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The Impact of CDM Forestry on Poverty Alleviation

The Case of the Humbo CDM Forestry Project, Ethiopia

Master's Thesis in Development Studies, specializing in Geography

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DEDICATION

This work is dedicated to Abigia, Melat, Nahom, Meklit, Yabsira and my beautiful wife Sara

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Sincere thanks to all the lecturers and administrative staff at the Department of Geography (NTNU) for their input and assistance in the completion of this research. I am grateful to my supervisor Professor Haakon Lein for his encouragement, guidance, commitment, constructive comment and enduring interest in my research. My sincere gratitude goes to my friends Dr. Girma Kelboro, Dr. Tadese Jaleta, Dr. Maru Guade and Tadese Duguma for your continuous support and encouragement. My biggest and most sincere gratitude goes to my wife Sara Kotiso and our children. You are the best and I am grateful for having you in my life.

DECLARATION

I, Abayechew Ayele , hereby declare that this study contains no material or information which has been used for the award of any other degree or diploma in any institution and to the best of my knowledge, contains no information or data previously published by another person, except where due reference has been made.

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Abayechew Ayele Amonge (Student)

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Prof Haakon Lein (Supervisor)

ABSTRACT

The CDM forestry projects are part of the United Nation Convention on Climate Change (UNCCC) framework as set in the Kyoto Protocol in 1997. The projects are designed to bring economic benefits and to contribute to poverty alleviation programs in host countries. However, evidence on the potential impacts of such kinds of project in the host countries is still scarce (Corbera & Friedli, 2012:209). This thesis therefore explores the impact of CDM forestry project on poverty alleviation by taking empirical evidence from the Humbo CDM forestry project in Ethiopia. It assesses the projects capability of alleviating poverty and how benefits and costs are being distributed throughout the community. The study uses political ecology, climate change and carbon paradigms as the theoretical frameworks. It employs qualitative methods of research and analysis of field data collected through interviews, focus group discussion, observation and document review. The study revealed that the implementation of the project has affected local livelihoods as it has brought some benefits to the community and some costs to households. These benefits and costs are not evenly distributed throughout the community as some groups of people bears much of the costs induced due to the implementation of the project whilst capturing no direct monetary benefits. The imbalance between the household's benefits and costs has made the impact of the Humbo CDM forestry project on poverty alleviation remain uncertain.

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LIST OF ACRONYMS

A/R: Afforestation Reforestation

CDM: Clean Development Mechanism

CERs: Certified Emission Reductions

CO_2: Carbon Dioxide

CSA: Central Statistical Agency

DNAs: Designated National Authorities

DOE: Designated Operational Entity

EPA: Environment Protection Agency

ES: Ecosystem Service

ETB: Ethiopian Birr

FDRE: Federal democratic Republic of Ethiopia

FGD: Focus Group Discussion

FMNR: Farmers Managed Natural Regeneration

GDP: Gross Domestic Product

GHG: Green House Gas

HWC: Human Wildlife Conflict

IUCN: International Union for Conservation of Nature

JI: Joint Implementation

KP: Kyoto Protocol

MoFED: Ministry of Finance and Economic Development

NGO: Non-Government Organization

NTFP: Non Timber Forest Product

PDD: Project Design Document

PES: Payment for Ecosystem Service

PSNP: Productive Safety Net Program

SD: Sustainable Development

SNNPR: Southern Nations Nationalities People Region

UNFCCC: United Nations Framework Convention on Climate Change

WB: World Bank

WVA: World Vision Australia

WVE: World Vision Ethiopia

1 INTRODUCTION

1.1 General Background

In 1997, the Kyoto Protocol (KP) designed a framework convention to mitigate climate change for the well-being of the current and future generation. The convention introduced new forms of market system that allow actors to involve with *"common but differentiated responsibilities"* (Boyd et al., 2009:15). One of these forms of market was the Clean Development Mechanism (CDM). It has been considered a mechanism that can help to solve north-south argument over climate change and development (Olsen, 2007:61).

The Clean Development Mechanism (CDM) is a mechanism created by developed countries to be implemented in developing nations. It is a type of mechanism deigned to bring sustainable development, promote poverty alleviation and contribute to ecosystem improvement in the host countries. Ethiopia has hosted a CDM project called *'the Humbo CDM forestry project'* that has been designed to meet five specific goals:

> To remove CO2 through regeneration of native forest, to check, measure and certify the carbon removal from the project site, to enhance the biodiversity of the region, to cut soil erosion and flooding, and to give an income stream for local families through the sustainable harvesting of the forest resources. (PDD, 2009:3-4)

The fifth goal is about the project's contribution to poverty alleviation. The project has generated revenues. Still there are doubts whether the revenues obtained from the sale of carbon actually have compensated and helped people out of poverty. Thus, the purpose of this study is to assess the impact of the *Humbo* CDM forestry project on poverty alleviation.

1.2 Problem Statement

I became interested in this issue after watching a video released by the World Bank about the success story of the *Humbo* CDM forestry project. I was struck by two presumably contradicting scenarios at the outset. On one hand, there is adequate literature that discusses the failure of such projects to meet their intended goals of addressing the needs of the poor. On the other hand, the

video emphasized the success of the project in reducing poverty by drawing on local people's opinion. It celebrated the project's achievement being the first of its kind in Ethiopia.

These two contrasting events attracted my interest towards the topic and decided to sort out the success story of the project. I recognized that most CDM forestry projects are location specific, and there is no one suit fit project design applicable to all geographic locations and livelihood conditions.

There are ample research on the potential impacts of CDM projects (for example, Corbera & Friedli, 2012; Boyd et al., 2012; Thomas et al., 2010; Olsen, 2007; and Brown et al., 2011). Boyd et al. (2009:829) argue that *"the CDM in its current form has not realized Sustainable Development benefits envisaged its creation."* Olsen (2007:59) argues that *"left to market forces, the CDM does not give much to Sustainable Development."* On the other hand, Thomas et al. (2010:886) argue that the afforestation reforestation (A/R) activities have potential benefits to meet sustainable development, promote poverty alleviation and ecosystem improvements. Similarly, Brown et al. (2011:331) argue that *"the Humbo CDM project doesn't threaten local livelihood systems, rather it enhances them."*

These debates center on the positive and negative sides of CDM projects in local communities. There is still work done on the project's impact on poverty alleviation and its likely effect on local institutions. But, how much of its practical and potential benefits are reaching the local communities has largely remained inconclusive. This research is an attempt to fill the gap.

This study is related to the works of Corbera & Friedeli (2011) and Brown et al. (2011). Corbera and Friedeli (2011) undertook desk based critical review of eight CDM projects including *Humbo* site. However, their review did not include local community's opinions about the benefits and the likely perceived impact of the project on local communities. The local community's inputs and opinions have significant role to achieve a pre-established goals and to understand the community support to the project and its sustainability. Brown et al. (2011), however, assessed early impressions of the project during its first three years of the implementation period. Some of the authors were direct participants of the project design.

1.3 Objective of the Study

The overall objective of this study is to explore the community perceptions of the impact of the *Humbo* CDM forestry project on poverty alleviation. More specifically, the study has the following two objectives:

1. To examine the benefit and cost sharing mechanisms of the project
2. To assess the impacts of the project on poverty alleviation

1.4 Research Questions

1. *How are the benefits and costs of the project being distributed?*
2. *What are the impacts of the project on local livelihood?*
3. *Has the project contributed to poverty alleviation? If so, how?*

1.5 Justification of the Study

Ethiopia is predominantly a rural country. More than 83 % of its population are living in rural areas (CSA, 2007:7). Agriculture is the mainstay for most rural households and is the back bone of the economy. Agriculture is, however, characterized by simple technology, low productivity and output, dependence on nature and, exposed to drought and famine. Ethiopia is also a country of smallholder agriculture. For instance, *"in the 2000 cropping season, 87.4 % of rural households operated less than 2 hectares; whereas 64.5 % of them cultivated farms less than one hectare; while 40.6 % operated land sizes of 0.5 hectare and less"* (Gebreselassie, 2006:6-8). This kind of land fragmentation was the result of continuous population increase and became one of the cause of poverty for rural population (Tafere et al., 2013:146). In Ethiopia, rising food prices and underdeveloped marketing infrastructures and irrigation systems has become a serious challenge for rural households.

At present, growing attention is being given to various mechanisms whereby different issues in which poor rural people can take part and benefit from market opportunities linked to ecosystem services and climate change mitigation (IFAD, 2010:5-7). The CDM under the KP is one of such climate change mitigation measures which is supposed to benefit farmers in the host country. However, this 'pro-market' and 'pro-poor' approach may possibly results in marginalization of some resource users through the process of inclusion and exclusion (Corbera & Brown, 2010:1741-1742).

This can possibly lead to certain conflicts among different actors. Such conflict can expect to be serious in countries like Ethiopia where farmers lack basic understanding of structural and relational mechanisms; where fuel wood is a relatively affordable and reliable source of energy; where traditional and nature dependent agriculture system is dominant; and where poverty and food insecurity is severe (Corbera & Brown, 2010:1757; Sonwa et al., 2012:1). As CDM forestry projects involve biodiversity restoration and forest protection, the process invite wildlife to come back to the area and possibly causes conflicts between people and wildlife. In such conflicts, farmers in the immediate vicinity of forest might be affected more than others due to their proximity to farmland.

The Wolaita Zone[1], where the study area is located, is one of the major food deficit and famine-prone parts of Ethiopia (Jufare, 2008:1). In different drought years of the country, the area has experienced food insecurity, poverty and vulnerability (Jufare, 2008:8). It is also one of the most densely populated parts of the country that represents continued diminishing farm land size with farmers on average of about 0.5 ha (Tafere et al., 2013:146).

The *Humbo* CDM forestry project was designed and implemented by World Vision Ethiopia in collaboration with local communities, government bodies and international long term grant from World Vision Australia. Local institutions were created to undertake forest management and protection. The project has also started bringing carbon offsets. The project is the first in its kind in the country (PDD, 2009:34). It is supposed to bring economic and non-economic benefit to local communities, ensure food security and contribute to poverty reduction. Though the potential benefits of CDM forestry projects vary across type, context and country, still the issue is debatable. The debate continues until carbon sequestration derive full benefit to farmers and local communities (Corbera & Brown, 2010:1739).

The contribution of CDM project to the host country in achieving its sustainable development goals is assessed by a Designated National Authority (DNA). A Designated National Authority is an organization granted responsibility to authorize and approve voluntary participation in

[1] Zone is the second-level administrative division in Ethiopia

CDM projects (UNFCCC, 2012:11). The organization evaluates the project based on national sustainable development indicators and provides a letter of approval to the project participants to confirm that the project activity contributes to sustainable development in the host country.

In Ethiopia, the DNA is the Ministry of Environment and Forest. At the time of project assessment and approval, the DNA used the *Humbo* CDM forestry project design document as a source of data. This makes its evaluation one-sided because project developers have never stated anything negative about their projects (UNFCCC, 2012:16). There are works that need to be done to find out the unstated negative consequences, and to what extent those positive contributions address the needs of local communities. Therefore, the purpose of this research is to explore the benefits and costs of the *Humbo* CDM forestry project in light with its perceived impact on poverty alleviation. By doing so, it aims to provide additional evidence to the inconclusive debate on the impact of CDM forestry projects.

1.6 Background of the Study Area

1.6.1 Brief Country Description

Ethiopia is located in the Horn of Africa between 3^0 and 5^0 North Latitude and 33^0 and 48^0 East Longitude. It has a total area of more than 1.1 million square kilometers (EPA, 2012:17). The topographic features range from the highest peak, Ras Dashen, (4,550 meters above sea level), in the North East down to the Afar Depression at 110 meters below sea level in the East. The climatic condition of the country varies with the topography. Forest cover in the country has increased during the period 2004/5 - 2009/10. Between these years it has increased from 4.1 million hectare (3.56%) to 8.8 million hectare (6.0865%) of the country's total area (MoFED, 2010:10).

Ethiopia is a home to about 80 ethnic groups that vary in population size. Based on the results of the 2007 National Population and Housing Census, the projected total populations of Ethiopia as of July 2013 become 86,613,986 of which 43,715,971 are males and 42,898,015 are females. Rural and urban population accounts 83 % and 17% of the total population respectively (CSA 2007:7). Agriculture is the main sector of the country and accounts about 80% of the total

employment, used for foreign exchange earnings and still dominates the country's GDP contribution (EPA, 2012:31).

1.6.2 Poverty in Ethiopia

Ethiopia is one of the poorest countries in the world. The GDP per capita of the country is US$ 378 in 2010 (EPA, 2012:9). The poverty head count ratio of the country is about 29%. According to the government interim report on 2010-11, in 2010/11 the proportion of population below poverty line stood at 30.4% in rural area and 25.7% in urban areas (MoFED, 2012:7). This indicates that rural poverty is greater than urban poverty. The report further revealed that the poverty gap index is estimated to be 7.8% while it is 8.0% for rural areas and 6.9% for urban areas.

The proportion of food-poor people that fall below the food poverty line in the country is estimated to be 33.6% with its food poverty gap index[2] of 10.5%. Its proportion in rural areas and urban areas are 34.7% and 27.9% respectively with their food poverty gap index of 11.1% for rural areas and 7.3% for urban areas (MoFED, 2012:9).

Ethiopia has experienced food insecurity problems. The country has become one of the largest recipients of food aid in Africa (Asfaw et al., 2011:1). In 2005, Ethiopia received 24% of the World Food Program's and 27% of the global food aid to Sub-Saharan Africa (Bezu & Holden, 2008:541). Though debates on the possible effect of food aid on agricultural production and consumption behavior is inconclusive, food aid program still assists the country in promoting agricultural conservation and constructing rural roads, terrace and irrigation dam (Asfaw et al., 2011:2). The country has also implemented the Productive Safety Net Program (PSNP) to deal with problems of food insecurity and environmental rehabilitation (EPA, 2012:34).

1.6.3 Brief Description of Wolaita Zone

Wolaita Zone is found in the Southern Nations, Nationalities and Peoples Regional State (SNNPR) of Ethiopia. It is located between $6^0$4'N to $7^0$1' N and $37^0$4' to $38^0$2' E. It covers about a

[2] Food poverty index measures the proportion of food poor people that fall below the food poverty line (MoFED, 2012:9)

total land area of 4537.5 square kilometers. The altitude in the zone varies between 900 and 2600 meters above sea level (Jufare, 2008:7). It generally consists of rugged, undulating mountains, rolling hills, platues and flat steep slopes that extend in the Lake Abaya and Omo River (Kebede et al., 2009:630).

According to the 2007 population and housing census, Wolaita Zone has a total population of 1,527,908 of which 88% were living in rural areas (Jufare, 2008:8). In terms of density, Wolaita Zone is among the most densely populated parts of the country. For instance, in 2006 average population density for the zone was 380 persons per square kilometer which is in contrast to the national density of 68 persons per square kilometer during the same year (Jufare, 2008:9). As compared to other parts of the country, zonal landholding is very small (1.41 ha), mainly due to high population density (Jufare, 2008:9; Kebede et al., 2009:630).

Crop production is the major means of livelihood, but livestock is also kept as a source of food, cash income, drought power and insurance against uncertainty. In the highlands, cereals, root crops and perennials are widely grown, while the hot and semi-dry conditions in the low lands allow the cultivation of only limited types of crops (Jufare, 2008:8).

Average annual rainfall varies between 803 mm at Abela Faracho in the lowlands and 1189 mm at Soddo in the high lands with high variability, especially in its distribution in all areas over the growing season (Jufare, 2008:7). Rainfall is bimodal: main rains (June-September) and short rains (February – March). The short rains are more variable and unreliable so that failure of one or both rains often leads to food insecurity in the area (Jufare, 2008:8).

Jufare (2009) further indicated that:

> Rural livelihoods in Wolaita Zone are caught up in a vicious cycle of poverty and food insecurity. The majority of households have faced critical food shortages for more than 5 months in a year and dependence on food aid is very high. Asset ownership is low, household size is very large, and farm size is declining rapidly as a result of the rapidly growing rural population. Rainfall variability is the most critical source of risk and vulnerability, with an apparent lack of public investment in infrastructure to reduce the risk of rain fed agriculture. (Jufare, 2008:20).

Generally, in Wolaita Zone, rainfall variability is the source of risk and vulnerability to frequent production loss and seasonal food shortages.

1.6.4 The *Humbo* CDM Forestry Project Area

The *Humbo* CDM forestry site is located in the *Humbo Wereda*[3], *Wolaita* Zone, Southern Nations Nationalities and Peoples Region (SNNPR), South Western Ethiopia. The community of *Humbo*, and the mountainous areas to the northwest and southeast, around *Tebella* village, is located approximate coordinates of : Latitude From 6° 46'48.47 to 6° 41'04.28 N and Longitude From 37° 48'35.44 to 37° 55'14.51 E (PDD, 2009:6). It is found within the watershed of Lake *Abaya and Chamo* which are located at the bottom of the Great Rift Valley. *Humbo* is one of the Great Rift Valley areas where rainfall is sporadic with mean annual rainfall ranging from 700-1000 mm (PDD, 2009:7). Three decades ago, the area was covered with a dense forest and was home to a variety of animal species (PDD, 2009:9).

In *Humbo* agriculture is the mainstay of rural households. The area had experienced sever soil erosions that affected households agricultural production (Brown et al., 2011:322). Its population size, according to the 2007 CSA report, was 125,286 which accounted 8.2% of the total *Wolaita Zone* population. As stated in Jufare (2008:9) *Humbo Wereda* had the least population density with 167 persons per square kilometer.

