An assessment of a REDD+ PILOT PROJECT in Nepal

A case study of the Charnawati Watershed REDD+ pilot project in Dolakha District

Alexander Solstad Ringheim

Norwegian University of Life Sciences
Department of INTERNATIONAL ENVIRONMENTAL AND DEVELOPMENT STUDIES
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By Alexander Solstad Ringheim

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Alexander Solstad Ringheim December 2013
Alex_ringheim@hotmail.com

Noragric
Department of International Environment and Development Studies
P.O. Box 5003
N-1432 Ås
Norway
Tel.: +47 64 96 52 00
Fax: +47 64 96 52 01
Internett: http://www.umb.no/noragric

Declaration

I, Alexander Solstad Ringheim, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature……..

Alexander Solstad Ringheim

Date……

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Abstract

The REDD+ initiative, which is an acronym for "Reduce Emission from Deforestation and forest Degradation, and incorporates conservation, sustainable management of forests and enhancement of forest carbon stocks. Is a mechanism which has emerged through a global partnership under the United Nations Framework Convention on Climate Change. The project is being implemented at various locations around the globe, the focus of this study will be the REDD+ pilot project initiative in Nepal. Nepal has been a member of both the UN-REDD programme and FCPF since 2010. The REDD+ readiness capacity initiative has been has been a joint effort initiated by the Government of Nepal with the support of FCPF, who have worked together in identifying "options for the design of an effective, efficient and equitable fund management system for REDD+ finance, and in assessing key policies and measures for addressing drivers of deforestation and forest degradation and linkages to the overall national REDD+ Readiness. This study investigates one particular case; that of the Charnawati watershed REDD+ pilot project, which was initiated in 2010. Through applying a case study design and using both qualitative and quantitative methods, this thesis is structured as a follow up evaluation of a baseline study. The objectives addressed in the thesis are; establishing the livelihood situation of the CFUGs and their level of dependence on natural resources (forest products in particular). Reviewing outcomes from the various livelihood strategies along with applicable livelihood challenges, vulnerabilities and coping mechanisms (based on the Sustainable Livelihoods Approach). The second section of the paper looks specifically at forest governance/ REDD+ related themes including; presenting users perceptions of climate change and CF governance, current mechanisms and practices employed in REDD+ implementation at the local level. Reviewing the outcomes of policies and fund distribution of the REDD+ initiative, as well as assessing users and mezzo level perceptions of CFs and REDD+. The last section discusses the level and approach communication between actors from the local level to the mezzo, also the potential for weakness such as corruption, elite capture etc. As the study has been of a small scale and no baseline study exists for the study area, some indicators have been hard to evaluate. As such it has it has seemed appropriate under certain sections of the paper to only determine and measure indicators. Although at times theories and reflections have been joined with findings, it has seemed prudent to restrain from over extrapolations, and where relevant supress the urge to transpose findings into a larger context. Based on the findings, this thesis argues

that the community forestry approach is both accepted and approved of by community forest users at the study site, but the REDD+ initiative, was at the time of study not well known by forest users, and its guidelines unclear and in certain aspects in conflict with present community forest use and management practices. The community forest users are predominantly subsistence farmers and have a high level of dependence on forest products in sustaining their current livelihood situation. The incentive mechanism to compensate forest users for reducing their use of forest products is generally not seen as viable by the forest users. Both due to the afore mentioned premise but also on account that the available REDD+ funds to compensate users for reduced forest product use are greatly under-dimensioned. Communication challenges were uncovered between the mezzo level and macro level. Thereof, most importantly the mezzo level being poorly informed of national directives and lacking the ability to participation and collaboration in developing locally relevant policies. Lastly concerning the possible approaches that may be taken to avoid the potential for elite capture and corruption when distributing REDD+ funds, a direct method from donor local institutions/ CFUG has been argued for.

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Abbreviations and Acronyms

AIGAs	Alternative income generating activities
CF	Community forest
CFUGS	Community Forest User Groups
CoP	United Nations Conference on Climate Change
DFO	District Forest Official
FAO	Food and Agricultural Association
FCPF	Forest Carbon Partnership Facility
FCTF	Forest Carbon Trust Fund
FECOFUN	Federation of Community Forest Users, Nepal
FUG	Forest User Group
HHH	Head of Household
ICIMOD	International Centre for Integrated Mountain Development
IPCC	Intergovernmental Panel on Climate Change
MoFSC	Ministry of Forests and Soil Conservation (Nepal)
NGO	Non Governmental Organisation
NORAD	The Norwegian Agency for Development Cooperation
NSCFP	The Nepal Swiss community forestry project
NTFP	Non timber forest product's
PES	Payment for environmental services

REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation + Conservation, sustainable management of forests and enhancement of forest carbon stocks
R-PP	REDD+ Plan Process
RWG	REDD Working Group
SLA	Sustainable Livelihoods Approach
UNFCCC	United Nations Framework Convention on Climate Change
UN	United Nations
UN-REDD	United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation

CHAPTER ONE – INTRODUCTION AND BACKGROUND

The acronym REDD+ stands for "Reduce Emission from Deforestation and forest Degradation, it also incorporates conservation, sustainable management of forests and enhancement of forest carbon stocks (URPS, 2011). In its inception REDD focused primarily on reducing emissions from deforestation and forest degradation. But in 2007 at the thirteenth session of the Conference of the Parties (COP-13) to the United Nations Framework Convention on Climate Change (UNFCCC), the Bali Action Plan was conceived. This plan expanded the original focus to also include "policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (UNFCCC, 2008). In 2008, the importance of conservation, sustainable management of forests and enhancement of forest carbon stocks was promoted so as to become equally important as; avoided emissions from deforestation and forest degradation (UNFCCC, 2011). At the COP-16 in 2010 REDD evolved to REDD+, as set out in the Cancun Agreements, now incorporating conservation, sustainable management of forests and enhancement of forest carbon stocks (Peskett, L, et al, 2008).

The current REDD+ mechanism has emerged through a global partnership under the United Nations Framework Convention on Climate Change (UNFCCC), with the goal of reducing emissions from deforestation and forest degradation. The approach is based on a partnership between developing nations committing to climate resilient, low carbon development incentivized by developed nations which in turn provide significant funding for reduced forest-based carbon emissions (UPRS, 2011).

The emergence of a policy mechanism such as REDD+ is in light of the current global focus on deforestation and its role in climate change. It is estimated that global deforestation accounts for 12 % of all total Co2 emissions (Lang, C, 2009), making deforestation an important factor contributing to global warming. Limiting, reducing and in the long run completely preventing forest degradation and deforestation is, therefore, today regarded as one of the most cost effective ways of cutting global greenhouse gas emission sources (IIED, 2009).

In contrast to afforestation and reforestation activities, stopping deforestation permanently through REDD+ aims to promote large benefits in terms of increased carbon stocks over a short time span. Other benefits affiliated with forest conservation are the prevention of floods, reduction in run-off, decreasing soil erosion, preservation of biodiversity as well as preservation of local culture and traditions (FCPF, 2013).

The focus of this study will be the REDD+ initiative in Nepal, officially; The Federal Democratic Republic of Nepal. It is a country located in South-East Asia, landlocked between China to the East and India at its southern border. Nepal has been a member of both the UN-REDD programme and FCPF since 2010. The REDD+ readiness capacity development process of UN-REDD has been a joint effort initiated by the Government of Nepal with the support of FCPF. The two actors have worked together in identifying "options for the design of an effective, efficient and equitable fund management system for REDD+ finance, and in assessing key policies and measures for addressing drivers of deforestation and forest degradation and linkages to the overall national REDD Readiness" (UN-REDD).

The precedence for implementing the REDD+ initiative in Nepal, can be linked to among other factors; that the country is especially susceptibility to the detrimental environmental threats posed by climate change. Indicators of this are many, among which; Nepal has experienced an average annual temperature increase of 0.06 degrees Celsius which is six time the global average (UNDP, 2010). Direct and physical environmental changes are also visible, such as receding glaciers and the formation of glacial lakes, altered vegetation compositions, altering weather characteristics and changes in vegetation systems all of which are indicators of an altering climate (Ojha, H, 2008).
Nepal has a total forest cover estimated at 5.8 million Ha, of which 21% is under community management (Dhital. N, 2009). Furthermore, the importance and dependence the population has on these areas, on account that 8.7 million people 73.9% (2008) of the total Nepalese workforce main occupation is within agriculture (ILO, 2010). Are attributes that support the implementation of forest conservation, community based carbon project such as REDD+ to be enrolled in Nepal.

In Nepal three REDD+ pilot projects have been initiated in cooperation with the Forest Carbon Trust Fund (FCTF). The projects have been established under the Norwegian Agency

for Development Cooperation (NORAD), which have funded the REDD+ project implementation in 104 communities within Nepal since 2009 (Khanal, S, 2011). Preliminary planning and development of methodologies/ mechanisms along with forest carbon stock measurement also began at the sites as of 2009 (MOF, 2011). The three pilot project locations are; Ludikhola watershed in Gorkha district, Kayar Khola watershed in Chitwan district and the focus of this study; the Charnawati watershed in Dolakha district (Karky, B. 2010). This study (2012) will look at two CFUGs in the Charnawati watershed addressing; the current livelihoods situation, outcomes and vulnerabilities of the study sites. Thereafter, reviewing the current forest governance system of the CFUG and the REDD+ implementation process. The final focus of study will be assessing the level and type of REDD+/Forest governance communication between actors, while uncovering potential threats such as corruption and lack of transparency. As the Charnawati watershed. REDD+ pilot project had been initiated two years before this study was conducted, it may best be described as a follow up evaluation of a baseline study. Thereby focusing primarily on describing the activities and outcomes of community based forest management in the area in terms that can be measured, in contrast to macro analysis/situational analysis which would address things outside the control of the project. As the study has been of a small scale and no baseline study exists for the study area, some indicators have been hard to evaluate. As such it has it has seemed appropriate under certain sections of the paper to only determine and measure indicators. Although at times theories and reflections have been joined with findings, it has seemed prudent to restrain from over extrapolations, and where relevant supress the urge to transpose findings into a larger context.

1.1 REDD+ in Nepal

The REDD+ initiative in Nepal has the overarching goals of strengthening community forestry management and promoting adaptation to the predicted changes caused by climate change through community development. While also encouraging sustainable livelihoods development among the rural and mostly poor communities which constitute 84% of Nepal's population (West, S, 2012). One reason for special consideration to be taken for the poorest groups within the Nepalese society is that these groups are also viewed as the most vulnerable in relation to the effects of climate change, therefore, focusing on adaption strategies within these groups will increase the resilience of communities as a whole (Luintel, et.al. 2009).

Furthermore for communities in general, when developing strategies for adapting to the altering conditions brought on by climate change it is important to take into consideration environmental/ ecological variations locally and how societal and political structures interact with ecological systems. Finding the balance is dependent on how political power is used and understanding that social needs do not always go hand in hand with environmental aspects, leading at times to contested negotiations (Luintel, et.al. 2009). Luintel, et.al (2009) also argues that in adapting to climate change, community forestry must incorporate and promote socio-economic change which strengthens community development, livelihood diversification and improved biodiversity conservation.

In the process of developing a country adapted strategy for REDD+ in Nepal, the REDD Forestry and Climate Change Cell, which lies under the Ministry of soil conservation in Nepal have prepared a paper for the monitoring and evaluation framework for the REDD+ R-PP process. The REDD+ implementation framework as presented by (REDD FCCC, 2013) as of 2013, is described as a consultative process with different groups and institutions collaborating as will be presented below, adapted from the paper (REDD FCCC, 2013).

The "Apex body" is a high level policy coordination committee, the main function of this committee is in multi-sectorial coordination and cooperation in planning and practical implementation of REDD+ activities. It also provides advice, monitors the planning process and implementation of different REDD activities.
The REDD+ working group (RWG) consists of nine members representing government, indigenous peoples groups, community forest user groups, private-sector and development partners. Its function is to ensure institutional representation of the different forestry stakeholders within forest related processes.
The REDD Forestry and Climate Change Cell (under MoFSC) is the main institution undertaking REDD readiness activities in Nepal; It coordinates these activities both at the national and sub-national levels.
Finally, the REDD Stakeholders Forum includes representatives from the private sector, civil society, media, government organizations, community-based organizations, local and international NGOs, donors, academia, research organizations, and all stakeholders interested in the Climate Change and REDD process. The forum provides a platform for outreach and communication between the varied actors, as a feedback mechanism for the process in

general. These organs together form the collaborative framework for the REDD+ R-PP process.

At "ground level" individual Community forest users groups (CFUGs) will be responsible for carrying out the overarching guidelines stipulated by the REDD+ R-PP policy committees, as well as defining, and developing locally devised forest rules and the distribution funds derived from the REDD+ initiative.
These individual forest user groups are connected through The Federation of Community Users, Nepal (FECOFUN), which functions as the countries network of forest user groups. It is comprised of 14500 CFUGs, which in turn make it the biggest civil society organization in the country. The organization is built up of 75 district units which again have 800 sub-district units beneath them (FECOFUN, 2009).

Monitoring the advancement and effectiveness of the REDD+ initiative is important for many actors including international participants who contribute funds to the project. It is also important for actors at the micro level so that the individual communities involved in the project have a quantifiable measure of calculating the progress and corresponding compensation for their work.

As mentioned monitoring carbon is an important aspect of the REDD+ process. Approximately 37% of Nepal are forested areas (Tamrakar, P, 2003) in monitoring these areas, there is presently a range of techniques in use including; physical observation, satellite and laser technologies (Lidar mapping). In order to be able to develop a successful mechanism for monitoring the success of the project, accurate information is needed on the accumulated carbon stocks, total stocks of forest in growth, biomass, forest cover and total carbon. But the economical and practical aspects of the different approaches and technologies are also important to weigh up, evaluating the success of an approach. With this last statement in mind, it is at present most common and practical for physical observation approaches to be practiced when measuring carbon stocks. From these observations measurements of the benefits from slowing or stopping the deforestation of Nepalese forest may then be calculated in increasing biodiversity and other ecological benefits along with the economic benefits both at the local and national level (Ojha. 2009).

1.2 Problem Statement

REDD+ is posed as a potential "triple win" approach for (climate, biodiversity and people), the three aspects consist of how the incentive based mechanism may modify practices and behaviours which will in turn lead to reduce carbon emissions and as a consequence of the latter development increases in biodiversity. Also, the project's focus on people is aimed at increasing the welfare of communities involved. But critics contend that there are several major obstacles in achieving this outcome with the prominent factors being; generally weaker governance capacities in developing forest-dense countries such as Nepal. Civil society presence in such countries has also often not been fully functional and seems still to be in a phase of strengthening. Lastly, the dependence such a country has on natural resources due to subsistence farming and intensive agricultural practices present large obstacles in achieving the triple win scenario that REDD+ aims for (Jagger, section 2).

REDD+ wishes to overcome such challenges through conveying the concept that climate change is an international challenge which affects all countries globally irrespective of borders and regardless of individual countries progressive or lack of internal investment in sustainable development. This understanding may encourage the international community to take a stronger stance and determined action, which in turn will catalyse greater investment both within the country's borders and in other countries capable of mitigating climate change effects such as Nepal.

As our collective understanding of ecologic-systems and the dynamics of climate change have developed, so has our knowledge of the factors driving deforestation. In regard to applying this understanding and adapting it to the REDD+ mechanism, the approach taken to governance and institutional reform is a vitally important factor which is deeply incorporated within the REDD+ structure and dialogue. In working towards improving livelihoods, REDD+ emphasizes direct payments, spin-off employment opportunities, development of community/national infrastructure while promoting long term access to natural capital.

