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THESIS

ASSESSING THE VALUE OF COMMUNITY FORESTS IN IMPROVING THE RURAL LIVELIHOOD IN PUNAKHA DISTRICT, BHUTAN

DECHEN CHODEN

A Thesis Submitted in Partial Fulfillment of
the Requirements of the Degree of
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Dechen Choden 2013: Assessing the Value of Community Forests in Improving the Rural Livelihood in Punakha District, Bhutan. Master of Science (Agricultural Economics), Major Field: Agricultural Economics, Department of Agricultural and Resource Economics. Thesis Advisor: Assistant Professor Penporn Janekarnkij, Ph.D. 66 pages.

The study investigates the participation of community forest management groups in conservation and community forest protection activities. This study also evaluates the contribution of participatory community forest management to livelihood improvement of rural households in the study area. Four community forests located in Punakha, western Bhutan were selected as the district has one of the oldest and second highest numbers of CFs approved. These include Waku Damchi, Lumsum, Yargay and Mangizingkha, all established in 2005. Data were collected from the total 180 member households of the community forests. Descriptive analysis using market price technique for valuation was employed. The community forest management groups were given rights to manage the community forest in their own areas. The benefits derived from the community forest were distributed among members both in-kind and cash, mainly for subsistence. There are strong supports from forest community members for forest conservation and protection activities. The contribution from forest resources for each household per annum was Nu.63,024 in Waku Damchi, Nu. 10,923 in Lumsum and Nu. 11,583 in Mangizinkha. Households in Yargay received no income from forest resource because it is still at the stage of plantation. On average, forest resources from the first three community forests contributed only 0.3% of the total household income, which is relatively low compared to that of neighboring countries. The study concludes that there is a policy challenge in terms of meeting both the goals of environmental sustainability and poverty reduction at the same time. The policymakers should improve the restriction on the use of forest resources and explore opportunities to capture more benefits from them, alongside the environmental sustainability outcome. The government should continue support for conservation and promote wider participation through higher education and awareness campaigns.

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Student's signature Thesis Advisor's signature

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Last but not the least to all my family, relatives, colleagues, and friends for their faith in me and without all their love and support it would have been impossible to live at home away from home and achieve my goal.

Dechen Choden

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LIST OF ABBREVIATION

CBNRM	Community-Based Natural Resources Management
CF	Community Forest
CFMG	Community Forest Management Group
DEFRA	Department for Environment, Food and Rural Affairs
DFPS	Department of Forest and Parks Services
DFS	District Forest Sector
DzFO	Dzongkhag Forest office
FAO	Food and Agriculture Organization
FNCR	Forest and Nature Conservation Rules
MA	Millennium Ecosystem Assessment
NSB	National Statistic Bureau
NTFP	Non-Timber Forest Product
Nu	Ngultrum
RECOFTC	Regional Community Forestry Training Center for Asia and the Pacific
RGoB	Royal Government of Bhutan
SFD	Social Forestry Division
SLA	Sustainable Livelihood Approach
TEEB	The Economics of Ecosystems and Biodiversity
TEV	Total Economic Value

CHAPTER I

INTRODUCTION

Statement of the Problem

Bhutan has abundant forest resources with forest covering a total of 26,826 square kilometers, which constitutes 73% of the total land area (Food and Agriculture Organization of United Nations [FAO], 2012). About 69% of Bhutanese population live in rural areas (Temphel and Beukeboom, 2006), which means a vast section of Bhutanese population depend directly or indirectly on natural resources for their livelihood. The Poverty Analysis Report of 2007 says that 23% of the Bhutanese population lives below the national poverty level. Thus, enormous potential lies in the exploration of natural resources to improve the livelihoods of the rural poor.

Of the total forest cover, 26% is designated as protected areas and biological corridors (Royal Government of Bhutan [RGoB], 2003). Another 8% is earmarked as production forest. There is, however, no specific area definition or demarcation for community forests. The National policy of 10th Five Year Plan (2008-2013), says that about 4% of the forest land will be designated as Community Forests (CF) by the end of 2013 (RGoB, 2009). This means about 1,074 square kilometers of forest land shall be brought under community management. However, maintenance of minimum 60% forest cover as enshrined in the Constitution (Temphel and Beukeboom, 2006) becomes questionable in addition to sustainability with increasing pressure on natural forests. The number of CFs has drastically increased from just over four in 2001 to 61 by 2008 (Social Forestry Division [SFD], 2010). Out of many contemporary interventions in forest resource management, CF has emerged as the most promising and is welcomed by both policy makers and communities.

The community forest program is one of the regimes for forest management in Bhutan (Wangchuk, 2011). The Social Forestry Division (SFD) under the Department

of Forest and Parks Services, Ministry of Agriculture and Forests, is the main government agency responsible for supporting community forestry program in all 20 *dzongkhags* (districts) of Bhutan. A community forest (CF) is managed by local people who are the traditional users of the forest, called the Community Forest Management Group (CFMG). The Royal Government provides CFMG members the right to utilize forest products from their designated community forest but imposes the responsibility on the beneficiaries to take care of it. The management plan and by-laws, which are formulated by the CFMG with the help of District Forestry Sector staff, form the basis for how this is done and acts as an agreement between the CFMG and the Royal Government.

Punakha district is situated in western Bhutan. As stated in Schindele and Dheki (1996), Punakha has forest cover of about 819 square kilometers, which accounts for 84% of the total area. From the same report, it is shown that about 50% of the total forest in Punakha district is accessible and usable for forest management. Broad-leaved forest is the main vegetation type in the forests of Punakha and accounts for about 89%. Chir Pine forest is also dominant.

According to Royal Government of Bhutan (RGoB) 2005, 3,353 rural households with population of 15, 423 reside in rural Punakha. People of Punakha rely on forests for various services and products such as: grazing land for domestic animals, timber and firewood for local households, organic manure in the form of leaf -litter, and making agricultural implements and tools. Agriculture is their main occupation and rice is the main crop grown, followed by wheat, mustard and vegetables. Horticulture crops like citrus, banana, mango and guava are also grown for both domestic consumption and sale. Almost all the people rear livestock for dairy products at the same time to make farm yard manure.

A community forestry program in Punakha started in 1994 in Dawakha village under Toewang block before the legal basis on community forestry was in place. It was only approved in 2007 (as Kuenphen CF) after numerous changes and adjustments were made. The first CF in Punakha, however, was Waku-Damchi CF,

which was approved in 2005 under Kabjisa block. Presently, there are 23 approved CFs in Punakha district (Table 1). The establishment and management of CF depends on enabling polices and legal and institutional conditions on forest governance. These necessary conditions influence how a CFMG organizes to develop and manage their CF resources, to fulfill CFMG's prescribed management objectives, and generate income from selling surplus products.

Table 1 Community Forests Approved by DzFO in Punakha District

Year	Community Forest	Location (Block)
2005	4	Lingmukha, Kabjisa and Talo
2006	2	Guma and Chhubu
2007	6	Lingmukha, Kabjisa, Talo, Toewang, Shenga and Bjimi
2008	6	Lingmukha, Kabjisa, Shenga,Bjimi, Guma, and Zomi
2009	-	
2010	5	Toebisa, Toewang, Shenga, Bjimi and Kabjisa

Source: District Forest Office (DzFO) (2010)

CFMGs were given the legal rights to harvest and sale forest products upon fulfilling their own requirements. The sale of timber and non-timber forest products (NTFPs) were confined access to products such as: fencing posts, poles, firewood, mushrooms, ferns and orchids. In return, the CFMGs have to plant trees in the open areas within their CF with free seedling supply from the forest offices. Other management responsibilities include activities such as patrolling of whole forest area, protecting the forest from fire. CFMG raise community's fund from both forestry and other then forest sources. The funds are used for various activities of community forest management and community development to ensure livelihood improvement of the households. The main research question in this study on which the study is embark upon is does the community forest improve the livelihood of the community? If yes, how so?

Objectives of the Study

1. To review community-based management schemes of forest resources in Punakha

2. To assess the direct use values from community forests and their contribution to livelihood improvement of the community forest management groups

Expected Benefits

The results from this study will provide some guidelines to improve CFMGs livelihood, based on the benefits from forest, which include economic value such as income from timber and non-timber forest products.

The policy maker such as SFD, DzFO and Department of Forests and Park Services (DFPS) can use the study results on community forest to help indentify key problems to be addressed and policy and implementation gaps in order to improve the livelihood of the CFMGs.

Scope of the Study

This study explores the contribution of community forests to local communities' livelihood through forest products, income generation and potentially other benefits. The information obtained from this study may be useful to managers of community forests and policy makers to improve the potential of community forestry in Bhutan towards fulfilling the goal and objectives of the tenth five year plan – poverty reduction. The content of the study is categorized into three aspects:

1. Study site – the study was conducted with the CFMGs in Lingmukha, Talo and Kabjisa block under Punakha. The Punakha district was selected for the study because it the oldest and has the second highest number of approved CF. All the four CFs for study site were established in 2005

2. Time period – the field survey were conducted from March to November, 2011. Secondary data was collected from CFMGs, District forests office and Social Forestry Division.

3. Study focus – the study focuses on assessing the direct use value from community forests and their contribution on livelihood improvement of the rural communities.

Structure of the Thesis

The thesis consists of six chapters. Chapter one starts with introduction. Chapter two provides the literature reviewed on forest ecosystems and valuation methods. Chapter three summarizes the status and legal aspects of community forest in Bhutan. Chapter four provides the research study methods and explains data collecting methods as well as analytical procedures. Chapter five presents the study's results and discusses them in light of the study's main objectives. The last chapter addresses the conclusion of the study and provides further recommendations.