[3] *Wereda* is the third-level administrative division in Ethiopia

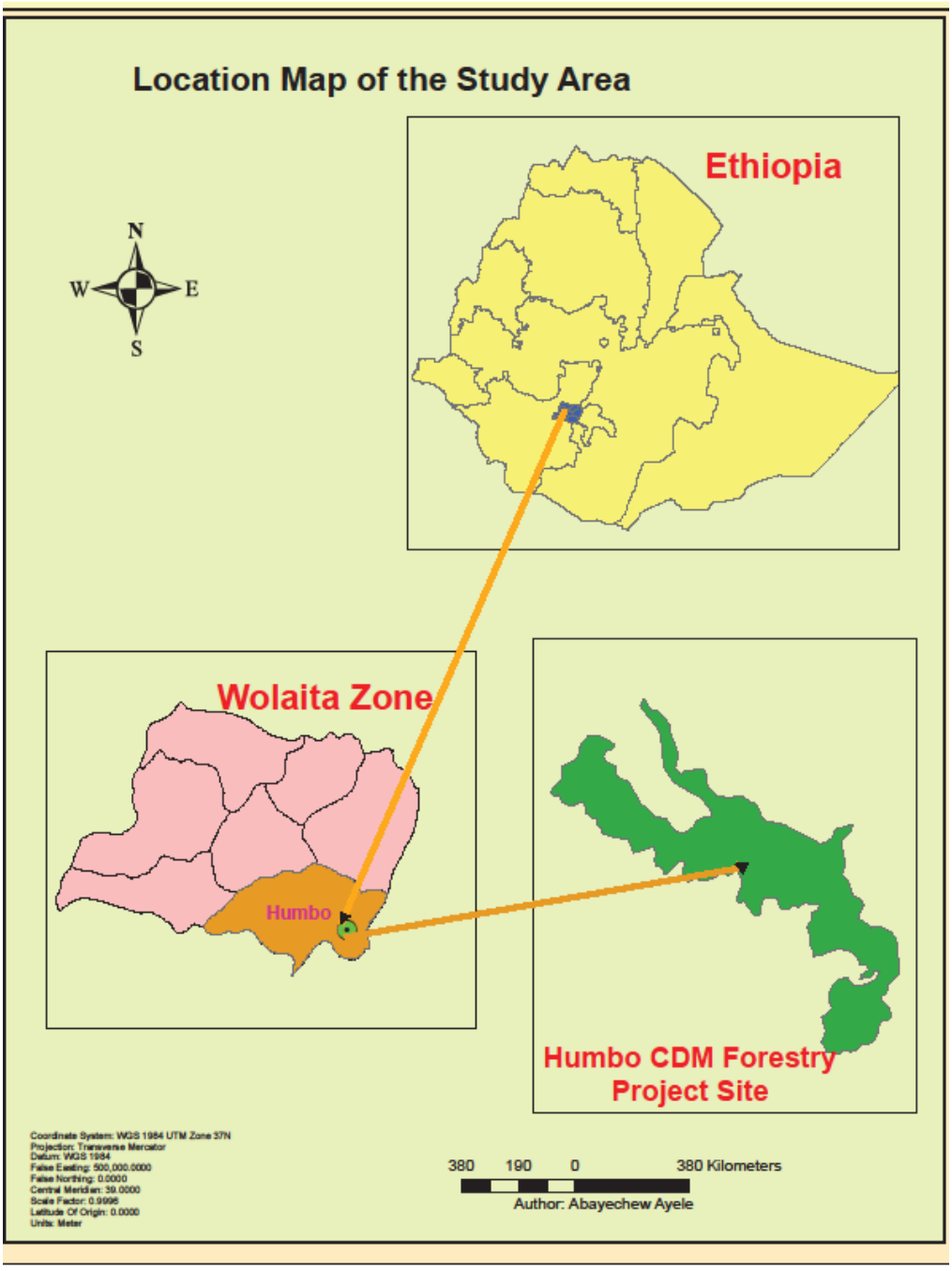

Figure 1.1 Location map of the study Area

Source: Author's own map

1.6.5 Poverty and Environmental Conditions of the Study Area

The study area is characterized by low agricultural productivity (Brown et al., 2011:322) and continuous fragmentation of farm land (Tafere et al., 2013:146). Prior to project implementation, the mean annual per capita income of the study area was less than US$ 100 (PDD, 2009:83) and an estimated 85% of the populations were living in poverty (Brown et al., 2011:322). Agriculture takes the lion share of the total income accounting to 68% (PDD, 2009:83).

It is common to accuse local poor, who struggle to make ends meet, for deforestation (Tafere et al., 2013:143). In *Humbo*, researchers have suggested that *"poverty, hunger and increasing demand for agricultural land have driven local communities to over-exploit forest resources"* (Brown et al., 2011:322). The most important bench mark for significant forest removal were the period between 1970 to 1985 in which major events like the 1975 land reform and the 1984/85 famine occurred (Tafere et al., 2013:148). Recurrent and severe drought caused the inhabitants to take desperate action to save their lives and the Nationalization of land in 1975 also encouraged local communities to cut trees for fire wood, construction and generating income (Tafere et al., 2013:148). However, the evidence obtained from aerial photographs (Figure 1.2) of the area during this time (in 1979 for instance) does not clearly indicate the area was exposed to deforestation and subsequent soil erosion (PDD, 2009:28). Rather it indicates that the area had significant proportion of forest coverage.

Soil erosion was another environmental problem attributed to anthropogenic activity within the area. Data produced by World Bank claimed that the project area was losing *"an average of between 4 and 10 tons of top soil due to erosion per hectare per year, and is allocated the highest possible environmental degradation index"* (PDD, 2009:22).

Deforestation in the Humbo surrounding was also the cause for the loss of biodiversity. In Humbo and its surroundings, there were different birds, mammals and other native animals as well as different diversity of plant species. Some of these species are either lost or threatened (PDD, 2009:12).

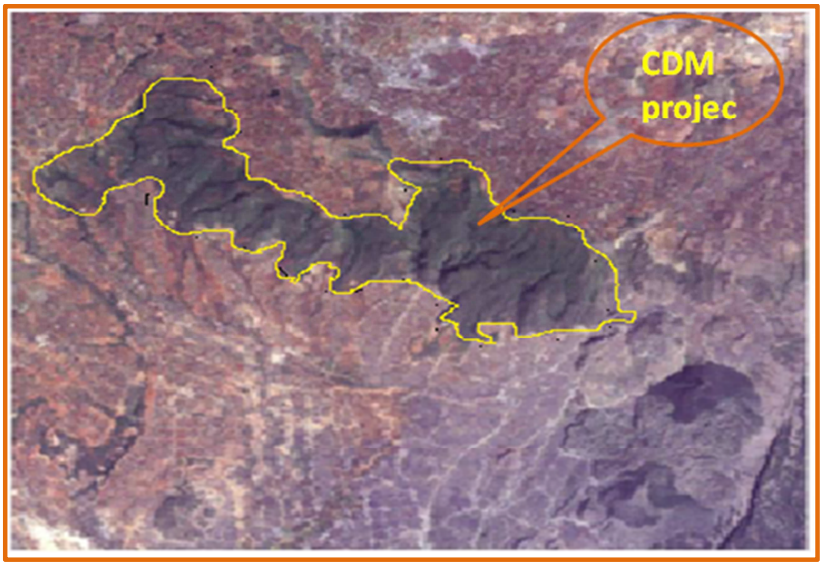

Figure 1.2 The aerial photograph of the study area in 1979

Source: (PDD, 2009:29)

1.7 Organization of the Thesis

This study has seven chapters. Chapter one presents the background of the study, the problem statement, objectives and research questions, and justification of the study. It also presents the background information to the study area by providing brief description about the country, regional and the Humbo CDM forestry project area. Chapter two presents the methodological approach, the rational for the choice of methodology, research design, data collection and analysis methods, rigor of qualitative analysis and positionality, power relation and reflexivity in research. Chapter three presents literature review and theoretical background. It presents the political ecology, forest based poverty alleviation and ecosystem services, payment for ecosystem services, climate change and carbon, forest carbon offset and its local impact and the benefit sharing mechanism of the project. Chapter four, five and six present the empirical evidence organized on the basis of the stated objectives. Chapter seven provides the conclusion and possible recommendation of the study.

1.8 Summary

This chapter introduced the problem statement, objectives of the study and the resulting research questions. It also presented brief description about the study area, particularly the geographic location, poverty and environmental conditions.

2 METHODOLOGY

2.1 Introduction

This section discusses the methodology used in this study. It provides detail information about the choice of methodology, the research design, data sources and types, respondent characteristics, methods of data collection and analysis techniques. Furthermore, it provides information related to rigor of qualitative analysis, positionality, reflexivity and power relation and finally ethical considerations.

2.2 The Choice of Methodology

Research methodology refers *"the descriptions of the methods or procedures used to conduct research activity"* (Cloke et al., 2004:5). Research methods are the various techniques used to generate data and to approach modes of data analysis. It refers to *"techniques and procedures used for exploring social reality and producing evidence (such as ethnography, interview, observation, focus groups, questionnaires, life histories, documentary analysis, laboratory experiments, analysis of texts, objects and images)"* (Ramazanoglu & Holland, 2002:11). Researchers can chose a particular method for their research activity, but their choice mostly depends on their research questions and the kind of information they want to generate (Valentine, 2001:43). Cresswell (1998, cited in Smith 2001) suggests that *"which method you choose depends on what you want to know or do"* (Smith, 2001:28).

Research in social science has two main distinctive approaches: qualitative and quantitative approaches. Quantitative approach is based on methods of collecting and analyzing data quantitatively and used to gather information (about the study area) in the form of numbers, and typically has structured and predetermined research questions (Punch, 2005:28). Qualitative approach is usually based on methods of collecting and analyzing data qualitatively in words and uses non-numerical and unstructured data and has more general research questions and methods at the start (Punch, 2005:28).

This empirical study primarily uses qualitative research approach to explore the role of CDM forestry project on poverty alleviation in Humbo. This approach is employed to investigate the interaction between forest resources and community members and the overall likely impacts of the project on the livelihood of local people.

2.3 The Rational for the Choice of Qualitative Approach

Geographers have adopted qualitative methodologies in the study of natural resource management and public understandings of environmental issues (Limb & Dwyer, 2001:5). Qualitative method of research allows researchers to focus and study selected issues or cases in depth. It also invites researchers to use different kinds of data collection techniques. Its data provide profound and detailed information through direct quotation or description of events, social relations and activities typical to informants. It doesn't start with the assumption that *"there is pre-existing world that can be known, or measured, but instead see the social world as something that is dynamic and changing"* (Limb & Dwyer, 2001:6). Qualitative approach became the right choice of my study as it emphasize quality, richness and understandings that are difficult to reduce in number (Valentine, 2001:43).

This study deals with the *Humbo* forest carbon project based on the last five years of its implementation period (2009-2013). The project is in its early impression stage and is very difficult to employ quantitative technique in order to understand the change in household income and food security. In this regard, qualitative methodology can provide early stage experiences, lived realities and meanings of everyday lives of the local community through a relational construction of knowledge between the researcher and the respondents. Therefore, in this study, I chose qualitative method to draw meaning, to get direct experience of social practices in action, allow people to speak for themselves about their own views and experiences, allow to document a range of experiences, to hear voices, to make representations, and to extract interpretations (Smith, 2001:29-31).

2.4 Research Design

My understanding of the debate about the potential impact of CDM forestry project on livelihoods in the host country helped me to develop and frame a number of research questions. Accordingly, the study employed various qualitative inquiry tools. These are observation, interview, focus group discussion and documentary evidences to generate data on the costs and benefits of the project, the benefit sharing mechanisms and the evolved conflicts during and after project implementation (Figure 2.1). I used focus group discussion in the immediate vicinity to carry out discussions with the local community about the likely impacts of forest and its resources. Interviews and observations are also complimentarily used so as to facilitate

triangulation. Triangulation refers to the use of *"multiple sources of data or multiple methods to confirm the emerging findings"* (Merriam, 1995:54). Eventually, the information obtained is summarized and used as input for the analysis which led to the key findings in the study. In the following sections, I described how the data collection tools as operationalized.

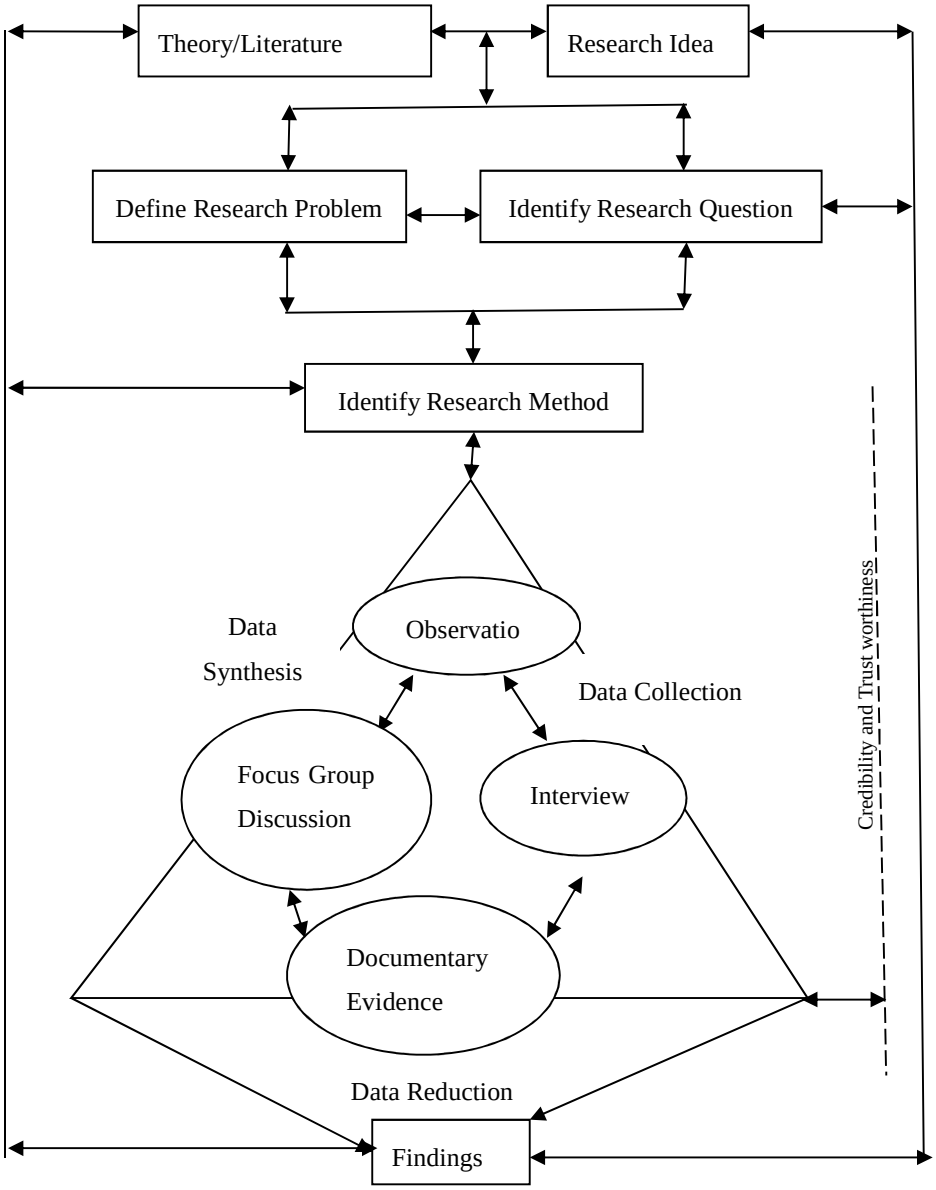

Figure 2.1 Research design

2.4.1 Data Sources and Types

Pertinent primary and secondary data were collected from June 15, 2013 to August 15, 2013. Such data were generated through a closer look at the role of different actors in the overall implementation and management of the *Humbo* CDM forestry project. These include: two NGOs (World Vision Ethiopia, the World Vision Australia); three Cooperative Societies; a multi-lateral organization (the World Bank BioCarbon Fund); five local government offices (see Appendix 4); and households in the *Humbo* community (Table 2-1).

Primary data were collected directly through observations, interview and focus group discussion, whereas secondary data were gathered from reports as well as documents developed by the project developers, the World Bank, the various sectoral offices mentioned above. Research papers were also relevant secondary sources for the study. The project design document (PDD) has provided valuable information that complemented the data obtained from the field. It was also a source of baseline information with which a collected primary data could be compared to.

2.4.2 Respondents and their Characteristics

Three groups of respondents had participated in this study. These are experts, project managers and members of the cooperative societies. Experts refer to both government offices and non-government organization workers, whereas the project managers are leaders of cooperative societies. Two of the seven experts are from the NGO and the rest five from the government offices (Table 2-1).

Moser and Kalton suggest three necessary conditions for successful completion of interviews: accessibility, cognition and motivation (May, 2001:128-129). Accessibility refers to whether or not the respondent has access to the information that the researcher seeks to obtain. In this regard, *Humbo* area consists of a male dominated society in which women are excluded from managerial positions of forest management. For instance, in the seven cooperative societies, all committee members were men and there was no a single position held by a woman. As a result, lack of women in the managerial position undermined their ability to access information and knowledge about the project activity. Moreover, some respondents were unable to give the necessary response for personal reasons, political fear and their social relationship with project managers and committee members.

Representative sampling in qualitative methods is of little importance (Hossain, 2011:153). Kumar (2005, cited in Hossain 2011) says that:

> In qualitative research, to explore the diversity, the researcher needs to reach what is known as saturation point and when he/she finds that he/she is not obtaining any new data, or the new information is negligible, the researcher is assumed to have reached saturation point. This point is a subjective judgment that is decided by the researcher. (Hossain, 2011:153)

For these reasons, my primary objective was to obtain the necessary data on the impact of CDM forestry project on poverty alleviation as well as to sort out the ground realities and practices of the community before and after the implementation of the project. To this end, I chose the following respondents with their respective category and number from three cooperative societies (Table 2-1).

The respondents were chosen based on their accessibility. Accessibility in this regard, refers to the ease of reaching respondents by walking or motorcycle. As discussed in section 1.6.4, the study area is mountainous with rugged topography and inaccessible to motorized transport system. The existing muddy roads are deteriorated and found in worse condition. Yet, these roads were the only accessible way to reach respondents. Accordingly, households who are living along the corridors of these deteriorated roads were chosen for the study. Equal number of households were selected from the immediate vicinity of forest and outside.

Table 2-1 Respondents involved in primary data collection

Respondent		Sex		Total
		Male	Female	
In-depth interview	Experts	7	-	7
	Project Managers	3	-	3
	Households/cooperative members	8	2	10
Focus group discussion	Households/cooperative members	6	-	6
	Total	24	2	26

2.5 Operationalization of Primary Data Collection Methods

2.5.1 Interview

Interview are *"verbal interchanges where one person, the interviewer, attempts to elicit information from another person"* (Longhurst, 2003:105). It yields rich understandings into people's experiences, opinions, values, feelings, etc. (May, 2001:120). In order to achieve this, researchers need to have insight about the dynamics of interviewing and the various methods of conducting interviews together with their strength and limitation (May, 2001:120-121). Gill Valentine states the advantage and disadvantage of interviewing that:

> The advantage of interviewing is that it can generate a lot of information very quickly; it enables the researcher to cover a wide variety of topics, to clarify issues raised by the participant and to follow up unanticipated themes that arise. The disadvantage of this method is that it largely depends on the interpersonal and listening skills of the interviewer. The interviewer may not ask the right or appropriate questions or they may not be understood by an interviewee; interviewees may not be willing to share their experiences, particularly about sensitive or personal topics. (Valentine, 2001:44)

Each interview began with a short and precise introduction about the purpose of study and expectations from respondents. I clarified to each informant exactly why I interviewed him/her. Clarification was among the central parts of the interview, as Tim May (2001) stated, *"clarification is not only a practical, but also an ethical and theoretical consideration"* (May, 2001:129). It created a clear picture of what I wanted to hear about facts, stories, complaints or whatever. I created a good impression from the onset and no time was lost with a lengthy explanation.