The success of the "triple win" approach is dependent on the design of its institutional framework which aims to support forest users, developing clear and strong tenure rights, checking and decreasing corruption and minimizing transaction costs. Collecting trustworthy and verifiable data regarding deforestation and degradation is vital in providing equitable and

fair funding. A transparent mechanism for payments to the relevant parties based on the collected data will encourage contributing parties to invest and pay for reduced emissions through the REDD+ Mechanism (Jagger, section 2).

Implementing REDD+ policies and securing reduced deforestation will naturally influence the practices and current structures present in specific pilot areas. The hope is that through introducing a project such as REDD+ positive effects such as the capacity to reduce poverty and secure more sustainable development locally will follow. The project has placed emphasis on continuously following up and problem solving implementation methods based on concepts such as "double[1] and triple loop learning[2]". This approach is especially important in early phases of REDD+ pilot projects. This study will hopefully contribute to increase the available pool on REDD+ data, as it will be conducted in the final phase of piloting in the Dolakha region. In carrying out the study, the baseline framework established in the POVUS-REDD+ manual will be applied, which emphasizes especially factors such as "income and land use, property rights/land tenure regimes, the decision-making process and local perceptions regarding the use and conservation of forest resources" (POVUS-REDD+).

[1] In double-loop learning, members of the organization are able to reflect on whether the "rules" themselves should be changed, not only on whether deviations have occurred and how to correct them (Argyris, 1974).

[2] Triple-loop learning involves "learning how to learn" by reflecting on how we learn in the first place. In this situation, participants would reflect on how they think about the "rules," not only on whether the rules should be changed (Argyris, 1974).

1.3 Goal of Study

In carrying out this study, my goal has been to establish an in-depth overview of the current status of community forestry in Charnawati watershed (Dolakha district) in Nepal, using primary indicators of social/economic status and perceptions. In regard to the REDD+ pilot project, the goal has specifically been to understand the local people's relationship to their community forestry program as well as their perception of the impact that REDD+ implementation has made. Aspects regarding the level of communication and interplay between actors from the local level through to the mezzo level are also important to establish including related fields such as the potential for negative factors such as; corruption, elite capture and equity. The study was initially intended to draw lines from the Micro to the macro level, but in time it has proven more realistic to focus on only two steps (micro/mezzo)

1.3.1 Objectives and research questions

Objective 1 - LIVLIHOODS – Identify and analyse the current livelihood situation, outcomes and vulnerabilities of the two CFUG sites.

A) What is the livelihoods situation at the CFUGs?

B) What level of dependence do the communities have on the forests and its natural resources?

C) What are the outcomes from the different livelihood strategies?

D) What are the community's livelihoods challenges and vulnerabilities and how do they cope?

Objective 2 – REDD+ IMPLEMENTATION - Describe and evaluate the local CFUGs perceptions of community forest governance and views on climate change. Thereafter present users attitudes towards REDD+ implementation and describe the practical outcomes of the project. Finally look at potential weaknesses such as corruption and elite capture in the selected CFUGs.

A) What is the local knowledge of the relationship between users regarding local forest governance and forests and climate change?

B) What methods and practices employed by the local community/ organisations in implementing REDD+. Analyse the consequences of REDD+ implementation and integration have had on the Charnawati watershed.

C) Understand how REDD+ benefits and costs are distributed at the local level, the method used and its effects. Collect information regarding the practical outcomes and consequences for the local populous of implementing REDD+ policies

D) Gain insight into what degree there is of communication between parties from the local level to the macro level, also determine whether there are signs of weakness such as corruption, elite capture etc.

1.3.2 Thesis structure

The following chapter will present the applicable theory for objective one; the SL approach, and relevant literature and theory applicable in addressing objective two. Both linked with the overarching ontological approach used in pursuing those questions. Background literature and prior research relevant to Nepal and the research site in particular will then be described in conjunction with the research questions. Chapter three will introduce the methods section with the chosen research design, data collection methods, interview structure, and data analysis and the applicable statistical tests used. The varied challenges and considerations are then addressed.
The study area is presented in chapter four, presenting the demographic, environmental characteristics of Nepal, and moving then to look specifically at the watershed area. The

results and discussion section of chapter five and six present are then presented. Each sub-objective is presented, discussed immediately when necessary and summed up at the end of each sub-objective. Lastly the final chapter outlines the conclusions and recommendation section is presented.

CHAPTER TWO - THEORY AND LITERATURE

In this chapter, the objectives will be linked to relevant theoretical approach, followed by the ontological framework used, which indicates the overarching perspective applied. The Sustainable Livelihood Approach abbreviated from now on as (SLA) will be described first theoretically, the final segment will attempt to mesh together objectives and approaches juxtaposed with current relevant studies and research as closely linked to the geographical area in question when possible.

2.1 Conceptual/Ontological Framework

Before presenting the theory which will be used, some overarching assumptions and definitions used in the paper are presented in order to create a coherent link between theory, approach and findings. Firstly Elinor Ostrom's (Ostrom, 1991) design principles will presented as a guideline in the evaluation of the project. These principles describe indicators required to achieve long enduring resource governing institutions, thereby, providing a template of important characteristics required for a system to be successful. There are eight main traits of a successful institution including; clearly defined boundaries of a resource, proportional equivalence between benefits and costs of resource use, decisions must be based on collective arrangements; there must be active monitoring of the resource, mutually respected sanctions for rule violations as well as a corresponding conflict resolution mechanism. The governing resource systems developed by users must be respected by the overarching authorities; this also includes the organizational structure and method of governance which should not be centralized.

A social constructivist perspective underpins my approach to the paper, in this view the "capabilities of individuals and the ways they see the world are socially constructed. Individuals – as social beings – are constituted through learning the typifications of both the material world and social relations as established by society. They learn the meanings already created by the society into which they are socialized. They are formed by the institutions of the society in which they are raised. Society itself is likewise perceived through the concepts that are collectively produced" (Vatn. A, 2005). One of these concepts is institutions which Berger and Luckmann describe as "Institutionalization occurs whenever there is a reciprocal

typification of habitualized actions by types of actors…and such typification is an institution" (Berger Luckmann 1967). North (1990) defines these typifications as the "rules of the game" which can be further divided into informal rules, conventions, norms and formal rules. Firstly conventions have an important role in standardizing or coordinating behaviour through creating regularity, in deciding upon a particular way of doings things over all possible options, interaction and communication between actors become simplified. Norms; Arild Vatn regards as the "response to questions concerning what is considered right or appropriate behaviour". These norms are rooted in established values, and when they are continuously followed they strengthen the value in question.

We take into consideration formally sanctioned rules which cover many levels "from the constitution of society, the civil law to the laws governing business transactions, rights to resources – property rights – formally defined emission rights and so on."(Vatn, 2005). These sets of rules play an especially important role when different actors interest are in conflict, in these situations the higher sanctioning power of formals rules are often indispensable in reaching a solution. The basic premise as mentioned is that individuals are socially created and therefore so are their norms, conventions and values to an extent, and their strength is a function of how completely they have been externalized then objectivized and finally internalized. (Vatn. A, 2005). Clarifying briefly these definitions and my approach are important in regard to how one may determine and define a regime which overarches a resource, along with who will be allowed to access and use the resource and how the resource will be distributed. Secondly we have to determine the transaction costs involved in establishing and running the institution. Lastly, the different interests, problems and values inherent in the regime should be defined. (Vatn. 2004: 252.)

2.2 The Sustainable Livelihoods approach

"A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base." Chambers and Conway (1992)

The sustainable livelihoods approach (SLA) can be closely linked to sustainable development, which also states that poverty and degradation are two factors which are deeply interrelated. The SL approach principally enables a flexible and holistic perspective on impacts and outcomes caused by the changes in livelihoods that are created through varied inputs such as donor interventions, economic approaches and policies. The SLA framework acts as a tool of holistic analysis incorporating multiple factors that influence livelihoods as well as the outcomes of undertaking different types of livelihood improving interventions (Krantz, L, 2001).

The SLA has been widely used especially in development strategies since the late 1990's. IFAD defines the SLA as a method in which to gauge and understand the livelihood situation of poor people, through framing the main factors which affect their livelihood situation. The approach allows for future planning of development projects as well as assessing the strength and contribution of current activities (IFAD, 2013). The SLA places people at the centre instead of focusing on resources or governments, the influences and factors that relate to people in creating a livelihood become the fundament centre of the web which is SLA (IFAD, 2013).

The SLA theory focuses on understanding "what do different rural people have and how do they use their assets and environment to secure livelihood outcomes under various conditions and constraints?" The concept has a specific definition which relates to the capabilities, assets and activities that are necessary for individuals to live sustainably; at the same time it is a coherent and realistic approach which aims to resolve rural development problems. The approach is multi-dimensional and moves beyond assessing only practical and material objectives through also incorporating factors such as security, information circulation, relationships, affirmation of personal significance, as well as group identity. The model focuses on the institutional processes which promote and help accomplish strategies and

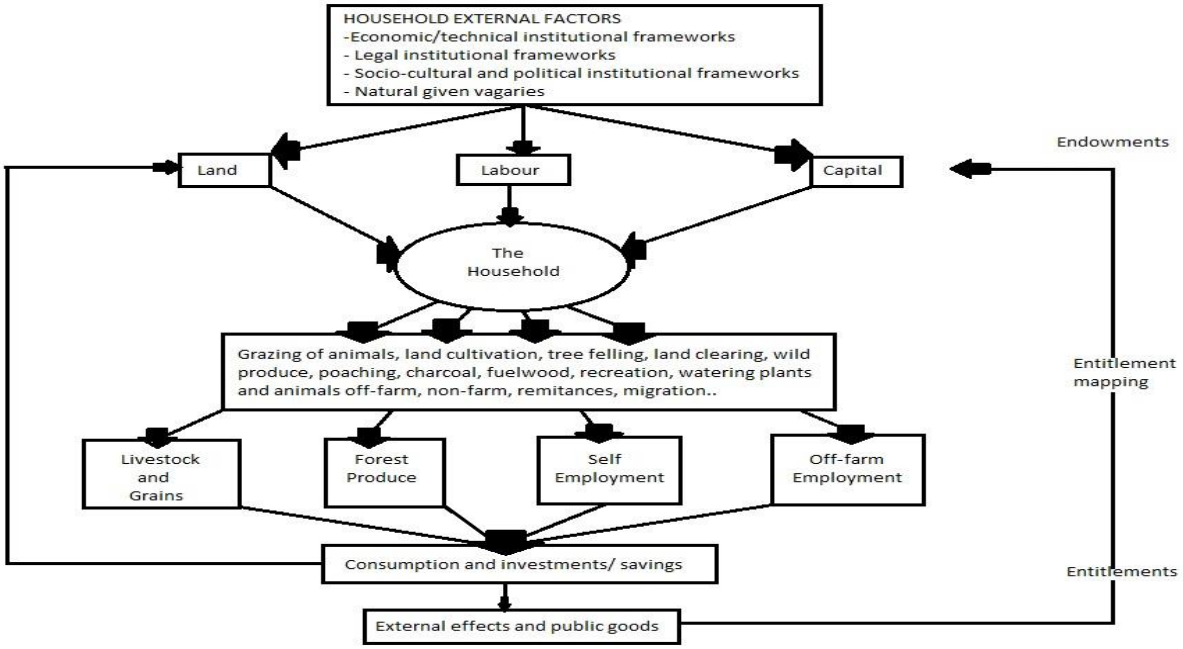
achieve set goals, where tenure rights and general resource access are an integral part of the institutional framework under which rural households adapt such as those under assessment. The framework can be applied to individual households, the mezzo level (villages) and even up to a national scale (Krantz, L, 2001).

Figure 1: Vulnerability context chart.

Vulnerability Context Figure, Source: Ellis (2003a; 2003b)

Using the above model one can divide the vulnerability context into three main themes, namely; assets, activities and outcomes. Through describing individual's assets and activities, the aim is to gain insight into not just the physical quantities a person owns, but also attempt to understand what "brings meaning" to the individual's livelihood situation. Assets are sub-divided into; Natural, Human, Financial, Physical and Social factors. Activities look at how people earn and secure their incomes and assets. "The process by which rural households construct a (n) (increasingly) diverse portfolio of assets and activities in order to survive and improve their standard of living" (Ellis, 2000: 15). In particular it subdivides activities into how people combine different activities, how they diversify their dependence and how they distribute their activities. The outcomes are a function of the incomes, public goods and externalities which are common issues and outcomes relating to the quality and sustainability of natural resources in sustaining livelihoods and wellbeing. In establishing the relevance of outcomes, effort should be made to distinguish what signifies "high income strategies", while discovering the local constraints along with enabling opportunities both privately and on a communal level (Vedeld, SLA, PowerPoint presentation).

Figure 2: SLA model



The Sustainable Livelihood Approach Model Ostrom.

The SL approach takes into account that the way people make their livelihoods are often comprised of many different activities this is often especially true in the poorest segments of society. Through taking into account the multiple methods of accumulating assets, a holistic picture of livelihoods is presented including not only the multitude of physical activities and natural resources, but also describing the characteristics of social and human capital.
The SLA aims to uncover the underlying causes of poverty by incorporating factors including formal/ informal institutions, as well as social factors from the local level and up to overriding national policies, economic processes and the national legal framework. The approach allows analysis from the micro to the macro level. The SLA's special emphasis on livelihoods is relevant when applied to the REDD+ framework which incorporates this as a vital fundament of its approach (Krantz, L. 2001).

There are also some issues that arise when applying the SL approach. This includes challenges of defining poverty. The SL approach does not define how one should go about assessing this. Therefore, one may use methods such as geographically defining areas where poverty is prevalent, assess poverty in relation to a defined poverty line or allow the communities themselves to define a wealth-ranking within their community (Krantz, L. 2001).

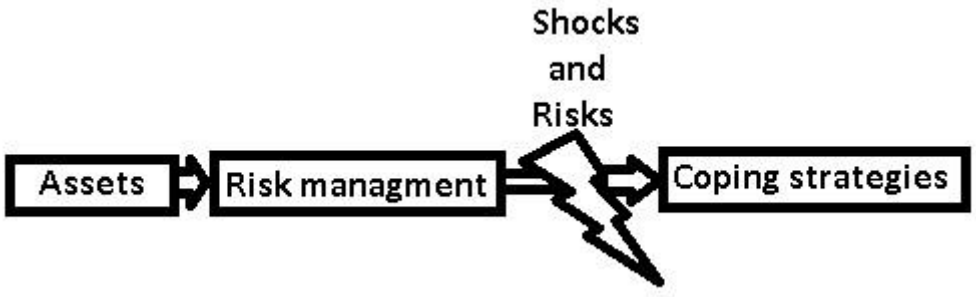
2.2.1 Vulnerability, Shocks and Coping Mechanisms

Ellis (2000) defines Vulnerability and risks as "Vulnerability has the dual aspect of external threats to livelihood security due to risk factors such as climate, markets, or sudden disasters, and internal coping capability determined by assets, food stores, support from kin or community and so on" (Ellis,2000 :62).

Ellis (2000) proposes that diversification as a livelihood strategy is suitable in confronting the vulnerability context. The strategy is further divided into two main branches; survival or choice. Whereas survival refers to contexts in which diversification is the result of involuntary external effects imposed upon the individual, forcing diversification, choice, on the other hand, refers to voluntary, proactive reasons for diversification. From these two overarching groups livelihood diversification is further divided into; seasonality, risk, coping behaviour, labour markets, credit markets and asset strategies.

Vulnerability can be handled according to Ellis either through coping strategies or risk management; coping strategies are mainly activities at the household level and reaction to a shock which has already occurred or perpetual, while risk management is a preventive approach where households prepare and adapt for potential and likely shocks before the event takes place. Not all consequences of shocks can be absorbed by a risk management strategy, as some shocks and risks may overwhelm the best laid plans; coping strategies are then set in place as a reactive strategy, shown in the table below.