CHAPTER II

LITERATURE REVIEW

The forest is considered to be an important sources to alleviate poverty as most of the rural communities rely on forest or their livelihood. In order to attain a higher opportunities in success of the solutions, most of these investigation tend to incorporate studies in benefits from forest ecosystems. This chapter delivers on the literatures relevant to this study which can be presented in to four primary aspects: 1) Benefits from Forest Ecosystem 2) Total Economic Value, 3) Community Forest and Poverty Reduction and 4) Market Price

Benefits of Forest Ecosystem

World Bank (2004), the world's ecosystems provide a huge variety of goods and services. The valuable commodities that natural ecosystems provide are such as edible plants and animals, medicinal products, and materials for construction or clothing. Likewise value the aesthetic or cultural benefits provided by natural ecosystems, including beautiful views and recreational opportunities. What is less well known is the extent to which human economies depend upon natural ecosystems for a range of biological and chemical processes. Examples of ecosystem services include the purification of air and water, regulation of rainwater run-off and drought, soil formation and maintenance, maintaining biodiversity for agriculture and protection from climate stabilization (for example, though carbon sequestration), and moderating extremes of temperature and wind.

Forest ecosystem services are defined as services provided by the natural environment that benefit people. While there is no single, agreed method of categorizing all ecosystem services, the MA framework is widely accepted and is seen as a useful starting point. Some of these forest ecosystem services are well known, including food, fiber and fuel provision and the cultural services that provide benefit

to people through recreation and appreciation of nature. Other services provided by ecosystems are not so well known. These include the regulation of the climate, purification of air and water, flood protection, soil formation and nutrient cycling. These are not generally considered within policy appraisal at present and represent an area where a greater and more systematic focus would be very useful (DEFRA, 2007).

Total Economic Value

TEEB (2009) Stated that the functioning of ecosystems and their services affect so many aspects of human welfare, a broad set of indicators can and should be used to measure the magnitude (‘value’) of their impact. All the aggregate values as defined in Total Economic Value (TEV) are integral for derivation of actual worth the biodiversity and ecosystem services are important to humans for many reasons. So, TEV comprise of both use values (including direct use such as resource use, recreation, and indirect use from regulating services) and non-use values, e.g. the value people place on protecting nature for future use (option values) or for ethical reasons (bequest and existence values).

In addition, the forest has non-use economic values that benefit from existence of and leaving the resource shares for future generations. The bequest value is the value of rights for the benefits from natural resources for now and future. Non use value is further categorized as: Option value (value for maintaining stock for future). It is the benefits due to uncertain and estimate the potential future benefits by avoiding the irreversible damage to the resources rather than exploiting it today and existence value (benefits derived from forests existence regardless of actual uses cultural, aesthetic and spiritual values) as shown in Figure 1.

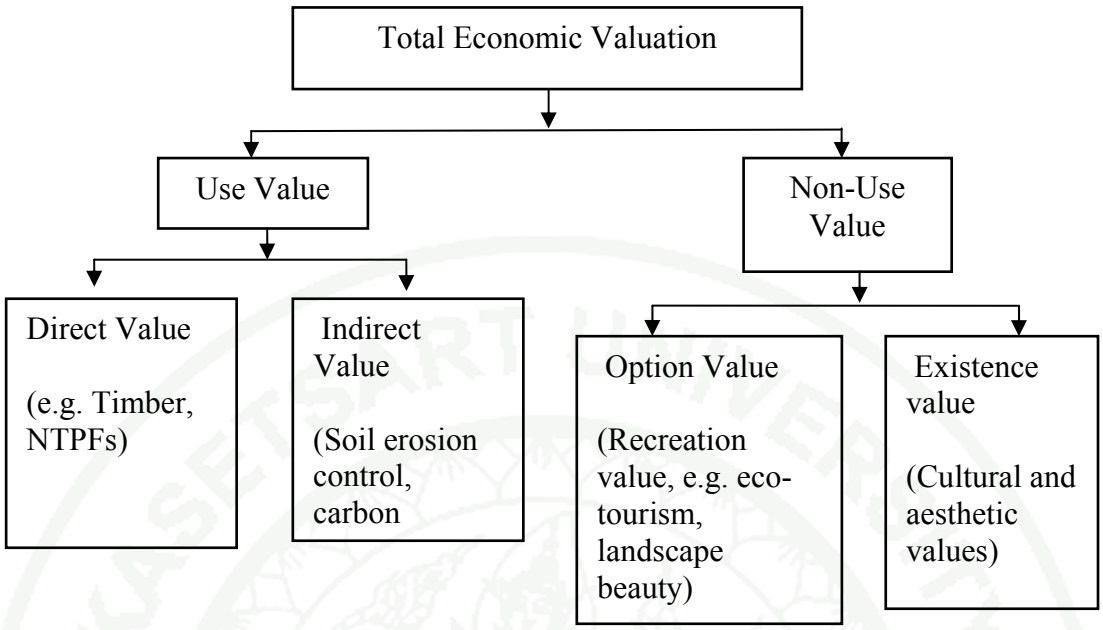

Figure 1 Total Economic Value of Forest Ecosystem Framework
Source: Adapted from MA (2005)

Market Price

The simplest and most straightforward way of valuing forest goods and services is to look at their market prices: what they cost to buy or what they are worth to sell. Although these methods can be useful, in many cases biodiversity has no market or subject to price that are highly distorted. In such cases alternative methods must be used. (Hecht,1999). Assessment of forest resources has typically focused almost entirely on the different productive uses of forest (e.g., timber, NTFP), while ignoring other productive uses such as traditional activities and the environmental functions and services provided by forests. One reason for this is that the benefits of productive uses are generally easy to illustrate since their output is marketed. By comparison, the economic value of many forest components escape traditional economic analysis because they do not have a market price (i.e., they are not bought and sold in the market place). Examples would be forest resources harvested for subsistence purposes (food, medicine) and ecological functions such as coastal erosion control or biodiversity. While the valuation of non-marketed good and

services may require a number of assumptions and extra research efforts, monetary estimates will be possible in nearly all cases.

Certain ecosystem goods and services have a market. Timber and NTFP e.g. have economic values that can be calculated with little statistical analysis. Markets for less tangible ecosystem services are also emerging, such as mitigation of greenhouse gas emissions. Most ecosystem goods and services, however, do not have readily observable market prices**.** When they are available, they may be either undervalued or distorted. Distortions in the market (subsidies, price regulations, taxes) may produce incorrect values which must be accounted for in an effective valuation analysis.

Community Forest and Rural Poverty

According to RECOFTC, 2004 currently defines it as: Community forestry involves the governance and management of forest resources by communities for commercial and non-commercial purposes, including subsistence, timber production, non-timber forest products, wildlife, conservation of biodiversity and environment, social and religious significance. It also incorporates the practices, art, science, policies, institutions and processes necessary to promote and support all aspects of community based forest management

Vyas (2000) defines Community forestry as forestry by the people of the people, for the people. The people are qualified to mean the involvement of the people rather than ownership. It is something like rehabilitation of forests for rehabilitation of people through active involvement and participation of the community, the government acting as a catalyst and a partner. Utilization and management of forests by the local community is therefore not a recent innovation but it is rather a new attempt to enhance sustainable supply of forest and natural resources by involving local people aiming towards meeting their own objectives. It is also perceived that at first the people's objectives were met and later aiming to fulfill the conservation policy of the government.

In Bhutan community forestry began as an attempt by governments and aid agencies to provide an alternative way for forest departments to manage forests, that is, through including local people (Gilmour and Fisher, 1991). The development of community forestry was partly motivated by a desire to allow forest dependent people to obtain legitimate access to a major source of their livelihoods. It was partly motivated by recognition that forests could not be properly managed without some level of active support from local people. Behind this, there was also increasing pressure on forest departments to become more efficient in their use of government funded resources. The underlying basis of community forestry in many places was its nature as a government program. Many of the recent advances in community forestry represent more sophisticated approaches to participation, both in terms of the way participation is understood and in the increased understanding of the sociology of resource management (Gilmour and Fisher, 1991.).

According to Hirsch (n.d.), community forestry means different things to different people. Nevertheless, there are some basic ingredients common to most definitions of community forestry, such as :

1) Community forestry is about using or managing natural or plantation forest at the local level in a way that is compatible with local objectives and values.

2) Community forestry involves a degree of decision making separate from state forestry agency control.

3) Community forestry is an attempt to match simultaneous environmental, economic and social objectives related to forest resources.

4) Community forestry involves a number of users who live in the same area.

5) Community forestry is primarily carried out by peasant farmers or smallholders

However, traditional village communities are unlikely to manage the new challenges of natural resource management on their own (Korten, 1986). State management of natural resources and returning to earlier local management regimes – attempting to simply 'reverse nationalization'– is also not a viable strategy for addressing contemporary challenges in natural resource management. The importance of participation in governance is strongly recognized in Bhutan. For nearly three decades, government has been guided by a decentralization policy that aims to stimulate capacity for self-governance and self-action, and to reduce direct expectation and reliance on central government.

According to Dhakal and Masuda (2008), the community forests supply the basic needs of forest-products for example firewood, fodder/grass and timber to local people on a regular basis. The proper management of community fund is crucial for sustainable community forest management and livelihood improvement, where forest resources have higher economic potential. The author also said that participatory forest management approach is not only effective to construct the local institution, but also effective to empower the local people and seize the forest management activities as the means of livelihood improvement

As stated by Zahabu, Malimbwi and Ngaga (2006), Regenerating local ecosystems can also deliver significant improvements in livelihood security to rural families who depend on natural resources. Millennium Development Goals, improving household incomes, education, and health, while restoring biodiversity and ecosystem integrity. Although this restoration process has been more concerned with livelihood improvement and security, very significant biodiversity and environmental benefits have been generated. The success of long-term forest and woodland restoration will ultimately depend on the extent and willingness of the farmers and beyond to manage trees and woodlands as part of their farming systems. For this to be successful as a long-term strategy, these forests and woodlands must continue to be seen as socially, economically, and environmentally valuable to these people. To reinforce this, more economic opportunities for tree and forest products will need to be sought through improved local-level processing, value adding, and marketing.