During interviews, I avoided the use of unfamiliar words. I tried to forward informative questions rather than questions that encouraged the respondents to provide 'yes' or 'no' answers. Most interviews lasted between one and one and half an hour. The time and place of the interview were given due consideration during the fieldwork. This is because for local farmers it was the growing season that some spent days and nights in their field to protect their crops from wildlife attacks. In this case, the interviews were held at their farm. It was important that prior appointments are made to contact them at places where they were keeping their maize plants.

Interviews were audio taped to avoid missing information. During the interview, I tried to create an atmosphere that encouraged respondents to speak freely. I insisted them to avoid the fear about the sorts of information they gave me will be used against them at later dates. I sought my respondent's permission before recording their voices. However, not all respondents were interested to be recorded. There were five respondents who refused to be recorded. In this regard, I used field note to take notes, ideas and explanations.

2.5.2 Focus Group Discussion

Focus group discussion is defined as *"a one-off meeting of between four to eight individuals who are brought together to discuss a particular topic chosen by the researcher(s)"* (Bedford & Burgess, 2001:121). It enable the researcher to explore how meanings and experiences are negotiated and contested between participants (Valentine, 2001:44).

Focus group discussion was held between households in the immediate vicinity who have things in common. Six participants, who were keeping their farm from wildlife attack, were chosen for formal focus group discussion. The discussion was held along one side of the forest which is adjacent to the maize farm (Figure 2.2). During the focus group discussion, I raised an issue for discussion and let each participant freely give ideas, make comments and/or express feelings on the issue. I served as a moderator, spoke little and encouraged the participants to generate information. The focus group discussion was audio-taped to ensure that all pertinent information is properly captured.

Figure 2.2 Focus group discussion around farmlands

Source: Author's own photo (Date: 11/07/2013)

2.5.3 Observation

Observation was less used in the research since the principal methods of data collections were interviewed and focus group discussion. However, it was used to complement interviews and focus group discussion in order to bridge data gaps. Observation was used (with no predetermined discrete activities) to understand the way farmers interact with each other and with wildlife and to capture the overall context of the CDM forestry project in *Humbo*. It was also made while conducting interviews and moderating focus group discussion.

2.6 Secondary Data Collection

Johnson & Turner (2003) defined secondary data as *"existing or available data that were originally collected at an earlier time by a different person from the current researcher often for an entirely different purpose from the current research purpose"* (Johnson & Turner, 2003:314). The authors classified secondary data into four common types: personal documents, official documents, physical documents and archived research data. This study used official documents recorded by organizations (government and non-government organizations) and archived research data which provided background information about the *Humbo* CDM forestry project. Some of the main official documents used in this research include: the project design document (PDD), the central statistics (CSA) report and government report. The PDD is the most used official secondary documents. The archived research data from the internet were also used as an additional source of information.

2.7 Data Analysis

> It is important to realize that even top quality data are of little use until they have been transcribed, coded and analyzed. (Jackson, 2001:201)

In this study, data collected through interview and group discussion were transcribed first and then coded and analyzed. The interview and focus group discussion generated 16 hours of recording. The taped data was first transcribed[4] before it is used for analysis. Moreover, as described in Bloor & Wood (2006:28), field notes are valuable sources of information in which

4 More than 85% of the recordings are transcribed. For one hour interview, I took eight to ten hours transcribing.

observations, reflections and emerging ideas are recorded. In this regard, the study included field notes as additional input to the transcribed texts.

According to Butler (201:267) direct quotes in qualitative research are the most important ways that provide spaces for the voices of respondents. Thus, the study used exemplary direct quotes from the interviews and the group discussion to capture the opinion of respondents and to strengthen the analysis.

Once transcription completed, the open coding system was used to break down data apart and delineating concepts on the basis of their property and dimension. Coding was carried out manually with the help of colored pens and highlighters so that specific words, phrases and some sections of the transcript were coded in a style of constant comparative analysis.[5] Once coding was completed, categorical themes were created by combining and reducing lower level concepts based on their characteristics that define and describe them. As a result, three core category headings, ten second level categories and ten third level categories were generated from the raw data.

2.8 Rigor of Qualitative Analysis: Credibility and Trustworthiness

In qualitative method, rigor of analysis is contested and debatable and sometimes the method is accused of the danger of producing understandings from unrepresentative samples or carefully selected quotes (Limb & Dwyer, 2001:10-11). The basis for this criticism is the lack of valid generalization that cannot be made from small number of respondents (Bailey et al., 1999:172). However, advocates of such method argue that *"the problem lies not with validity, but with a narrow view of validity"* (Bailey et al., 1999:172).

Researchers used different strategies to ensure rigor in qualitative method. For instance, Lincoln and Guba recommended a set of activities needed to ensure credibility in qualitative research. These are: prolonged engagement in the field, persistent observation, triangulation, negative case

5 Constant comparative analysis involves *"taking one piece of data (one interview, one statement, one theme) and comparing it with all others that may be similar or different in order to develop conceptualizations of the possible relations between various pieces of data"* (Thorne, 2000:69).

analysis, checking interpretations against raw data, peer debriefing, and member checking (Zhang & Wildemuth, 2009:6). For Corbin & Strauss (2008:302), credibility indicated that *"findings are trustworthy and believable and the explanation is only one of many possible 'plausible' interpretations possible from the data."*

The study used triangulation, member checking and peer debriefing to ensure credibility and trustworthiness. Triangulation was made possible using different sources of data (such as households, project managers and experts as well as secondary sources) and various methods of data collection (such as interview, FGD and observation) to ensure credibility and trustworthiness.

Members checking refers to *"taking data from respondents, and giving tentative interpretation of these data, back to respondents and asking if the interpretations are plausible"* (Merriam, 1995:54). In this regard, members checking was conducted during formal interviews and at the end of each interview (Zhang & Wildemuth, 2009:10). During formal interviews, ideas of the previous respondent were forwarded to the succeeding respondent to make certain refinement, to rephrase and to interpret. At the end of each interview, respondents were asked to comment and reflect on the issues raised during the discussion. Peer debriefing refers to *"asking colleagues to examine the data and to comment on the plausibility of the emerging findings"* (Merriam, 1995:54-55). In relation to this, discussions were held with my colleagues about the findings, coding style and category developments.

2.9 Positionality, Power Relation and Reflexivity in the Research

"Fieldwork is a dialogical process in which the research situation is structured by both the researcher and the person being researched" (England, 1994:84). I travelled to my home country for fieldwork in June, 2013. I then headed to the study location some 350 km away from the capital city of Ethiopia. The field site was mountainous, with rugged topography, inaccessible to road transport, muddy and difficult to move around.

During my fieldwork, I was acting both as an insider and outsider. Insider/outsider, according to Mohammad (2001), refers to *"the boundary making an inside from an outside, a boundary that is seen to circumscribe identity, social position and belonging and as such marks those who do not belong and hence are excluded"* (Mohammad, 2001:101). As an insider I am an Ethiopian,

who was born and grown up in the Southern Region, thus have reasonable knowledge of the social, cultural values and norms of the study community. This was a key to my easy assimilation to the local culture. It won me some degree of acceptance from the community and also facilitated access to key informants.

Yet, I was an outsider since I was not a member of the researched community and do not speak their local language. As a result, I was a differently positioned person from social, locational and ideological standpoints primarily due to my educational and different ethnic background among other factors. For instance, such differences were reflected during group discussion that participants sometimes switched to their local language in the middle of the discussion. This was primarily due to their preconceived suspicion of researcher's political affiliation.

At the same time, local community members represented me as a person who was from the city, educated, better off, with a lot of money, with a camera, with a tape recorder and moving around within the community by using a motorcycle that they seldom used it before. These all gave me an overt position of difference. Considering the researcher as someone from a city with a good education and economic background, there were often encounters of respondents asking for financial remuneration to provide information. Therefore, it was found important to openly communicate with respondents about my purpose in the study area.

Moreover, due to the presence of heavy control of project managers, I faced restrictions both to move within the community and select respondents. The project managers expected me just to appreciate their task, to honor of them, and to magnify the positive side of the project. They were never interested to discuss about the negative aspects of the project. Sometimes they perceived me as a person who was against their positive side and not impartial to both households living in the immediate vicinity of forest and project managers. I perceived that I was the disempowered person in that situation that without their consent I couldn't collect the information.

Reflecting on my data collection, the study has met certain limitations. Firstly, my prior plan to conduct FGD has met challenges. Thus, I was instead forced to conduct group discussion. Secondly, it was hard to mobilize participants for the group discussion. Thirdly, it was also not possible to mobilize a group discussion that includes different social groups like women, elders,

and youths. Lack of adequate information (about the project on women's side), fear of the possible effects of providing information and language barrier made group discussions with female headed households a difficult task. As a result the researcher has hardly benefited from their opinions and views. Because of the growing season and the challenge from wildlife attack, farmers in this particular area always passed days and night in their farms. Thus, the only group accessible to carry out interviews and FGD (in the immediate vicinity of forest) were those household heads who were keeping their farms. Such discussions were held along the sides of their farm lands.

2.10 Ethical Consideration

Ethics is one of the core issues to discuss while conducting social research. Researchers should behave as per the norms required to undertake the research. Every course of action, which is accomplished during the fieldwork, would come across with ethical decisions. This ethical decision has demanded researchers to consider the values of the community or people being researched. Otherwise, their actions can create huge problems. John Barnes defined ethical problems in social research as:

> Ethical problems are those which arise when we try to decide between one course of action and another not in terms of expediency or efficiency, but by reference to standards of what is morally right or wrong. (J.Barnes 1979, as cited in May, 2002:59)

Researchers involve in ethical decisions to undertake the research at different stages of the research process, such as to identify the research area, to select research participants, to formulate research questions, to gain access to respondents, to collect and analyse data, and to disseminate findings (Ali & Kelly, 2012:59).

My ethical consideration started from the onset of my research process. I started fieldwork by asking research permit to the local administration. I shortly explained the purpose of the study and my background. After I secured the letter of permission, I met with the gatekeepers and asked their permission to access information from respondents. At the time of conducting interviews and group discussion, I asked each respondent's consent to record his/her voice and take pictures.

Anonymity was also an important part of my research work. As stated in Lofland et al.:

> One of the central obligations that field researchers have with respect to those they study is the guarantee of anonymity via the 'assurance of confidentiality'- the promise that the real names of persons, places and so forth or will be substituted by pseudonyms. (Lofland et al. 2006, as cited in Corbin & Strauss, 2008:31).

In this regard, I took all the necessary care to keep the anonymity of respondents. They were also assured that the information they provided would be treated confidentially. I used a combination of letters and numbers to hide the respondent's real name and identity during the writing up of the analysis.

2.11 Summary

This chapter presented the overall design and process of qualitative research approach which was used in the study. It discussed how the research was designed, data were collected and analysed. It also discussed how rigor in the study was ensured.

3 LITERATURE REVIEW AND THEORETICAL BACKGROUND

3.1 Introduction

This chapter presents the literature that provides the conceptual and theoretical understandings of the impact of CDM forestry projects on poverty alleviation. It discusses the philosophical and practical aspects of studies that are directly related to the topic. It starts the discussion from political ecology and proceeds to provide conceptual understandings about payment with ecosystem services, poverty and forest, climate change and carbon, carbon offset and local impact and forest carbon benefit sharing mechanisms.

3.2 Political Ecology and Clean Development Mechanism

Political ecology, originated in studies of developing countries (Eden, 2011:169). It holds a range of definitions that *"some stress political economy, while others point to more formal political institutions; some stress environmental change, while others emphasize narratives or stories about the change"* (Robbins, 2012:14). Its main concern is the human environment relation, which involves many actors with divergent interest and power relation. As Paul Robbins noted, political ecology is an explicit alternative to traditional apolitical ecology that it works from *"a common set of assumptions, and that it employs a reasonably consistent mode of explanation"* (Robbins, 2012:14). It differ from the conventional perspective by politicizing environmental issues and ecologizing the political processes (Andersson et al., 2011:297).

Political ecology is an interdisciplinary concept and its proponents attempt to integrate the diverse aspects of natural and social science approaches to understand the complex interrelationship between human and natural ecology (Peterson, 2000:323). Greenberg and Park delineated theoretical thrusts that influence the formation of political ecology: political economy and ecological analysis (Greenberg & Park, 1994:1).

Political ecology was considered as a framework to understand the interaction between local people, national and global political economies and ecosystem (Peterson, 2000:324). However, as a research field, it is struggling with internal controversies about the relationship between politics, ecology and policy. The debate deals with the extent to which political ecology is

‘ecology without politics’ or ‘politics without ecology’ and/or the risk of becoming too academic, i.e. the concern of distancing itself from the policy (Andersson et al., 2011:297).

In the developing countries, the debate in political ecology has focused on the underlying problems of social justice of environmental disputes and resource struggle (Forsyth, 2003:7). As Peet & Watts noted:

> Much concern about political ecology in the developing world has reflected the belief that injustices are being committed against both local people, and against environmental resources that may be of value to these people, or to the world at large. (Peet & Watts, 1996 as cited in Forsyth, 2003:8)

In the global climate regime, political ecology provides an excellent framework for assessing the impacts of carbon offset project in the developing countries. It provides a rich and overwhelming opportunity to analyze as to how local agencies react to institutional rules and structures and integrate multi-level and networked environment-development interests (Bumpus & Liverman, 2011:2011). In this regard, a political ecology approach helps to understand how local contexts and agencies are influenced and become part of the global processes and how they influence the global wider structure (Newell & Bumpus, 2012:63).

Political ecology then provides an opportunity to approach and analyze the relationship between transnational (carbon) capital and its effects in specific communities in the developing countries. This kind of multi-level connection between local and global phenomena and its understanding with respect to local social and environmental perspectives and policies has been an important contribution of political ecology (Bumpus & Liverman, 2011:2011). In this regard, Newell & Bumpus argue that:

> Political ecology offers a rich set of resources to map out empirical connections and theoretical tools for making sense of political ecologies of the Clean Development Mechanism (CDM) because of its focus on the embeddedness of environmental conflicts within broader social relations, which simultaneously influence the effectiveness of global climate governance and, in turn, are affected by the global regime. (Newell & Bumpus, 2012:49)

Experiences from different countries indicated that CDM forestry projects has entailed blocking of access to natural capital, politicizing use right and manipulation of the livelihood activity of

the poor by the process of inclusion and exclusion and others. It has also exposed the poor to various vulnerable conditions and conflicts in the way that the poor people trying to resist against the situation. In this regard, political ecology helps to understand how the global carbon market disrupts and changes local social and environmental interrelationship through impacts on property right, access to resources, power relation and others (Newell & Bumpus, 2012:49).

3.3 Forest Based Poverty Alleviation and Ecosystem Service

Poverty can be defined as *"a pronounced deprivation in well-being which encompass lack of material income or consumption, low achievement in education and health, vulnerability and exposure to risk and voicelessness and powerlessness"* (WB, 2001:15). Thus, poverty alleviation can be defined as *"successfully lessening deprivation of well-being"* (Sunderlin et al., 2004:1).

Forest based poverty alleviation refers to *"the use of forest resources for the purpose of lessening the pronounced deprivation of wellbeing on either a temporary or lasting basis"* (Sunderlin et al., 2005:1386). There are two types of poverty alleviation which applied at household level in association to forest resources (Sunderlin et al., 2005:1386). These are:

> Poverty mitigation or avoidance - the use of forest resources to meet households subsistence needs, to fulfill a safety net in times of emergency, or to serve as a "gap filler" in seasonal periods of low income, in order to lessen the degree of poverty experienced or to avoid falling in to poverty;
>
> Poverty elimination- the use of forest resources to help lift the household out of poverty by functioning as a source of savings, investments, accumulation, asset building, and lasting increases income and wellbeing. (Sunderlin et al., 2005:1386)

In developing nations, *"sever poverty and remaining natural forests tends to share overlapping space"* (Sunderlin et al., 2005:1384). Poor people directly rely on resources obtained from forest environment (Veldeld et al., 2007:869). The poor extracts a wide range of commodities from forested areas and some of these could be converted to monetary benefits and others for household consumption (Wunder, 2001:1818). On a global basis, almost 60 million indigenous people are entirely dependent on forest, and about 350 million people, live in the vicinity, with high level of dependence for their subsistence and income (Vedeld et al., 2007:869). Natural forests might help the poor to sustain and live but may have little impact on alleviating human poverty (Scherr et al., 2004; Wunder, 2001:1817).

One of the functions of protected forest is timber production. Timber is one of the most valuable product in most forest areas, but very little of this resource has gone to the poor (Sunderlin et al., 2005:1390). There are two models of timber production that may contribute to alleviate poverty: management of natural forestry by forest villagers and tree growing by small holders. However, major obstacles are attached to both. First, local management of natural forest is challenged by weak and slow-changing institutions, rent seeking and capture by local elites, unreliable laws and regulations, cumbersome bureaucracy, and lack of control of downstream activities. Second, use of trees for subsistence, for example for fuel wood and fodder, is important yet over exploitation is common. Furthermore, small holder tree growing needs tenure security that the poorest households often do not have (Sunderlin et al., 2005:1390-91; Sunderlin et al., 2004:3).

Non-timber forest products (NTFP) such as charcoal, fuel wood, game, fruit, nuts, medicinal herbs, fodder, and hatch for roofs are other types of forest resources. Evidence indicated that NTFPs may contribute to around 10-25% of households income (Wunder, 2001:1826).

Non-timber forest products covers a wide range of products in different context; they serve subsistence needs; can have safety net function; and can provide regular cash income to the poor living adjacent to forests (Angelsen & Wunder, 2003:19; Wunder, 2001). In rural areas, NTFPs is collected and sold in relatively small quantities (per producer) and for relatively low prices and often has less impact in poverty alleviation (Shackleton & Shackleton, 2004:663; Wunder, 2001:1824). But, still it serves as an *"important mainstays in the households economy; an important sources of emergency food; the main sources of cash income to pay school fees, to purchase agricultural inputs, or to pay emergency medical costs"* (Sunderlin et al., 2005:1391). For the rural poor, the chance to collect NTFPs and convert them into marketable products commonly start as an emergency net and evolves in to permanent livelihood option (Shackleton & Shackleton, 2004:663).