Figure 3: Risk management and coping strategies from (Ellis, 2000)



Typically for poor households vulnerability is often a composite of internal livelihood components and external influences which when combined build a pattern of vulnerability, Chambers (1989) defines the context as "Vulnerability refers to exposure to contingencies and stress, and difficulty in coping with them. Vulnerability thus has two sides: an external side of risks, shocks and stress to which an individual is subject; and an internal side which is

defencelessness, meaning a lack of means to cope without damaging loss." (Chambers 1989:1).

External aspects of vulnerability can either be unexpected shocks, seasonal occurrences or a current trend, in the case of Nepal and for the poor population within the CFUGs the nature of the shock will be related to weather and climatic events (droughts, floods, landslides etc.), but may also be social/political. Shocks are related to the ability of households to maintain their livelihoods, while trends are more often connected to the adaptability of households in confronting these failures (ODI, 2000). As shown by the figure below Assets are a determining factor in the potential for households to cope with vulnerability and fall under the internal component of vulnerability, Moser (1998) the connection between assets, activities and the presiding outcomes in relation to vulnerability as; "Vulnerability is, therefore, closely linked to asset ownership.. ..The means of coping are assets and entitlements that individuals, households, or communities can mobilize and manage in the face of hardship. The more assets people have the less vulnerable they are, and the greater the erosion of people's assets, the greater their insecurity" (Moser, 1998).

Fewer assets relate to greater vulnerability, households normally have different combinations of assets but generally reduced access to assets would in turn make them more vulnerable. But also through having fewer assets the individual also has reduced the potential for substituting their resources in an attempt to adapt to shocks. In reacting to a shock, such substitution mechanism can be liquidating non-critical assets, re-allocating labour domestically or if necessary recruiting external labour in times of necessity. Given this premise different households will have unique outsets for tackling shocks, several sections of the conducted household survey has attempted to describe the relevant factors that affect the population residing within the CFUGs. Questions have focused on the local looking at the current practical challenges of the household. So the focus of vulnerability will look specifically at this level. However in order to gain an overview of the full range of possible trends, shocks and seasonality factors that define vulnerability, a table by Devereux (1999) is presented below.

Table 1: Trends, shocks, and seasonality (Devereux, 1999)

Trends	"True" shocks	Regular or seasonal shocks
-Population trends	-Human health shocks	-Of prices
-Resource trends	-Droughts, floods	-Of production
-Environmental -degradation	-Economic shocks	-Of health
-National/ international economic trends	-Conflict, civil upheaval	-Of employment opportunities
-Technological change	-Pestilence, crop diseases	
-Human health trends	-Livestock health shocks	

In addition to the level of assets a household possesses and their vulnerability risk, other factors are also important such as the ratio of gender in households and whether they are elderly or young. The level of resources and issues of entitlement and lastly the division of labour within the household also weighed in when establishing the level of vulnerability faced by households (Laier et al, 1996).

The inquiry into the households vulnerability situation has been based overarching on economic shocks, livestock health shocks, resource trends and pestilence, crop disease shocks, but other have been shed light upon through supplementary comments and through in depth interviews.

2.4 Existing literature linked with theory and objectives

Presented in this section are introductions to prior research in an attempt to highlight important current themes relevant to REDD+ in Nepal. This section will also attempt to present existing literature relevant to the objectives, shedding light on current perspectives and challenges that are found surrounding the different objectives.

2.4.1 Land rights

In establishing how land rights and the land access landscape looks, it is important to describe the underlying laws which define the restrictions of different ownership forms. In Dolakha, one finds primarily that there are two types of property rights applicable to community forestry namely; user rights and private ownership.
On a National scale the forest act of 1993 defines private forest ownership as "a forest developed or conserved in the land which is under the ownership rights of an individual according to the prevailing laws". This implies that the individual should have the right, to manage and develop the land as he sees fit, however; the government has imposed certain restriction including; the prohibition of harvesting or commercialization eight timber species, two NTFPs and eight other species. There are also dilemmas of dual ownership in resettled areas, creating complicated bureaucratic processes in establishing the right to use and commercialize forest products and limited guidelines on the use of wildlife these factors add complexity to understanding private land use and discussing private ownership (Krishna. P. 2008).

Regarding community forests, the National forest legislation proclaims that all dedicated community based forests as modalities of national forests; this means that the state has ultimate ownership of all community forests. The state, therefore, has the power to alter the use of forest area or revoke community forest lands. This uncertainty may have repercussions on the affected groups receding in these areas regarding their present and future dependence on community forests in sustaining their livelihoods (Krishna. P, 2008). Combing raw data at the individual level in combination with the underlying laws a more lucid picture may be sketched as to how the current situation stands at the local/individual level, and which policy/use options are open and available to local groups.

2.4.2 Dependency and income from forest land use

A study conducted by (Sapkota. A, 2008) on households socio-economic dependence on firewood in the "Terai" communities of Nepal sheds light on the importance of adapting and developing fitting policies to the current level of dependency on forest products by the local population. The study found that the distance from forest, as well as household wealth, excerpts a strong influence on a household's forest dependence. The strongest influence of the two was found to be household wealth, were poor households were highly dependent on forest fuel-wood average annual extraction among this group amounted to an average 4561.3kg/household. The paper recommends adopting a policy which focuses on poverty alleviation in order for households to be able to substitute their fuelwood consumption for other alternatives (Sapkota. I.2008). (Gautam, A, 2007) contends with a similar approach recommending that community forestry policy needs to be flexible to contextual factors and allow for sustainable use of forest products in areas where they are central to livelihoods, systems where a national standardized approach simply is not be feasible. (Gautam. A, 2007).

2.4.3 Power structure REDD+, local communities

In developing the global architecture of REDD+, a national approach has been favoured due to the assumed relative ease of implementing an integrated international carbon accounting and financing system from this level. In order to minimize leakage caused by reductions of deforestation in certain areas and proportional increases in others, a project of comprehensive mapping of the total forested areas of Nepal has been and still is being conducted in partnership between the government of Nepal and Finland (Bushley. R. 2011)

As REDD+ funding mechanisms aim to standardize processes in order to more easily compare results over a range of countries, it may conflict with the wish to implement the project from a bottom-up perspective adapting to local conditions and sentiments. As a result of the World Banks pressure to develop the project in this manner, Nepal has felt increasingly that it must conform to the overarching guidelines and templates as set by the World Bank (Bushley. R, 2011).

2.4.4 Distribution

The distribution of REDD+ funds is a factor still under discussion in Nepal as it is on a global scale, through experimenting and applying different funding mechanisms in the pilot project period a an equitable and accepted mechanism is strived for. There are presently three main methods for accomplishing this (governmental funding, market based, hybrid). The success of the distribution mechanism and red+ as a whole is highly dependent on the type of funding system used whether it is market or a governmental mechanism. Also whether these mechanisms are introduced at the national level or on project level will also have implications for how the funds are distributed. The critical point in the distribution of the funds is based on how the funds are distributed between the different stakeholders; National government, local government and on the community level. If distribution between these actors is felt to be unfair by one the parties, practical and real contribution to forest conservation is unlikely to be achieved. Ultimately dividing the funds fairly is seen as being important in the realization of an effective system. If these complications are solved, REDD+ could potentially bring great benefits both to community forestry and rural livelihoods (Thapa.D, 2009).

A market based approach is based on generating carbon credits which are then sold on the international market; the funds generated are then transferred to REDD+ projects. These credits may then be traded and used by especially Annex 1[3] countries to meet their national "cap-and-trade"[4] emission targets. The main criticism of this approach is that the markets may prove highly volatile and unstable in relation to the price spikes among other commodities such as timber, thereby potentially rendering investment in REDD+ and conservation less lucrative than investments in extraction and acquiring those same resources (Thapa.D, 2009).

The governmental approach is based on pooling funds into an international fund, which then redirects funds to where they are needed. This approach could with more ease fund indirect measures to combat deforestation such as policy reform and redesigning cooperative action between developing and developed countries. As the approach is centralized, it would perhaps be better suited at effectively addressing and funding projects

[3] Annex 1 Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States. From http://unfccc.int official website for the United Nations Framework convention on climate change.

[4] A cap and trade system is a means by which reductions in greenhouse gas (GHG) emissions can be implemented. It involves creating a market where GHG emission allowances can be bought and sold by entities , better facilitating the reduction of GHGs in a way that prevents inflexible limitations on economic activity. From thr International Emissions Trading Association website: www.ieta.org

requiring funds. One potential drawback argued is of whether such a system would be capable of mobilizing and building sufficient funds from the international community (Thapa.D, 2009).

The two main approaches in financing carbon reduction through REDD+ are firstly by directly monitoring and verifying carbon and converting increases or decreases in these measurement into payments. The second approach is based on building and strengthening national institutions as well as promoting conservation activities. Whether payments should be market based a hybrid of this or a purely government funded is also still under discussion. The leaning of developed nations as of 2009 is to base the system on the market; many developing countries are not fully assured that this will be positive for them (Thapa.D, 2009).

2.4.5 Communication/ participation

Participation is a vital pillar of the REDD+ in Nepal, where the representation and inclusion of marginalised and oppressed segments of the community is especially emphasised. The process is intended to work in practice as a bottom up communication and policy development approach. To what degree this is happening in practice will be studied including the level of communication and the possibility of weaknesses such as corruption, elite capture among others. Bushley (2010) discussed this theme and lays much importance on REDD+ being an intrinsically bottom up approach if it is to be economically beneficial, socially equitable as well as environmentally sustainable. In assessing Nepal's readiness in the implementation of REDD+, he mentions several serious challenges and shortcomings which may be indications of deeper problems within forest governance in Nepal. A lack of deliberative planning in the policy making processes and widespread corruption on all levels are among these challenges. Bushley (2010) also discusses how although Nepal has developed a significant level of forest decentralization, there is still a long way to go in regard to embracing a truly participatory, transparent and polycentric approach, and that the marginalized voices are heard is vital for the success of the project as a whole. (Bushley, B, 2010)

2.4.6 The role of the CFUG

The "vehicle" which is to be used for REDD+ initiative implementation are the already present forest user group of Nepal. Through establishing and empowering these Forest User Groups (FUGs) at the local level, specified and locally applicable solutions can be developed. The measures used by the Forest User Groups are aimed at mitigating the adverse effects of climate change while at the same time educating and preparing local communities in adapting to changing climatic condition on many levels. Encompassing equality principles help the most vulnerable in the local communities to increase their overall resilience and thereby the resilience of the community as a whole (Luintel. H, 2009).

Among the tasks and responsibilities of the FUGs or CFUGs as, we will from here on refer to them are many and varied. Among which designing infrastructure development systems such as; the construction of roads, irrigation facilities and drinking water systems. Also, precautionary projects aimed at reducing the effects of disasters such as river embankment strengthening. In the area of education materials for community school buildings are supported as well as wood for the construction of furniture, informal forms of education aimed at improving literacy rates are also encouraged. Within the area of Health and sanitation, resources for the construction of health camps and accessible toilets for local communities are supported as well as funds towards safe motherhood programs.

Through creating markets for forest products, the establishment of forest based companies as well as laying good foundations for among other ventures "eco-tourism" forest user groups are contributing to the creation of employment and contribution to the national treasury in the form of taxes and royalties.

The forest user groups also promote ideas of good governance, inclusion and equity. Empowerment and social inclusion are central to the creation of access to financial opportunities and functional governance while promoting equity so that the system is not biased towards the "poorest" of households. These ideas link up with the ideas of poverty reduction and support for livelihoods which are also a fundament of the CFUGs. The aim is to allow the most vulnerable and poor parts of the population to participate in profitable activities or use of land through incentives by the giving of loans or grants.

Encouragement of social activities intended to raise awareness and information on issues such as environment, social issues and cultural conservation are also embraced by the CFUGs. Lastly the CFUGs promote sustainable management which is aimed at improving the

conditions of forests along with improvements in soil conservation, watershed preservation and soil conservation.

CHAPTER THREE - METHODS

This chapter introduces the methodological approach applied during field research in an attempt to address the research questions. The goal of the chapter is to provide a comprehensive and clear guide to the specific steps taken in conducting the research.

The POVUS-REDD+ sections of the research mostly are based on the household survey which is a predominantly quantitative data collection method. But it also includes a mix of qualitative and quantitative methods for several sections of the research to build a nuanced and in-depth picture of the local population's perspectives and personal opinions. The primary focus is on developing an understanding of the livelihoods situation and socio-economic, factors which when connected depict how the individual and community as a whole are adapting and perceive the influence of REDD+ implementation is having. The case-study is based on two individual CFUGs in the Charnawati watershed, which is located within the Dolakha district. The study design may best be classified as a single case study, and hopefully the scope and depth of the inquiry will be sufficient to be able to view and transpose the findings into a wider context.

3.1 Research Design

A research design is closely linked to the chosen dimensions of the study; it is the root to how one explains causal links between variables, how the results are to be (if) applicable generalized to a larger scale, how actions and behaviour can be understood in a social context and insight into how a particular phenomenon behaves over time (Bryman, 2008). The overarching definition of a research design is "a framework for the collection and analysis of data" (Bryman, 2008: 31).

This study focuses on one pilot project area and therefore I have found the most appropriate approach is to regard it as a "case study". A case study design is defined as the "detailed and intensive analysis of a single case" (Bryman, 2008: 52). As the study is in-depth and focuses on a specific area the "case study design" is applicable since the field of research as in the case of REDD+ is very broad. This design allows for single cases to be explored along with

the main characteristics of that case, it is a method well suited to test whether a particular theory or theories can be applied to the phenomena (USC, 2013).
It is also a flexible approach to eventual findings in respect to interpretation as the method allows for unexpected and new information to direct and guide the method for extrapolating findings and recommendations. In contrast, pure scientific approach is often more rigid as it is based around proving or disproving a particular hypothesis.
A critique of this design is that since the results are based on one specific study (often at a single location) the findings and conclusions cannot be transposed to understand the particular phenomena within in a wider context. A rebuttal to this argument is that a; macro-scale, purely statistical study is often too broad .Also that a quantitative study does not concern itself with complex social factors viewing the phenomena in a holistic way, therefore, often merely scratching the surface of complex phenomena. The case study gives a single point in-depth understanding, especially in the case of a social-science approach (Shuttleoworth.M.2008).

Jagger (2010) describes that generally when designing and conducting a case study one should focus on a single case and then apply the chosen relevant theory in order to test its compatibility for the chosen population and case. As there are no set rules of what should be focused on specifically, it is important that the study remains relevant and concise so that the collected data can be practically workable. This will also alleviate the confusion and pressure from filtering through large quantities of irrelevant data (Jagger, P, 2010).

The study design will be based on collecting detailed documentation of participant's perceptions of implementation choices and measuring the baseline socio-economic situations, so as to gauge the impact of the project along with the associated costs and benefits of the initiative. The focus will primarily be on impact evaluation and assessing the research and implementation design presently in use, in order to create a picture of what impact the REDD+ intervention has made. An ideal study designed would to collect data prior to, under and post implementation in other words a longitudinal study. This, however, is not an option for the study at hand, as it has been conducted only once within a specific geographical location and time-frame (Jagger, P, 2010.)

3.2 Validity and Reliability

In order to be able to evaluate the study, certain control parameters for quality are recommended in the social sciences. These parameters are divided into three namely; reliability, replicable and validity (Bryman, 2008: 31), which will be described in this part of the paper.

Reliability is concerned with the studies repeatability, in other words whether similar results are likely to occur if the research is to be repeated, if this is not possible questions may arise regarding the methods consistency and it may be deemed unreliable (Bryman, 2008: 31). For the case of REDD+ implementation in Dolakha, the study was conducted within at a certain time-frame and with a specific group of randomly selected individuals. This opens up for the collected data to be apt and liable to change to a certain degree over time and to depend on which individuals participate in the study, as is usually the case when studying highly dynamic and changing human social patterns. However, clarifying details of the method and closely describing the parameter has been emphasized, also achieving a realistic and truthful depiction of the current state of the phenomena at the time of conducting the research has been paramount.