CHAPTER III

STATUS AND LEGAL ASPECT OF COMMUNITY FORESTS IN BHUTAN

Community-based Natural Resources Management (CBNRM) in Bhutan

Since the nationalization and centralization of control over forest resources in 1969, many of the indigenous knowledge systems and community-based regimes for natural resource management disappeared, as communities lost their customary rights and regulatory function over local forest resources. Community accountability and responsibility for natural resource protection became irrelevant as government forest bureaucracy took over regulation and monitoring of forests and forest use (RGoB, 2002). For example, local communities had locally defined harvesting areas for subsistence and utility products, such as firewood, bamboo, cane and other non-timber forest products. Nationalization and State control made locally defined harvest areas irrelevant as outsiders with an official permit from the government enjoyed the equal right to resource access and use. The problem was exacerbated by the expanding road network and increasing international trade, which encouraged and enabled commercial resource utilization and exploitation by outsiders. (RGoB, 2002)

Limited state capacity to effectively monitor and manage Bhutan's natural resources, combined with the loss of local resource management regimes, has created an open-access situation for many resources in which "everybody's property is nobody's concern" (RGoB, 2002). Under conditions of increasing resource-use, an open-access situation results in excessive resource use, declining resource productivity, increasing competition and conflicts among users, and environmental degradation. Popularly termed the 'Tragedy of the Commons', this situation is a major challenge for natural resource management. The 'tragedy of the commons' is not yet perceived as a significant problem in Bhutan because of the relative abundance of natural resources and because the gradual impact of over-use has gone largely

unrecognized. However, the situation is changing rapidly and an increasing number of local ecosystems are showing signs of environmental stress.

Improving the effectiveness of natural resource management is necessary for sustaining Bhutan's natural resources and environmental health. World-wide evidence demonstrates that increasing local participation in natural resource management is essential for sustainable resource management; the State cannot achieve sustainable resource management entirely through conventional bureaucratic and technocratic approaches, which are control oriented and seek to insure that resource management decisions conform to centrally defined prescriptions. Where local resource users have significant influences on natural resources, effective Natural Resource Management strategies provide a framework for the participation of users: in defining the desired condition, in defining and managing their roles and responsibilities in achieving that desired condition (RGoB, 2002).

Community Forest in Bhutan

Rural Bhutanese people usually live near forests and rely heavily on forest resources for their basic needs. Forests provide them with products and services such as firewood, construction timber, fodder and pasture, foods, medicines, leaf litter, water for drinking and irrigation, and spiritual grounds. A community forest is managed by a group of local people, including the traditional users of the forest, called the CFMG. On approval of a Community Forest Management Plan (CFMP) and by-laws, the Royal Government gives CFMG members the right to use and benefit from their designated community forest in return for taking responsibility for its management and protection. The Management Plan and By-laws which are formulated by the CFMG with the help of DzFO staff and which are approved by the DFPS, from the basis for how this will be done and act as an agreement between the CFMG and Royal Government.

In the Bhutanese context, community forestry also refers to combination of people and the forest and covers a range of livelihood and the forest resource management. CF applies to local management of forest area, including protection and sustainable utilization of its resources from intrusion. In the past, community forestry in Bhutan has been promoted on degraded land purely looking at the rehabilitation of the area. The older version of the Forest and Nature Conservation Rules (FNCR), 2000 says that CF should include at least 50 percent natural forest and 50 percent degraded/barren area, wherever possible. Through experiences, this was not practical in the field. However with policy reforms and changes in the perception of the foresters this provision was lifted in FNCR, 2006, thereby enabling the farmers with more options in choosing the CF area. Again the other side of this rule is that the area of CF is limited and people have less option in meeting the diverse objectives of their CF.

In the last fifteen years, CF has evolved from an emphasis on improving subsistence levels and reforestation activities, to looking at viable communities can generate income from the management and utilization of forest resource. It is now widely accepted that if local communities are involved in decision making processes regarding resource management and derive benefits from conservation activities, they are more needed to conserve forest resources.

Evolution of Community Forest in Bhutan

In 1979, His Majesty the Fourth King Jigme Singye Wangchuck said that "*The participation of the local community is the key to conservation and utilization of forest resources*". This was the starting point for the development of social forestry in Bhutan as a government-supported program. However, little progress was made during the following decade due to limitations in the regulatory framework which had a primary focus on forest conservation and mandated that all forests belonged to the State. There was also no legal provision for allocation of Government Reserved Forest to communities, though it was an important signaling of the intent to change the forest management paradigm from a centralized top down one to a decentralized

and devolved bottom up on. Real changes began with the adoption of decentralization policies in the early 1990s when the importance of people's participation in protection and management of forests was recognized (SFD, 2010).

Progress in establishing CFs was initially slow for two main reasons: (i) communities were skeptical about whether the Department of Forest would actually hand over Government Reserved Forest for their management and, (ii) government staff had severe reservations about the ability of communities to manage forests sustainably without causing forest loss and degradation (Temphel and Beukeboom, 2006). The move to a more people-centered approach is still on-going, but considerable progress has been made since 2001, and this is evident from the impressive increase in the number of functional CFMGs in recent years, which is related to the substantial improvement in the capacity of district level staff to support decentralized forest management and to a realization among communities that the government is serious about handing over government forest to communities for local management for local benefit (SFD, 2010).

The 10th Five Year Plan (2008-2013) adopted poverty reduction as its overarching theme and primary goal, and this has major consequences for policy orientation and medium term strategies in the forest sector. Among the strategic measures is one related to the: "*Establishment of Community Forests and expansion of commercial harvesting of Non Timber Forest Products (NTFPs).*" One of the two impacts set for the Community Participation Program in the 10th Plan is: "*Reduction in the proportion of rural households living below the poverty line"* and one of the nine major targets set for the Renewable Natural Resource (RNR) sector is *"4% of forest area to be managed as community or private forestry*." Thus, Community forestry has a clearly identified place in the country's key planning instruments with strategic links to: (i) governance of Renewable Natural Resources; (ii) decentralization and devolution; (iii) commercial harvesting of NTFPs and (iv) poverty reduction.

Regulatory Framework for Community Forest in Bhutan

The regulatory framework includes the legislation, policies, rules and procedural systems (implementation manuals and guidelines) that provide the formal framework within which community forestry operates (SFD, 2010). The following paragraphs describe the key changes that have taken place in recent times, and the contemporary situation.

The Forest Act of 1969 was the first Act passed by the National Assembly after its inauguration. This Act mandated that all forests belong to the State, and there should be no private rights to any part of them. The first formal forest policy for Bhutan was approved in 1974, and this remains the only officially approved policy statement on forests. The 1974 policy followed the directions in the 1969 Act and set a framework for the scientific management of the country's forest lands. Approaches were laid out for the key areas of forest conservation, afforestation, resource survey, utilization and wild life conservation. This policy also contained the first mention of the objective of maintaining "*a minimum of 60 % of the total land under forest*", which was later included in the Constitution.

A new National Forest Policy was drafted in 1990 under a Master Plan process, but this remains in draft form without having been officially approved. Even though the draft was not officially approved it was still influential in guiding policy direction. The primary policy objective of this draft was on conservation of the environment, and only thereafter on deriving economic benefits from the forests. A major thrust was to bring the reserved forest under effective and scientifically prepared management plans, and approved management plans are now a requirement for commercial harvesting. All policy documents to date have provided for the on-going supply of timber to rural households. In spite of the policy intent to balance conservation and sustainable utilization, interpretation of the policies and implementation tended to emphasize the conservation and protection aspects of forest management (SFD, 2010).

The Act also makes provision for private forestry to be practiced in privately registered lands and for CFs to be established on government forest lands, with the communities being granted management and use rights under conditions set out in approved management plans. The FNCR, 2006 signal the intention of sourcing rural timber supplies from CFs in the longer term, when these forests are capable of yielding sufficient timber. Until that time, members of CFMGs remain entitled to obtain their timber needs from Government Reserved Forests. The FNCR, 2006 spell out the role of government officials in supporting CFMGs in all aspects of community forestry, from identifying suitable forests, to developing, implementing and monitoring management plans (Table 2).

Table 2 Key Change between FNCR, 2003 and 2006

Topic	**FNCR, 2003**	**FNCR, 2006**
Preparation of CF management plans	CFMG shall prepare the management plans with assistance from DzFO (Section 29-3)	DzFO shall prepare management plans in consultation and collaboration with the CFMGs (Section 28-3)
Administrative responsibilities and powers of CFMGs	CFMGs shall mark the trees (Section 34-1)	CFMGs shall request the DFO/PM to mark the trees (Section 33-1)
Management of NTFPs	NTFP management not clearly defined	NTFP management more clearly specified, e.g. the area for NWFPs can exceed 2.5 ha per HH (Section 27-2 (d))
Type of forest land available for CF	Equal ratio of degraded and good forest, where ever possible (Section 28-2 (e))	No qualifications on type of natural forest to be handed over, although plantations raised by the Department shall not be included (Section 27-1)

Source: Adapted and expanded from SFD (2010)

The FNCR, 2006 are currently being revised and there are expectations that some of them will be modified to make their application more flexible and adaptive. For example, some of the Rules that define the number of households that can constitute a CFMG and that limit the area of CF per household may be modified. The present FNCR, 2006 constrain small communities from establishing themselves as CFMGs and limit the ability of CFMGs to generate significant income from their CF and to provide for timber for rural construction and maintenance.