Ecosystem Services (ES) are also the other functions of protected forests. Sunderlin et al. noted two ways that the poor can be benefited from ecosystem services: direct and indirect. The direct benefits are internalized benefits that can help the rural poor, for instance, to protect the quantity and quality of water supplies, to restore land fertility and maximize production. It is linked to poverty avoidance rather than poverty elimination. The indirect benefits are externalized benefits

through transfer payment arrangement and the payment is made as compensation to local communities (Sunderlin et al., 2005:1391-92).

Sunderlin et al. noted two simultaneously met conditions for ES to contribute to poverty alleviation. The first one is 'market expansion'. In this regard, the authors argued that *"the markets would need to experience a take-off such that a significance number of poor people are made better off"* (Sunderlin et al., 2005:1392). The second one is building local farmers' capacity to become well equipped competent actors in the expanded market. The major obstacle in this regard might be lack of land security and the relative high transaction cost of working with many rural poor than few large landholders. In marginal areas, where there is limited available source of monetary income, evidence indicated that small proportion of financial transfer can create significant impact in household income (Sunderlin et al., 2005:1392).

3.4 Payment for Ecosystem Services

Ecosystem Services (ES) are defined as *"ecosystem functions that are beneficial to humans: carbon sequestration, provision of clean and sufficient water supplies, and biodiversity conservation"* (McAfee & Shapiro, 2010:581). It denotes the various services people obtain from ecosystem. These include: *"provisioning services, regulating services, supporting services and cultural and amenity services"* (Jost & Gentes, 2014:244). Ecosystem service is considered as a subcategory of environmental services, dealing exclusively with the human benefits derived from natural ecosystems (Muradian et al., 2010:1202).

The basic assumptions of ES are that: *"Ecosystem Services (ES) can be valued in monetary terms; ES can be measured and offered for sale; a market demand can be generated from those who benefit from ES; and the transfer of revenue from ES beneficiaries to producers will slow down the degradation of ecosystems"* (McAfee & Shapiro, 2010:582). However, ES often involves trade-off with other policy objectives such as economic growth, poverty alleviation and social equity (Börner & Vosti, 2013:21).

PES services are funded either globally (such as carbon sequestration and biodiversity protection) or locally (e.g. watershed services, scenic beauty). However, globally funded projects, such as CDM, are often difficult to implement due to limited funding, high transaction costs, strict rules and conditionality tied to it (Van Hecken & Bastiaensen, 2010:789).

The core principle for the design and implementation of PES schemes is that *"the lack of markets for Ecosystem Services results in market failures"* (Pascual et al., 2009:3). The need to correct the ensuing market failures is the center of PES approach (Van Hecken & Bastiaensen, 2010:790). This move to market ES is *"a massive transformation of the human–environment relationship and of the political economy of regions and landscapes"* (Liverman, 2004:734). Some scholars view this relationship as a tool for cost-effective conservation while others expect to achieve global conservation gains, foster greener economic growth, and ease poverty in the global south: a triple-win solution for nature, private investors, and the poor (McAfee & Shapiro, 2010:580). In this kind of arrangement, the valuable contribution of PES to both environmental and social justices can be ensured by making rich ES users from the developed world contribute to supporting poor ES providers in the developing world (Van Hecken & Bastiaensen, 2010:791).

PES scheme involves voluntary and conditional contracts between willing service buyer and seller. In this contractual arrangement, payments are conditional and criteria referenced. The adoption of market-based system in the conservation and management of natural resources through market forces sounds convincing, but the truth is in masquerade behind the market metaphor (Milne & Adams, 2012:134).

Empirical evidence however, indicated that PES programs are not simply be described as neoliberal or market based (Milne & Adams, 2012:136). For instance, in Mexico the first phase pro-poor, pro-market model of national PES programs were found hybrids of market-like mechanism, state regulation and subsidies in the third phase (McAfee & Shapiro, 2010:587-594). Similarly, community level direct payment scheme reveals a blurring of policy narratives that make *"the distinction between project and market-based approaches hard to draw"* (Milne & Adams, 2012:136). According to Milne and Adams (2012), the main reason for such continuum boundary is the attempt of engaging communities as a single rational actor and rewarding them in kind as community development projects.

PES schemes, however, can clash with equity goals and can cause ethical problems by limiting access to natural resources for people whose livelihood directly depend on. It can reinforce the existing power structure and inequality in access to resources. It may also establish protected area in or close to densely populated places and create social and political distress (Jost &

Gentes, 2014:246). The demand of solving environmental problems through monetary valuation and money can generate power asymmetry in decision making and outcomes and payments do not cover the opportunity costs, particularly when the services are commercialized by rural farmers (Corbera et al., 2007:365).

3.5 Climate Change and Carbon

3.5.1 The Kyoto Protocol (KP)

The Kyoto Protocol (KP) is *"an international agreement linked to the United Nations Framework Convention for Climate Change (UNFCCC).*[6] *It sets binding targets for industrialized countries which are signatories to the protocol as listed in Annex I*[7]*, for reducing GHG emissions amounting to an average of five percent reduction against 1990 levels over the five year period 2008-12"* (Böhm et al., 2001:6).

It is created in 1997 to mitigate the climate change for the well-being of the current as well as the future generation. On February 16, 2005, a set of benchmark conditions were reached and the protocol entered into force[8] (Bebbington & Larrinaga-González, 2008:701; Santilli et al., 2005:269). It is the first protocol to the United Nations Framework Convention for Climate Change (UNFCCC). It has assigned the binding Green House Gas (GHG) emission reduction targets to industrialized countries (below the base year[9] level during an initial commitment period of 2008 through 2012) and obligates the use of market mechanisms such as emission trading as tools for achieving compliance (Telesetsky, 1999:797). The article 3.1 of the protocol

6 UNFCCC refers to 'an international treaty to consider how to respond to climate change' (Böhm et al., 2001:7).

7 Annex I countries are those countries committing themselves specifically to the aim of returning individually or jointly to their 1990 level of GHG emissions by the year 2012 (Böhm et al., 2001:5)

8 "The protocol required the signatures of 55 parties, including those that produced at least 55% of the CO2 emissions in 1990 in what are called Annex I parties (these are the developed countries). When Russia ratified the protocol it came into force. A total of 172 countries and governmental entities have ratified the protocol to date" (Bebbington & Larrinaga-González, 2008:701).

9 Base year refers to 'the year 1990 for all annex I parties except for Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986)' (KP, 2010:4).

states that the new forms of market system allow actors to involve with *"common but differentiated responsibilities and capabilities"* (UNFCCC, 1997:3).

The Kyoto Protocol exempts developing (non-annex I) countries from the binding limits, but are able to involve in the global emission markets by hosting projects under the Clean Development Mechanisms (Boyd et al., 2009:821). The annex I countries are allowed to achieve the binding limits by investing in renewable energy and by tree planting (Santilli et al., 2005:269). In other words, the protocol underlines two ways of Green House Gas (GHG) mitigation measures: internal as well as external. Internal measures are investment decisions by developed countries in renewable sources, whereas external measures are about the use of alternative flexible mechanisms called market based instruments such as Joint Implementation, Emission Trading and the CDM (Boyd et al., 2007:250). However, the issue of developing country's commitment was already in contentious and the continuity of the protocol beyond 2012 may depend on the mutual agreement between the annex I and developing countries (Santilli et al., 2005:269).

The Kyoto Protocol targets reduction measures only within developed countries for the first commitment period (Haupt & von Lüpke, 2007:2). For instance, from 1990 to 2008, the total aggregate GHG emission for all annex I countries taken together decreased by 16.2%, which is equal to 2.2 thousands teragrams of carbon dioxide equivalent (KP, 2010:4). Developing countries are not required under Kyoto to reduce their emissions over this same timeframe, based on "*the concept of contraction and convergence*[10]" (Bebbington & Larrinaga-González, 2008:701).

3.5.2 Carbon Trading

Carbon trading can be defined as *"the sale and purchase of GHG (or Carbon) accounting tokens (permits and credits) including transactions and securities based on this accounting tokens"* (Böhm et al., 2001:6). It has emerged since the Kyoto Protocol, whose 'flexible mechanism' (CDM) provide space for the creation of its market (Fletcher, 2012:103). It is promoted largely

10 Contraction and convergence is "a principle whereby those who emit at above average rates reduce their emissions while those who emit at a rate below average may increase their emissions" (Bebbington & Larrinaga-González, 2008:701).

by developed countries and it has pushed mainly by USA, EU and others (Childs, 2001:12). It is suggested by these countries as an instrument to meet their emission reduction target without breaching any agreed temperature increase (Childs, 2001:15).

Critics from NGOs and developing countries considered carbon trading as the result of the 'new tragedy of the commons' as developed country's *"self-interest prevents them from living within their fair share of the planet's atmospheric carbon carrying capacity"* (Childs, 2001:12).

> Carbon trading is the vehicle by which rich countries are pursuing self-interest pretending that they are willing to work together for the common good. They are using carbon trading to get out of even the paltry reduction targets they are willing to accept. They are using carbon trading to avoid additional financial transfers to developing countries. They are using carbon trading to enable them to remain the global fat cats able to consume the vast majority of remaining atmospheric space. (Childs, 2001:17)

Since 2005, the global carbon market has expanded vastly and its growth has been astronomical. For instance, in 2005 the total global market in carbon trading amounted around US$ 10 billion and within five years the market grew up and reached around $ 142 billion in 2010 (Fletcher, 2012:103). The CDM offset trading has also experienced similar growth. In 2005, the CDM offset trading was amounted $ 2.5 billion, and within three years, it grew up and reached $ 33 billion. However, trading started dropping after 2009 and reached under $ 20 billion in 2010 (Fletcher, 2012:103).

The market is forecasted to expand even more dramatically in the future to $ trillions (Fletcher, 2012:103). However, this prediction contradicts with the conclusions made by carbon market specialists. For instance, Payal Parkeh predicts that due to the current low prices of carbon credits and the economic recession in Europe, there is unlikely to be a demand for carbon credits. Scholars like Patric Bond argued that the global carbon market is found in a state of failure and the mechanism is becoming volatile, fragile and vulnerable to fraud (Bond, 2012:45-49). The mechanism has opened rooms to polluters for further economic growth than the state to solve many social problems (Lohmann, 2009:1). According to Bond, the only real winners in emissions markets have been *"speculators, financiers, consultants (including some in the NGO scene) and energy sector hucksters who made billions of dollars in profits on the sale of notional emissions reduction credits"*(Bond, 2012:48).

3.5.3 Clean Development Mechanism (CDM)

Clean Development Mechanism (CDM) is *"an arrangement under the Kyoto Protocol that allows industrialized countries with a GHG reduction commitment to invest in projects that reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries"*(Böhm et al., 2001:7). It is a mechanism created by developed countries to fulfil their demand that *"displacing their emissions to developing nations by paying the later to reduce their own emissions would be more efficient than pursuing reduction at home, where the cost would much greater"* (Fletcher, 2012:103).

The CDM is one of the three 'flexible mechanisms' which was designed with two main goals: to assist developing countries in achieving sustainable development and to assist annex I parties to achieve their emission reduction targets cost effectively (UNFCCC, 1997:11). The mechanism has created these two objectives by merging two main instruments called Clean Development Fund and Joint Implementation (Sutter & Parreño, 2007:76). In this regard, *"the objective of 'sustainable development' was originated from the proposed Clean Development Fund (CDF), whereas the objective of 'cost-efficient emission reductions' were the main driver behind the concept of Joint Implementation (JI)"* (Sutter & Parreño, 2007:76).

The CDM is estimated to generate around two billion tons of carbon credits by the end of 2012 (Haupt & von Lüpke, 2007:2). The mechanism allowed developed countries to purchase offsets created by the host countries. This makes it most relevant to development, forestry and climate (Boyd et al., 2007:250). It is also considered as a mechanism that can solve north-south argument over climate change and development (Olsen, 2007:61). For some host countries, it might create a good opportunity to attract foreign capital and promote technology transfer (Ellis et al., 2007:16).

In the global south, CDM is a project based and designed to have *"additional aims of encouraging sustainable development, promoting poverty alleviation and improving ecosystem services"* (Thomas et al., 2010:886). It is also an activity that generates Certified Emission

Reductions (CERs)[11] used by companies and countries included in Annex I to fulfill their emission reduction commitments.

CDM projects are diverse and most of them are concentrated under three sectors such as *"renewable electricity generation, reduction of methane emission and decomposition of gases from an industrial process"* (Ellis et al., 2007:19). But, CDM forestry options are restricted to afforestation and reforestation (A/R)[12] activities. Study indicated that those projects involving CDM were slow to become operational and are more procedural and restrictive than others (Corbera & Friedli, 2012:207; Haupt & von Lüpke, 2007:2). The first CDM project was registered on November 2006 and since then several projects have been approved (Haupt & von Lüpke, 2007:2). However, evidence on CDM forestry projects is still scarce (Corbera & Friedli, 2012:209). In relation to the project cycle, Corbera & Friedli stated:

> The CDM project cycle consists of several consecutive stages. Developers prepare the Project Design Document (PDD). This PDD is then submitted to the host-country's CDM Designated National Authority (DNA), which should endorse or reject it according to the country's sustainable development criteria. If endorsed, developers hire a Designated Operational Entity (DOE) recognized by the CDM Executive Board (EB) – the governing body of the mechanism – to validate the PDD. Once this happens, project documentation is sent to the CDM-EB for further consideration. The Board may either reject or accept the project subject to revisions. If approved, the project enters the official CDM registry and can start operating officially as a CDM project. (Corbera & Friedli, 2012:207)

3.6 Forest Carbon Offsets and its Local Impact

Forest carbon can be seen as a market expansion option for forest dwellers. Forest carbon offset is a *"unit of carbon dioxide-equivalent[13] (CO2e) that is reduced, avoided, or sequestered to*

11 CERs refers to 'a unit of GHG emission reduction issued pursuant to the CDM and measured in metric tonnes of carbon dioxide equivalent. One CERs represent a reduction of GHG emission of one tCO2e.' (Böhm et al., 2001:6).

12 A/R refers to 'establishment of forest in areas not forested for atleast 50 years or in those deforested before 1990, respectively' (Corbera & Friedli, 2012:207).

13 Carbon dioxide equivalence (CO2e): 'There are several gases other than carbon dioxide that have a global warming effect. In order to be able to compare the dangers of each of the gases, their global warming potentials (GWPs) are measured against a metric tonne of carbon dioxide over a fixed period so as to know what mass of the

compensate for emissions occurring elsewhere" (Goodward & Kelly, 2010:1). It is voluntary market's emission reduction credits (Bumpus & Liverman, 2011:203). The market allow buyers to continue releasing Green House Gas[14] (GHG) in one place in return for reduction in another place (Corbera & Friedli, 2012:6). It represents a 'socio-economic-technical' networks of people, material technologies, technical process and biophysical environment (Bibby, 2012:107).

Forest carbon offset can be generated from both carbon governance instruments called CDM and REDD+ (Reducing Emissions from Deforestation and Degradation). The CDM was institutionalized under the UNCCC and prominently set up in the Kyoto Protocol. It provides the only formal link between developed and developing countries in the protocol. Only afforestation and reforestation (rather than avoided deforestation and degradation) projects are eligible under the CDM forestry scheme. The REDD+ projects compensate tropical forest countries not only for avoided deforestation and degradation, but also incentivize sustainable forest management and enhancement of forest carbon stocks (Lederer, 2011:1900).

The business rationale for reducing emissions that includes internalizing external costs, seeking competitive advantage via voluntary market and environmental governance is intellectually fascinating but highly surrounded with controversy in its local impact (Bumpus & Liverman, 2011:204) . Empirical evidences indicates that forest carbon projects may increase local inequity and restriction of access to resources essential to some of the poorest local people (Agrawal et al., 2011:377; Bumpus & Liverman, 2011:2012).

The market possibly creates some local actors who possess more power than others (Bibby, 2012:107). Those in power adopt a set of relations, negotiate their interest across stages (horizontally or vertically) and acquire new rights and obligations that can affect disadvantaged groups. The established power relation affects poor households tenure right and benefit access (Murdiyarso & Herawati, 2005:44). In this regard, both tenure rights and access to forests are

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gas would have the same global warming effect. This is known as its carbon dioxide equivalence' (Böhm et al., 2001:7).

14 GHG included in the Kyoto Protocol: Carbon dioxide (C02), Methane (CH4), Nitrous oxide (N20), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF6) (UNFCCC, 1997:19).

equally important for benefit sharing, to participate in the formal local institutions and to determine the local poor's ability to gain benefit from emission trading (Agrawal et al., 2011:379).

In the host countries, farmers may lack expertise, technology and understanding of carbon offset (Corbera & Brown, 2010:1754) and so are 'disempowered' by such project (Hashmiu, 2012:61). Experiences in the host countries demonstrated that *"reducing poverty is not alone a matter of increasing levels of income. People's participation, legitimacy and knowledge are key issues"* (Murdiyarso & Herawati, 2005:9). Hashimu noted in this regard that:

> Tree planting to improve rainfall, fire prevention and availability of non-timber forest products is welcomed, and encourages participation of farmers and landowners, while arguments about carbon sequestration remain alien. (Hashmiu, 2012:61).

According to actor-network theorists, both human and non-human actors have the ability to influence forest carbon market (Latour 1997 as cited in Bibby 2012:107). They argue that:

> Not only do social agents – people, institutions, nation-states, etc. – influence the market, but so too does the presence of technological actors, such as fuel efficient wood stoves or wind turbines, and biophysical actors such as a forest, weather patterns, or a particular type of GHG. (Bibby, 2012:107)

However, actors who involve in this market have different agendas and ideologies, each trying to get a piece of perceived forest-carbon cake, and they are not only from adjacent forested areas (Brockhaus & Angelsen, 2012:18). Such kind of community level internally divided interests became one of the threats against the global value of payment for environmental services (Angelsen & Wunder, 2003:36).

3.7 Benefit Sharing Arrangement in CDM Forestry Projects

One of the promising features of CDM forestry project to developing nations is to bring benefits of carbon offsets that contribute to SD. Benefits can be financial or non-financial. The financial benefits can be generated from the sale of CERs and NTFP. The financial gain through the sale of CERs from approved projects can have significant impact in the management and governance

of CDM forestry projects. Benefit sharing in this regard considered as a viable tool that ensure the sustainability of the project.

