources.....

2. Principal livelihood

1.	Farming system	Category	Area Owned (acres)	Area currently Cultivated (acres)
		Paddy		
		Dry farming		
		CF site		
2.	Non-farming system			

3. Livestock breeding by household

Category	No. of livestock	Type of livestock breeding	
		Domestic	Commercial
Goat			
Cow			
Pig			
Chicken			

4. Do you know the leaders of your group and who select them?

i. Village Head

ii. FD staff

iii. Members

5. What are the activities of the leaders in your group?

6. When did the leaders came the CF site?

i. To take part in management activities

ii. To plant the trees

iii. In cultivating crops in his plot

iv. When FD staff came

v. Others

7. How leaders informed to you for implementing management activities?

i. through meeting

ii. Hearing

iii. Making announcement

iv. Others

8. Who attend the meeting?

i. Household head

ii. Son or daughter

9. Did the leaders tell about the rules for planting crops and trees in the meeting? “Yes” or “No”

10. When did leaders call for the meeting? In the daytime or at night?

12. Who inform to you for attending meeting?

i. Leader

ii. Secretary

iii. Member 1 or 2 or 3

13. Do you have any chance to speak in the meeting? Yes or No

14. If you cannot attend the meeting, the reason is

i. Because of time constraint

ii. No invitation to attend meeting

iii. Don't want to participate in meeting? If so why?

iv. Others

16. Who are the decision makers in meeting related to implementation of management activities?

i. Only chairman

ii. Chairman and secretary

iii. Almost all leaders

iv. Members

20. Who distribute the tree seedlings and how?

21. Who is the owner of the planted trees?

22. When you have to cut the planted trees?

23. How many trees did you planted in your plot? How many trees and what kind of species are there now?

24. Do you like those species? If not, what kind of trees do you want to plant and why?

26. Did the leaders check after the planting trees? If yes, how they check?

28. How far is the location of CF site from your house? ---mile

29. Is it close, far, or too far for

Appendix I (b)

Benefits from Community Forest

1) Name of the products collected from agroforestry

Name of household	crops	thetke	Fuelwood from the AF plot boundary	Fuelwood and pole from the planted trees	Fodder (myatsut)

2. Income from CF

(a) Income from selling crops

Name of the crops	Unit (tin)	Price per unit	Total income	Place of market
Sesame				
Pigeon pea				
Green gram				

(b) Income from Thetke

Name of household	Amount of Thetke	Selling price	Place of the market

Household Survey Questionnaires

--Natural forest type--

Household number:.....

Date:

1. Household information

i. Name

ii. Family Size: -----Number

iii. Education level:.....

v. Income sources:.....

2. Principal livelihood

1.	Farming system	Category	Area Owned (acres)	Area currently Cultivated (acres)
		Paddy		
		Dry farming		
2.	Non-farming system			

3. Livestock breeding by household

Category	No. of livestock	Type of livestock breeding	
		Domestic	Commercial
Goat			
Cow			
Pig			
Chicken			

4. Where did you collect fuelwood for household consumption?

5. Do you know the leaders of your group and who select them?

i. Village Head

ii. FD staff

iii. Member

6. What are the activities of the leaders in your group?

7. Do you like the leaders? “Yes” “No”

8. What are the activities that you participate as a member of USG?

i. Carrying the seedlings

ii. Planting trees in the gap area

iii. Pruning

iv. Others

9. Did you see other member who did not participate in planting trees and pruning? “Yes” or “No”

10. Did the leaders discuss with you before they make final decisions in assembly? “Yes” or “No”

11. How decisions are made in assembly?

i. Only chairman

ii. Chairman and secretary

iii. Almost all leaders

iv. Majority of the members

v. Others

12. Who inform to you for attending meeting?

i. Leader

ii. Secretary

iii. Member 1 or 2 or 3

13. Who attend the meeting?

i. Household head

ii. Son or daughter

14. If you cannot attend the meeting, the reason is

i. Because of time constraint

ii. No invitation to attend meeting

iii. Don't want to participate in meeting? If so why?

iv. Others

15. Did the leaders check after the planting trees in gap area? If yes, how they check?

16. Did you have any experience in collective action in the village?

17. Did you have any experience in forest management in your village

18. How far is the location of CF from your house? ---mile

19. Is it close or far for you?

Checklist key Personnel (Leaders of USG)