A community forestry implementation manual in four parts was produced in 2004 based on experiences in countries with similar conditions to Bhutan as well as early field experience in Bhutan itself. This has been used to guide field implementation and cover the topics of:

1. Initiating Community Forestry
2. Community Forest Management Planning
3. Silvicultural Options for Community Forestry
4. Record Keeping and Institutional Strengthening for Community Forestry Management Groups (SFD, 2010).

Article 5 of the Constitution of the Kingdom of Bhutan (2008) makes it clear that: "*Every Bhutanese is a trustee of the Kingdom's natural resources and environment*". The Royal Government is enjoined in the Constitution to conserve and improve the environment and safeguard the country's biodiversity. It is further directed to secure sustainable development while promoting economic and social development. The Constitution further charges the Government to ensure that a minimum of 60% of Bhutan's total land area is maintained under forest cover for all time.

Conservation and Protection Activities of Community Forest

The CF manual (2004), states that all individuals and households with traditional claim to forest produce can seek CFMG membership. People eligible to become members have the choice as to whether they wish to join the CFMG or not. Chosen members of the CFMG are obliged to follow the procedures and rules of the CFMG as outlined in the by-law. It includes participation in the conservation and protection of the CF, planning and decision making, conservation and protection of CF activities and CFMG meetings, which are held once every three months or when required. The CFMG also provides labour if required.

As stated in CF manual, all individuals and household with traditional claim to forest produces from the proposed CF can seek membership for CFMG. People eligible to become members have the choice as to whether they wish to join CFMG or not. Chosen members of CFMG are obliged to follow the procedures and rules of the CFMG as outline in the By-law. It includes participation in conservation and protection of CF, planning and decision making, conservation and protection of CF activities and CFMG meetings which are held once in three months or when how it is required. CFMG also contributes labour if required (CF manual, 2004).

The main management aspect includes protection and sustainable utilization of its resources from intrusion. With enabling policies and legal supports on community forestry, the CFMGs were granted with rights to use and manage the resources available within their CFs. The resources include timber products and NTFPs such as: mushroom, bamboo, cane, orchids, ferns and medicinal plants. However, there were also indirect values such as: soil erosion control, fresh water, carbon sequestration, soil nutrients retention, aesthetic values, and wildlife and bird recreational values.

Role of Forests in Rural Livelihoods

In Bhutan it is well known that forests are important for providing wood for construction and fuel wood as well as non-wood forest products. Of the total population in Bhutan, 75% lives in the rural areas (NSB, 2009), where they depend on agriculture, livestock and forests for their livelihood. The key non-wood forest products in Bhutan include cane, bamboo, mushroom (Tobgay, 2008). According to Renewable Natural Resource Statistics 2000, about 21% of households in the country are engaged in harvesting wild mushrooms, while about 42% of households use bamboo for a variety of purposes and 39% of households participate in fern top harvest.

The commercial value of these non-wood forest products encouraged the government to use the community forestry program to expand management and increase the commercialization of non-wood forest products. This is to be done through community forestry management plans by explicitly stating their major focus is a particular NTFP. To date there is little information on the extent to which timber and non-wood forest products such as mushrooms, cane and bamboo are generating income from community forests, the opportunities for expanding it, or their constraints; we also do not know how the income is collected, used and/or distributed by the CFMG, including its economic impact at the household level. Lastly, there has been little attention to how CF works in the broader context of other household food and income earning activities, especially agriculture.

Income Generation

Since agriculture in Bhutan is mostly subsistence-oriented and seasonal in nature, there is a possibility of partial employment for local people from their community forest. Timber and fuel wood from CF can be sold at commercial rates to local market thereby generating income and potentially improving the livelihoods of CFMG. One example of timber income from a community forest is from Magizinkha CF under Talo block in Punakha district. In this case, the CFMG earned

significant income from selling timber because the national transmission line went through their CF. Labor for the timber extraction came from the CFMG for which the payment was given to individuals. Another example of income generation from community forests is Waku Damchi CF under Kabjisa block. Here, the CFMG is engaged in collecting NTFPs from its CF which are consumed and even sold.

However, to date few CFs have generated income. This may because a CF does not have surplus timber to be extracted or where they do have the inventory, the CF may not have road access and the extraction of timber may be very expensive (Temphel and Baukeboom 2006). But no study has been done on the marketing and transportation of community forestry products to determine their costs and. benefits, especially related to other livelihood enterprises.

CHAPTER IV

STUDY METHODS

Conceptual Framework

The conceptual framework shows the overall idea for the study (Figure 2). The forest ecosystems services from the CFs to the CFMGs, their conservation efforts will be analyzed, as shown in the framework bellow. The direct use values from forest ecosystem were analyzed and its impact on CFMGs livelihood. Further the from the study findings, policy options were suggested.

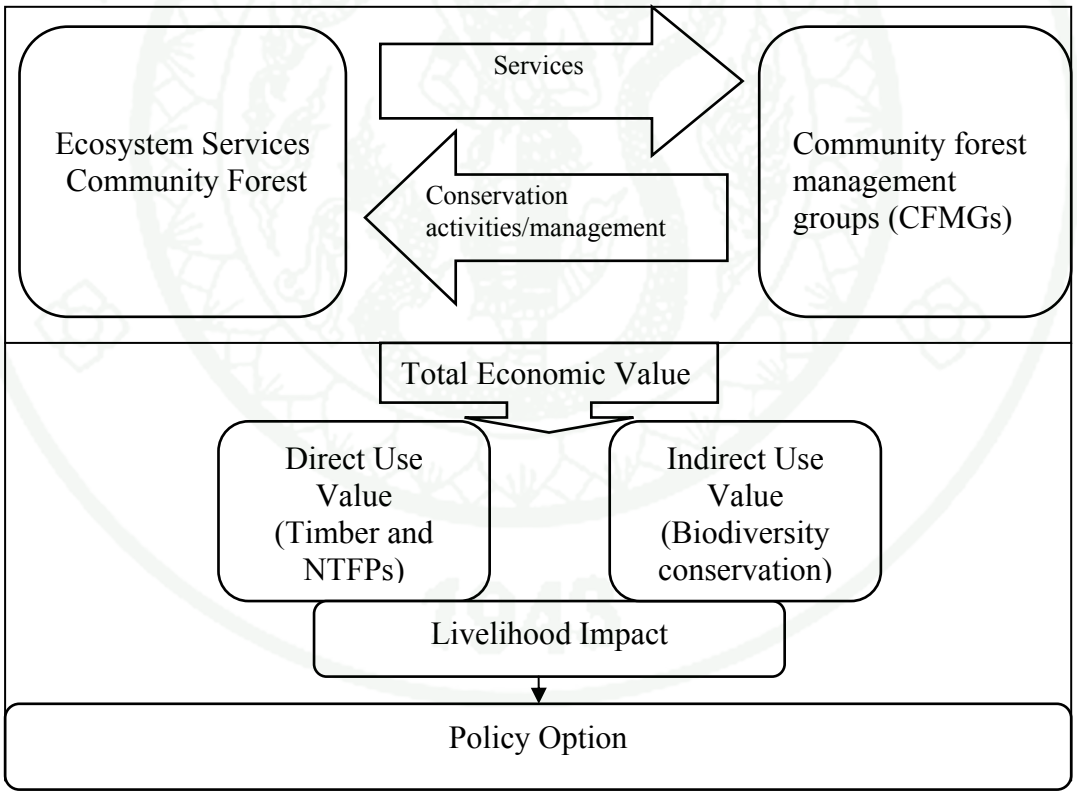

Figure 2 Conceptual Framework of the study

Note: Indirect use values were not included for this study

Study Site

The study focuses particularly on Punakha, one of the eight western districts of Bhutan (Figure 3). It describes specific blocks in the district where research and studies were carried out.

Figure 3 Location of Bhutan on the map of South Asia
Source: Wangchuk (2011)

Punakha district was chosen for the study based on the following conditions:

1. The concept of CF started in Punakha district in 1994, well before the legal policies for community forestry were devised in the country. People of Punakha are, therefore, more aware and experienced about community forestry.