Benefit sharing mechanisms are debatable and most of these debates emanated from the lack of conceptual clarity (e.g. what the benefits are; how they can be shared; and how they balance with costs) and due to the various ways of interpretations given to the arrangement (Peskett, 2011:1). Peskett states that:

> At one extreme, benefit sharing is interpreted broadly to include many types of benefits (e.g. Direct benefits of carbon, employment, enhanced use of natural resources, etc.) and sharing at different scales (e.g. Locally through community funds or nationally through the welfare effects or…). At the other extreme, it is a much narrower concept, for e.g. linked to revenue sharing arrangements within PES system. (Peskett, 2011:1)

Benefit sharing involves the transfer of all monetary and non-monetary incentives to local communities (Behr, 2012:1). This arrangement can create conducive environment for affected communities to become partners in the project and it potentially empowers them in decisions that affect them. It can also help the project developers to reduce the risks associated with the project and enhance the project sustainability, to turn conflict into consensus, and to lower the local level of poverty (Peskett, 2011:2).

Benefit sharing in CDM forestry projects can have either of the two arrangements: performance based or input based arrangements (Behr, 2012:15). Behr explains that:

> Performance based arrangements distribute benefits on the condition that the local communities receiving the benefits have achieved a predetermined, measurable and verifiable standard of performance against a baseline. In input based arrangements, local communities agree to carry out specified actions, or refrain from certain actions without any link provided between the distribution of benefits and future measurable performance. (Behr, 2012:15)

Benefit sharing mechanism require engagement with a broad range of stakeholders and identification of beneficiaries. This knowledge will help to prevent conflicts and ease working within a complex situation at local level. Identification of beneficiaries need to take into account the existing property rights and deals with historic claims and recognize the existence of potentially conflicting interests within the community. In this regard, NGOs play significant role

in scoping rights and benefits, in advocating for local communities, and in awareness raising and capacity building for local communities (Behr, 2012:12-13). This helps to avoid lack of clarity in negotiating choices and legitimacy of the process and to make decision on the benefit sharing arrangement (Luttrell et al., 2012:148-49).

3.8 Summary

In summary, the chapter discussed some literature that provides a framework for the conceptual and theoretical understanding of CDM forestry projects. The discussion began from the global understanding of political ecology and CDM, payment for ecosystem service, carbon trading, clean development mechanism and narrowed down to include the local impact of forest carbon offsets and the benefit sharing mechanism. It touched various issues that range from simple to complex; internal to external controversies; and local, national to global interactions. It provides an analytical framework that guide to analyze data and find out the empirical evidence on the overall impacts and benefits and cost sharing mechanisms of CDM forestry projects.

4 OVERVIEW OF THE *HUMBO* CDM FOREST CARBON PROJECT AND ITS BENEFIT SHARING MECHANISM

4.1 Introduction

This part discusses the general overview of the *Humbo* CDM forest carbon project and its benefit sharing mechanism. These include the project design process, institutional set up, community right and implementation strategy. The section also provides evidence on the revenue generation potential of the project and how these revenues are being distributed to local communities. This is discussed in terms of the project's capability of generating revenue and its benefit sharing mechanism.

4.2 Project Initiation and Design

As discussed in section 1.6.5, forests in *Humbo* area were removed during 1970 to 1985. Poverty and increasing demand for agricultural land were the main driving forces for the over exploitation of forest resources. The *Humbo* CDM forestry project was therefore designed to reverse such situation.

The *Humbo* CDM forestry project started in 2006. The expected lifetime and crediting period of the project is 30 years. It is a non-renewable large-scale project, which covers 2,728 ha of previously degraded communal lands for afforestation and reforestation activities. Fuel-wood collection, charcoal making and grazing were activities that characterized the former land use.

The project was initiated and developed by World Vision Ethiopia with the help of World Vision Australia. World Vision Ethiopia has been working in *Humbo* development since the 1980s. It started development activity after the 1984/85 famine. At this time, the NGO established a three phased development intervention: relief phase, rehabilitation phase and development phase (E_1, July 22/2013).

The relief phase focused on humanitarian activities of food provision. *"It was one of the NGO's responses given to relieve the recurrent severe impact of drought and starvation,"* said one respondent (E_1, July 22/2013). Farmers were dependent on the NGO's food aid programs designed to ease the famine. During the second phase, capacity building was the main focus area.

Farmers were trained and supported to maximize their productivity, to explore sustainable ways of agricultural production and to find alternative sources of income.

Development work came to place in the third phase. In this phase, the organization was focused on education, health, infrastructure provision and food security issues. For instance, the '*Likimse*' potable water supply project, designed to serve more than 10 kebeles [15] of the region, was one of the major development activity of the NGO.

One respondent described the outcomes of the three phased development interventions of the NGO in the project area. He said:

> The NGO worked for the past 28 years. It had spent a lot of financial and human resources. But, there was no tangible result. Poverty and food insecurity remained there and farmers couldn't solve their recurrent food insecurity problem. (E_1, July 22/2013)

This respondent further noted about the periodic variation of production that had consequences on the local market and farmer's income. Farmers could harvest more products in one season and less in the other. On good harvesting season, local markets will be filled with similar surplus products and as a result, prices fall down and diminishing returns to farmers. A respondent explained:

> Products produced within the area varied across seasons. A year with good harvest is usually followed by a bad one. For instance, farmers who grew tubers or root crosses got more products in the first year and very small by the next year. During that good year, there was abundant supply and as a result the price of the products went down. It was disappointing to most farmers to the extent that they were forced to throw away their products instead of carrying it back home. They have no option, no storage facilities and no technology to keep the food for extended periods. They must sell the product to get essential services and to cover their immediate costs. On the contrary, there were fewer products by the next year to the extent that people went into starvation. That was the turning point for CDM forestry project initiation and development. A

15 Kebele is the smallest local government administration unit both in urban and rural parts of Ethiopia.

> series of discussions were held among experts to solve the problems until one day Mr. Tom, an expert of World Vision Australia, suggested the brilliant idea of a forest carbon project. (E_1, July 22/2013)

The World Vision Australia assigned Mr. Tom to check and test the '*Likimse*' potable water supply project. He was conducting field surveys to watch and test the project development and was visiting the project area repeatedly. On his way to the area, he was noticing the overall livelihood condition of farmers and their bottlenecks to progress and productivity. According to the respondent, Mr. Tom envisaged the potential advantages of establishing CDM forestry project to poverty alleviation. He said:

> Mr. Tom explained the potential advantage of CDM forestry projects to the World Vision Ethiopia. He insisted the NGO to develop the project and to find markets for carbon offsets. According to Mr. Tom, the money generated from the sale of carbon could finance development projects and give job opportunity and credit access to farmers. Farmers easily get local financial institutions that enable them to give loans, provide market access to their products and sold it out back to them at times of food shortage. (E_1, July 22/2013)

As informed by the respondent (E_1), the World Vision Ethiopia found Mr. Tom's innovative idea compatible with its activity. At that moment, the NGO was seeking a mechanism to boost farmers' productivity and soon after the NGO took the responsibility to develop the project on communal lands.

The project was designed to cover 2,728 ha of land with the overall goals to remove of atmospheric carbon, set up bio-diverse native forest, and reduce poverty in the *Humbo* area (PDD, 2009:4). Restoration of natural forest using Farmers Managed Natural Regeneration (FMNR) technique, formation of community ownership and management, and planting fast growing species were among others major activities pursued to meet these goals.

The project was designed to bring economic, non-economic and environmental benefits to local communities. Economic benefits include revenues from forest products and sustainable fuel sources and creation of temporary and long-term jobs. Forest management, agroforestry, ecotourism and livestock management trainings are also the expected non-economic benefits to local communities. Some of the outlined environmental benefits include biodiversity conservation, flood and land erosion control, and watershed protection (PDD, 2009:3-4).

The project was registered in December 2009 under the Clean Development mechanism (CDM) of the Kyoto Protocol (KP). In the emission trading scheme, World Vision Ethiopia (on behalf of local communities) is the seller and the World Bank BioCarbon Fund for Canadian government are the buyers with a fixed carbon price of US$ 4.4 per tons of CO_2. World Vision Australia has covered the direct operating and maintenance costs through philanthropic funds contributed from churches, corporations and people (PDD, 2009:20).

4.3 Institutional Setup

As mentioned in section 4.1, the *Humbo* CDM forestry project was designed to be carried out on communal lands. This land was accessible to all people living inside or outside of the *Humbo* community. The Federal Land Administration and Land Use proclamation No. 456/2005 and the SNNPR Rural Land Administration and Utilization Proclamation No. 53/2003 defined this land as 'community holdings' for grazing, forestry or other social services (PDD, 2009:16). This indicated that a community member should have no place to own the use right of this land individually. One respondent noted:

> The land was communal and accessed by all people. Protecting and delineating this area for CDM forestry project was found beyond the capacity of some households, the NGO as well as the local administrator. The NGO recognized about the collective management schemes and decided to set up responsible institutions. According to the federal proclamation No. 147/98, a primary co-operative society is entitled to manage resources collectively where community members cannot individually do. (E_1, July 22/2013)

Article 6 of this proclamation stated that a primary co-operative society could be established by persons (not less than ten) who live or work within the area (FDRE, 1998). To this end, the NGO conducted an awareness creation campaign within *Humbo* community to recruit members for the cooperatives. The NGO used the church (Evangelical Church) and church leaders as the point of departure to advocate the benefits of carbon credit to local communities.

A number of respondents noted that they got firsthand information about the project during church congregation. One of the respondents suggested:

> The *Humbo* CDM forestry project was initially introduced to our community by Mr. *Asfaw Mariane,* who used to be an expert of World Vision Ethiopia

> working at *Humbo* site. He introduced the benefits of the project, first to church leaders and then to the congregation. I think it was a successful strategy as the church was among the most convenient places to convey messages. It had been costly and time taking when the NGO conducted house to house awareness creation campaign. (PM_2, July 08/2013)

Another respondent noted that the strategy of addressing farmers through church helped the NGO to recruit members for cooperative societies within short time.

> During the campaign, the NGO organized some early convinced active members of the community (for instance, 22 farmers from one kebele, 39 for the second and 89 for the third, etc.) and established seven primary cooperative societies. (E_1, July 22/2013)

This echoes the findings of Corbera and Fredill who found that the *Humbo* CDM forestry project purposely created seven institutions, formalized groups as cooperative society's and distribute the communal land to them (Corbera & Friedli, 2012:227). In the PDD, the project developer clearly acknowledged the institutional formation to meet the stated project goals. It states:

> Formation of the *Humbo* forest management group, securing legal title to manage the proposed regeneration area, incorporating the groups as cooperative societies and adopting a constitution and bylaws... (PDD, 2009:4)

This shows that the NGO used the early established community members to legalize the use right of communal land, to allow some groups of the community to control and manage the existing forest, to block human and animal intrusion, and to execute nursery development and plantation activities. The respondents claimed that the NGO unilaterally undertook its own initiative to set up cooperative societies in a top-down way. As a result, there were dissatisfactions from households in the immediate vicinity of the forest. They noted that the early establishing members of cooperative societies were those who were less likely to get affected by the project.

At the time of data collection, the project has 5,087 members of which 4,010 (78.83%) are males and the rest 1,077 (21.17%) are females (see Table 4-1 for the proportions of members across cooperative societies). This indicated that membership is allowed for both women and men, yet the majorities are men. According to the cooperative society's bylaw, a member should be either of the following: a household head (male or female); a family member (youth) who has completed secondary education (grade 10-12); and for a polygamous marriage arrangement, each

of the wives has its own separate house and the husband is considered as the head of the first wife. The other wives are considered to be the head of their respective households and become eligible members.

Table 4-1 Members of each cooperative society

Cooperation Name	Members			Percent
	M	F	Total	
H/Bada Weyto Mountain	743	105	848	16.66
Abala Longena Gamo Mountain	722	141	863	16.96
H/B/Oda Mountain	661	142	803	15.78
Abala Shoya Sere Mountain	369	135	502	9.86
Bola Wanche Gamo Mountain	433	277	710	13.95
Bosa Wanche Kacha Mountain	626	179	805	15.82
Abala Gefeta Hoko Mountain	456	100	556	10.93
Total	4010	1079	5089	100

Source:(PM_2, July 08/2013)

Even though membership is based on head of households, all household heads of the study area are not members of the cooperative societies. The members account only 64.4% of the total household heads of the study area which means that significant proportions (35.6%) are not members. According to project managers, membership is still allowed for these households as far as they are interested to pass through the procedure. The procedure dictates a newcomer to pay ETB 200 to complete the registration and membership process.

4.4 Community Right to Forest Carbon

Establishing cooperative societies pursuant to the federal proclamation No. 147/98 and issuance of certificate of registration proves the legality of cooperative societies. Respondents indicated that the certificate of registration was the basis to claim forest carbon user entitlement. Accordingly, each cooperative society received title-deed certificate from SNNPRS Agricultural

and Rural Development Office Natural Resource and Land Administration Department as a confirmation for community land use right. User rights in this regard means *"a form of land tenure management and forest product rights"* (PDD, 2009:16).

A number of interview respondents explained that user right certificate provided many benefits and facilitated community development process. One of them explained:

> User right certificate helped the community to own and take care of the products produced and to respond to the dynamics of social needs and economic priorities. It empowered community leaders to splint benefits of carbon offsets, to control and manage forested areas, to sanction rules, plan and execute community development and others. (E_1, July 22/2013)

The other respondent stressed on the positive impacts of land use right. He noted the power of collective use right to change community's perception and to develop a sense of place and ownership. He said:

> Possessing land use right has changed the community's perception. It has created a sense of ownership within the community. Before the implementation of the project, the land was open and accessible to all people irrespective of the place of their residence. Groups of people living within the community or outside used the forest to produce charcoal. The land and its products were a public property and could be accessible to all. But, the situation has changed since 2006. At present, these groups have no place in our community since community member oppose their deeds. (PM_2, July 08/2013)

Another respondent suggested that user right provided local community's exclusive right to use forest resources for community based development and allowed them to exercise their socio-political rights, to assign leaders and to share the benefits of carbon offsets.

4.5 Implementation Strategy and Technology

Project designers adopted and used Farmers Managed Natural Regeneration (FMNR) technique to restore communal mountainous land (PDD, 2009:13-14). The method is different from the conventional forestry approach. The conventional approach usually involves nursery development, planting, watering, protecting and weeding. The FMNR technique only requires use of the living root stocks of previously felled trees (see Box 4-1). This technique was then

adopted (together with small percent artificial plantation) for afforestation/reforestation project in *Humbo*. Tree planting was used to fill some patchy areas not vegetated with trees.

In the project area, FMNR technique for forest development accounted for 91% of the total area (2,728 ha). The rest 9% has covered with artificial planting. The respondents explained that FMNR technique was also applied to each farmland to support farmers to fulfill firewood demands and consumption (Figure 4.1).

Figure 4.1 FMNR site before implementing the project (left) and after implementation of the project (right)

Source: World Vision Ethiopia (Left) and authors own photo (Right) (Date: 09/07/2013)

Box 4-1 Farmers Managed Natural Regeneration Technique

FMNR was first started in 1983 at Maradi, Niger rural regions where barren plains, infertile soils, drought, dust storms, severe fodder shortages, and agricultural pest outbreaks were normal occurrences (Tougiani et al., 2009:18). FMNR is different from the conventional forestry approach. The conventional forestry approach *involves "raising large number of trees in nurseries, planting out, watering, protecting and weeding"* (Rinaudo, 2007:32). In this method, ensuring how many trees had survived once planted, and continuity of project based tree planting once the project ended were challenging (Haglund et al., 2011:1697). Conventional approaches to reforestation faced insurmountable problems, being costly and labor intensive. Even in the nursery, frogs, locusts, termites and birds destroyed seedlings. Once planted out, drought, sand blasting, pests, competition from weeds and destruction by people and animals negated efforts (Rinaudo, 2007:32).

It was also criticized as it relied on planting exotic species, focused on the problem of deforestation and ignored the social understanding of farmers (Cunningham & Abasse, 2005). FMNR is distinct from most afforestation and agroforestry efforts in that *"it does not need the planting of either seeds or trees but instead makes use of the living root stocks of previously felled trees that stay in the landscape"* (Haglund et al., 2011:1697). The fundamental principle of this method was the natural regeneration and management of tree stems from underground stumps. It is a form of coppicing and pollarding that involves selecting and pruning stems regenerating from stumps of previously felled, but still living trees called 'Underground Forests' (Rinaudo, 2007:32).

FMNR claimed to be low-cost, given rapid economic returns, is being easy to carry out and restores the environment (Brown et al., 2011:330; Haglund et al., 2011:1704; Rinaudo, 2007:33).

4.6 Revenue Generation

As discussed in section 4.1, the *Humbo* CDM forestry project was designed for 30 years with a fixed carbon price of US$ 4.4 per tCO2. The World Vision Australians covered the first investment cost of the project and it was stated in the PDD that the revenue from carbon sale would be used to cover the running costs of the seven cooperatives.

> In order to precipitate this carbon project, World Vision Australia has committed US $103,700 over three years in nursery establishment and management, as well as US $ 39,550 over three years for forest management training, and $138,600 over three years for a project related staff costs. In addition, the costs of establishing the legal and socioeconomic framework for the efficient running of the seven community cooperatives have been significant (over US $11,000) and it would not be possible without the revenue provided by the carbon finance to set up these institutions. (PDD, 2009:33)

The above statement indicated that no public funding is involved in undertaking the project activities. Registering the project as a CDM activity was then considered as the only viable option to partially overcome the aforesaid investment barriers (PDD, 2009:33). To this end, an initial Emission Reduction Purchase Agreement (ERPA) between World Vision Ethiopia and the World Bank's BioCarbon Fund was signed in 2009 (Shames et al., 2012:3).

The agreement is about the sale of 165,000 tons worth of CERs over the first 10 years. The sale is expected to bring a total of US$ 726,000 during 2009 to 2018. Up to the date of data collection, World Vision Ethiopia received US$ 320,000 from the sale of carbon for sequestrated 73, 338 tons of CO_2 between the year 2009 and 2012. The revenue from the sale of CERs has been the main source of fund since 2009 (E_1, July 22/2013).

In addition, the PDD outline a number of other possible sources of funds. These were classified as short-term and long-term sources. Short-term sources refer to the revenues generated from the sale of fodder and fuel woods. Long-term sources refer to the future revenues generated from the sale of timber which will be accomplished at the end of the project's crediting period. The project developers anticipated that some 160,000 dollars of fuel wood will be harvested from the project over the crediting periods (PDD, 2009:86). Moreover, the investment returns from the sale of cereals (mainly from maize) and the service charges of cereals milling machines are considered other sources of funds for a number of cooperative societies.