Replication concerns itself with whether or not a study is replicable. Emphasis is here placed on whether the methods and approach to the study are sufficiently detailed and explained for another actor successfully and accurately to follow the instructions and replicate the study. As it is quite uncommon to find replication in social sciences, the necessity of these criteria rather lends itself to the reliability of a measure of a concept (Bryman, 2008: 32). Concerning this paper much effort has been put into describing in as much detail as deemed rational the methods applied. Likewise, all available tools and templates used have been added to the paper to provide further parties with adequate instruments for replicating the study.

Measurement of validity is an assessment of whether a measure that is linked to concept does indeed reflect that concept (Bryman, 2008: 32*)* which is sub-divided into three categories. *Internal validity;* whether a causal finding can justify the following conclusion. In other words whether the factor in question truly is the root in another parameter or if can be attributed to other factor/s.

External validity; Asks the question of whether the findings of this particular study can be generalized beyond the specific research area and conditions it was conducted in.
Ecological validity; Do the social finding in fact reflect "…the daily life conditions, opinions, values, attitudes, and knowledge base of those we study as expressed in their natural habitat?"(Cicourel, 1982: 15)
These points have been taken into consideration throughout the study; however, the categories can perhaps not be satisfied completely objectively; rather they act as guiding principles and points of reflection during data collection as well as analysis, exposing critique of methods and describing subjective biases that are inevitable in the research process. Several encountered challenges relating to these parameters are discussed further in the limitations and challenges section.

3.3 Methods of data collection

The approach to data collection was primarily built around the assorted templates designed by POVUS- REDD+. The data collection tools included a standardized household questionnaire, which were modified and adapted to the specified study area, also an interview guide for local resource persons and one for the focus group interviews, all with corresponding user manual, based upon the Participatory Rural Appraisal (PRA) principles.

3.3.1 Literature Review

The study incorporates REDD+ related literature from a global level down to the micro level, with special emphasis on research and information from the mezzo and local level.
Developing a broad base of knowledge around the topic area builds a fundament enabling credible interpretations of the current situation and the potential for constructing alternate viewpoints based on available information and additional data collected during the study (Bryman, 2008).
The literature review encourages studying the factors that are important to gain in-depth information so to build a comprehensive perspective on the subject based on what is already known about the theme. Researching relevant theories and concepts as well as which research

strategies and methods have been employed earlier, uncovering potential inconsistencies or unanswered questions surrounding the project and research area.
Literature has been collected from varied electronic databases primarily available on the Internet, especially academic online libraries. Documents have also been obtained locally from district offices and organizations in Dolakha as well as in the capital of Nepal Kathmandu. Although a similar baseline study of REDD+ project implementation in the Pilot area of Dolakha has to my knowledge not been conducted prior to this paper, research papers which have elements that tangent the focus of this paper have been found, allowing me to piece together relevant findings from different authors and timeframes, in effect giving a providing a collage of supporting background material and the possibility to strengthen findings with previous extrapolations.

3.3.2 Participant Observations

Overt participant observation is the method found best suited to parts of the study conducted, as the goal of participant observation method is to immerse oneself within the local context/ situation to the degree this is possible. It involves continuously engaging with and meeting people from the pilot area, conducting casual and formal conversations and writing notes of responses and impressions from both forms of communication (adapted from Bryman, 2008). The goal is to construct to the best of one's ability a picture of how the affected people interpret the realities that surround them in the context of REDD+. The approach suggests that all communication should be done openly, which means that one should explain in a much detail as necessary the intentions and purpose of the study and how the data will be used later. The intention is to build and eventually establish trust through achieving consent from each of the participants. This approach, when practiced in the field presented a problem of ambiguity on the respondent's part. As on one side the participant should presumably be less tense and more apt to answer honestly and sincerely, when all the "cards" are laid on the table. However, considering that the project has an influence on many of the participant's livelihoods (to a greater/lesser degree); there may be a chance for the "observer effect" being a factor. This is when a participant's behaviour and responses may be influenced by my mere presence and the subject matter. Ultimately the rationale was that based on me being clear about my objectives and recording the data openly, the participant would be in control of the situation which would in turn contribute to the participant feeling at ease. Adding to this a

covert method of observation implies tricky ethical considerations which might leave the researcher in an awkward and complex situation due to not truthfully stating the research purpose.

3.3.3 Semi-Structured and Structured Interviews

The "Household Questionnaire" can be regarded as a structured interview as questionnaires although similar to a structured interview would traditionally entail that the respondents themselves fill out the information asked for (Bryman, 2008: 215). This form of interview is highly standardized; the intention is under the interview each interviewee is given the same context and stimuli when answering as all other respondents (Bryman, 2008: 193). The questionnaire used includes predominantly specific questions with responses either on an ordinal or nominal scale (closed, pre-coded, fixed choice), 68 respondents in total. Supplementary questions requiring the respondents to elaborate on their answers have been in the form of open answer questions where it has been deemed helpful or necessary to extrapolate. In an attempt to reduce error due to interviewer variability, the questions are highly standardized and presented in the same manner to each participant, therefore, differences in answers will be due to real variations thereby keeping errors to a minimum (Bryman, 2008: 194).

Conducting interviews*;* in preparation for conducting the unstructured interviews, the questionnaire was revised repeatedly until I felt that all the questions had been thoroughly internalized and embedded. The same approach was applied when preparing the translator. Before any interview could be conducted we repeatedly read through both the questionnaire and supporting guideline book, I also provided him with relevant literature on the specific subject. Then we together went through coding procedure for entering the pilot study results into the computer and discussed some particular phrases and word definitions. Perceiving my colleague as prepared to conduct interviews we began in earnest after 8 days of preparation (Bryman, 2008: 200).

Introducing the research; when encountering and asking a potential interviewee to participate in a structured interview, it has been of upmost importance for me personally and for the interview, to present my background, intentions and goals very clearly. Therefore, the translator and I paid close attention to this point when communicating with a third-party. A particular concern was that my presence in the areas and the humble "if any" implications that "respondents" may perceive that my study might incur, should not be overstated and repercussions of presence not be sensationalized. This was important as many associate the project with a potential source of income, and a potential biases may be suppressed to a certain extent through portraying the work as honestly as possible (Bryman, 2008:200).

Rapport; in building rapport I made an extra effort to present myself in a calm and friendly fashion and very respectful manner. However being a "westerner" in a less visited mountain region of Nepal, I realized I would regardless of manner be viewed as a novelty. Knowing this I consciously made an effort to collaborate with a translator who was natively from the local area. This seemed to spark immediate rapport in a positive manner to a larger or smaller extent under our introductions (Bryman.2008: 201).

Question order; in conducting the surveys an important factor was that questions should be asked in the same chronological manner with each respondent. The prime reason for this was due to the carefully considered sequence of the questions in their standardized form. Some questions were naturally of a more personal nature than others; the idea was, therefore, was for questions to flow and ebb from general to personal questions so that the respondent may feel less pressured and hopefully more comfortable (Bryman.2008:203).

3.3.4 Focus Group Discussions

The origins of the focus group approach, according to Bryman is that "people who were known to have had a particular experience could be interviewed in a relatively unstructured way about that experience" (Bryman.2008:475).

In the Dolakha watershed, we conducted one focus group interview at each of the two CFUG locations with 5 and 6 people. Morgan (1998a) proposes that a typical focus group size should be between 6 to 10 participants. In our group of 5 we originally had another participant, but as he was the son of the local REDD+ coordinator it was deemed a detrimental factor to include him, as this might impede other participant's openness.

Under the interview, the translator would ask the questions translated for me, and I would make notes continuously under the discussion, mostly verbatim but at times in short note form. The criteria for being involved in the discussion would be an affiliation with the REDD+ programme, as well as being a resident of the pilot project area. We asked the village leader to sample from the highest to lowest social strata of the community and involve women equally, which he obliged to do. An important emphasis was that each participant should answer the household survey as naturally and truthfully as possible. The rationale used to convince users to answer truthfully, was that using smudged results it would be impossible for the research to present a true picture of the current situation. Also, it was pointed out that it would be preferable that the women of the group should be allowed to contribute equally to the men, as I perceived that this may be a potential problem. With these parameters in place, the focus group discussions lasted in the vicinity of one and a half hours, and all participants were allocated fair time to share their perspectives and interpretations.

A problem was revealed after the focus group interview had been conducted, it was believed by myself and the translator that some of the participant may have intentionally been "cherry picked, this has led to only fragments of the original interview being incorporated into the paper. Furthermore a second focus group discussion was to be held at the end of my stay in Nepal. In organising this discussion with the REDD+ leader of Chyashe, several logistical problems, and obligations to other parties hindered the focus group discussion sessions from being conducted.

3.3.5 Survey Research, Site Selection and Sampling

Prior to conducting any research, a week was spent communicating with different actors connected to the pilot project area including organizations, the pilot project local leaders, translators and independent advisors. When planning the household survey FECOFUN in Dolakha provided me with a map showing the geographical information and characteristics of the CFUGs. Livelihood documents from the proposed CFUGs were also at our disposal. But after review were found to be lacking and incompatible with the study.

The sampling method chosen most resembles stratified random sampling (Bryman, 2008), the results would be taken from two CFUG sites, the first (Thangsa Deurali) having 400 households and the second (Chyanse Bhagawati) 100, 38 participants would be picked from the Thangsa Deurali sample and 30 from Chyanse Bhagawati. After reflecting over Bryman's literature, who argues that through using a simple random sample one may statistically represent each group correctly but the because of systematic sampling error it is often unlikely that this will occur, and you will end up over representing or under representing a particular group (Bryman.2008:173.), I decided to rather than chose perfectly randomly and equally from both CFUGs, that the size of the CFUG should weigh its representation.

After establishing the two group sizes, the sampling method may closer resemble that of random sampling where "each unit of the population has an equal probability of inclusion in the sample" (Bryman 2008: 171). In planning to conduct a form of random sampling, it was brought to my attention through discussions with local key-persons; that perfect random sampling would be physically very demanding due to the topography and perhaps counterproductive as the population of Dolakha tends to cluster into groups of people on equal standing either ethnically, religiously or economically. The argument being that one may, therefore, end up, through perfect random sampling with a homogeneous and like-minded group of individuals. We chose to look at the map and pick out a wide range of individuals associated with the project as possible (religiously, economically and politically and geographically) and take a corresponding sample from those groups.

3.4Data analysis

The data collected was transferred from written form to PSPP (Freeware version of SPSS) and structured into a workable form; it was then transferred to SPSS due to ease of processing compared to the PSPP platform. A period of discovering and testing through using different statistical tests, which may be found suitable, thereafter, learning how to interpret these was then experimented with, attempting to make sociological sense out of the mixed quantitative and qualitative dataset (Trieman.D.2009)

3.4.1 Calculations of and conversion of data

Some of the collected data on measurements have been collected in the form of national measurement units and currency values. Subsequently these values have been converted to European metrics and US dollars in the case of currency, also in this segment the approach taken in creating "wealth-ranking groups" is explained.

3.4.1.1 Wealth-ranking justification

In defining the wealth-ranking groups, 8 variables were included and computed the resulting score would place the respondents within one of four groups. The below factors have been used in defining wealth rank groups, certain groups have been weighted; an explanation of weighing method under each "weighed" question explained.

Table 2: Wealth-ranking groupings

Group	Label
3	Poor
2	"Middle class"
1	Rich

The variables used to calculate the respondent wealth-ranking group were whether the household's income over the past 12 months been sufficient to cover what you consider to be the needs the household, the size of farmland that currently has been in use over the (last 12 months). Total land was felt to be especially important and was weighted as more important

than the other values for each respondent. Furthermore, the respondents housing contract type, the main source of potable water and most important source(s) of energy were included in the calculation. Regarding income measures firstly the most important crops that the respondents household had produced, consumed and/or sold the last 12 months, NTFP income, environmental income and remittances were used as a reference.
All measurements are converted to European measures, 1 moori = 60kg (maize, milk), similarly the total number of livestock and livestock products that the household had sold, bought, slaughtered or lost during the last 12 months. Here the total number of livestock weighted against the (believed) relative value of livestock type. This value was then compared and adjusted to the TLU (Tropical Livestock Units) scoring method. Taking consideration and adjusting for local relative importance of different livestock, and various other local condition values and norms. The exact conversion is shown below.

Table 3: Livestock categorization adapted from TLU.

Animal	Adjusted TLU weighting score
Cattle	16
Buffalo	14
Goat	5
Sheep	4
Pig	6
Poultry	1

Whether the respondents sell any NFTP and how much income the household make on average in a month through this activity was an important indicator of wealth-ranking locally. Those respondents who have said yes (3 people) got rating of 3= poor group, and this would become their official rating, as only the poorest people of the community will/ or are allowed to sell these products by the community. Lastly the net income related household business per month and the average income received from income transfers (state support; remittances etc.) the household members together receive in a month (in $) were combined to find a rating for overall income, as shown in the list below.

Table 4: Income groupings.

Income group	Group
0-10,000	3
+10,000-20,000	2
+20,000	1

This division of groups is based on a fictive income grouping where the "less poor" group is in typical nations smaller than the remaining two groups, as in the table below this division divides one quarter of respondents into the "less poor" group; one third are placed in the "middle" group and slightly above 1/3 for the poorest group.

The final distribution of the three groups after calculating all the factors described above gives the distribution shown in the table below.

Table 5: Final distribution of wealth-ranking groups.

Factor	Size of group	**%**
Group 1	19	27.9
Group 2	23	33.8
Group 3	26	38.2
Total size	68	100.0

The final score was calculated by adding up all scores on the criteria that the respondents have answered and dividing by the total number of questions that respondent had answered. Leaving the division 27. 9% the Middle Group = 2, = 33.9% and finally the Poor group = 3, = 38. 2%.

The labels of groups being referred to as poor to less poor are based on the average yearly salary as of 2012 in Nepal, which was 214,080 NPR approximately (2174 USD) (National survey, 2012). The average incomes of household in the case study area are significantly lower than the national average, due mainly to the CFUGs being in a rural area with significantly fewer possibilities for non-farm income generating activities. These features deem the region a relatively poor district of the country hence the wealth-ranking classifications not containing a "rich group".

3.4.1.2 Conversion of local/National measurement units

Much of the collected data was naturally given with local or national values and measurement methods, they have subsequently been converted into the metric system when regarding weight and size and (USD) when converting from Nepalese Rupee in measures of capital. There are different methods of measuring size and weight in Nepal; these depend on which region one is in and also often whether one is in low lying places or mountainous regions. I have chosen to try as accurately as possible to use the measurement systems of the mountainous regions, which are thereafter converted into the metric system. Unfortunately, this may result in some slightly off or false conversions as I regrettably was not so well informed of the differences in measuring systems dependent on locality, and therefore did not ask each respondent of which measure they were accustomed to and used when answering my questions. Below is a chart of the conversion units applicable for this paper.

Table 6: Conversion table.

Unit	Measure	Measure type	Conversion	Measure unit
1000	NPR Nepalese rupee	Currency	= 10.1565$ USD (14.10,2013)	Approx. 100 NPR = 1 USD
16	Ana	Land area	16 = 1 Ropani	0.014 ha
1	Ropani	Land area	= 74 x 74 feet	0.225 ha
1	Bigha	Land area	= 13 Ropani	2.93 ha
1	Kattha	Land area	= 338 square meters	3.38 ha
1	Ropani yield based on an average of maize/lentils	Weight	=70 Kg	70Kg
1	Load of firewood	Weight	= 35 Kg	1 load

(Nepali European metric system)

When analysing the yield from varied crop types produced, reference points to official annual yield produced by different crop types were used for comparison. The figures were adjusted for less favourable mid-hill conditions, and accounting for lowered access to heavy industrial equipment.