1. Name of the USG:.....
2. Position of leaders.....
3. Age:.....
4. Education Level:.....
5. Number of private land holding.....
6. Occupation:.....
7. Number of household member:.....
8. What did you do for your village?
9. Who selected you as a member of the leaders?
 - i. Chairman
 - ii. Secretary
 - iii. Village head
 - iv. FD staff
 - v. USG member
10. Did you meet and discuss among the leaders for management activities?
11. Are you working in the field? “Yes” or “No”
IF not why?
12. How many times did you participate in the meeting?

i. 2005-----times

ii. 2006----times

iii.2007---times

iv. 2008---times

v. 2009----times

13. How decisions are made in the meeting?

14. What are the activities supported by FD in implementing management activities?

15. What should be the role of FD staff in future?

Data collection form for village profile

Collected from Village Head

1. Population number of village.....
2. Household size.....
3. Number of ten household leaders.....
4. Number of hundred household leaders.....
5. Numbers of landowners.....
6. Number of landless people.....
7. Livestock Unit (cow, goat, sheep).....
8. Participation of villagers in activities.....
9. Organizations (religion, village associations, other).....
10. Quality of road connections to the city.....
11. Income sources of the villagers.....

Household Survey Questionnaires (Philippines cases)

I. Characteristics of the households

1. Name of the respondents.....

2. Age...../Gender.....M/F /Level of Education...../
Size of Family.....

3. Ethnicity of the respondent

(i) Ilocano (ii) Ifugao (iii) Gaddang (iv) Ibanag (v) Ayangan (vi) Pangasinense (vii) Isinay
(viii) Kalanguya

4. Size of the land holdings of the respondents

Types of the land	Owned	Lease	Total
	Purchase/Inheritance	How many years/how much per year	
Farm Land			
Agroforestry			
Plantations			

5. What are the working statuses of the household members?

Working status	No. members	Education
Farmer		
Housewife		
Officer		
Worker		

Merchant		
Student		
Not working/Retired		
Unemployed		

6. Type of the house.....

7. Type of fuel mostly used by cooking

1. Fuelwood 2. Gas 3. Electricity 4. Coal

If Fuelwood→Where did you collect it and how much per day?

If charcoal→Did you buy or make yourself?

8. How many livestock do you have?

Cattle... (1) No (2) Yes.....Cattle (3) Amount not mentioned

Buffalo... (1) No (2) Yes.....Buffalo (3) Amount not mentioned

Pig.... (1) No (2) Yes-----Pig (3) Amount not mentioned

Chicken (1) No (2) Yes.....Chicken (3) Amount not mentioned

9. How long have you been living in this village?

(i) You /years (ii) Father /years (iii) Grand/years

10. (If they have been living there for less than 10 years) Where did your family come from?

(1) From another province

(2) From the same province

11. Do you live in this village throughout the year?

(1) Yes

(No) No → How many months did you live here?months and why?

12. Household Income during the last one year

Source of income	Amount (pesos) per year
1. Income from private agricultural land	
2. Income from selling (vegetables, fruits) harvested from CBFM area	
3. Income from livestock	
4. Income from Business (traders/selling goods)	
5. Income from selling charcoal	
6. Income from selling lumber	
7. Income from driving tri-bicycle	
8. Wage income earned by the households members	
9. Transfer income (remittance from households members living in other places)	
10. Any other income source (specify)	

II. Property rights

Individual claims area: (Harvesting rights)

13. How many trees are planted in your plot?

Name of the trees	Yes	If yes → how many trees	When did you plant those trees
Mahogany			
Ipil Ipil			
Gmelina			

Others			
--------	--	--	--

14. Have you been harvested the planted trees from your plot?

If yes → please choose the reason of harvesting.

(i) Home consumption (ii) Selling

If not → please give the reason of not harvesting?

(i) Trees are immature (ii) No need to cut (iii) For Environment conservation (v) For generations (vi) Others

15. How do you know that you have a right to harvest the trees from your plot and you can also sell it in the market?

(i) Government officials (ii) PO leaders (iii) My neighbor (iv) Barangay Council (v) I don't know

16. Do you need to get permission for harvesting the planted trees for home consumption?

(i) Yes..... (ii) No.....