2. Punakha is also the district with the second highest number of CFs approved so far.(Figure 4)

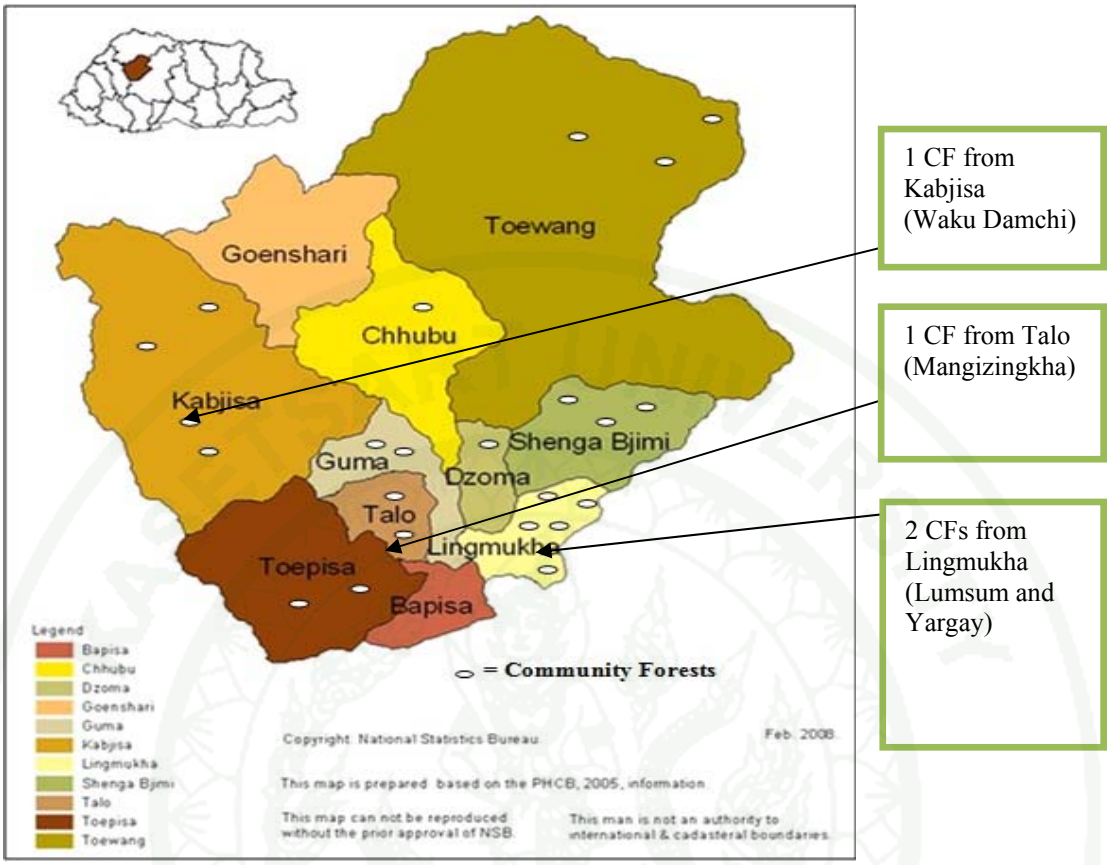

Figure 4 The administrative map of Punakha district with community forests
Source: National Statistic Bureau (NSB) (2009)

Sampling

There are 23 CFs in Punakha. The four oldest CFs, namely *Lumsun*, *Yargay* CF under Lingmukha block, *Waku Damchi* CF under Kabjisa block and *Mangizinkha* CF under *Talo* block, were selected as the samples for the study using purposive sampling method. All four CF was established in 2005.

There 108 households in the four CFs (Table 3). All the households were the member of CF, there were no non-member of the CF. Therefore entire population of the study site of four CFs were selected for the study.

Table 3 Sample community forest in Punakha for the study

Block	Name of CF	Forest Type	Area in Hectare	No. of CFMG
Kabjisa	Waku Damchi	Chirpine and Broad leaved	76	42
Lingmukha	Lumsum	Board leaved	60	29
Lingmukha	Yargay	Cool Board leaved	15	20
Talo	Mangizinkha	Cool Board leaved	41	17

Source: Study survey (2011)

Primary Data Collection

Informal discussions were held with people of the four community forestry sites, including a few CFMGs, along with the committee members, block extension officers and district forestry officers. They were encouraged to talk about their experiences and knowledge of community forestry. Specific data and information were obtained through focus group discussions. Separate focus group discussions with two committee members – chairperson and secretary – of individual CF, block extension officers and district forest officer were held to understand their perceptions of goods and services they obtained from their community forest (Table 4). These discussions provided CFMG members opportunity to express and share their views freely. Interviews with the CFMG, their leaders and the members of the executive committees were also conducted. Questionnaires were pre-tested and revised making changes where it was felt necessary. Face-to-face interviews were then carried out by the researcher.

Table 4 The list of participants for the primary data in all four blocks for the study

Blocks	Informal discussion	Focus Group Discussion	Interviews
Talo	- Chairperson - CFMGs - Block Extension Officer - District Forest Officer	- Chairperson - Secretary - Block Extension Officer - District Forest Officer	All CFMGs
Kabjisa	- Chairperson - CFMGs - Block Extension Officer - District Forest Officer	- Chairperson - Secretary - Block Extension Officer - District Forest Officer	All CFMGs
Limbukha	- Chairperson - CFMGs - Block Extension Officer - District Forest Officer	- Chairperson - Secretary - Block Extension Officer - District Forest Officer	All CFMGs

Source: Study survey (2011)

Secondary Data Collection

Secondary source of information for this case study included the following existing literature and plans: Forest and Nature Conservation Act of Bhutan 1995 and Forest and Nature Conservation Rules of Bhutan 2006, case studies conducted by participatory forest management project and Social Forestry and Extension Division of Department of Nature and Park Services, Ministry of Agriculture and Forests. The study made use of office records, reports and other documents of four community forest management groups. Data were also retrieved from office records and reports of District Forest Office, Block Forest Office, and Division Forest. Forest Office of Punakha District and other published and unpublished literatures were referred for the study.

Data Analysis

The procedure of data analysis started with the process of error correction and data editing in each questionnaire. Microsoft Excel was used for data entry in order to perform in the part of descriptive analysis. The quantitative data was analyzed using the statistical software. For the economic valuation of forest resources, the data obtained was converted to monetary terms for all tangible goods by using market price. The unit used for the monetary terms was in Bhutanese Ngultrum (Nu).

Economic Analysis

Agriculture is the main occupation in the entire study-district and rice is the main cash crop grown, followed by wheat, mustard and vegetables. Horticulture crops like citrus, banana, mango and guava are also grown for both domestic consumption and commercial purposes. Almost all the people rear livestock for dairy products. The cost of agriculture inputs like seeds, manures, haired labourers and transportation of the goods to market were calculated. The household cash expenditures on food, education, health, clothes and cultural events were also included as the cost expenditure of the household. Other expenses like house rents, electricity and telephone were calculated.

The Quantity , amount used in previous year(time/month/year) were calculated and the unit was Bhutanese Ngultrum (Nu)

Quantity (unit)/month = Quantity/time/month (how many times the rice produced/month?)

Quantity (unit/year) = Quantity/time/month (how many times the rice produced/year)

Gross Value (total amount of rice produced by each household)

= **Value** of rice kilogram (kg) **x** Price **– Cost** of amount of rice produced (Cost includes cash and non-cash such as labour and materials)

Direct Use Values

'Direct use values' of forest resources refer to values derived from actual use of particular good either for direct consumption or the production of other commodities. Market prices are used for goods that are traded as their value is difficult to estimate. In the case of forests, direct use values would include the value of timber being extracted and the NTFPs collected. The value of timber and NTFPs for both domestic purposes and sale in the market were estimated.

The measurement of the economic value of CFs includes only direct values. The study does not try to capture indirect values as the estimation of indirect values because most products and services are not traded in the market, and hence they do not possess market prices. Net income was valued in units of Nu/household/year. The direct use value at the household level is explained as follows:

$$DUV^T = \sum_{i}^{n} \square \sum_{j}^{m} [R_j - C_j]_i$$

Where:

DUV^T are the direct use values accrued to the total households in the CF using resources in activity *j* of forest utilization in i^{th} household, in the time period of annual contribution. T is the time period of one year

Activities j is the economic activities on farm, non-farm and forest utilization for each household

R_j is the gross return from timber, polls, post, fuel wood and NTFP both for domestic purposes and for sale per year. (Amount of forest produce collected (Kg) **x** price (Nu/Kg)/household/year

C_j is the cost incurred during the use of forest resources, such as transportation, cost of hired labour, etc. (hour/time **x** amount of time/month **x** amount of people)/household/year. The information was collected in 2011

CHAPTER V

RESULTS AND DISCUSSION

Socio-Demographic Profile of the Households

The background information of household respondents on gender, education level, age and sources of income were collected (Table 5). About 38% of the household respondents were female. The average age of the respondents was 44 years. Regarding the educational status of the respondents, about 73% of the total households were illiterate. About 11% of the respondents had completed high school, 9% had completed secondary high school and 6% had completed primary level education. Only 1% of the respondents reported to have attended non-formal education.

Table 5 General socio-economic characteristics of the respondents in the study sites

Criteria	Waku Damchi	Lumsum	Yargay	Mangizinkha	overall
Female (%)	48	45	35	24	38
Age (years)	42	48	38	47	44
Education (%)					
None	67	69	75	82	73
High school	12	14	10	6	11
Sec.High school	.5	10	15	6	9
Primary	14	.3	0	6	6
Non-formal	2	3	0	0	1

Source: Study survey (2010)

Community Forest Management Scheme

During the household survey, household respondents were asked about the management scheme of CF (Table 6). About 98% of the CFMG does CF monitoring. About 93% agreed that a CF program should be initiated by the DzFO and the management of CF, while monitoring and evaluation (for both the CF and the CFMG) are in place. Around 91% of the CFMG agreed that the committee decides on the procedures for the allocation and utilization of CF produce and 90% of members said CF by-laws are respected by non-members. About 87 % of the CFMG agreed that members decide on the procedure for the control, management, and utilization of the CFMG fund. About 85% agreed that CFMG is the major authority when implementing management plan activities in the approved CF. The members can access Acts, Rules or Manuals from any office within the district. Only 71% agreed on this. Around 68% of the members felt that the CFMG should initiate the CF program. 60 % of the members felt that a CF area of 2.5 ha per household is sufficient. The members had less hope (59%) as to whether the CFGM will be able to establish CF without incentives either from the government or from projects/donors in the future. Only 52% of members agreed that timber harvesting should be limited.