Table 7: Official per. ha annual crop yields Nepal, 2010/2011.

Crop	Kg. ha (grain)	Adjusted kg. ha (60%)
Rice	2310	1386
Maize	1560	936
Millet	2295	1377
Cauliflower	2800	1680
Wheat	1323	793

(FAO, Estimate) (World Bank, Estimate)

The average yield per ha. was then linked with the national average crop price per tonne, for the 2010 period. The two combined gave a reference point for comparison when reviewing the data regarding agricultural output from the household survey.

Table 8: Average price per. metric tonne, Nepal 2010.

Elements	**Area**	**Maize**	**Millet**	**Rice, paddy**	**Wheat**
		2010	2010	2010	2010
Producer Price (USD/tonne) (USD)	Nepal	177.80	246.10	205.10	198.30

(FAOSTAT)

3.5 Limitations and Challenges

Conducting a study in a foreign country and under time and budgetary limitations naturally makes way for many limitations and challenges, but this section will only present the most important of these limitations and challenges.

Linguistic challenges were perhaps the most obvious limitation in Nepal, although English is spoken at many locations. This was not the case at the study location (Dolakha, Charikot). In general, there were very few of the respondents of the household survey with the exception of one teacher who could speak English to any degree. Naturally this meant I was highly dependent on the translator. In the initial phase of conducting surveys, this problem conveyed itself when working together with the first translator which had 9 years of experience with community forestry. Pretty soon it became clear that this would not be beneficial for my

purposes as questions deemed irrelevant by the translator would be skipped. The result was teaming up with another translator with high English proficiency and comparatively unbiased in regard to the subject matter. The first weeks were spent learning about local conditions and the basics of the project and rehearsing the questionnaire vigorously. I believe that his translation during the interviews was translated verbatim; one drawback, however, may be the lack of information I was given regarding subjects that digressed from the overarching subject matter. Although often only post survey "chit-chat", outside the focus of the survey, it is possible that being included in these discussions may have helped me get a more in-depth understanding of the respondent's deeper sentiments.

Another problem was the perceived invasion of privacy or in some cases stepping over the threshold of social decency, when inquiring about household incomes. Many respondents felt uneasy about answering these questions, in particular monthly and yearly on-farm/off farm and external incomes. The translator first brought this to my attention as he felt uncomfortable himself as well as putting respondents in this often uncomfortable situation. It was decided we would try with the upmost care to inquire about this data using different methods. But finally it became clear that all questions with the exception of directly asking for monthly income was seen as moderately acceptable. In addition, it was brought to my attention by several parties that when answering this question many respondents particularly well standing individuals would tend to understate their income, to gain potential project benefits, and for the sake of being modest. Those less wealthy would do the same, but perhaps in an aim to improve "status", regardless of the names being anonymous in the paper. This further complicated the matter of accurately estimating household income. It is believed that information regarding on-farm and external incomes will adequately compensate and build a realistic picture regardless of the difficulties created on this theme.

Lastly a problem of determining the respondent's caste and religion was encountered. As it was suggested that these were highly sensitive topics, it was decided, that only the names of respondents would be noted. Through analysing these names ethnicity and religion could be extrapolated. However, communication broke down between the translator and myself after conducting the physical field work, and therefore, general statistics for these factors (for Dolakha district) will substitute, the lack of collected data

3.6 Ethical Considerations

Ethics and politics in social research revolve around the role of values when conducting research. In this chapter, I outline the main issues which are important to take into consideration when conducting research.

Ethical principles; the four main principles as denoted by Diener and Crandall (1978) are reviewed here in relation to the study and how they were handled in the study.
Whether there is harm to participants; Great emphasis was laid on explaining to the participants that their views and personal data would be kept confidential, explaining this in detail and explicitly was important as some of the data collected contained sensitive socio-economic information as well as statements which reflect the individuals moral, ethical and value based position regarding their local community, Community forestry and the REDD+ project specifically (Bryman.2008: 118).
Whether there is a lack of informed consent; Each participant was given information of how their contribution and data would be used, my area of study, the goal of the study and my independence as a researcher was stated, also my relative position of power in real decision making or more specifically the lack thereof (Bryman.2008:121).
Whether there is an invasion of privacy; regarding this point it must be stated that many of the questions were of an intimate nature; income, assets and annual produce to name a few. Although the overwhelming majority of participants were at ease answering all the questions, some declined to answer one question in particular; annual income. It was, therefore, decided that this question should be removed from the questionnaire as this area made many uncomfortable, and with lacking data would not be computable (Bryman.2008:123).
Whether deception is involved; when presenting the study to participant's outcomes from the findings potential consequences were purposely modestly stated while its goal was described as correctly as possible. The emphasis was due to a perceived and later supported conviction that local people may believe external actors as possible instigators of direct change or economic benefits and would in some cases behave accordingly (Bryman.2008:124).

CHAPTER FOUR – STUDY AREA

This chapter will describe in detail the characteristics of the study site, beginning from a macro perspective of Nepal as whole, and then specifically describing the study site.
The aim of the chapter is that through thoroughly describing the context of the study a stronger and more complete picture of the context which the REDD+ project is being implemented in will be developed.

4.1.1 General demographic and economic characteristics of Nepal

Nepal has a total population of 26.5 million residents as of 2011, and the country is currently experiencing an average annual population growth rate of 1.77% (NPHC, 2011). Due to this population growth rate, the country has a "bottom heavy" population structure with a median age of 21. 6 years. Most people reside in rural areas, with only 19% of residents living in the urban areas. There has however, been a high rate of migration to urban centres from rural areas with an approximate influx of 4. 7% per annum of the total population moving to urban areas in the 2010-2015 period (NDP 2012). The population as a whole are dispersed on a total surface area of 147,181 square kilometres which leaves an average population density of 199.3 persons per square kilometre (NDP 2012).
Looking at economic indicators, the gross domestic product as of 2009 was estimated at 12,784 million USD with a contributing annual GDP growth rate of 6.5% (UND, 2009). GDP per capita averaging 435.9 USD, and GNI of 441 USD (UND, 2009).
The population by profession is mainly involved in agricultural, and the census of 2001 places 65.7% of the total workforce within this sector. Finally the workforce divided into genders consists of 63.3 % females and 80.3 % males (% of total gender population pools) (UN, Data, Nepal, 2009).

4.1.2 The forest management history of Nepal

This section is adapted from Ganga Ram Dahals and Apsara Chapagains paper (2008) "Community forestry in Nepal: Decentralized Forest Governance" unless otherwise referenced.

The first move towards institutionalizing forest management came in 1957, when the forests of Nepal were nationalized, and the ministry of forestry (MOF) was established soon thereafter in 1959.

In this period (early 60s), forest management remained highly centralized, but ultimate control of forest use was contested and continually changing between different internal state organs. In the late 70's forest management was still run predominantly by the government, which was then in charge of both management and programme budgetary details. The main focus of the state in this period was conservation through reducing soil erosion as well as managing deforestation rates, through proactive policies such as tree planting projects, which materialized through paying citizens for their labour. The areas in focus during this time were mostly Hill districts.

It was not until the decentralization act of 1982, in an attempt to overcome the failing centralized approach, that the "user group" concept was adapted. The act formalized the duties and responsibilities of the different committees within villages. The goal was to mobilize local resources and thereby strengthen local institutions, through allowing participation from the local level as well as establishing links between national and local planning processes.

The early 80's proceeded with smaller rearrangements; overall management authority was still held by government but now the costs involved in the project subsidized by the state where slowly being reduced. Priority was still placed predominantly in the hill districts with a focus on soil erosion being exchanged for a focus on supplying basic needs for forest products.

The 1982 act was then re-examined in 1988 through a master plan for the forestry sector, producing a framework for developing forest management policies. The framework was installed to mobilize and manage the forests in a sustainable way in order to maintain balance within the supply and demand of forest products. This act handed over the management of forests lying in the mid-hills over to users-groups of the respective communities, but other forest types were not in focus and therefore not addressed in the plan (Dahal et.al. 2008).

In 1993, the New forest act was put forward which handed over many of the national forests to adjoining forest users groups, on the conditions that they would commit to and accept the guidelines of "accountable management". The act recognized forest user groups as legal entities and acknowledged five categories of national forest: community forest, leasehold forest, state managed forest, religious forest and protected forest. The overarching goals were to promote economic and social development, work towards a healthy environment through development and conservation. The 1993 act was progressive, but users were still only given usufruct rights, while the state retained ownership of the forests (Dahal et.al. 2008). In 1995, the forest bylaws were set in action. The push was for launching the national forestry program in accordance with conditions set forth in the forest act of 1993, which included giving full power to the forest user groups in matters of decision making. His majesty's government of Nepal (HMG) acted as facilitator in the community forest transition process.

The forest sector policy of 2000 moved focus towards the conservation of forest areas and also made it obligatory for CFUGs to contribute 40% of their earnings from timber sales to the state. On a side note, a criticism of this move is that it curtails the advancements made in devolving power to the people and again moving towards more centralized authority (Dahal et al. 2008).

Since 2000 Community forestry has continued to develop, and we now see CFUGs placed in charge of management as well as the associated program budgetary details. Policy focus has shifted towards poverty alleviation diversification and management. The focus is no longer specifically placed on certain forest types, but expanded to incorporate all types of terrain (Dahal et.al. 2008).

Forest degradation drivers;

In understanding the primary forces in play driving forest degradation in Nepal, I would like to reference Acharya, K et al. Paper (2011) "Understanding forest degradation in Nepal". The authors divide forest degradation drivers into two main categories, those which are anthropogenic and those which are exogenous, although the author states that there is no clear demarcation between the definitions.

Natural causes will often fall into the exogenous category, these are natural drivers of deforestation, which are often uncontrollable, and therefore policy instruments cannot be applied to remedy the situation, while anthropogenic drivers are commonly associated with

deforestation and degradation. Anthropogenic drivers can be subdivided into direct drivers which include among other factors; "over-extraction, intentional fire, free grazing, targeting Of high-quality commercial tree species, illegal logging, encroachment, shifting cultivation and forest fragmentation" (Acharya, K et al, 2011: 35). Also, indirect drivers which may include; "market failure, unplanned development, policy failure, weak tenure rights and capacity gaps." (Acharya, K et al, 2011: 35).

Acharya (2011) continues to explain that determining a definitive cause of degradation is often complex, as degradation may often not be the result of one factor, but rather can be attributed to an array of interactions. Determining and defining degradation drivers, is further made harder when they are indirect, rather than when they are direct, as direct drivers can often be observed physically.

However certain drivers have emerged as obvious candidates for forest degradation of which; "Forest encroachment and invasion of alien species have…and in Nepal, particularly in the Terai plains. Illegal settlement drives forest degradation and may lead to the permanent conversion of forests to non-forest land uses. Invasion and colonization by alien species can slowly reduce growth and potential for restoration of forests, and infestations can ultimately affect entire forests. Another important driver is forest fires. Additionally, high-altitude forests suffer degradation as a direct result of the stocking of livestock units in quantities up to nine times greater than their carrying capacities (MoEST, 2008; MoFSC, 2002)." (Acharya, K et al, 2011: 36).

4.2 General study site information

As mentioned earlier three sites have been dedicated in Nepal as pilot project areas for the REDD+ initiative of which this paper focuses specifically on the Charnawati watershed located within Dolakha district. Charikot, which lies right beside the two CFUGs studied, is the regional financial capital of the Dolakha district and is located 100km North-East-East of Kathmandu. One of the reasons for choosing the Charnawati watershed as a REDD+ pilot project site is that " The Dolakha district, in central and mid-hills of Nepal was chosen for this study because it represents typical forest landscape in the mid-hills of Nepal that have been managed by the surrounding communities" (Sharma, A, R, 2010).

The Charnawati watershed is located in a temperate zone and the people of the region are called the Thami which can be found in both the Dolakha and the Sindhupalchowk districts. At present, there are 58 CFUGS in the Charnawati area, which have all approved the constitutions and operational plans. The area of Charnawati has been divided into dense and sparse strata where 164 permanent sample plots have been allocated in the dense strata for measuring carbon, and 41 permanent plots have been allocated in the sparse strata for measuring carbon (Community REDD+, 2012.
The vegetation of the Charnawati watershed contains Quercus, Chir as well as blue pine and alder species along with associated species that are common in high hill areas (Community REDD+, 2012).

The data on the General information regarding the vital statistics of the Charnawati Watershed is based on the report "Development activities of good governance and payment for community forest trough REDD+ in Nepal from 2011/2012", (Jao, 2012) which is a yearly progress report.

The Charnawati Watershed Area where REDD+ programme is being conducted has a total Watershed Area of 14037 Hectares of which the Community Forest Area is 5996.17 Hectares. Within this area, there are 58 Community Forest where 7 community forest groups have been added recently lastly of these 15 are leasehold forests. The areas where the project is being conducted include 1 municipality (Charikot) and 5 village development committees.

The community of Chariot municipality within the Dolakha District consists of 21278 females and 21,331 males, and the Charnawati watershed includes 9,902 households which fall within three main ethnic groups as shown in the table below.

Table 9: Ethnic group distribution of the Dolakha district.

Group type	Total number
Unspecified ethnics groups	3510 people
Dalit	642 people
Brahmin and Chhetri	3963 people
Total of all groups	42,609 persons

The table shows a large proportion as simply "unspecified ethnic groups"; Nepal has a rich diversity of ethnic groups and unique local cultures and traditions 19 major ethnic groups, 42 smaller groups and 61 sizeable ethnic groups in total (Niroula, 1998)

Detailed statistics of Chyanse Bhagawati CFUG

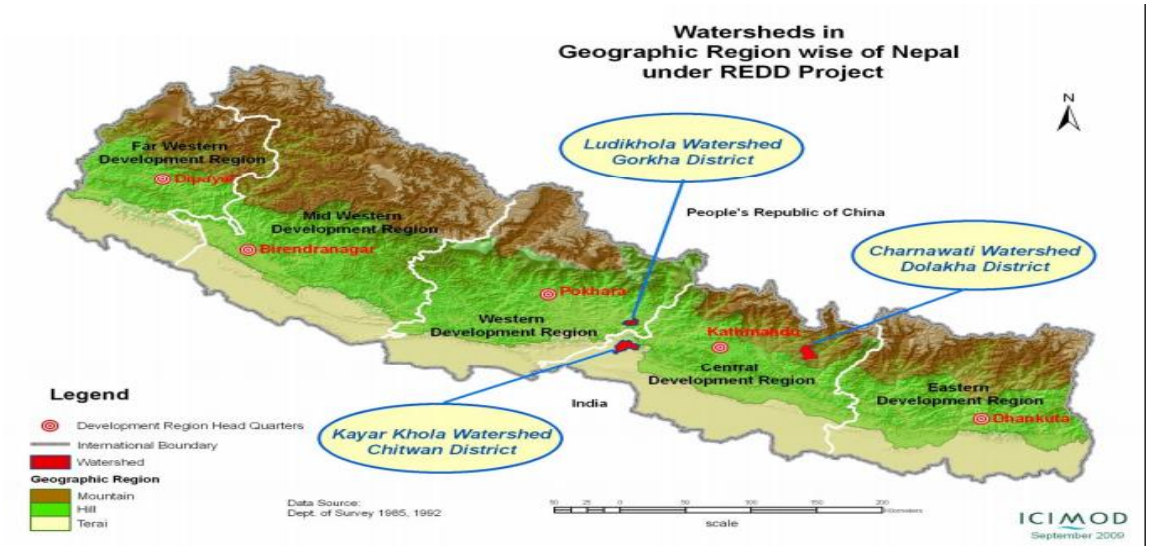
The CFUG Area is in total 30.32 Hectare. Stored carbon as of measurements done in 2012 dense carbon: 5444.36 Ton and rare carbon: 1082.87 Ton, in total Stored Carbon lies at approx. 6538.23 Tons, divided per Hectare this gives an average of 215.31 Tons. The registered storage of Carbon for 2012 is 6618.25 Tons approx. This would give an increase of carbon at approximately 80 Tons from the preceding year.