4.7 Benefits Distribution Mechanism

As discussed in section 4.5 that the major source of funding for the *Humbo* CDM forestry project was the sale of CERs. The amount of money generated from this source led to the conclusion that with its absence, the realization of the project was not feasible. The project has been developed to generate money from the sale of certified emissions, to finance development projects, to create job opportunities and to support household's livelihood activities.

The establishment of the project has also created social networks. These networks connect through forest resource management, driven by carbon trading. In this regard, the monetary benefit sharing mechanism would be a serious concern and a binding force of the networks and/or actors involved in the project. For instance, in the Emission Reduction Purchase Agreement, World Vision Ethiopia was acting as an intermediary to ease the identification and design of benefit streams. This echoes the idea forwarded by Behr (Behr, 2012:13) who suggested that NGOs play intermediary roles in scoping the rights and benefit streams and in advocating for local communities. One respondent said:

> The agreement was signed between the two organizations without involving a third-party such as the Federal or Local Government. Federal and Local Governments had no role in the contract agreement. The contract was out of their governance structure. According to the contract, the World Bank releases the payment directly to the NGO's account after five years of project realization and verification. Then World Vision Ethiopia will distribute to cooperative societies. (E_1, July 22/2013)

This indicates that the agreement allows executing direct international payments to the *Humbo* CDM forestry project. According to the arrangement, the World Bank BioCarbon Fund should first be transferred to the NGO's account. This enabled the NGO to manage and distribute the fund to cooperative societies (see Figure 4.2 for the financial flow arrangement).

The contractual agreement has given legal status to the NGO to manage and subdivide the money. How to make payments to cooperative societies has become the major concern to the NGO, project managers and local communities. A respondent indicated that the NGO used the performance-based approach of distributing benefits to cooperative societies. He said:

> The NGO used performance-based arrangements to distribute benefits on the condition that each cooperative society receiving the benefits has protected area of forests. And the benefit should base the amount of carbon sequestrated within the forest. (E_1, July 22/2013)

Based on this payment mechanism, cooperative societies have been paid for their contribution to a well-protected, managed and verified forested area. This indicated that the amount of revenue accruing to each cooperative society is to be determined based on the amount of carbon sequestered within a given forest area that falls within the boundaries of a particular cooperative society.

One respondent supported the NGO's benefit distribution system. According to this respondent, the NGO was distributed the benefits equitably based on the ratio of forest area coverage. He said:

> Each cooperative society takes a sensible share in such a way that a larger amount for larger area and smaller amount of smaller area (Table 4.2). For instance, the Abala Longena Gamo Mountain cooperative society delineated larger area and took the lion's share (34.92%). Abala Shoya Sere Mountain cooperative delineated smaller area and took the least (4.32%) of total financial benefit transferred within three years. (PM_2, July 08/2013)

But, Table 4-2 displays differently for the share of other cooperative societies. For instance, Bola Wanche Gamo Mountain and Bosa Wanche Kacha Mountain cooperative societies delineated nearly equal areas of 343.6 ha and 341.96 ha. Nevertheless, the table displays significant difference in the amount paid off which is about ETB 74, 458.89 (2.22%) of the total BioCarbon Fund. Similarly, significant difference is visible in the amount paid off between Abala Gefeta Hoko Mountain and Bosa Wanche Kacha Mountain cooperative societies (see Table 4-1). Cooperative managers failed to explain the cause of these variations. But, interviewed local experts suggested the difference might be due to better management in such cooperative societies.

Table 4-2 the three rounds BioCarbon Fund transferred to *Humbo* CDM forestry project from 2009 to 30/06/2012

Cooperative Name	Area (Ha)	Area (%)	Revenue from Carbon Trade (in ETB)			Total Revenue	Revenue (%)
			1st Round	2nd Round	3rd Round		
H/Bada Weyto Mountain	372.78	13.7	82844.8	128495.3	169833.4	381,173.5	14.56
Abala Longena Gamo Mountain	1043.5	38.3	216442.5	295403.8	402402.3	914,248.7	34.92
H/B/Oda Mountain	340.0	12.5	77498.6	100448.8	136832.5	314,780.0	12.02
Abala Shoya Sere Mountain	109.7	4.0	25428.5	35797.4	51754.75	112,980.7	4.32
Bola Wanche Gamo Mountain	343.6	12.6	74974.1	101253.9	137929.2	314,157.2	12.0
Bosa Wanche Kacha Mountain	341.7	12.5	76773.0	70241.5	95683.75	242,698.3	9.30
Abala Gefeta Hoko Mountain	176.4	6.50	25067.5	133180.7	179866.8	338,115	12.91
Total Sum	2,728	100	579,029.1	864,821.5	1,774,302.7	2,618,153.3	100.0

Source:(PM_2, July 08/2013)

A number of respondents opposed the NGO's benefit sharing mechanisms saying that the mechanism lacks clarity and involved a closed system of financial transfer. This supports the findings of Luttrell et al. (2012:148-49) who found that lack of clarity became a common constraint in various institutions that engaged in decisions about benefit sharing arrangements. In relation to this, one respondent suggested:

> The NGO used a closed financial transfer system implemented without the consult of project managers. I think it is better to unveil the payment mechanism to parties who are directly or indirectly involved in the project. There was hardly any evidence about how much money the NGO has received

> from the sale of carbon, how the BioCarbon Fund transferred to its account and how it was distributed to cooperatives. (E_3, July 29/2013)

Another respondent emphasized on the lack of clarity of the NGO's financial flow mechanism. He was questioning the overall certified emission trading scheme and ways of monetary transfer. He said:

> Each cooperative has no complete document that explicitly expresses how the money has been released from international buyers, the way, requirements, with whom World Vision Ethiopia was negotiating, how benefit/money has been made, how it is now distributed, etc. My cooperative gets informed after the amount is transferred to its account. The NGO distributes the benefit without consulting project managers. We need to know how the distribution is made. And also as a legal entity, each cooperative society has to get a copy of the contract agreement. But, this has not yet been handed. (PM_3, July 23/2013)

Up to the time of data collection a total of ETB 2,618,153.29 (US$137, 798) [16] was distributed to cooperative societies which is about 56% of total BioCarbon Fund transferred to World Vision Ethiopia.

The other problem of the NGO's benefit sharing mechanism was a delay in carrying out carbon payments. Project managers complained consistently about the delay of payments. One of the respondents suggested:

> Long waiting time affected our plan of action. This is something that should be addressed the most. I think the NGO should pay up as fast as possible when the international payment is due. (PM_1, July 25/2013)

Figure 4.2 displays the entire financial flow arrangement that exist among various actors who involve directly or indirectly in the sale of CERs.

16 Note: Currency rate is calculated as 1.00 US$=19.00 ETB.

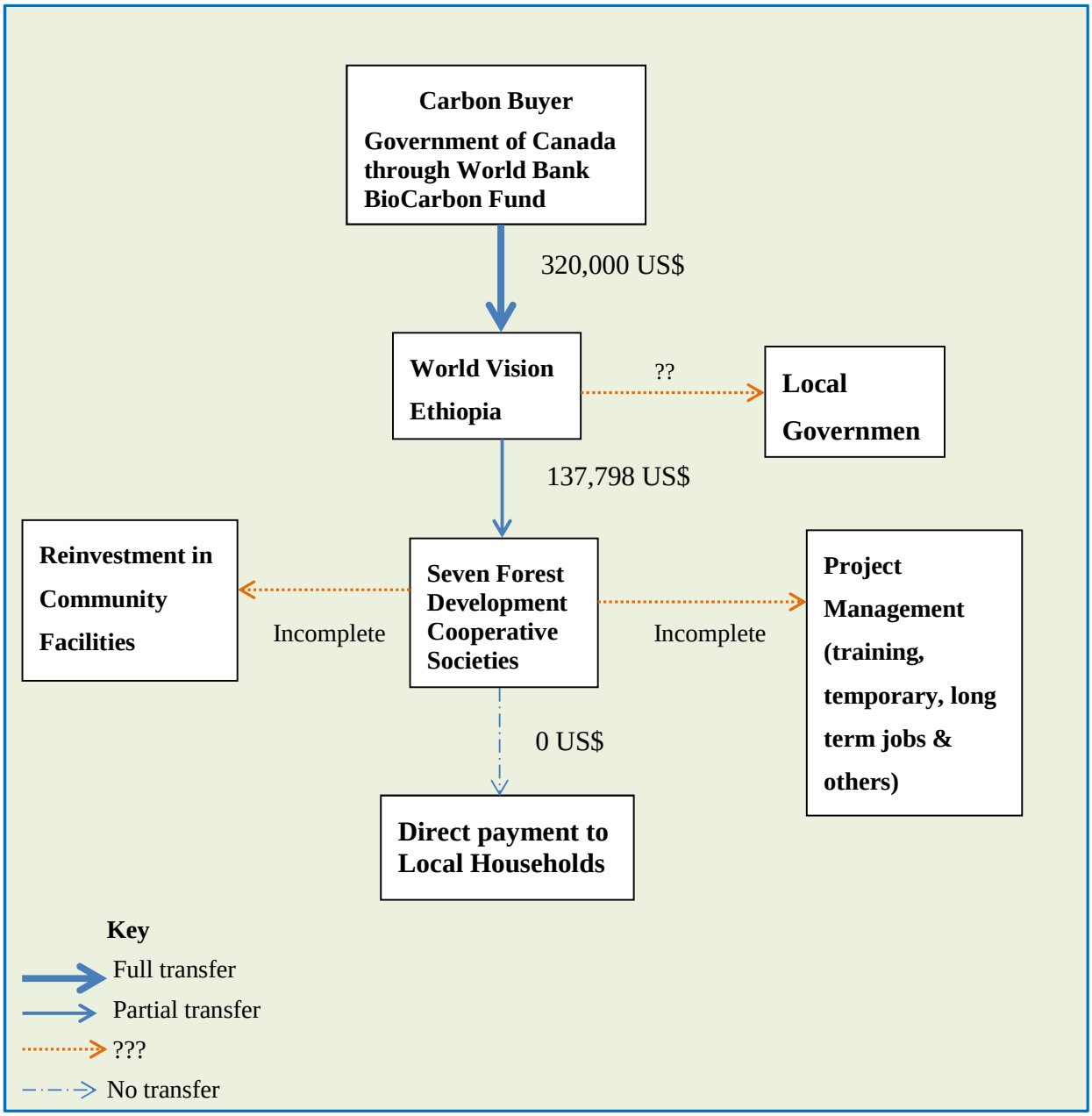

Figure 4.2 Financial flow arrangements

Source: (PM_2, July 08/2013 and E_1, July 22/2013)

Note: The figure on funding is up from 2009 to August, 2012 (the date of data collection).

4.8 Summary

This chapter discussed the general overview of the *Humbo* CDM forestry project and its benefit sharing mechanism to local communities. The study found that the *Humbo* CDM forestry project was initiated by World Vision Ethiopia and World Vision Australia. There was no community involvement in the formulation and design of the project. Community involvement came to place later when the NGOs sought the ownership and legal status of the project from the point of view of the Ethiopian policy direction.

The study revealed that community members were told to participate in the process of institutional set up without the opportunity to decide on how or what they could contribute to the project design. To this end, seven cooperative societies were purposely created by the NGOs in order to meet the legal and procedural requirements of the project. The project was designed for 30 years. No public funding is involved and the revenue from the sale of Certified Emission Reductions (CERs) becomes the main source of financial benefit. The financial flow arrangement allows this revenue to pass through an intermediary party, the World Vision Ethiopia, and then distributed to cooperative societies. The empirical evidence obtained from respondents indicated that the NGOs benefit sharing arrangement lacks clarity and transparency.

In relation to the theory of political ecology, the empirical evidence revealed the existence of power asymmetry between local communities, project managers and project designers. The project disempowered local communities to the extent not to take part either in project formulation or benefit sharing arrangement.

5 COMMUNITY BENEFITS AND CONFLICTS

5.1 Introduction

This part discusses about community benefits and conflicts associated with the implementation of the *Humbo* CDM forest carbon project. The community benefits include facility provision, market access and local ecosystem improvements. The section also provides evidence on evolving conflicts within the community.

5.2 Community Benefits

Community benefits refer to those benefits resulted from the reinvestment decisions of cooperative societies. Cooperative societies reinvested revenues obtained from the sale of CERs in to different projects that can provide services and market access to local communities.

5.2.1 Facility Provision

Article 7 of Federal Proclamation No. 147/98 of Ethiopia states that *"A society may engage in either production or service rendering activities or in both"* (FDRE, 1998). In *Humbo*, cooperative societies were engaged in both production and service rendering activities. Producing income through the sale of carbon credits became the major activity to which cooperative society depends most. It is the major, perhaps the only source of funds to finance basic community facilities.

Cooperative societies have reinvested their revenues in service rendering activities. They have constructed flour milling machines, offices, shops and grain storage facilities. For instance, each cooperative society constructed its own office and shops; two cooperative societies constructed flour milling machines (Figure 5.1); and a number of other cooperatives constructed grain storage and shops to provide services to the community (Figure 5.2). One respondent said:

> The availability of a flour mill in our area is a relief particularly to women. In our culture, women are responsible for processing grains thus had to carry sacks of wheat or maize and walk to a nearby village or town to get a mill. Things have changed since the machine has come to place in our area. It has tremendously reduced the burden of women. (HH_1, July 10/2013)

Figure 5.1 The *Bola Wanche* Mountain Cooperative Society flour milling machine

Source: Author's own photo (Date: 25/07/2013)

In the study area, grain mills are diesel-powered thus are relatively low-speed and are not as efficient as electric machines. As a result women have to spend longer hours before they take their turns. In relation to this, another respondent said:

> I used to carry and walk long distances to get my grains been milled. The problem was severe during holiday's week. At this particular time, many women gathered and the machine was subjected to work days and nights. I should stay there the day to take my turn in line. Sometimes I might return home after midnight or spent the night there. (HH_2, July 26/2013)

Figure 5.2 The *Abela Longena Gamo* Mountain Cooperative Society grain store

Source: Author's own photo (Date: 09/07/2013)

Money is also an issue for some households to get private grain-milling services. As discussed in section 1.6.5, the mean annual income of the community is below US$ 100 and 85% of the populations were living in poverty. Respondents indicated that paying for private grain milling services is still unaffordable to some community members and that some women prefer to use traditional technique which requires them to grind the grain manually. Another respondent explained:

> When consumers brought grains for grinding, private mill owners charged them at a definite rate of ETB 1.00 per kilogram of grains. The payment was not affordable for many households. The established community milling service has eased this problem. We are charging consumers with 40% discount at the rate of ETB 0.6 per kilogram of grains, just to cover the running costs. The service is open to all community members irrespective of membership. (PM_2, July 08/2013)

For project managers, the discount in the service charge rate per kilogram of grains was considered as an indirect benefit distribution mechanism.

5.2.2 Market Access

In the study area, crop production is the main source of income. Maize is one of the main crops grown in *Humbo*. The project area is located not close to transportation, storage and communication infrastructure. Farmers use donkeys to transport maize to nearby local market places of *Humbo* town or Sodo city.

The project managers constantly mentioned that cooperatives have engaged in buying and selling of locally produced products and created a market access to households at their place of origin. I was told by project managers that their cooperatives have created better market opportunities for households and this has helped them to save time, energy and travel expenses.

The market operates in such a way that cooperatives purchased crops (maize in this case) from households with prices competitive with the prices in *Humbo* town and Sodo city. Such crops are then stored until May. Finally, the project managers re-sale it back to households. Project managers indicated that they received good responses from consumers, including nonmembers. They said that they built a competitive marketing system that allowed each participant to respond voluntarily.

The system motivated nonmembers and became part of their marketing strategy. In this regard, one of the respondents explained:

> The market operates for all, irrespective of membership. Nonmembers are given permission to sell their produce to cooperative societies. The pricing mechanism is the same for all. Our resale program, which was held, last May, included nonmembers too. Because our aim was to respond to food insecurity problem of the area which could hardly be treated on membership basis. (PM_1, July 25/2013)

Figure 5.3 *The Abela Longena Gamo* Mountain Cooperative Society's grains left from re-sale
Source: Author's own photo (Date: 09/07 /2013)

Price information is important in this kind of local market system. It is clear that, households in rural areas has limited access to transportation and communication infrastructures. As a result, they suffer with lack of up to date market information that usually limit their bargaining power. In the study area, households as well as project managers collected price information through informal networks.

As discussed in section 1.6.3, most households in the study area and its surroundings have faced with critical food shortages that last up to five months in a year so that dependency on food aid is high. One of the cooperative committee members repeatedly mentioned that his cooperative provides cheap maize grains to the market to respond to households demand at

this critical season of the year. He said that his cooperative created a kind of safety net to provide cheap food at the right time and place to reduce exposure to risks of food deficits. He explained:

> We (committee members) had spent ETB 44,745 (US$2, 355) amount of money and purchased maize during the harvesting season (October, November and early December of 2012) to be sold during food shortage periods to the community, including those who were not members. We (committee members) thought the service should be inclusive, irrespective of individual's view and status. It was based on 'pay and take' basis, which created a win-win situation for local people, i.e. profitable to the cooperative and cheaper to households. Unlike the nearby private traders, we provided discount that ranged from ETB 0.80-1.00 per kilogram of grains. (PM_2, July 15/2013)

In this regard, cooperative societies are acting as for-profit commercial enterprises. For instance, the *Abela Longena Gamo* cooperative society spent ETB 44,745.00 to buy maize and sold out for ETB 63,180.00 with a profit that equals ETB 18,435.00 which is 41.2% of the money paid to acquire the product. At the time of re-sale, there was no credit facility serving those community members who were unable to pay.