Table 6 Respondents' opinions on the CFMG scheme (percentage of the yes response)

Activities	Waku Damchi	Lumsum	Yargay	Mangizinkha	Overall
CFMG do the CF Monitoring	93	100	100	100	98
Ownership Certificate is awarded by DzFO	95	97	90	88	93
CFMG manages the CF	83	100	95	94	93
Monitoring (for both CF and CFMG) are in place	93	97	100	82	93

Table 6 (Continued)

Activities	Waku Damchi	Lumsum	Yargay	Mangizinkha	Overall
Committee decides the procedures for the allocation and utilization of CF produce	81	93	95	94	91
The CF By-laws are respected even by non-members	93	90	100	76	90
CFMG manages and utilizes the CFMG fund	88	93	95	71	87
CFMG has the major authority implementing, management activities in the approved CF	88	83	80	88	85
CFMG can access Act, Rules or Manuals from any office within the district	71	76	90	47	71
CFMG should initiate CF programs	64	66	70	71	68
The CF area should be 2.5 ha per household	71	45	60	64	60
CFGM establish CF without incentives from government, or any other source	69	62	65	41	59
There should be limited Timber Harvesting	62	45	40	59	52

Source: Study survey (2011)

Community Forest Conservation and Protection Activities

During the household survey, household respondents were asked about their participation in various community management activities regarding natural resource conservation and CF protection (Table 7). Protection from forests fires, illegal logging and NTFP collection, fresh water protection and re-plantation showed 100% participation. Committee members mostly attended conservation meetings with 92% participation. The participation in patrolling CFs was shown at 90%. The participation in wildlife conservation was about 65%. However, the lowest level of participation of the households was in wildlife conservation as wildlife causes damage to agricultural crops

Table 7 The Frequency and percentage of participation in conservation and protection activities in CFs

Activities	Waku Damchi	Lumsum	Yargay	Mangizinkha	Overall
Protection against illegal harvesting	100	100	100	100	100
Forest fire control	100	100	100	100	100
Protection of fresh water	100	100	100	100	100
Re-plantation	100	100	100	100	100
Attendant CF meetings	90	90	100	88	92
Patrolling of CF	90	86	85	100	90
Wildlife conservation	60	52	70	76	65

Source: Study survey (2011)

Household Income and Expenditure

About 90% of the rural communities depend on farming, such as crops and livestock for their livelihood in the study area. Agriculture is the main occupation in the entire study district, and rice is the main crop grown, followed by wheat, mustard and vegetables. Horticultural crops like citrus, banana, mango and guava are also

grown for both domestic consumption and sale. Almost all of the people rear livestock for dairy products and to make farmyard manure. Other non-farm sources of household income include weaving, wage work and receiving money from remittances and pensions.

The net family income ranges from Nu.101,748 to 489,200 per household per year (Table 8). The income from crops was estimated to Nu. 1,217,175 and the income from livestock were estimated at Nu. 145,289. The estimated net farm income was Nu 1,362,464 per household per year. The other sources of income came from non-farm activities such as salary, remittances, weaving and small household business. The non-farm income was estimated to be Nu.15,891 per household per year. The annual income from forest resources (timber and NTFPs) income was estimated to be Nu.2,559 per household. The other household cash expenditure such as on food, education, health, cultural events, house rents, electricity and telephones was calculated and amounted to Nu. 352,865 per household per year.

Table 8 Net household income in the study area (Nu/household/year)

Items	Waku Damchi	Lumsum	Yargay	Mangizinkha	Overall
Net farm income	578,822	189,755	251,400	342,487	1,362,464
Crops	563,413	174,209	159,342	320,211	1,217,175
Livestock	15,409	15,546	92,058	22,276	145,289
Non-farm income	4,810	5,821	510	4,750	15,891
Forest income	1,501	377	0	681	2,559
Household expenditure	95,932	94,204	120,918	41,811	352,865
Net family income	489,200	101,748	130,992	306,107	1,028,047

Source: Study survey (2011)

Household Benefits from Community Forests

In this study, it was found that the major direct uses of the forests in Punakha district included timber extraction and NTFP collection such as mushrooms, ferns, bettels, orchids and bamboo shoots. The calculation of the annual value of timber, fuel wood, poles, posts and non-timber forest products was based on market prices. Households found it extremely difficult to quantify how much they collected from CFs. The villagers used different measurements such as bundles, baskets, and pots, which are difficult to be converted into units associated with a market price.

In this study, forest income includes the income derived from the use and sale of forest products from a community forest. In all of the four CFMGs, no other forests other than community forests were used to collect forest products. Income from the forest is, therefore, the monetary value of the products consumed and sold by the users (Table 9). Among the four CFs, Waku Damchi had the highest annual net income from forest resources of Nu.1,501 which was estimated to be Nu.36 per household and Nu830 per hectare. In Mangizinkha, net annual income was Nu.681 which was amounted to Nu.40 per household or Nu.183 per hectare. The lowest annual income was from Lumsum with the net income of Nu.377 which were estimated to be Nu 13 per household or Nu.283 per hectare. Yargay CF has not been included as it has not made any contribution from its forest products due to the early plantation stage.

Table 9 Net income from forest resources in the study area (Nu/household/year)

Items	Waku Damchi	Lumsum	Mangizinkha	Total
Timber	152	154	373	679
NTFP	591	38	20	649
Poles	353	65	139	557
Fuel wood	260	38	112	410
Posts	145	81	38	264
Forest income (Nu/year)	1,501	377	681	2,559
Forest income	36	13	40	89
(Nu/household/year)	830	183	283	1,296
Forest income				
(Nu/hectare/year)				

Note: NTFPs include mushrooms, bamboo shoot, orchids, ferns and bettels.

Source: Study survey (2011)

Discussion

Management Scheme of Community Forest in Punakha

A community forest is managed by a group of local people, including the traditional users of the forest, called the Community Forest Management Group. On approval of a Community Forest Management Plan and by-laws, the Royal Government gives CFMG members the right to use and benefit from their designated community forest in return for taking responsibility for its management and protection. The Management Plan and By-laws which are formulated by the CFMG with the help of DzFS staff and which are approved by the DFPS, form the basis of how this will be done and act as an agreement between the CFMG and the Royal Government. CFMG elects representatives to function as their CFMG management committee. Each CF committee comprises a chairperson, a secretary, a treasurer and normally has five to eight members. Committees are selected bearing in mind that

there are considerable responsibilities involved, and the committee members are expected to attend meetings and implement tasks on a regular basis.

The CFMG members raise their funds through different activities in a CF, such as from timber and non-timber forest products. The amount received as fines/penalties ranges from Nu. 50-100 for the violation of rules and regulations, and other grants, donations or other funds received from any person, organization or government contribute to CFMG funds. In accordance with the CF rule, all funds collected are deposited in separately maintained fund accounts in the name of the CFMG. However, the amount collected by a CFMG depends on how much members are able to pay. The CFMG committees decide on the use of funds, which is normally for community development activities such as rural road construction

Any Bhutanese citizen can apply for a permit to harvest forestry products from a government forest even if the forest is located close to a village. However, they cannot get a permit if that village has established a community forest. Only members of the CFMG can collect forest products from the CF. During the interview, respondents are aware that their nearby forests were degraded due to extraction by outsiders, especially urban residents as opposed to other rural residents. The CFMG members are supposed to patrol the CF twice a week. Their duty is to check for poaching activities. Moreover, it is the responsibility of all CFMGs to report any illegal activities to the executive committee to take action. The government is legally required to provide back up as handing over a CF to a CFMG is a legally, binding control.

Participation in Conservation Activities of CF in Punakha

Overall, the research literature shows that community-based natural resources management is a universal remedy for forest management in developing countries. The purpose of the CF program is to generate income and reduce rural poverty through the sustainable management of the forest. The CFMG was given rights to manage the CF in its own areas and the benefits derived from the CF were distributed

among its own members. The failure of some community-based management systems can be traced back to a number of problems, such as the inability to truly develop power at local levels. This happens when local communities are given rights to forest use but decisions are usually made by forest or other officials. For example, CFMGs are responsible for forest protection but have limited rights to access forest resources. CF program regulations do not enable CFMGs to legally exploit the full potential of the forest to improve livelihoods. For a CF program to capture this untapped potential, wide ranging and phased reforms are required at both local and national levels. As stated by Shyamsundar and Ghate (2011), a good part of the success of CF in Nepal can be attributed to local foresters banding around the concept, and community institutions being more accountable locally. Communities with more secure rights over their forest are able to use funds raised from forest-related activities with less interference from the state. Therefore, while improved forest management and income generation are important, poverty reduction seems to be the required targeted intervention in order to address the concerns of the rural poor.

Bhutan's 10th Five Year Plan states that it will adopt an effective strategy by which the communities, as well as the prospects of the forest, complement each other in such a way that communities are closely and gainfully involved in all of the activities of a CF relating to the regeneration, afforestation, protection and management of forest areas and the CF program. When it comes to forest conservation and protection, the compromise within the research and policy communities is generally positive (Shyamsundar and Ghate. 2011). The results of the four CFs in the Punakha district are shown in Table 3. It was found that a majority of households contribute to forest regeneration, fresh water protection and there has been a decline in forest fires, illegal logging and NTFP collection. Encouraging community participation in conservation and protection of CFs, for example, following the CF rules and regulations, may be enough to increase household perceptions of the benefits of conservation and protection activities (Zahabu., Malimbwi., and Ngaga. 2006). However, the study offers a degree of confidence about the long-term positive impact of CF programs on the environment.