General information regarding the perimeters of the CFUG is that there are 100 households with a total population of 586 people. Of which the Dalit (Low Caste People) there are 46, of the Janajati (Ethnic Group) there are 17. In total, the division is equal between the sexes of 293 males and 293 females.

4.2.1 Location

Below are shown the three pilot project areas chosen for the implementation of the REDD+ initiative in Nepal.

Figure 4: Map of Nepal. ICIMOD, NORAD REDD, 2009.



Here we see the three forest areas chosen as REDD+ pilot project areas, two project areas to the west of Kathmandu; Gorkha district (Ludikhola watershed) and Dolakha District (Kayar Khola Watershed) the focus of this study being the Dolakha District (Charnawati Watershed) located East of Kathmandu approx. 100km (aerial line); 6 hours travel time by bus/car from Kathmandu.

The map below provides a geographical reference to the district project sites relative size and location in Nepal (area in red demarcates the district of Dolakha).

Figure 5: Dolakha district, Nepal.

The map (below) shows a rough indication of the topographical location of Charikot (Dolakha district). The circle on the left indicates the Thangsa Deurali CFUG site, while the circle to the left shows the second site Chyanse Bhagawati. The white line in the photo is the main road between Kathmandu and Jiri. Dark green areas are predominantly forested areas, lighter Brown/green is primarily agricultural areas; the white and greys areas indicate roads, infrastructure and housing.

Figure 6: Dolakha CFUGs (google maps)

Source: google maps. Thangsa Deurali to the left and Chashe Bhaghawati to the right

4.2.2 Population socio-economic indicators

The research area lies is in the vicinity of Charikot now known as Bhimeshwar Municipality, which is the Headquarters of Dolakha District in the Janakpur Zone of North-Eastern Nepal. The total population of Dolakha district was estimated in 2011 at 186,557 inhabitants of which 87,003 were male and 99,554 being female. The average household size in the area is 4. 08 people divided upon a total surface area of 2,191 sq. km (2011), and the population of Charikot stands at 22,537 as of 2010. The table below shows a detailed breakdown of the demographic distribution of the population of Dolakha (DDPF, 2011).

Table 10: Dolakha household characteristics, 2011. DDFP, 2011.

Sex of household	Total	10-14	15-19	20-29	30-39	40-49	50-59	60-69	70+
Total	45,688	47	371	5,762	8,876	9,803	8,835	6,792	5,202
Male	29,970	23	164	2,815	5,217	6,813	6,727	4,851	3,360
Female	15,718	24	207	2,947	3,659	2,990	2,108	1,941	1,842

The education statistics of Dolakha district shows a child literacy rate of 16.18% as of 2011, the table below indicates the general literacy rate of the population as a whole.

Table 11: Household characteristics, population aged five years and above by literacy status, Dolakha, 2011. DDFP, 2011.

Area/ Sex	Population aged 5 years & above	Can read and write	Can read only	Can't read and write	Not stated
Total	170,820	107,820	5,979	57,447	156
Male	79,064	57,989	2,629	18,400	46
Female	91,756	49,249	3,350	39,047	110

The marginal households of the region constitute 35.69% of the total population (DDPF. 2011). The per cent of forest dependent/forest users stands at 86.8% indicating the relative importance of the resource. Access to improved drinking water in the area is at 82. 66%, while access to toilet facilities is 65.8% (DDPF. 2011). The household energy source distribution of Dolakha district is as follows; 10,567 households connected to the grid of isolated hydropower, 3195 households using alternative energy sources, in total only 28. 54% of the population have a form for formal metered connection (CADEC.2007.).

4.2.2.1 Ethnic/ Religious indicators

The main ethnic groups in the Dolakha region are Chhetri (28.49%, Tamang (13.52%), Brahman Hill (9.20%), Newar (7.75%), Thami (6.82%), Sherpa (4.77) the remaining groups of 11% contain Kami, Jirel, Sarki, Magar, Damai/Dholi and Sunuwar respectively in accordance to their proportional size (NPFC, 2011).

The religious statistics of Dolakha divides the population into 72.43% Hindi, 23.92% Buddhist and 1. 32% Kirat the remaining groups make up 2.35% of the religious population also including the marginal proportion (NPFC, 2011).

4.2.2.2 Economic indicators

In the Dolakha district the 2010 projections of economic statistics based the population aged above 10, there are 121,732 people economically active were of 59,617 are men and 62,115 are women. Of the total 32,381 people, not economically active, 15,485 of these are men and 16896 are women (DDPF. 2011).

Table 12: Profession data of Dolakha district. DDPF, 2011.

Census	Legislators Senior officials/ Managers	Prof. / Semipro. /Tech workers	Adm. & Clerical workers	Service workers & shop, Market, sales workers	Farm Fishing/ Forestry worker	Craft & trade workers	Prod. Labour workers	Not stated
2010 Projection	197	3951	2024	7141	72186	11843	640	13568
% of total	0.15 %	3.54 %	1.81 %	6.4 %	64.71 %	10.62 %	.57 %	12.16 %

The data shows that the overwhelming majority of the population is employed within farm; fishing and forestry work, the second largest group belonging to smaller sectors and potentially due to dark number, and the third largest employment sector is within the craft and trade businesses.

4.2.3 Vegetation, Wildlife and Climate

Charnawati watershed lies in a temperate zone with diverse vegetation types; it has a combination of Quercus, Chir and blue pine and alder species followed by some other associated species that are common in high hill forest types of the middle part of Nepal. The watershed is resided by scarce Thami people, who are confined in Dolakha and Sindhupalchowk districts" (RCMFP). The study site is within the Bhimeshwar forest cluster, where the Nepal Swiss Forestry project conducted a survey of the land cover status change between 1990 and 2010 and the following are the results of their GIS survey.

Table 13: Dolakha forest-cover data.

Land cover class	Area (ha) 1990	Area (ha) 2010	Net land change (ha)
Agriculture	4723.05	5218.38	495.33
Barren land	91.65	39.35	-52.30
Dense forest	2151.26	5642.80	3491.53
Grassland	2286.52	410.87	-1875.65
Sparse forest	5525.22	3472.35	-2052.87
Sand	1.70	0.16	-1.54
Water bodies	19.09	14.60	-4.50

Niroula. R. R. 2011.

The data shows a major increase in dense forest cover as well as land for agricultural purposes, also evident is a significant loss of water bodies, grassland and sparse forest over a 20 year period.

4.2.4 Agriculture and Livestock keeping

The typical farm size in the Dolakha district is estimated at 0.59 sq.km, and 12% of the total agricultural arable land is irrigated (DDPF. 2011). Cereals are an important produce of the district, divided between the population of 227,451 the production/availability and local demand/requirement of cereals are shown in metric tons in the table below.

Table 14: Cereal consumption of Dolakha district 2007/2008. DDFP, 2011.

Year	Tot. Pop	Rice	Wheat	Maize	Millet	Barley	Total edible	Reqd.	Surplus/ deficit
2007/ 2008	227,451	3132	5978	6266	2896	63	18335	43443	-25108

The table shows a clear deficit between the required quantity of cereals and what has been produced within the period. The main cereal crops are paddy, wheat, millet maize and barley, the main cash crops consist of oil seed, potato, tobacco, sugarcane and jute.

4.2.4.1 Livestock characteristics of Dolakha

The average number of livestock per farm household in Dolakha is 6. 24. A further breakdown of Livestock keeping can be divided into the following types; Cattle: 93,752 producing 12,817 MT of milk. Total net production excluding cattle for cultural reason stands at 2234mt based on 38,938 Buffalo, 22,916 sheep, 180,287 goats, 9,295 pigs, 354,723 fowl and 4,249 ducks. In addition, there were approx. 10993000 eggs produced and 16500kg of wool in this 2008-09 censuses (DDPF. 2011).

4.2.5 Forestry in Dolakha

Before the community forestry program was developed in Nepal, Dolakha was one of the first districts to implement a formalized state forest management system in 1962 focusing mainly on regeneration of degraded forests, afforestation and improvement of fodder resources. The 1970's the Panchayat party enforced the project; Panchayat protected forest (PPF) an early forebearer of the community forestry approach shifting focus towards including local participation as it was seen as vital for efficient management. The Master plan for the forestry sector (MPFS) was introduced in 1988 proposing that up to 61% of Nepal's forests could be handed over to community forestry groups. The forest act of 1992 and Forest regulations of 1994 made further provisions for community forestry in Nepal. Finally in 1995 the community forestry directives were introduced in Nepal in general and in Dolakha specifically. The Nepal Swiss community forestry project (NSCFP) began working in Dolakha in 1990 and with the introduction of the community forestry directives the transition towards community forestry has gained momentum. NSCFP early goals were technical and environmental at its start. The goals were then rearranged towards social needs, poverty alleviation, equity and good governance in the projects concluding years of the project (1990-2011).

The total number of FUG today in Dolakha stands at 280 with a combined community forest area of 29,901 HO. Within the community forests of Dolakha, there are 41,229 households the data is from March 2010 (DDPF. 2011). The proportion of households using solid fuels for cooking stands at 89% for the total population. (DOF, 2010). The Bhimeshwar Cluster where the pilot project site is located had a forest cover of 61.6% in 2010 (Niroula. R. R. 2011).

For more than a decade, although some areas of forest have been more recently handed over to communities for management namely The Swiss Agency for Development and cooperation (SDC) has conducted regular assessments of the community forest areas at many sites around Nepal including the Charikot region of Dolakha district. Presented now will be some specific examples of their findings from NSCFPs findings in this area over the last 40 years.
In Serbesi, Dolakha in 1974 large scale gully erosion was observed which had a large detrimental effect on the cultivation, in fact, rendering much of this area practically uncultivable. The region was also experiencing a severe lack of water due to the absence of

water bodies necessary for agricultural practices to be effective due to low soil moisture. These problems have been a challenge in the area for several decades, but in 2010, another analysis described how the challenge of water bodies has been confronted causing an increasing productivity. The main contributing factor for this improvement is explained to be the handing over of the then state driven forests to community forest groups, which have successfully increased the water discharge from springs through effective management.

Another observation from 1986 in Charikot (Dolakha) is that due to large scale degradation of the forested area, farmers had difficulties in providing their livestock with sufficient feeding possibilities. On account of this problem, many farmers would bring their livestock onto harvested fields, shifting temporary sheds over the terraces and sporadically fertilizing the grounds with manure, which had a positive impact on the quality of the soil. In conclusion, many changes have happened in Charikot over the last decades and the photos below from 2005 show a radically changed landscape were much of the prior cultivated land has been replaced with building structures. The green areas and forests in particular have, however, recovered and according to the observation improved substantially. Providing the people and livestock with timber, firewood and fodder. The consensus is that increased population density in the area will not have detrimental effects on the surrounding forests; on the contrary appropriate policies measures initiated through local institutions can rehabilitate forested lands.

The Nepal Swiss Community forest project has been operating in Charikot since the early 90's; the photos below are taken for comparison 20 years apart, giving an indication of the development of forest management in the area (from the NSCFP. Development Assistance in Action Lessons from Swiss and UK funded forestry programmes in Nepal December 2012).

Figure 7: (Bharat, 1998). Nepal, Charikot.

RESULTS AND DISSCUSION

The following chapter presents the findings and discussion segment of the paper, beginning here with a general recap overview of the case study and theory, thereafter presenting each objective with corresponding findings and discussion in chronological order. The structure of a presentation under each objective will include; general information predominantly based on the household survey, data divided into the two pilot sites Thangsa Deurali and Chyanse Bhagawati and wealth-ranking groups (when applicable).
In between this presentation the perceptions and findings from the in-depth interviews are intertwined as well as discussions linking findings with the overarching theory.

An overview of the chapter lay-out is presented below

Objective	Focus
Objective 1 –LIVELIHOODS- **Describe the current livelihoods situation of communities as well as vulnerability and challenges**	**SLA** - Assets and activities - Forest dependency - Outcomes Vulnerability context, external adaptation
Objective 2 – FORESTS, REDD+ AND COMMUNICATION **Explore the relationship between users and forest rules, REDD+, benefit distribution and level of communication**	Relationship to forests and rules Knowledge about REDD+ Current REDD+ Benefit distribution Communication activities form micro to mezzo level, elite capture and corruption

CHAPTER FIVE - THE CURRENT LIVELIHOOD SITUATION

The goal of this section is to describe and analyse the vital components which constitute the livelihood situation of the CFUG users based on the POVUS-REDD framework and defined by applicable livelihoods literature.

Chapter structure

The chapter structure as stated will present one objective at a time; this method of presentation has been chosen so that each objective can be followed through naturally from the initial question, data presentation and analysis, in this way each objective will be self-contained. Effort has been made to make sure as far as possible that the main themes of SLA which build the vulnerability context are grouped together namely; assets, activities and outcomes. The sub attributes of the SLA can be found within the objectives including assets which are sub-divided into; Natural, Human, Financial, Physical and Social factors. Factors regarding land: Agricultural land, soil, Livestock, forests/environmental resources, renewable /non-renewable resources, genetic resources. Labour: Size, education, age, sex of HHH, skills, knowledge, health. Financial measurements such as; Cash, savings, credit and debt.
A description of physical implements, canals, wells, technologies, local infrastructure. Social: Social; Reciprocity/ trust, horizontal and vertical, status. Memberships, kinship, gender, religion, wealth, caste, trust positions, ethnic groups, networks. Below the three groupings are presented and defined.

Activities: Refers to how individuals gain and secure their incomes and assets. Subdivided into; combining and assets, Diversification and assets, Dependence, Distribution.
Dependence on different sources: What dependence does the user have on; Environment, Irrigation, Protected areas, Poaching (NTFPs), Livestock, Child labour, Relief aid/ Refugees and hosts.
Outcomes: Outcomes which sustain livelihoods and wellbeing; Incomes, Attainment of food security**,** Poor or non-poor, effects of the project are reviewed in objectives.

Ellis and Briggs (2001) contend that historically agriculture and farming have been the fundamental factor of economic activity especially in rural poor households. Therefore, the main assets of these households have been closely linked to access to and ownership of land

since they are closely linked to agricultural production and in turn to food security and rural wealth generation. However, Davis et al. (2008) argue that rural households although often dependent on agriculture are also often involved in a large array of off-farm and non-farm economic activities. These "livelihood approach" thus recognizes that households are often dependent on many different sources of outcome generation. In defining the livelihood situation the varied types of outcome generation activity will be subdivided into; human capital, social capital, natural capital and physical capital and labour.

5.1.1 Household Characteristics and access to assets

First presented is a descriptive overview of household characteristics of all respondents followed by describing and comparing this data divided into the two pilot sites and wealth-ranking groups.

In general, the sex division of heads of household from the total group shows 81% are male and 16% female. The relationship status of the respondents show 69% are married, 23% widowed while only (3%) were single and (1%) had separated. The average household had 6 members. Indicating that the typical respondent is male, married residing within a household of approximately 6 inhabitants.

5.1.1.1 Wealth-ranking groups

When applying the SL approach in defining poverty the theory does not define how one should go about assessing this and, therefore, one may use methods such as geographically defining areas where poverty is prevalent, assess poverty in relation to a defined poverty line or allow the communities themselves to define a wealth-ranking within their community (Krantz, L. 2001).

This segment is an attempt at creating such groups, the in-depth details of which can be found in the methods chapter. The general characteristics of the respondents are divided into three "wealth-ranking" groups a "poor", "middle" and "less poor" group.