17. Do you need to pay the fee to get Certificate for selling lumber?

(i) Yes.... (ii) No.....

If yes → how much (pesos) do you need to pay to whom?

18. Did you replant after harvesting of any trees? Yes....or No.....

If No → please give the reason.

(Management rights)

19. Do you have the rights to plant the trees that you want to plant in your plot?

(i) Yes or (ii) No (iii) I do not know

20. When you want to do thinning, do you need to consult with PO?

(i) Yes (ii) No (iii) I do not know

21. Can you make charcoal by harvesting the trees?

(i) Yes (ii) No (iii) I do not know

22. How much you have to pay per (sac) of charcoal?

23. How many (kg) of product do you get from the seasonal crops and fruit trees including your own consumption and the amount you sell annually?

Name of products	How many kg of product you harvest per year	self-consumption (%) /Value	Selling (%) /Value
Banana			
Coconut			
Avogadro			
Rattan			
Peanuts			
Beans			
Tomato			
Taro			
Mango			
Orange			
Lemon			
Papaya			
Others			

24. Do you need to get permission to sell those products in the market? Yes or No

25. Where did you sell these products?

(1) Local market (2) City market (3) Middleman

26. Do you have the rights to prevent the outsiders for cutting trees in your plot? Yes....or No.....

Communal Area

27. Do you know the Resource Use plan of your Association? Yes.....or No.....

28. Did you participate in preparing this Resource Use Plan? Yes.....or No.....

29. Do you know the communal area of your group? Yesor No.....

30. Do you need to get permission to access the communal area? If need, who is authorized person to give permission?

i) No need to get permission ii) I don't know iii) PO leaders (v) Others

31. How many times have you been accessed in the last year? Please give the reason of access to the communal area.

i) Just access, ii) Collect fuelwood iii) Harvest trees, iv) Harvest NTFPs (v) Grazing vi) Management purposes (vii) None of them

32. If you collect fuelwood from communal area, please tell the amount of fuelwood? (Frequency)

33. How many trees can harvest at one time?

34. Could you sell the fuelwood collected from communal area?

35. Could you sell the trees harvested from communal area in the market?

36. Could you sell the NTFPs collected from communal area in the market?

37. According to your understanding, who make decisions related to the harvesting and management of the trees?

(i) PO leaders or PO chairman (ii) Federation leaders (iii) Barangay Council (iv) DENR (v) LGU

38. Did you participate in making those rules? Yes...or No....

If yes→ Could you have chance to speak out your opinion in assembly?

If No → Why you could not join in making rules for the communal area?

39. Did you participate in patrolling the communal area? Yes...No.....Frequency/month

III. Perceptions of values of communities for the property rights they have

40. Do you think that the rights can transfer to your generation?

i) Yes ii) No iii) I don't know iv) I am not sure

41. If someone wants to buy your plot (claims), are you willing to sell it?

(1) Yes → why do you want to sell?

(i) Meet emergency need (ii) For money (ii) Insecurity of tenure (iii) Buyers' need (iv) Others

(2) No → why don't you want to sell?

(i) For next generation (ii) Environmental Services (iii) Security of tenure (iv) Others

42. How do you think the duration of tenure?

i) enough ii) short iii) should be longer tenure

If the answer is "should be longer tenure", please tell the duration that you prefer and why?

43. How do you feel for paying the fee for getting timber transport?

44. When you try to get approval for timber transport, can you get quickly or is it delay?

45. Around this community, did anyone sell the land in the last 12 months?

(1) Yes

(2) No

(3) I do not know

46. How is your feeling for planting trees in your plot?

Property rights	Enough	Not Enough	Need to improve	Please tell freely how you want to improve
Access				
withdrawal				
Management				
Exclusion				

(i) Enough for home consumption (ii) Get income for our home (iii) It is not useful (iv) I want to plant more trees.

If the answer is (iii) → why did you plant the trees?

If the answer is (iv) → please write down the species preferences.

47. In order to improve CBFM policies related to property rights in communal area, how do you think existing property rights and how you would like to improve the existing property rights?