Contribution from Community Forest to Community's Livelihoods

In this section, results from the survey are reported for the actual or real benefits that CFMG members report. In general, the survey found that the benefits that derive from community forests differ across the four sites. This is due in part to the varying quality of the forest, and the different levels of management capacity and experience to implement management plans

Research conducted in the study areas indicated that the forest plays an important role as part of the livelihood strategies of the rural poor. Most of the communities in the study areas, however, did not depend solely on the forest and its products as sources of sustenance and income. For the most part, they are dependent people who derive a greater proportion of their livelihood from agriculture but may depend on the forest for certain products. The study result has revealed that the principle sources of income for the majority of households were from agriculture. Forest utilization is a supplementary source of income to agriculture. This result was similar to what one would expect that free forest utilization by households are additional sources of income in rural areas, and fuel woods were the main source of energy (Kaal *et al*., 2002). As Temphel and Beukeboom (2006) mentioned, communities are aware of the economic potential of CFs but do not optimally benefit from it economically. Some small-scale timber harvesting does occur at the local level for the construction of houses, but any profiting from timber extraction has been strictly forbidden until there is a surplus.

The role of sustainable management and the development of forests in poverty reduction was found to be particularly strong in Bhutan. However in order for such a contribution to be fully realized, information on its importance must be collected, measured and targeted towards poverty reduction policies. Unfortunately current poverty-environment indicators do not have the ability to capture the contribution of forest and natural resources to livelihood accurately. One of the most hoped-for benefit by CFMG members is income generation from CFs. However, this study found that income generation from community forests in the four sites has been limited or non-existent.

It was found that forest resources contribute 0.3% of the total household income (Table 5). It is relatively very low compared to other countries (Chetrri, 2005). This is because of it being the initial stage of the CF program. The communities depend mostly on forest products which are restricted by regulations imposed by CFMGs. The impact of CFs is limited, particularly with respect to the income from timber and non-timber forest products, even though timber values can be significant because of restrictions on timber harvesting, and because the return from timber may be small. Vyamana, et al., (n.d) noticed that restrictions on the use of resources have reduced the average contribution from forest use to the household income of the communities.

Tshring (2009) stated that the annual harvesting limit did not allow the harvesting of any timber if the basal area was below 10 square meters per hectare because it was classified as degraded land. However, the researcher found out that the resources were under-utilized. In a protective forest, the challenges are higher as harvesting itself is restricted and local benefit streams are minimal (Zahabu, Malimbwi and Ngaga. 2006). More creative thinking is required, such as the reduction or removal of the timber harvesting limits, supported by long term initiatives, such as payments for environmental services related to bio-diversity. Without these policy reforms, CF programs will be unable to deliver the poverty reduction objective

Further, Wangchuk and Back (2008) argued that the area ceiling of 2.5 hectare per household is a limiting factor as the maximum area for a CF program fails to take into account the large differences in the growth and yield potential of different forest types in the country. Community land distribution has lead to differences in income generation for the communities in the study district. The area ceiling also severely limits the ability of communities to manage their forests to produce an excess of timber that can be sold to generate income. They recommended that the government make a minimum slot of forest area in order to allow CFs to sell timber and enable them to become independent from the Government Reserved Forest, and also to have a maximum area based on a certain income possibility.

The Land Act 2007 (RGoB) states that "*Any minerals resources found in any registered land shall belong to the state and shall be governed by the prevailing mines and minerals management Act or any other law that shall govern their use and management*". The Land Act can claim state rights over mineral resources even in private land, it can be inferred that rights to mineral resources on government lands rest exclusively with the government. Therefore it can be inferred that minerals in CF are state property. But as argued by Tshering (2009), forest resources managed under the CF regime should not be limited only to timber and NTFPs. CF should be holistic and management should include all forest and natural resources for the community. At present, only timber and NTFP are included within the management regime. The tenure over forest resources also should include other resources of CF such as stones and sand.

In contrast, one of the CFs in Punakha district, Mangizinkha CF (under Talo block) notably found that every CFMG member interviewed said his or her household has benefitted from the CF. The benefits they describe include easier access to construction timber. Again, a reason for this was because Mangizinkha CF was established in a forest with good wood supply and can therefore meet the demands of timber for construction from the community forest. Equally importantly, it suggests the benefits are getting to all CFMG members as everyone said they were benefiting. More varied is the result from Waku Damchi CF under the Kabjisa block report benefiting from community forest, mostly in terms of fuelwood, fencing posts, flag poles and NTFP but not in construction timber. This is because the community forest lacks good wood as it was established in a degraded forest.

As noted, in four established CFs there have been constraints including inadequate transportation, markets, commercial wood to sell and a preference to engage in alternative livelihood-generating activities, especially farming, over CF activities. Increasing the income stream from CF would help sustain the population by making CF products even more essential to local livelihoods. One of the most effective ways to do is to expand markets for CF products. The lack of markets and market access act as barriers to achieving poverty reduction and growth as

demonstrated by much literature. A case study in Lao was impressive in showing that investment in market interventions for NTFPs through the establishment of NTPF marketing groups and adding value through enhanced processing made a substantial difference in improving the wealth status of the poor communities (World Bank, 2008). India's Tenth Plan states that measures will be initiated to strengthen the effort to promote commercial cultivation and the collection of medical plants as one of the avenues for reducing poverty among communities.

CHAPTER VI

CONCLUSION AND RECOMMENDATIONS

Conclusion

Important steps have been made during the past decades to integrate the poverty reduction objective within the policy and practice, as well as main-streaming the contribution of forestry and natural resources within broader poverty reduction policies. At the local level, project such as a CF program acts to empower local communities in forest restoration and sustainable management in a region that is highly vulnerable to environment degradation. As a result, a significant area of land has been reforested and placed under the ownership of individuals, groups and communities and significant economic and livelihood benefits have been realized

The objective of the study was to review the management scheme of the CF and its contribution to rural livelihoods in Punakha district in Bhutan. The rural communities heavily rely on the forest, and good management can play a crucial role in poverty reduction. The community forest management groups were given rights to manage the community forest in their own areas. The benefits derived from the community forest were distributed among members both in-kind and cash, mainly for subsistence. The CFMGs raise their funds through different activities in a CF and committees decide on the use of funds, which is normally for community development activities such as rural road construction. There is strong support from forest community members for forest conservation and protection activities.

The contribution from forest resources for each household per annum was Nu.63,024 in Waku Damchi, Nu. 10,923 in Lumsum and Nu. 11,583 in Mangizinkha. Households in Yargay received no income from forest resources as it is still at the stage of plantation. The total net income for households ranges from Nu 2,620 million to Nu 20,546 million per year. The contribution from forest resources was only an

average of Nu.28,510 per year, accounting for 0.3% of total household income. It is relatively low compared to that of other countries. There is a very marginal contribution from forest activities to the livelihoods of the communities in the Punakha district.

Benefits from CFs were widely different across the four case studies. Mangizinkha community forests with good standing forest, is the only one in the study where CFMG households obtain maximum timber from the CF. Waku Damchi community forest has met very few needs of its CFMG. It has provided maximum fuel wood, fencing posts, flag poles and NTFP, but has not provided construction wood. While research is increasingly being conducted on the community forestry program in Bhutan, including its promises and opportunities, few studies focus on households. A focus on households is particularly important as the policy goal of community forestry now includes poverty alleviation. An important finding of this study is how households make their living. Most households in the three Punakha blocks in this study, Lingmukha, Kabjisa and Talo, purchase the majority of their staple foods with income earned from the sale of cash crops, particularly rice. Other agricultural products that earn income include selling livestock products and wild mushrooms and ferns. To date, very little income has been generated from community forests through the sale of forest products.

As a result of the study, it is concluded that participation, decentralization, and the devolution of power to the people for better management and conservation of forest offer more advantages than disadvantages; they may help with income generation and poverty alleviation in the future, but this has yet to be achieved and may be a more difficult goal to reach. Community forests directly benefit local communities by better enabling them to access forest products, which gives them more incentive to protect their CF from outside poaching. It has indirect benefits through social capital development and environmental conservation. However, generating income from CFs and distributing it to households to alleviate poverty raises many challenges.

Recommendations

Despite the sound legal framework for forest management rights, responsibilities and returns to local communities, CF program agreements are often stalled or tend to be highly conservative regarding devolving forest user rights to community management groups. In the protective forest, the challenge is greater, as harvesting itself is restricted and local benefits are minimal. Policy reforms are clearly required for the removal of harvesting limits and the area ceiling to establish CF supported by long-term initiatives, such as payments for environment services related to water, carbon and biodiversity.

At the local level, particularly in Punakha district, which is the subject of the study, forests play an important role in supplementing and diversifying farm income. Since the introduction of CFMG, the communities have the right to manage, protect and use these areas for sustainable forest management and poverty reduction. Evidence suggests duel goals of environment sustainability and poverty reduction are being met. However, the long term viability of these arrangements is questionable. There is a policy challenge in achieving the goals of both environmental sustainability and poverty reduction at the same time. Therefore, the challenge needs to be acknowledged.

The SFD and DFPS should reduce the restrictions on the use of forest resources and explore opportunities to capture more benefits from them at local and national level, alongside the environmental sustainability outcome. The government could help by supporting small-scale processing plants to diversify and add value to CF products. For example, making timber into furniture and by helping households access local and regional markets for their CF products by providing relevant and timely information to it CFMGs can increase the income generation from its CF and thus can meet the poverty reduction goal. The government should continue to support conservation and promote wider participation for CFMGs through higher education and awareness campaigns.

The cost of conservation should be studied as the benefits from the forest are very small to the community. Bhutan is slowing gearing towards developing a National strategy on Reducing Emissions from deforestation and degradation, therefore, carbon finance should be focused for further studies. Furthermore, this study didn't attempt to consider the indirect value of the forest, such as biodiversity, which should be further researched.

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APPENDICES

Appendix A

Household Survey Questionnaires

The purpose of this questionnaire is to gather information for Master Degree Thesis. Name of the interviewee(s) will be confidential!!