Table 15: Socio- economic assets of different wealth groups, Dolakha District, Nepal, 2012.

Social-economic factors	Poor N= 26	Middle N= 23	Less Poor N= 19	p-value
Average age HHH	54.8 Yrs.	58.6 Yrs.	51.3 Yrs.	0,26
Average years lived in village	48 Yrs.	54.2 Yrs.	42.4 Yrs.	0.92
Ratio of Male HHH %	76.9	95.7	78.9	0.169
Marital status (Married %)	69.2	81.8	63.2	0.196
Education HHH – **(1) No education %** **(2) Primary School %**	(1) 50 (2) 41.7	(1) 40 (2) 35	(1) 18.8 (2) 43.8	0.432
Main Occupation (Agricultural) % HHH	68	65.2	78.9	0.688
Average household size (Number)	6	6.26	5.8	0.825
Do you consider your village a good place to live % (reasonably/yes)	92.3	95.7	100	0.414
How comfortable do you feel in your village % (Fair + very)	96.2 %	95.7%	100%	0.738
Average household land (Ha.)*	0.98	1.91	5.17	0.004*
Average total income per household USD/Yr.*	1285	2108	2724	0.018*

N=68, Poor group n= 26, Middle n= 23, Less poor n= 19,* indicates significant differences between CFUGs

The data from the three groups show differences in several measures, of which; five times the mean household land area of the less poor in comparison to the "poor" group, similarly incomes of the less poor group are on average just under two times greater that of the "poor group". Differences in the level of education attained between groups is also evident, as in the poor group there are 50% of respondents with no formal education while the less poor group contain only 19% without any education. Regarding qualitative/subjective measures of contentment and comfort economically and socially the less poor group score higher on all counts in comparison to the "middle" and "poor" group. One remark to this data may be the high prevalence of "widowed" respondents within the less-poor group in comparison to the other two groups while at the same time the "less poor" group having the lowest average age of HHH. The largest average household size can be found among the "middle" group rather

than within the poorest group; the difference amounts to .26 persons per larger households in the "middle" group than in the "poor" group.

Dividing the respondents into wealth-ranking groups has made clear that there are significant differences between the relative poor and rich within the pilot study areas, this was also seen in the Anova test showing a significant difference between groups of ($p<0.018$). Among respondents, the average income of households per when compared to the national average of 5.95 USD per day, is lower both among the "middle" group 5.7 USD per day and the poor group 3.5 USD per day, with only the "less poor" group hovering above the national average at 7.4 USD per day. This indicates that the study area is located within a poor region within a national context.

5.1.1.2 General Characteristics by CFUG Thangsa Deurali/ Chyanse Bhagawati

Table 16: Household characteristics by location, Dolakha District, Nepal.2012.

Social economic factors	Thangsa Deurali	Chyashe Bhaghawati	p-value
Average age HHH	55.9 Yrs.	54.2 Yrs.	0.196
Average years lived in village	50 Yrs.	47 Yrs.	0.896
Ratio of male HHH % *	76.3	93.3	0.000*
Marital status % *	1= 59.5	1= 86.7	0.000*
(1) Married (2) Widowed	2= 32.4	2= 13.3	
Education HHH % (1)No education	1= 36.7	1= 40	0.294
(2) Primary School	2= 36.7	2= 43.3	
Main Occupation of HHH % (Agriculture)	92.1	44.8	0.117
Household size (Number)	5.55	6.56	0.179
Do you consider your village a good place to live % (Yes) *	100	96.7	0.000*
How comfortable do you feel in your community % (fair + very)	100	90	0.719
Average household land*	3.14 ha	1.62 ha	0.049*
Average total income per household	1637 USD/Yr.	2381 USD/Yr.	0.971

N= 68 Thangsa Deurali= 36 Chyanse Bhagawati = 32,* indicates significant differences between CFUGs

In order to see whether there are significant differences on account of user's geographical locations, the respondents have been divided into their respective community forest user groups. The general characteristics of the respondents divided into the two groups (Bhaghawati Chyashe, Thangsa Deurali) pilot project areas are shown in the table below.

The independent t-sample test has revealed several significant differences between the CFUGs. HH heads are more likely to be male and married in Chyanse Bhagawati, and respondents are more likely to consider the village a good place to live in Thangsa Deurali. The total average area of land owned per household in Thangsa Deurali is close to double that of Chyanse Bhagawati; The independent t-sample test found this relationship to be significant at the ($p<0.049$) level. One theory for the difference in mean total land size may be in part due to relative land prices and congestion between Thangsa Deurali and Chyanse Bhagawati. Chyanse Bhagawati pilot project area is located directly adjacent to the centre of Charikot, which is the district economic centre, while Thangsa Deurali is on the outskirts of the district starting approximately 15Km from the centre of Charikot. On the other hand, the average income per household at Chyanse Bhagawati is higher than that of Thangsa Deurali, however, not significant according to the independent t-sample test. The difference may, however, be rooted in the proximity to larger markets and ease of selling produce. Linked with the proximity of the two CFUG sites to the CBD is the main occupation of HHH at the two sites as in Chyanse Bhagawati there is only half the number of HHH working within the farming/ agriculture sector as there is in Thangsa Deurali.

Figure 8: The CFUG sites Thangsa and Chyashe Bhaghawati. Nepal, 2012.

Ring to the left shows Thangsa Deurali CFUG, ring to the right shows Chyanse Bhagawati the blue ring shows Chariot (CBD).

5.2 ASSETS AND ACTIVITIES

This section aims to assess people's livelihoods and incomes from various land use as well as income generated from alternative sources, based primarily on the household surveys collected in the Charnawati watershed.

As mentioned in the (chapter structure section,) Capital in its varied forms includes; social capital, financial capital, human capital and labour and natural capital. By quantifying these assets, the aim is to gain insight into not just the physical quantities a person owns, but one can also draw lines to what brings meaning to the individual's situation. "The process by which rural households construct a (n) (increasingly) diverse portfolio of assets and activities in order to survive and improve their standard of living" (Ellis, 2000: 15).

5.2.1 Education

Education is an important asset as the lack of this factor is considered a core dimension of poverty; therefore, improving the level of education is a key factor in positively improving the individual's livelihood situation.

The majority of respondents 78.3% have either no formal education or primary education in the CFUGs, leaving 21.6% either achieving secondary or higher education. With only a small minority achieving specialized higher education, it seems natural that the overwhelming majority have fallen into hands-on profession most notably agricultural professions. In the table below the level of education is divided into respective wealth-ranking groups. The table shows a tendency of individuals within higher wealth-ranking groups also achieving higher levels of education.

Table 17: Wealth-ranking education distribution, Dolakha District, Nepal, 2012.

Level of education	Poor	Middle	Less poor
No formal education (%)	50	40	18.8
Primary education (%)	41.7	35	43.8
Secondary education (%)	8.3	15	37.5
Higher education (%)	-	10	-

The table shows the relationship between wealth group and education level achieved, where the “less poor” group has only one third as many respondents without formal education as the “poor” group while having almost five times the percentage of its respondents attaining secondary education. The attainment or lack of education relates to the individuals potential choices of professions and income generating activities, the level of education, therefore, plays an important role as to which wealth-ranking group the respondents would fall into.

5.2.2 Health

Health as a factor of assets refers to a household’s access to and quality of health service options. The household survey showed that 41% of households had been afflicted by the death or serious illness in the family (productive age group/adult) within the last year. Which in turn had an effect on the available labour force of the household as well as placing an economic burden in many cases on the household. In the case of larger household, the effects of these “shocks” were reduced as larger households have an advantage since the size reduces the impact of diseases (Ellis, 2000). In the case of illnesses, the majority of cases were related to stomach problems, chronic pains of the stomach and diarrhoea. There was a medical dispensary in the city centre of Charikot, but respondents mentioned problems of transportation (often not available) as well as insufficient financial means to cover the cost of medicines, leaving individuals in a position of reduced productivity or completely incapable of working, even in cases where the ailment could easily be remedied by off the counter medicines totalling only a few US dollars. As experienced personally when assisting a respondent with an ailment of the stomach.

5.2.3 Natural Capital – Land

Natural capital encompasses ecosystem services that are vital for survival and well-being; this includes the land, air, water, living organisms and all other formations of the earth's biosphere (IISD, 2013). Beyond the physical attributes of the ecosystem; boundaries, size of the CFUG, perceptions, values and opinions regarding forests and their condition may be good indicators of natural capital.

5.2.3.1 General natural capital information

The data about the Charnawati watershed is based on the statements from the interview with the Assistant of the District Forest official (DFO) of Dolakha district (speaking on the behalf of the DFO). The total land and distribution of land was explained. The total area of the Dolakha district is approximated to 2lac (Nepalese measurement) which equates to 140,287 hectares of which the total forested area is 100,000 hectares. The total potential usable land for community forestry is estimated to be 61,915 hectares. Presently (December 2012) the area used for community forestry is shared by 392 registered CFUGs. 63% of the total area of the district, however, is restricted from use as it is one the most important religious sites in Nepal (Gori Shankar), and it is declared a conservation area. In total, 73% of forest area of Dolakha district is declared a conservation area, which gives an indication of available natural assets and potential for expanding community forests.

5.2.3.2 Users access to natural capital - land

The household survey shows that only 9 respondents (of 68) hand no land on their property that could be used for cultivation (neither owned/ rented). The average size of land among all respondents was 2.04 ha (s.d 4.38 ha). Variation was seen between the two CFUG sites where the average household had substantially more land in Thangsa Deurali than in Chyanse Bhagawati. Between wealth-ranking groups, there was also a difference; the "less poor" group having on average 5 times the land of the "poor" group.

5.2.3.3 Natural capital divided into groups

Perhaps one of the most valuable asset for a community heavily dependent on agriculture for their livelihoods is the area of land the individuals has access to as well as own. Now we look at how the land are owned within the wealth groups, as well as CFUG, is dispersed, as well as which type of contract is most common among the users. The frequency of ownership of land is 100% among those who do have rights to land (n=63), and the remaining respondents did not answer the question so either do not own land or simply would not answer. The same tendency is seen with housing contracts and accompanying land as 97. 1% own their property and only 1. 5% are tenants.

The table below shows the natural capital data of the three wealth-groups. The data indicates that "well of" groups have a larger mean total of agricultural land, but also that the more "well of" groups leave more of their total land fallow. The fallow land, however, may also serve a purpose even though it is not used for agricultural production. The fallow land may serve as a protective barrier from unwanted animals/pervasive crops, but also plants and other vegetation that grows on the land may serve as fodder, and potentially as supplementary nutrition if it is suitable for consumption. The table also shows that even though there is a large difference in the total available land between the groups, all three groups on average clear a similar amount of land for use for cropping, tree plantation and pasture. Although Chyanse Bhagawati leaves a higher proportion of its land fallow, it is interesting to see that their total mean agricultural land is less than that the Thangsa Deurali group. One might expect that with less land; the available land would be put to productive use.

Table 18: Average size of user's agricultural land by wealth-ranking group, Dolakha District, Nepal, 2012.

Factor (mean)	Poor	Middle	Less poor
Permanent agricultural land (ha)	0.98	1.91	5.17
Forest cleared last 3 years (ha)	0.35	0.34	0.35
Land left fallow (ha)	0.4	0.6	0.9

N=68

Table 19: Average size of user's agricultural land by CFUG, Dolakha District, Nepal, 2012.

Factor (mean)	Thangsa Deurali	Chyanse Bhagawati
Mean household land (ha)*	3.15	1.62
Forest cleared in the last 3 years (ha)	0.33	0.36
Land left fallow (ha)	0.58	0.7

N=68, * indicates a significant difference between groups.

Dividing the respondents into their respective CFUGs shows a significant difference using an independent t-test, in access to land. Where Thangsa Deurali has access to close to twice that of Chyanse Bhagawati. One may speculate that the relationship is due to the CFUGs geographical locations. Thangsa Deurali is further away from the "prime real-estate" in Charikot, hence lower real- estate prices and lower population density. At the same time, Thangsa Deurali is relatively further away from markets and access to other means of income generation.

A remark may be made that that the figures shown in both tables above reflect the user's personal perceptions of land owned and left fallow as well as their recollections of forested areas cleared. As mentioned before there remain dark figures around timber use as well as the use of coal which would mostly be extracted and produced locally.

5.2.3.4 Access to water

According to the household survey, the most prominent problems experienced in agricultural production under the household survey among all respondent were the following; Problems of irrigation (21 cases) especially that of rain shortage (11 cases). Although the district does have contemporary forms of irrigation, the region is heavily dependent on traditional irrigation. With both CFUGs located in steep slopes, access to water is restricted to smaller streams as there are no perennial water bodies within a practically accessible distance from the agricultural areas.

The main source of potable water used by the households is a public tap (47. 5%) secondly is personal tap of which (44. 3%) have while only 4. 9% use surface water such as form a stream pond or lake. Although not everybody has access to their own private source of water, the

data shows that the majority have at least access to an efficient and reliable source of water such as the (public and private taps.

5.2.3.5 Local perception of natural capital and access

In regard to how content users were with their relationship to fellow CF users, concerning cooperation in sharing forest products, (7.6%) found their relationship to be fair the remaining respondents found they're relationship to be good/very good (83.3%).

When looking at access to resources, most respondents believe that access to land and stock of forest products had increased over time. However the minority of respondents (9.1%) of respondents found access to and use of resources (Fuelwood, poles & timber, charcoal) was "bad". The reason for this is that the perception is that they felt the access to forest products had been reduced or much reduced over time are cited in the list below. The list presents the main and secondary reasons (added together i.e. frequency).

Table 20: Reasons for decreased access to forest products, Dolakha District, Nepal.2012.

Reason	Frequency	Relative importance
Population increase	8	22.2%
CFUG extracting excessive amounts	5	14 %
Too many rules	5	14 %
Limited access	4	11 %
Longer distance	4	11 %
Reduced forest cover	4	11 %
Excessive private sale	3	8.4 %
Carbon trading	3	8.4 %

Population increase is a major reason people feel forest stocks had been reduced. As noted by one of the respondents, this was because; more people (population increase) have access to and use the same level of forest stock as before. Interestingly the explanation; community forest user groups extracting excessive amounts of forest products was high on the survey, which would seem to be in conflict with the views shown by the group who believed forest stock had increased. As they believed, on the other hand, forest stock increases were a result of the CFUG carefully monitoring and adapting their extraction to counter the negative impact on the forest stock.

Too many rules regarding forest resource extraction was the third most prominent reason for reduced availability of forest products; these rules limited the user's ability to access the forest stock and therefore their ability to extract forest products was reduced, this does not necessarily mean the respondents felt that this led to a reduction in the forest stock itself.

5.2.3.6 Access to NTFPs

All respondents were dependent on one or several NTFPs, the most important of which will be explained in further detail under "forest activities and dependency" were fodder, especially for feeding livestock.

When looking at extraction and selling of NTFPs, it was explained by the CFUG chief as well as the respondents that collecting and also the selling the collected NTFPs was not commonly practiced in either of the two pilot sites. One of the main reasons for this is due to traditional norms which dictate that the use and sale of NTFPs should be reserved exclusively for individuals in poor economic situations. It seemed there was some stigma attached to this kind of work. Out of the 68 respondents only 3 answered that they would sell the NTFPs they collected; it is here possible that several respondents would have withheld from me the fact that they were involved in this type of business for personal reasons or potentially uncertainty of whether revealing this information would have negative social repercussions for them. The average income of the three respondents who did collect and sell NFTP's the monthly income amounted to (32 USD).