5.2.3 Floods, Landslides and Soil Fertility Improvements

The *Humbo* forest carbon project site is established on mountainous land which is free from associated farm opportunity costs. Respondents in the area confirmed that in the past, the landscape was susceptible to rock and mudslide and flooding during rainy times, which brought significant impact in the immediate vicinity. In relation to this one of group discussion participants said:

> It is not only water flooding down to our farmland. Rocks are also falling and threatening our life. Floods wash away the top fertile soil and affect our land fertility. It also damages crops, and decreases productivity and production. (GDM_4, July 11/2013)

A number of respondents feel that the project has improved the area's ecosystem. According to one respondent:

> The situation has changed since the implementation of the project. The afforestation and natural regeneration method re-vegetated trees to protect lands which were once bare and vulnerable to erosion. (E_2, July 30/2013)

Another respondent emphasized the project capacity in reducing mud slid and associated property damage:

> Re-vegetation is an anti-erosion mechanism that hindered transporting heavy sediments to downstream areas. It enhanced water infiltration, reduced flooding and landslide, reduced property damage, and increased agricultural production. (E_4, July 31/2013)

Another respondent described the project's benefit through the changed scenery of the area as he explained:

> The project restored the landscape and fertility of the project area as it minimized and protected the area from erosion, silt load, runoff, and landslides and changes the area once bare land to greenery. (E_1, July 22/2013)

Yet, participants of the group discussion forwarded two contrasting views. Two of the participants said: *"nothing has improved since project establishment. They added: "we haven't recognized the change. Floods are flooding and rocks are falling."* Whereas, others explained:

> Natural regeneration and artificial plantation have minimized rock fall and the amount of foods that eroded top fertile soils of farm lands. (E_5, July 30/2013)

5.3 Conflicts

Conflicts discussed here are those that arose due to the implementation of CDM forestry project. These include human-wildlife conflict and the conflict between farmers and project managers within the community.

5.3.1 Human-wildlife Conflict (HWC)

As discussed in section 1.6.5, forests in *Humbo* area were severely destroyed during 1975-1985. The removal of the forest has created a change of habitat for wildlife as it affects their natural as well as physical environment. As a result, they were forced to migrate to other areas.

The established CDM forestry project has changed the forest ecosystem in a way that wild animals such as monkeys, hyena, leopards and wild-boar have been able to return to the area.

However, the return of these animals has created conflicts. Such conflicts occur mainly due to crop damages and livestock attacks.

In the study area, human- wildlife conflict takes two forms: a conflict between human and wildlife and a conflict between people about the wildlife. In the case of the former, a conflict between people and wildlife occurs due to the interaction between wildlife and local communities. This interaction negatively affects those living in the immediate vicinity of the forest and results in loss of crops and livestock. In the case of the later, the conflict is between people in the immediate vicinity of the forest and project managers as a result of the failure to respond to complaints about the damage inflicted by wildlife.

The problems are severe to those living closer to the forest area. These problems can be categorized into two: damages to resources and threats to their life. Resource damages refer to crop raiding and livestock predation. The threat to human life results from the conflict with carnivores such as leopard and hyena.

Wild animals attack farmlands both at day and at nights. Households found out that catching these crop raiders is very difficult and are using traditional methods to scare them. They make a wooden pillar to support their visibility at a distance and scream to scare them away (Figure 5.4). The method might be effective during the day, but does not help much at nights. One participant of FGD said:

> How could I protect my farm day and night? It is impossible. I am old and I couldn't run fast to protect my farm. My eyes are weak and I cannot clearly see at a distance. It is hard for me to see objects, especially at dawn and dusk. (GDM_1, July 11/2013)

Figure 5.4 Wooden pillars that support visibility to control farm land from raiders

Source: Author's own photo (Date: 11/07/2013)

Farmers in the immediate vicinity also felt that wild animals have become a threat to their lives. One respondent expressed his worry as follows:

> The conflict is serious and our life is at stake. I don't know what I can do. I don't know where I can live. Panthers are forcing me and my family to evacuate, but where? Lions also come. The government cares more for wild animals than us. Experts and local administrators have warned us not to defend ourselves and properties. It is illegal to kill or injure wild animals. If we do, we will land in jail. So, how to protect ourselves? (HH_8, July 26/2013)

Another group discussion participant expressed the distress in a state of disappointment. His dismay was visible in his face. He said:

> Project managers are incapable of protecting households from attack. They failed to address our needs. We need fencing and they need to do that. But, no one is interested to hear our voice. We are mistreated. We are paying heavy price living near the protected area. No compensation, no insurance and no special treatment for our loss and threat of life. (GDM_4, July 11/2013)

Project managers opposed the complaint and saying that the monetary gains from carbon offset do not allow them to fence the forest given the high costs of construction. They further explained that fencing is not the task of one or two cooperative societies and it requires the willingness and

the solidarity of the seven cooperatives. They said that each cooperative has its own priority areas of reinvestment and does not interested to reinvest for fencing. One of them said:

> Fencing demands the high cost of construction and is too costly for cooperatives. We are re-investing the BioCarbon Fund into community services. We don't have enough money. We are seeking external help. The local as well as the federal governments should consider the situation and allocate money for fencing. (PM_2, July 15/2013)

5.3.2 Conflicts within the Community

One of the likely impacts of CDM projects could be the probability of inducing new human-human conflict within the community. Such conflict exists between different actors of various interests and expectations. In the study area, the main conflicts are between households and project managers.

Respondents indicated that the conflict between households and project managers have different characteristics. It is an external conflict that has evolved mainly due to opposing interests. It seems very difficult to get these conflicts resolved within a short time. Some of these conflicts involve benefit disputes with project managers. Others involve disputes about the effect of wild animals.

In the study area, the type of conflict differs across cooperative societies. For instance, in the *Bola Wanche* Mountain Cooperative Society, a conflict started as the cooperative leaders took away the use rights of 18 people by force. They established living fences (see Figure 5.5) to separate individual holdings from communal holding and excluded the use right of claimants without compensation. The cooperative project manager said that the land was open for community use for 17 years without agricultural activity. He noted:

> Our community has a shortage of arable land. Contrary to this, the land (laid in the claim) has never been used for agricultural purpose, though it is suitable for. (PM_1, July 25/2013)

The former use right holders of this land were living outside the community. Interviewed informants indicated that the claimants moved to other parts of the country for better income and job opportunities. Some migrated to *Zeway* agro-industrial processing factory and engaged in temporary labor and others migrated to *Awash* Agriculture Development and *Woito* Agriculture

Development areas for temporary labor works. However, these people still have contact to the local community. They are considered as part of the local community and participate in the different cultural and social activities like mourning and wedding ceremonies.

Figure 5.5 Aloe Vera plant used as a living fence used to separate forest area from private holdings

Source: Author's own photo

Respondents indicated that the conflict between the project manager and the land claimants has lasted for three years (2009-11). During this time, the conflict was serious and had stopped tree planting activities. Claimants brought the case to court. In explaining the court process the project manager was quoted:

> We had been on trial for three years. The court sent investigators to our area to examine the situation. Finally, the court concluded the dispute in 2011 and decided the land to be used as communal land. Since then, our cooperative society has ensured the use right of the land. We have planted Grevilla Robusta tree in July, 2011. (PM_1, July 25/2013)

The conflict in *Abela Longena Gamo* cooperative society is different. The cooperative society hasn't yet managed the total area of land delineated for CDM forestry project. Nine farmers are still encroaching the project area. The cooperative leaders accused them of wrongdoing. The local police arrested three of these farmers. However, arrest and punishment couldn't stop farmers from their action. One day, a person set fire to the forest and burned some area. He was then accused of setting fire and the local court sentenced him 20 months imprisonment.

Respondents of the study revealed their worry about the declining traditional conflict resolution mechanism of the community. Elders have been skillful to manage and handle conflicts between

households. Yet, this has been gradually changing since the introduction of CDM forestry project. According to the respondent's opinion, the project has empowered project managers to the extent that they respond to such conflicts by turning to the formal court than using the traditional channel. This has gradually eroded the role of elders in resolving conflicts based on local traditions.

5.4 Summary

In summary, the chapter discussed the community benefits and conflicts induced due to the implementation of CDM forestry project. The study revealed that the project has contributed to community benefits within the study area. The benefit can range from facility provision and market access to local ecosystem improvements. The study also revealed that the project has induced conflicts between wildlife and households who are living in the immediate vicinity of the forest and between households and project managers. Of these conflicts, human-wildlife conflict has found serious and more challenging.

6 HOUSEHOLDS COSTS AND BENEFITS

6.1 Introduction

This part discusses the direct costs and benefits of the CDM forestry project. It presents the costs of restricted access to forest resources and the costs of wildlife attack. The section also provides evidence on the direct benefits of the project. This is discussed in terms of the project's capability of generating employment and its contribution to increase household income.

6.2 Costs

Household costs discussed here are costs that arose as a result of changes in the use of forest lands and resources. These are mainly caused due to restricted access to resources as well as wildlife attack (Box 6-1). The impacts are not equally distributed within the community. Some sections of the community are better off than others. For instance, those outside the immediate vicinity of the forest are less likely to be affected by project implementation.

6.2.1 Costs of Restricted Access to Forest Resources

As discussed in section 3.6, forest carbon projects entailed restrictions of forest resources to local people. Before the implementation of CDM forestry project, the project land was a state holding that poor households had easy access to firewood and charcoal production to support their day to day livelihood activities. The implementation of the project, however, changed the land tenure system to communal holding[17] and issued user right to cooperative societies. This change in land use system has restricted poor households not to collect forest products and generate income.

There are also a lot of resentments of the restriction of access to firewood as a source of household income. One participant of FGD explained his situation:

> Trees grown in my farm lands are not enough to support my livelihood. I need to collect dry woods and fodder for sale and earn benefits. They are my sources

17 land which is not designated as state or private holding and is being used by the local community as common holding for the purpose of grazing, forestry or other social services

> of cash income that I used to cover some of my family's weekly expenses. (GDM_5, July 11/2013)

Another respondent indicated that restricted access to forest resources has weakened the ability of households to cope with seasons of crop failures especially during drought years. He stressed that firewood collection can provide a regular cash income and has a safety net function in order to reduce exposure to risks of deficits (HH_6, July 26/2013). The respondent sees the restriction as a problem to his household livelihood as he is unable to fill his family's income needs, particularly during times of food shortage. Yet, still some parents have sent children to collect firewood for their household consumption (Figure 6.1).

Figure 6.1 Children heading home after collecting fire-wood

Source: Authors own photo (Date: 10/07/2013)

Restricted access to forest products forced some households to shift their strategy of acquiring such forest products from adjacent unprotected areas. Respondents of the study revealed that the establishment of CDM forestry project displaced charcoal making activities into the nearby unprotected areas of the region. One of the respondents said:

> Charcoal was the main source of income for our livelihood. We used to earn at least ETB 200 (US$ 10.5) per week. Since December, 2006, however, it is totally forbidden to make charcoal in our area. The restriction has shifted some people to unprotected areas of the region located along the sides of Lake Abaya. (HH_7, July 26/2013)

According to respondents, project managers should provide the opportunity to collect fire wood and fodder and convert them to marketable product at least as compensation for their exposure to wildlife attacks. The complaint of one respondent is captured during one of the interviews:

> We are losing a significant amount of resource due to wildlife attack. We are tied and restricted, not to moving anywhere which made us pay additional costs. We need to be compensated so that the project managers should allow collecting fire wood and fodder. (GDM_2, July 11/2013)

Box 6-1 Household's loss of income due to project implementation

I have lived here for more than 20 years. I have five children, three sons and two daughters. My eldest son is a farmer, married and has established his own household. He is landless. Yet, he has shared from my small holding (one hectare). The other two are living with me. The youngest son is attending school (he is in grade nine) while his elder dropped out from grade ten. Prior to the implementation of the *Humbo* CDM forestry project, I and my sons had diversified sources of income. We were making charcoal, rearing sheep and goats, farming (maize production) and selling fuel woods. Income from charcoal making and fire wood became our safety net particularly during food shortage seasons. Income from the sale of valuable assets such as sheep and goats also used to support our livelihoods. However, the implementation of the project has blocked our access to these forest products. It has also exposed us for food insecurity problems. We have been experiencing loss of maize products and livestock attack. Wildlife is also threatening us. Our livelihood is getting deteriorated. (GDM_1, July 11/2013)

6.2.2 Costs of Wildlife Attack

In section 5.3.1, it is discussed that human wildlife conflict is one of the major conflicts evolved since project implementation. Both carnivores and herbivores are attacking crops and livestock of farmers living closer to forest areas. A number of respondents reported that they were at stake

due to the destructive impacts of wild animals. For instance, participants of the group discussion expressed their frustrations of leopards attack and reported that they lost five goats, seven sheep and an ox. They blamed the project managers for being reluctant to respond to their problems.

Another respondent emphasized the opportunity costs of sharing the immediate boundary with wildlife and the loss of income due to their havocking attacks. According to this respondent, some farmers possibly loss a quarter of their mature maize crops due to wildlife attacks. He further explained:

> I lost two sheep and two goats which cost around ETB 2000 (US$ 105). They were my buffer to fall back during food shortage seasons and a means to cover different expenses such as schooling fees, clothes and other unexpected social costs. (GDM_3, July 11/2013)

Lack of adequate food in the forest causes herbivores such as monkeys and wild-boars to move into their farmlands. In this regard, one respondent expressed his frustration:

> We are threatened. We spend days and nights at our farm. No sleep, no rest. Our health is deteriorating. We have used all our energy and time to protect our farm, but we couldn't save. We have lost a significant amount of crops. We couldn't avoid the risk, yet trying to reduce the total loss. (HH_9, July 26/2013)

A household living near the forest area reported that each year, he loses a quarter of his annual maize grain. This is damaging to farmers' livelihood as the loss of food grain implies a constraint on the availability of food. Farmers living in the immediate vicinity of the forest are usually victims of wildlife attacks. One respondent revealed:

> Monkeys and wild boars are destroying my farm land. A single monkey/wild boar can destroy five to ten maize plants within five minutes. I have kept my farm days and nights, in a rainy and sunny weather. (GDM_2, July 11/2013)

Another respondent explained the likely impacts of wildlife on the day to day activities of households who have settled along the sides of the forest (HH_{10}, July 26/2013). According to this respondent, households in the immediate vicinity are excluded (especially during the growing season) from different social and cultural activities. At this time, they could not participate in the social and customary practices of the community, such as attending funeral ceremonies and paying condolences as well as wedding ceremonies. One respondent said:

> Funerals are important events in our community. Handling funeral matters and participating in the provision of logistics and labor services in the house of the deceased will ensure similar support in the future. People are supposed to provide the service on a rotational basis. And a failure to attend this occasion is punishable either by cash fines or work assignments. The fear of wildlife attack has affected my participation, especially during crop growing season. (HH_9, July 26/2013)

Respondents indicated that the fears of property damage restricted their mobility elsewhere outside their farm land.

6.3 Benefits

Apart from the demerits, the *Humbo* CDM forestry project has brought benefits to some groups of people. However, the benefits are not equally distributed within the community. as discussed in section 4.3, the project developers created cooperative societies which are responsible to administer and manage the net benefit obtained from the sale of carbon offset. These primary societies were established based on the Federal Proclamation No. 147/98. Such proclamation urged project managers to divide 70% of the net profit among members of the cooperative society. Yet, there is no direct monetary payment made to members of cooperative societies.

6.3.1 Employment

The *Humbo* CDM forestry project was implemented in rural areas where agriculture was the main and the only employment option for households. Prior to the project implementation, households had no other employment opportunity than agriculture. There were no off-farm or non-farm jobs available in the area. Off-farm activities used to be available only in the nearby cities. Respondents in the area revealed that, households used to move to the nearby cities for employment during off-farm season (particularly from December to April).

The response obtained from respondents indicated that the implementation of the project has brought temporary and long term employment options to local communities. The temporary

employment options were designed on the basis of man's-day jobs[18]. It was designed to create 9,000 man-days of temporary job opportunities for thousands of community members in order to undertake the various reforestation activities (PDD, 2009:86). Some of these reforestation activities include site preparation, planting, pruning and coppicing, weeding, and thinning (Figure 6-2 and 6-3).

Figure 6.2 Farmers working on man-days temporary jobs (weed control).

Source: (E_1, July 22/2013)

Such temporary jobs were financed by World Vision Australia. As discussed in section 4.6, WVA financed a total sum of US$ 292,850 to realize the project development and implementation over three years (2006-9). As part of the development cooperative agreement, WVA first transferred the money to World Vision Ethiopia. WVE was a responsible local NGO that provides the temporary man-days job opportunities to local community members. The NGO then offered the man-days temporary jobs with a daily allowance of ETB 35 per day (which is about US$ 1.8 per day).

18 It refers the amount of work performed by an average worker during one day.

The NGO was also financed the artificial tree planting process. The process was covered 285 hectares of land to plant with Grevillea Robusta seedlings. Local farmers had participated to dig small pits of size 0.018 m^3 (0.3*0.3*0.2) and plant trees. Payment in this regard was arranged per tree/seedling basis. In this regard, one of the respondents indicated that the NGO had paid ETB 0.43 per planted seedling ($PM_{1,}$ July 25/2013).

Figure 6.3 Artificially planted Grevillea Robusta's trees

Source: Authors own photo (Date: 09/07/2013)

The NGO also created some long-term employment opportunities during the project implementation phase. It employed forest wardens who control and protect forest areas from human and animal intrusions. The NGO was paid each warden around US$ 75 per annum, which was equal to 93% of the mean annual income of a household in the study area. The NGO has stopped employing wardens since 2012 and transferred the responsibility to cooperative managers. Each society has now employed its own wardens. For instance, the *Abela Longena Gamo* Cooperative Society employed 12 wardens with a monthly salary of ETB 120 (around US$ 6.3). According to project manager, seven of these wardens are from the immediate vicinity of forest so that they can easily control and keep the forest from animal and human intrusion.

The reinvestment strategies of two cooperative societies created a number of jobs to local households. At the time of data collection, four persons held long term position and operating

grain milling machines (Box 6-2). Project managers were on the move to add one more milling machine in *Abela Longena Gamo* Mountain Cooperative Society. The additional machine is supposed to offer jobs for additional two workers.

Box 6-2 Household's income gain due to project implementation

Prior to the implementation of the *Humbo* CDM forestry project, my family had experienced food and financial shortages. Life had been tough for us. Maize production was our major source of food and income. However, the production is nature dependent and is exposed to maize failures, due to rainfall variability in the area. When maize fails, we are forced to sell our valued assets such as oxen and cows to cope with food and financial shortages. Maize product used to be the only source of income for my family, but now we have had additional source of finance. The implementation of the project has created a long term job opportunity for me. My family is now benefiting from the project. I have employed with annual salary of around US$ 189. My salary has covered all non-food costs and no more pressure on maize product. I have used this money to make important payments. I can change shirts, pants and shoes. I can easily provide school materials, shoes and clothes for my children and my wife. Furthermore, I can pay for agricultural inputs without taking loans.

(HH_3, July 25/2013)

6.3.2 Training with Financial Incentives

Parallel to man's-day temporary job opportunity, World Vision Ethiopia were trained local households during the project implementation phase. The NGO used incentive based approach to get people educated about the potential benefits of CDM forestry project to local communities.

The NGO provided a lesson with daily allowances of ETB 35 (around US$ 1.8 per day). Households get trained during off-farm seasons, with no opportunity costs of farming.