Questionnaire for CF Executive Members and general CFMG members

Sub-district name..... Date.....

District Name.....

Section 1:- (General information)

Name of Interviewee……

Gender: Male ? Female ? Age..... Level of education.....

Village…… CF……...…….

CFMG Member □ CF Executive Committee Member □

If CF Executive Committee Member, position……

Section 2:- (CF Management program)

1. Who should initiate the CF program?
?Community (CFMG) ?DzFS ?Geog Ext ? SFD
Reasons……..……

2. Do you think that the CF By-laws are respected by outsiders, beside CFMG?
□Yes □No □Don't know
Reason(s)……

3. Do you think there should be limited number of households to form a CFMG?
□Yes □No □Don't know
Reason(s)……
Suggested number of households……..……

4. Do you think that CF area of 2.5 ha per household is sufficient?
□Yes □No □Don't know
Reason(s)……
Suggested area in ha per household……..……

5. Who has the major authority when implementing management plan activities in the approved CF?
?Community (CFMG) ?DzFS ? Geog Ext. ? SFD

6. Who decides on the procedure for control, management, and utilization of CFMG fund?

?Community (CFMG) ?DzFS ? Geog Ext ? SFD

7. Who decides on the procedures for allocation and utilization of CF produce?

□Community (CFMG) □DzFS □ Geog Ext.

8. Who should be issuing the Ownership Certificate to the CFMG for the approved CF?

□Dzongkhag Adm. □DzFS □ Geog Ext □ SFD

Give supporting reasons/justifications…….....

9. Who controls the overall management of CF?

?Community (CFMG) ?DzFS ? Geog Ext. ? SFD

Give supporting reasons/justifications…….....

10. If any CFMG member wants to refer any Act, Rules or Manuals, is it accessible from any office within the district?

□Yes □No □Don't know

Reason(s)……

11. Do you think that there should be equal ratio of men and women in the CF Executive?

□Yes □No □Don't know

Reason(s)……

12. Do you think that in future, communities will be able to establish CF without incentives (DSA, refreshment, food, etc.) either from government or from projects/donors?

□Yes □No □Don't know

Reason(s)……

13. Is there monitoring and evaluation (for both CF and CFMG) in place?

□Yes □No □Don't know

14. How frequent?

..……

15. Who does the Monitoring?……

Section 3:-

Table 2 Income and expenditure of the household

Particulars	Value of total products (June-May2011)			Expenditure of production (June-May 2011)		
	Quantity unit (Kg) per year	Price Nu. per unit(kg)	Total value Nu. per unit(kg)	Quantity unit per year	Price Nu. per unit	Total expenditure (Nu. per year)
Cereal						
Paddy						
Wheat						
Mustard						
Maize						
Soy Bean						
Horticulture						
Mango						
Guava						
Orange						
Grapes						
Banana						
Vegetable						
Chilli						
Cabbage						
Cauliflower						
Sag						
Potato						
Tomato						
Livestock						
Egg						
Cheese						
Milk						
Butter						
Beef						
Pork						
Chicken						

Section 4:-

Table 3 Values of products and expenditure of off-farm of household)

Sources (Items)	**Value of total products**			**Expenditure of production**		
Weaving						
Salary/allowance						
Govt employee						
Household business						
Loan interest						
Gambling						
Remittance from relatives						
Others(specify)						

Section 5:-

Table 4 Household cash expenditure

Sources (Items)	**Cash Expenditure**
	Total expenditure (Nu. per year)
Food	
Cloths	
Medical	
Education	
Transportation cost	
Cultural events	
House rent	
Water expenses	
Electricity	

Section 6:-

Table 5 Assess the use values and natural services from community forest and its contribution to the CFMGs

Particulars/issues	Value of total products before CF			Value of total products after CF		
	Quantity unit per year	**Price Nu. per unit**	**Total value (Nu. per unit)**	**Quantity unit per year**	**Price Nu. per unit**	**Total Value (Nu. per year)**
Forest products						
Timber for construction						
Firewood						
Poles						
Post						
NTFPs						

Section 7:- Member's participation in protection and conversation activities (yes √/ no X)

1. What are the main activities for you as member normally participate in conservation and protection?

Attend meeting for CF development/conservation	☐
Monitor of CF	☐
Forest fire control	☐
Support cash/kind for CFs protection activities	☐
Wildlife conservation	☐
Protect illegal cutting and NTFPs collection	☐
Protect for water quality for fresh water	☐
Re plantation	☐
Other	☐

Appendix B

Focus Group Discussion Questionnaire

Focus Group Discussion Questionnaire

Sub-district..... District .....Date

Section 1: - (General information)

1. Name of respondents

Name	Position (code)	Age	Sex	Phone number
1.				
2.				
3.				
4.				
5.				

Position

1. village leader/head
2. Progressive farmer
3. Respective farmer/villager
4. Teacher/Natural leader
5. Other.....

Background of the sub-district (gaog)

Total households in the sub-district..... (Households)

……. (Persons) … ……..Gender…….

Total population in the sub-district who are members of CFMGs …….

Data about land use

Land use type	**Size (%)**	**Details (land tenure, vegetation, water sources, etc)**
1. Residential area		
2. Crop area		
2.1 Main crop…		
2.2 …..		
3. Forest area		
3.1 Natural forest		
3.2 Community forest		
4. Idle land		
5. Other eg water body, etc		
Total land in sub-district		

Section 2: - (Local people's participation)

a. How people are informed about that program?

b. How did local people participate in the planning and implementation of CF program?

c. How many households in the village participate in the CF program?

d. How the local people receive the benefits (cash/kinds)?

e. What criteria have been used for selecting local villagers to be involved in CF program?

Section 3: - (Member's participation in protection and conversation activities)

What are the main activities for members normally participate in CFMG?

Attend meeting for development/conservation of CF	☐
Monitor of CF	☐
Forest fire control	☐
Support cash/kind for CFs protection activities	☐
Protect wildlife hunting	☐
Protect illegal cutting and NTFPs collection	☐
Protect for water quality for fresh water	☐
Replantation	☐
Other	☐

Do you think Community forest protection and conservation is important? How?

If Yes, because...

Section 4: - (Supports for local people)

a. What are the relations between local people and the organization responsible for forest management in that program?

b. What are the relations between the local conditions and the role of households, groups of households and village communities in forest protection/CF management?

c. What supports do local people (particularly those participating in CF conservation program) get from agro-forestry extension and other support programs?

Section 5: - (Monitoring and Evaluation)

a. What agencies (stakeholders) are involved in monitoring and evaluation of CF protection services?

b. What is the situation of control, monitoring and violation punishment? What is the level of violations?

c. How forest resources changed since the implementation of CF program? (before/after?)

d. How do local people evaluate the benefits/payment received from participating in CF program?

e. How important are the payments/benefits from CF program in improving farmers' income, job creation, and alleviation of poverty in the village.

f. What will be the appropriate amount of payment and why?

g. Who will need to involve in identifying the amount of payment and how?

h. What are the appropriate/suggested forms of payments/benefits (payment to community, group, and individual?)

i. What are major constraints that limit the participation of the poor and disadvantage groups to participate in that program?

j. What are the possible measures to address these constraints?

k. What are the strategies at policy levels implemented?

Section 6: - (Local Institutions)

a. Farmers' organizations present (cooperatives, irrigation/water-use, forest user groups, seed production, marketing)

b. What are the existing rules and regulations of CFMG?

c. Who formulates these rules?
d. How are these rules disseminated to the farmers?

e. How are these rules and regulations enforced and by whom?

f. Types of conflicts occurring in the area

g. How are conflicts resolved or managed?

h. What kind of rules and regulations would assist them in farming?

i. What kinds of local organizations will manage in conservation activities?

j. What kind of conservation activities?

k. Number of people/household participated in conservation organizations

Section 7: - (Market Conditions)

a. Infrastructure (access to market, farm to market roads); Road network and type/means of transportation present

b. Where farmers sell products; farm gate prices, costs (distribution in terms of costs for labor, input and management), income

c. Market information and sources (national, regional, local)

d. Market channel (government, local collectors, individual), market distribution, market margin processing and market storage facilities

Section 8: - (Credit Facilities)

a. Formal and informal credits, from which sources

b. Types of credit

c. Interest rates according to credit types

d. Farmer's access to credit

e. When they need credit most? At Least? What reasons?

Section 9: - (Extension Services)

a. Types of extension services provided by whom?

b. What kinds of services you have accessed and are these services timely?

c. What other kinds of extension services are needed?

d. What kinds of trainings farmers need?

e. What kinds of conservation activities of extension services are provided?

f. Budget allocation from local institution/extension services/government or private sectors

<u>Section 10</u>: - (Value of forest products and expenditure from CF in a year)

Particulars/issues	Value of total products per CF unit			Expenditure of production per CF unit		
	Quantity unit per year	Price Nu. per unit	Total value (Nu. per unit)	Nu. per acre	Acre	Total expenditure (Nu. per year)
Forest products						
Timber for construction						
Firewood						
Poles						
Post						
NTFPs						
Bamboo						
Bamboo shoot						
Herbs						
Mushrooms						
Orchids						
Ferns						
Cane						
Fruits						
Others(specify)						

THANK YOU

BIOGRAPHICAL DATA

NAME :	Miss Dechen Choden
DATE OF BIRTH :	December 17, 1985
PLACE OF BIRTH :	Trashigang, Bhutan
EDUCATION :	Bachelor of Arts in Economics
	2004-2006 Pune University, India
SCHOLARSHIP :	Thailand International Cooperation Agency
	2009-2012