Respondents have different views about the impact of training related financial incentives. One respondent expressed his positive opinion by saying:

> Trainings were given by local experts, with local language, within our place of residence. We are not expected to buy food and drink or rent accommodation. We put the training allowances to our pocket. (PM_1, July 25/2013).

Another respondent, however, complained about the small amount of money that was offered during trainings by saying:

> I just got trained once for five days and received ETB 175 (around US$ 9). It was too small money that I couldn't remember how I spent it. (HH_2, July 26/2013)

The discussions with respondents revealed that local communities appreciated the existence of training for temporary financial gain.

6.3.3 Income from Beekeeping and Animal Fattening

As discussed in section 4.2, non-timber forest products could have significant impact to households and improve their livelihood activities. Beekeeping is one of these forest products available to households. In this regard, both the NGO and cooperative societies supported some groups of households who are living in the immediate vicinity to benefit from beekeeping. One respondent said:

> World Vision Ethiopia tried to create different options for those living in the immediate vicinity to diversify their income from beekeeping, animal fattening, sewing, etc. through credit access and direct support. For example, the World Vision Ethiopia offered 120 modern beehives and 40 sewing machines for those identified as affected groups. (E_1, July 22/2013)

Affected groups in this regard refer to those households living in the immediate vicinity of the forest. For instance, Figure 6.4 shows bee hives given to one of the respondents who is living closer to the forest.

The Abela Longena Gamo Mountain Cooperative Society also bought 20 beehives for ETB 13,700 (US$ 721) and distributed to households. Beekeepers in this society were organized into small groups of five members in order to share experiences and to supply honey collectively in groups. Project managers politicized the distribution of beehive as a symbolic project outcome that can impact beekeeper's productivity and increase household income. It is however, noted from respondents that such benefit hasn't yet come to beekeepers. One respondent explained:

> I had experiences with beekeeping before and after the CDM forestry project. Prior to the project implementation, I used traditional beehives and used to get ETB 300-400 per annum. After the project, I have used modern beehives, but the produce and the income I got is nearly the same, with a slight difference of between ETB 100-200. (HH_4, July 26/2013)

Figure 6.4 Beehives for honey production

Source: Authors own photo (Date: 10/07/2013)

In relation to animal fattening, the NGO facilitated credit access to households to purchase animals. The fattening of cattle, sheep and goats is a system which could be practiced by most households and bring them income. In the process of animal fattening, households built pens, tie up the animals to restrict their mobility and provide feed and water. They also regularly check and clean their pens to reduce the risk of illness. The animals are usually ready for sale within two to three months. The income obtained from sale is first used to pay back loans, and then the

profit is used to supplement other household needs. Animal fattening is generally considered quite helpful in terms of increasing households' income in the study area.

However, interviewed respondents complained about the lack of credit access to benefit from fattening animals. They pointed out that since 2012/13, the NGO as well as cooperative societies have stopped loan provision. In relation to this, project managers explained that they had a hard time collecting repayments because of some defaulters. According to them, there are households who did not return the loan to cooperative societies. For instance, in the *Abela Longena Gamo* Mountain Cooperative Society, a total amount of ETB 2,550 (US$ 134) was reported overdue at the time of the 2011/12 audit report. One respondent said that project managers are afraid of some disobedient people so are skeptical to provide credit (HH_6, July 26/2013).

6.4 Summary

This part discussed the costs and benefits of the *Humbo* CDM forestry project to households. The study indicated that the costs and benefits of the project were not evenly distributed across households. Household costs ranges from financial to social. Financial costs include loss of income, agricultural products and livestock whereas social costs are those related to failure to attend social events such as funeral and wedding ceremonies. On the other hand, the study revealed that the implementation of the project created temporary and some long-term job opportunities to local communities.

7 CONCLUSION AND RECOMMENDATION

7.1 Introduction

The study was set out to explore the community perception of the impact of the *Humbo* CDM forestry project on poverty alleviation. Specifically, the study has sought to examine the benefit and cost sharing mechanisms of the *Humbo* CDM forestry project and to assess the impact of the project on poverty alleviation. The general theoretical literature on CDM forestry projects in the context of developing countries is inconclusive on several questions within the impact of the project on poverty alleviation discourse. The study sought to answer three of these questions: (a) How are the benefits and costs of the project being distributed? (b) What are the impacts of the project on local livelihood? And (c), Has the project contributed to poverty alleviation? If so, how?

This chapter presents the empirical findings as answers to research questions, the theoretical implications of the empirical findings and some possible recommendations.

7.2 Empirical Findings

The main empirical findings are chapter specific and were summarized within the respective empirical chapters: Overview of the *Humbo* CDM Forest Carbon Project and its Benefit Sharing Mechanism, Community Benefits and Conflicts and Households Costs and Benefits. This section synthesizes these findings to answer the study's research questions.

The first question of the study was about how are the benefits and costs of the project being distributed. In this regard, the study provides the following answers.

a) *Lack of conceptual clarity:* The existing financial transfer mechanism, particularly from World Vision Ethiopia to cooperative societies, lacks transparency and clarity. The project managers as well as the ordinary members have no idea as to how the revenues are being distributed across cooperative societies. In this regard, the NGO has not created conducive environment that enables project managers to take part in the revenue sharing arrangement. Lack of clarity in the financial flow arrangement may create conflict across cooperative societies that can affect their integration in the overall forest management scheme.

b) *Failure to identify local beneficiaries:* The project developers as well as the project managers have not engaged in identification of local beneficiaries (i.e. who is affected by the project, who should be treated differently and how) by taking in to account the impact of the project throughout the community. Respondents in the immediate vicinity of the forest feel that failure to identify affected groups and to deal with their claims obscure their hope of receiving financial benefits from the sale of CERs.

The second question of the study was about the impacts of the project on local livelihood. In relation to this the study found out the following answers.

a. *Consequences:* The implementation of the *Humbo* CDM forestry project has brought both positive consequences (benefits) and negative consequences (costs) to the local community. These consequences vary across scale: at the federal, local, community and households level (Table 7-1). The benefit ranges from ecosystem improvement to direct and/or indirect benefits from foreign exchange, facility provision, income gain and capacity building. Most of the direct benefits have focused at the community level and they are the results of community level reinvestment decisions. The costs of the project implementation include loss of income, wildlife attack, restricted access, insecurity and social costs. All of these costs are direct costs and they are entirely focused at household level.

Table 7-1 the Costs and Benefits of the *Humbo* CDM Forestry Project Implementation

Scale	Benefits						Costs				
	Foreign exchange	Milling service	Grain Market	Income gain	Capacity building	ES improvement	Income loss	Wildlife attack	Restricted access	Insecurity	Social costs
Federal government	**				*	*					
Local Government					*	*					
Community		**	**		**	**					
Households		*	*	*	*	*	**	**	**	**	**

Note: ** = Direct benefits/costs; * = Indirect benefits/costs

b. *Uneven distribution of benefits and costs:* The study indicated that benefits and costs are not evenly distributed within the community. Households who are living in the immediate vicinity of the forest have suffered with all of the direct costs (that have entailed due to the project implementation) whilst capturing no direct benefits.
c. *Power asymmetry and conflict:* The respondents of the study feel that the implementation of the project has created a new form of power relation (economic and knowledge) between project managers and cooperative society members. The project managers have empowered themselves to make decisions on matters who believe important for the community (without consulting ordinary members) in order to reinvest the BioCarbon Fund to their priority areas of interest. This decision has overshadowed the household's hope of receiving direct monetary benefits generated from the sale of CERs.

The third research question of the study was about how has the project contributed to alleviate poverty in the study area. In relation to this, the study found out that:

a. *Significantly small income*: the respondents of the study emphasized that the implementation of the project has brought limited income and has only enhanced a very few household's income gain. The respondents, who are living in the immediate vicinity of forest, consider the implementation of the project as a misfortune that exposes them to falling into poverty instead.
b. *Lack of financial capital*: the respondents of the study highlighted access to financial capital as a factor that caused them to diversify their income sources and avoid falling in to poverty, yet they still do not enjoy reliable financial access.

7.3 Theoretical Implication

The theoretical dimensions for CDM forestry project therefore needs to be revisited in order to understand its impact on poverty alleviation in the host country.

The benefit sharing mechanisms of CDM forestry projects suggests the transfer of all monetary and non-monetary incentives to local communities (Behr, 2012:1). It is however, noted from this study that such benefits, particularly the monetary incentives, is not directly transferred to households. The financial flow mechanism is suffering with lack of clarity and transparency. This finding is consistent with that claimed by Peskett (2011:1). Benefit sharing mechanism of a

CDM forestry project that involves a range of stakeholders needs to consider the historic claims and potential conflicting interests within the community. In this regard, identification of beneficiaries and scoping their rights and benefits is crucial (Beher, 2012:12-13). The empirical evidence obtained from this study supports this argument by capturing conflicts evolved due to failure of project managers and designers to identify and categorize local beneficiaries and deal with their claims. Clear and transparent financial flow mechanism and identification of local beneficiaries are, therefore, very important in negotiating choices, to make decisions and to enhance the sustainability of the project as suggested by Angelsen et al., (2012:148-49).

Forest carbon offset market suggests the achievement of meeting Sustainable Development and poverty alleviation via voluntary market mechanism in the host countries (Thomas et al., 2010:886). It is however, this study noted that such benefits are mostly community based and are not likely for all households. Instead, there are households who are suffering with the direct costs (economic and social) induced due to the implementation of the project. Furthermore, the study noted uneven distribution of benefits and costs within the community. This finding supports Olsen (2007) and Boyd et al. (2009) arguments but contradicts that of Brown et al. (2011) and Thomas et al. (2010).

In the global CDM forest carbon market, the mechanism is criticized for its impacts of disrupting and changing the existing local social interrelationship, access to resources and power relation (Newell & Bumpus, 2012:49). This study therefore, echoe such argument and reveal household's feelings and resentments of the newly created power asymmetry, conflict, threat, misfortune and access to financial capital. This finding is similar to that of Corbera et al, (2007); Agrawal et al., (2011) and Bumpus & Liverman (2011) and contradicts with the goals of flexible mechanism which was designed to meet the needs of local communities in the global south. These controversies may overshadow the full benefits of CDM forestry projects and make its local impact on poverty alleviation uncertain.

The CDM forestry project, as part of community-level PES scheme, need to avoid social harm and benefit local communities to alleviate poverty. Poverty alleviation is a multi-dimensional concept that goes beyond increasing monetary income. People participation, legitimacy and security are also key issues and empower them to make decisions on community based investments and development schemes. It is however, noted from this study that such powerful

idea of market-based approaches undermined social justice by forcing some conflicted groups of the community, who have internally divided interests, to function together. Project developers and implementers politicize 'community development' (like facility provision) and 'local claims' to disguise the project's negative consequences on local agency and to deny local voices. I argue that such kind of disempowering effect exacerbate local inequality, deny local agency and can possibly lead some groups to fall further in deep poverty.

The conventional market-based approach of solving environmental problem displaced the pre-existing regulatory role of the state by private sector and NGOs. The role of NGOs in this regard is to support local community in the overall process of project design and provide expertise, knowledge and technology. Such NGOs can play significant role particularly in PES contract arrangements that involve a single seller and a single buyer. In this regard, NGOs play a facilitatory role of organizing the community to function as a single entity. It is however, revealed in this study that the NGO goes beyond its role and could negotiate and sign contracts on behalf of the community. The NGO may politicize local community's lack of understanding and expertise. Yet, it is the disempowering effect of the project that denies local community's ability to negotiate and sign contracts with their product buyer. In view of political ecology, such kinds of politicizing and disempowering effects of CDM forestry projects may erode people legitimacy, participation, decision making power and the ability to negotiate with their benefit streams in general.

7.4 Recommendations

In view of the conclusion, the following possible recommendations are provided.

- Benefit sharing is a very sensitive issue in the CDM forestry projects. It can possibly affect the feeling, attitudes and circumstances of households or groups of people or the entire community and its needs. It can also affect the sense of ownership (throughout the community) and the sustainability of the project. This calls both project developers and project managers need to evaluate the existing revenue sharing arrangement and to establish a transparent mechanism that can ensure a sustainable flow of monetary benefits down to households.
- The CDM forestry project designers should delineate a clear boundary between direct financial benefits and in kind payments as community development projects. Lack of

clarity may deny the rights of some groups of household's to get compensation for their lost property and disguise local claims of direct financial transfer system.

- The project managers should explore innovative ideas to scale up the current reinvestment activities. They should provide access to capital to diversify or possibly change the household's livelihood activities and potentially increase their income. For example, people living in the immediate vicinity of the forest could reliably engage in other activities such as animal fattening, weaving, beekeeping, etc. instead of relying on producing maize which is exposed to wildlife attack.

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APPENDIX 1

Interview Guide for Households

Interview ID……

Name …….Age……Sex……. Occupation……..

Cooperative Society……Position in the cooperative Society…….

1. How do you understand the Humbo CDM forestry project?
2. Can you tell me how the project was designed and implemented?
3. Did you involve in the process of project design and implementation? What was your role during that time?
4. Do you have a role in the management of the forest carbon project, particularly in the process of controlling and maintaining the forest and its offsets? Can you explain your role?
5. In your own views, what are your perceptions on the impacts of the project in relation to poverty alleviation?
6. Do you think the implementation of the project has brought benefits or costs?
7. Can you tell me some of the benefits or costs caused by the implementation of the project?
8. How are these benefits and costs affecting your income?
9. As a result of the impacts caused by the implementation of the project, how do you compare your current income to the past?
10. In your opinion, who are the most affected (both positively and negatively) groups of people due to the implementation of the project?
11. Can you explain why these groups of people are most affected?
12. What strategies are being put in place by project managers and project developers to cope with the impacts of the project implementation in relation to household's income?
13. What have the project managers done to reduce the negative impacts resulting from the implementation of the project?
14. In your opinion, what strategies would you recommend as a way of coping and adapting to the future impacts of the project?

APPENDIX 2

Interview Guide for Project Managers and Experts

Interview ID……

Name …….Age……Sex……. Occupation……..

Cooperative Society/Government/NGO office……..

Position in the cooperative society/Government/NGO office……..

1. How do you understand the Humbo CDM forestry project?
2. Do you know why emission is trading?
3. Can you explain how the carbon market operates?
4. Who are your emission buyers?
5. Can you tell me how the Humbo CDM forestry project was designed and implemented?
6. Did you involve in the process of project design and implementation? What was your role during that time? If not, explain why.
7. There are seven cooperative societies that are actively involved in the Humbo CDM forestry projects. Can you explain how they are created? What are the roles and responsibilities of these societies?
8. One of the purposes of establishing the CDM forestry project is to contribute to the host countries sustainable development and poverty alleviation. What are the impacts of the project in relation to poverty alleviation?
9. What are the benefits and costs of the project?
10. Who are the most affected (both positively and negatively) groups of people due to the implementation of the project? Explain why.
11. How much monetary benefits have you been received?
12. Do you know how the benefits are transferred from international emission buyers to your cooperative society? Can you explain the mechanism?
13. What kind of role have you been played in this transfer mechanism?
14. Have you transferred monetary benefits to cooperative members? If not why? If yes, how and how much?

15. Many people argue that managing communal forest land and its products are challenging. What is your comment in this regard?
16. Do you think the implementation of the project evolved conflict within the community? What kind of conflict you are experiencing so far? Explain why.
17. Can you explain some of the challenges that you have experienced so far? Did you solve these challenges?
18. What strategies are being put in place to cope with the impacts of the project implementation in relation to household's income?
19. What have you done to reduce the negative impacts resulting from the implementation of the project?
20. In your opinion, what strategies would you recommend as a way of coping and adapting to the future impacts of the project?

APPENDIX 3

Interview Guide for Focus Group Discussion

Group ID ……Age……Sex……. Occupation……..

Cooperative Society…… Position in the cooperative society…….

1. How do you describe the Humbo CDM forestry project?
2. In your opinion, what does 'emission trading' mean?
3. To what extent you were involved in the process of project design and implementation?
4. One of the promising features of CDM forestry projects is to bring benefits that contribute to poverty alleviation. Do you think the Humbo CDM project brings benefit? Explain how.
5. Can you tell me some of the benefits or costs caused by the implementation of the project?
6. How are these benefits and costs affecting your income?
7. As a result of the impacts caused by the implementation of the project, how do you compare your current income to the past?
8. Some people argue that the implementation of a new project (like a CDM) involves many actors who have different interest and experience and empower some groups. Such kind of varying interest and power relation might be one of the causes of conflict within the community. What is your opinion? Explain why?
9. Do you think the implementation of the project evolved conflict? What kind of conflict you are experiencing so far? Explain why.
10. What strategies are being put in place by project managers and project developers to cope with the impacts of the project implementation in relation to your income?
11. What have the project managers done to reduce the negative impacts resulting from the implementation of the project?
12. In your opinion, what strategies would you recommend as a way of coping to the future impacts of the project?

APPENDIX 4

ANONYMS

Interviewee	**Cooperative society/Organization**
HH_1 - Household One……	Abela Longena Gamo
HH_2 - Household Two…… …	Bossa Wanche
HH_3 - Household Three……	…..Bossa Wanche
HH_4 - Household Four……	…….Abela Longena Gamo
HH_5 - Household Five……	…….Bolla Wanche
HH_6 - Household Six…… …	Abela Longena Gamo
HH_7 - Household Seven……	…..Abela Longena Gamo
HH_8 - Household Eight……	….Bossa Wanche
HH_9 - Household Nine……	……..Bolla Wanche
HH_{10} - Household Ten……	Bolla Wanche
PM_1 - Project Manager One ……	Bossa Wanche Cooperative Society
PM_2 - Project Manager Two……	……Abela Longena Cooperative Society
PM_3 - Project Manager Three……	…..Bolla Wanche Cooperative Society
E_1 - Expert One……	……..World Vision Ethiopia (Humbo Branch)
E_2 - Expert Two……	Humbo Wereda Agriculture
E_3 - Expert Three……	Humbo Wereda Cooperative
E_4 - Expert Four……	.Wolaita Zone Agriculture
E_5 - Expert Five……	...Wolaita Zone Cooperative
E_6 - Expert Six……	..Wolaita Zone Tourism
GDM_1 – Group Discussion Member One……	Abela Longena Gamo
GDM_2 – Group Discussion Member Two……	Abela Longena Gamo
GDM_3 – Group Discussion Member Three……	Abela Longena Gamo
GDM_4 – Group Discussion Member Four……	.Abela Longena Gamo
GDM_5 – Group Discussion Member Six……	.Abela Longena Gamo
GDM_6 – Group Discussion Member Seven……	Abela Longena Gamo