5.2.4 Social Capital

This segment tries to account for the less tangible factor of "social capital" which is based in this paper heavily within the personal perceptions presented through the household survey; a definition of social capital by Claridge is as follows. "The commonalities of most definitions of social capital are that they focus on social relations that have productive benefits. The variety of definitions identified in the literature stem from the highly context specific nature of social capital and the complexity of its conceptualization and operationalization."(Claridge, 2004). Social capital also incorporates the value of social networks, bonding similar people and building bridges between diverse people, through norms of reciprocity (Dekker, 2001).

5.2.4.1 Ethnicity and religious indicators

What ethnic group or religion an individual belongs to can represent a type of social capital. However, when describing ethnicity and religious characteristics of the study area, I was recommended to avoid asking such questions directly as some respondents might find such questions overly personal. One reason for the uneasiness respondents might have regarding these matters was based on the fact that the area had been the victim of political terrorism (bombing) in early 2000's. These questions were therefore removed from the questionnaire, leaving District development profile of Nepal profile of 2011 (DDPF.2011) as a general reference to this data.

Table 21: Ethnic groups of the Dolakha district, Dolakha District, Nepal, 2011.

Groups	% of Dolakha population
Chhetri	28.49%
Tamang	13.52
Brahman Hill	9.2
Newar	7.75
Thami	6.82
Sherpa	4.77
Other	11

Source (DDPF.2011)

The data shows a strong presence of the Chhetri ethnic group as well as a five other main ethnic groups. Nepal is, in fact a highly diverse country containing 19 major ethnic groups, 42 smaller groups and 61 sizeable ethnic groups in total (Niroula, 1998). Ethnic groups are closely related to which cast an individual is a part of. And although castism is officially abolished in Nepal, from personal experience and conversations with local persons, it is clear that there exists a hierarchy within the villages which dictate what strata on the social ladder an individual belongs to. This again has an impact on the individual's relationship with other members of the group and promotes or inhibits their potential livelihood opportunities.

Table 22: Religious groups of the Dolakha district, Dolakha District, Nepal, 2011.

Religious group	% of Dolakha population
Hindi (%)	72.43
Buddhist (%)	23.92
Kirat (%)	1.32
Other (%)	2.35

(DDPF.2011)

As in the majority of locations in Nepal the Hindi presence is dominant, however, the Dolakha district has a higher percentage of Buddhist than you would typically find in the country. This may be explained partially by its relative proximity to Tibet, but can also be attributed to the tendency for Buddhist, which typically are less well of than other groups, to reside in mountainous regions with lower property values and costs of living.

5.2.4.2 Social capital perceptions

One way social capital was measured through the household survey was by asking the respondents to rate their relationships with an array of other actors. The table below is the combined results from all respondents on that question.

Table 23: Users perceived relationship with other actors, Dolakha District, Nepal, 2012.

Relationship with actors	Very bad	Bad	Fair	Good	Very good
Neighbours (%)		2.9	16.2	76.5	4.4
People from other communities (%)		2.9	16.2	79.4	1.5
NGO workers (%)			34.2	65.8	
VDC (%)			33.3	65	1.7
Forest government officials (%)			28.1	68.4	3.5
CFUG Committee (%)			10.9	82.8	6.3

N=68

With the majority of response in all categories falling firmly within the “good” or better column, one may assume that the majority of respondents have a good relationship with their

fellow neighbours as well as organizations and representatives from institutions. Although this claim may be skewed, as it is possible that the respondents prefer to present their relations with these parties in a positive way so as to save face.

A more concrete measure of an individual's social capital may be whether they are involved and actively engaged in a particular group. Regarding the question of whether the HHH was a member of a range groups, show that 61 of the HHH (just over 90%) of all respondents, were members of a saving's group, 14 respondents were part of a local political group and 11 respondents were members of farm groups. Very few of the respondents had any membership or affiliation with groups such as village committees, local NGO's, REDD+ network. The result may indicate that there is a high level of trust among the community regarding financial matters, also that loans from external actors may not be easily accessible.

In general, there are obvious differences in social assets between income groups and significant differences between CFUGs sites. The prevalence of savings groups shows that there is some form of communal arrangements for collective saving and loans, which include most of the inhabitants regardless of financial situation.

Within the CFUG, a question asked to gauge the current conflict level, and the level of conflict was to ask if there had been conflicts of any nature over access to land for agriculture in the last 3 years. 22. 7% of respondent had had conflicts, out of these conflicts 60% have been of an intermediate nature, 20% were "serious" and 13. 3% were very serious. In general 77.3% of all respondents answered that they had had no such problems.

5.2.5 Financial Capital

"Financial capital represents the financial resources available to individuals and households (e.g., savings, supplies of credit, regular remittances or pensions) that provide opportunity for the pursuit of different livelihood options." (Carney et al. 1999).

These are the financial resource individuals use to achieve livelihood outcomes, the resources can come in the form of available stocks as well as regular flows (for example remittances, and livestock). It is a versatile form of capital as it can be easily converted into other forms of capital (e.g. purchasing provisions in times of little food). This is however a form of capital often less accessible for the poorer segments of a population, whom are more heavily dependent on other forms of capital

Access to financial funds was found through conversations with household survey's respondents to be primarily restricted to locally devised community loan mechanisms. From the survey, it was revealed that 61 of 68 respondents belonged to a savings groups (just over 90 %). Of regular flows of financial capital, 32% of respondents have access to remittances averaging monthly 36USD, and only 4% do not have livestock which they may easily trade. Presented in daily salaries the poor group has an average income of (3.5 USD), the middle group has (5.77 USD) and the less poor group (7.5 USD) (based on a 31 day month). There is a significant difference between the three groups as the less poor group has approximately three times the income of the poor. Below is a table of monthly incomes, divided into wealth-ranking groups. This factor represents the group's potential to convert capital into other forms of capital. Lower income dictates that the individual may be less able to cope with unforeseen shocks, thereby making them more vulnerable.

Table 24: Mean household income categorized by wealth-ranking group, Dolakha District, Nepal, 2012.

Mean	Poor	Middle	Less Poor
Total Household income (USD)	107 / Mo.	176 / Mo.	227 / Mo.

N=68

Below are the results when dividing the respondents into their respective CFUGs

Table 25: Mean household income categorized by CFUG, Dolakha District, Nepal, 2012.

Mean	Thangsa Deurali	Chyanse Bhagawati
Total household Income (USD)	136 / Mo.	198 / Mo.

With (62 USD) between the two sites, there is a difference in monthly incomes between the two sites. As noted earlier an explanation for the difference may be rooted in the proximity to large markets for selling produce and potential for alternative means of off- farm income within the district financial centre of Charikot, which may explain why Chyanse Bhagawati, which lies directly adjacently to Charikot, has a higher income in comparison to Thangsa Deurali and therefore a higher access to convertible financial capital.

5.2.6 Activities and income sources

Households in the study area mostly fall within the professions of agriculture, forestry and on/off-farm activities; this section describes the overarching characteristics of these activities with a special focus on forest activities.

These activities fall within the definition of human capital which can be divided into several sub-categories of people acquiring a specific competency and thereby becoming a valuable asset. From an economic perspective, it refers to factors of production which in turn create goods or services. In general human capital is one of production elements which will generate added-value through the input exerted (Human capital, 2009). Another definition of this form of capital is of people acquiring a specific competency and thereby becoming a valuable asset. From an economic perspective, it refers to factors of production which in turn create goods or services. The factors of production used in this analysis will be primarily those which are on-farm, for example, agricultural yields, livestock income and capital related to forest products. Off-farm capital such as business external to the household or farm, or employment on account of competency in other sectors is included (Human capital, 2009).

5.2.7 Agriculture

Agriculture is the most common profession and income generating activity in Nepal with the census of 2001 placing 65.7% of the national work force within this sector (UN, Data, Nepal, 2009). This is also the also an important profession in the Charnawati watershed, as shown in the general household characteristics section the division of primary profession of all respondents in the household survey, agriculture makes up the vast majority with (68. 7%); the second most important form of income comes from the data includes all forms of non-farm income generating activities, typically contracting work. In connection with this it interesting to see that the total agricultural land of Dolakha has increased over the last two decades indicating its importance as shown in the table below. When dived into CFUG groups, Thangsa Deurali responded in the household survey that 92.1 % of HHH were primarily involved in agricultural professions, while only 44.8% of respondents form Chyanse Bhagawati respondents placed this as their primary profession.

Table 26: Agricultural land area change over time, Dolakha District.

Land cover class	Area (ha) 1990	Area (ha) 2010	Net land change (ha)
Agriculture land	4723.05	5218.38	495.33

For both the CFUGs millet is an important cash crop as it requires less work than other crops. It is also stable in relation to variations in seasons as it is a very resilient plant and can cope with extremes of climatic changes. Also in the Dolakha region, though not legal to make commercially at home, millet is used widely in alcoholic drinks. Many respondents revealed under the household questionnaire that the sale of millet alcohol was an important source of income. Cauliflower is also an important cash crop but more prevalent in Thangsa Deurali than in Chyanse Bhagawati.

Table 27: Crop variation in CFUGs, Dolakha District, Nepal, 2012.

	Thangsa Deurali	Chyanse Bhagawati
Cash crop	Cauliflower, other, millet	Millet, cauliflower
Subsistence	Rice, Maize, other	Rice, maize, other

Looking at the table below, for the poor group Maize is a crop planted by almost all respondents and a vital crop for subsistence. Millet as noted above is often used for the production of alcoholic beverages, and production mostly falls upon households within the "poor" category, which are apt to distil millet to make "thomba" at household level as even though many consume the drink the production is left to "lower castes". Cauliflower as a cash crop has according to respondents grown immensely in popularity as a cash crop in recent years. The main proponent of this trend is said to be a large and growing influx of immigrants to the major cities leading to larger demand and price spikes for these crops in the metropolitan areas.

Table 28: Crop variation by wealth-ranking groups, Dolakha District, Nepal, 2012.

Type	Poor	Middle	Less poor
Cash crops	Maize, Cauliflower, Millet, Other	Cauliflower, other	Cauliflower, other, Maize, Millet
Subsistence crops	Rice, maize, millet	Rice maize, Millet	Rice, maize, millet

5.2.8 Livestock

Most respondents keep livestock, the most common of which were goats of which 78% of respondents kept (s.d 2.6). Goats are generally low maintenance and provide both milk and meat, but also importantly are a good source of fertilization for crops which is widely applied among most farmers. 60% kept an average of 19.8 poultry (s.d 61); a large s.d reflecting that some had specialized in keeping poultry commercially as an important source of income. Buffalo were also kept by 41% of respondents (s.d 0.9). Buffalo have traditionally and continue to be an important tool in agriculture, but in Nepal it is also an important source of dairy products and meat, as very few keep cattle for meat for religious reasons. Although cattle cannot be used for meat in Nepal, 19 % still kept them (s.d .92). Cattle produce large quantities of dairy products but often play an important symbolic role as a sign of wealth socially. Only one respondent kept a pig; one reason for this low number may be that traditionally swine are viewed as "dirty" and still to the current day those of higher "caste" will not keep the animal or eat the meat from pigs.

Table 29: Mean total livestock kept by household by wealth-ranking groups, Dolakha District, Nepal, 2012.

Livestock (Mean total)	Poor	Middle	Less Poor
Cattle	1	2.17	2
Buffalo	1.12	2.4	1.3
Goat	4.44	4.88	5.23
Sheep	-	9 (1 person)	-
Pig	-	2 (1 person)	-
Poultry	6.6	23.8	24.26

The table shows that the "poor" group has a lower average number of livestock than the other two groups on all counts, also that the middle and "less poor" group keep on average very similar counts of livestock; this may be partially due to the middle groups higher dependence on agricultural activities while the "less poor" group are often involved in several forms of income generating activities. As mentioned livestock represent a form of income flow to the household, and also can act as a bartering capital when necessary. Livestock can, therefore, act as steady income for households and as easily convertible assets, lack livestock would imply that the individual has less of capacity to do this and is therefore potentially more vulnerable.

5.2.9 Non- farm activities

Non-farm activities include activities which are not primarily within agriculture or forestry or fisheries, but the definition does include activities of processing or trade of agricultural products, even if these activities are on a small scale and potentially take place on the farm, it does not matter where the activity takes place, at which scale, or with what technology. The definition 'non-farm' is different from 'off-farm', "off farm" refers to activities done away from the household's own property/ farm, authors such as (Ellis, 1998) use it to refer exclusively to agricultural labour on someone else's land.

Of all respondents, 28 % had a primary occupation which was not a farm related activity. 37 people had one or more inhabitants of the household involved in a type of business; of these 7 respondents said that they were involved two businesses. The most common of the businesses defined by the questionnaire was shop/ trade related business and secondly was transport related businesses.

Table 30: Type of business respondents are involved in, Dolakha District, Nepal, 2012.

Business	% non-farm business people divided into profession
Other %	59
Shop / trade %	22
Transport (car, bus, truck) %	6,5
Agricultural processing %	4,3
Brewing %	4,3
Carpentry %	2,1
Other forest based activities %	2,1

Shop/ trade businesses were typically on a small scale holding basic food goods, beverages and a limited assortment of basic household items. From the table, it is shown that only 4.3 % of respondents were involved in brewing but as noted earlier the real number is probably substantially higher as the brewing profession on a side note would typically only be carried out by the women of the community. Agricultural processing businesses would probably be in directed towards the processing of cauliflower for sale in the city centres but may also be for one of the larger scale poultry farms of the area. The households being involved in more than one income generating activity increases diversification, which in turn can provide a safety net, in case of sudden "shocks" hindering the household from pursuing activities within one income generating activity.

5.2.10 Off- farm Activities

Of the 64 households involved in agricultural production, 43.7 % of respondents would hire labour locally in carrying out planting, maintenance and harvesting activities for their primary crop; the number was slightly lower for secondary crops and others. The need for additional labour would vary in relation to the type of crop harvested; cauliflower would be a crop that many of the users would be involved in as a hired hand. The table below shows how often users involved in agricultural production would use additional hired labour divided by wealth groups. The less poor group here uses hire labour most frequently but interestingly the "poor" group uses hired labour almost twice as often as the "middle" group.

Table 31: Use of hired work for agricultural divided by wealth groups, Dolakha District, Nepal, 2012.

	Poor	Middle	Less poor
Hired work (%)	43	26	66

In summing up, it is clear that almost all respondents are dependent on forest resources, especially the use of fuelwood but also including NTFPs. Also, the majority of respondents are involved in livestock keeping, and several also sell the produce from livestock. Although agricultural professions are the primary livelihood activity of most households, just under half of respondents have also diversified through being involved in non- farm activities. Off farm services serve as an important income and are also an important income generating activity for many users.

5.3 FOREST ACTIVITIES AND DEPENDENCY

Forest related activities are central to the paper, so extra attention has been paid to describe in detail the specifics of user's relationship and activities regarding forest products.

The section will mostly consist of analysis from the data collected through the household surveys. The secondary objective is to understand the prevailing energy mix users rely on and for livelihoods/cooking etc. The last question will be based on whether users are content with their present energy mix, or whether a new energy type/mix may be an option, especially looking into non-forest dependent forms of energy.

5.3.1 General forest use information

Forest resources can act in three capacities; directly providing resources for livelihoods (subsistence), as a source of supplementary resources in times of hardships as well as a tool for poverty reduction in the capacity of such projects as REDD+, through payments for environmental services.

It total 91.2 % of all respondents are primarily dependent of fuelwood for cooking, heating and other capacities , with only a smaller group primarily dependent on gas 7.4% of respondents. Fuelwood is thus clearly an important element for the vast majority of respondents. Collecting fuelwood from the REDD+ pilot project areas (community forest) is the most common (69.1%), fuelwood collected from other forested areas (mostly private forest) is the second most prevalent (14. 7%), third (7. 4%) is bought fuelwood which in practice may come from either the REDD+ area, private forests or external forests. From these general statistics, it is clear that fuelwood is a vital proponent of most household livelihood situation and the community forests role in providing this resource.

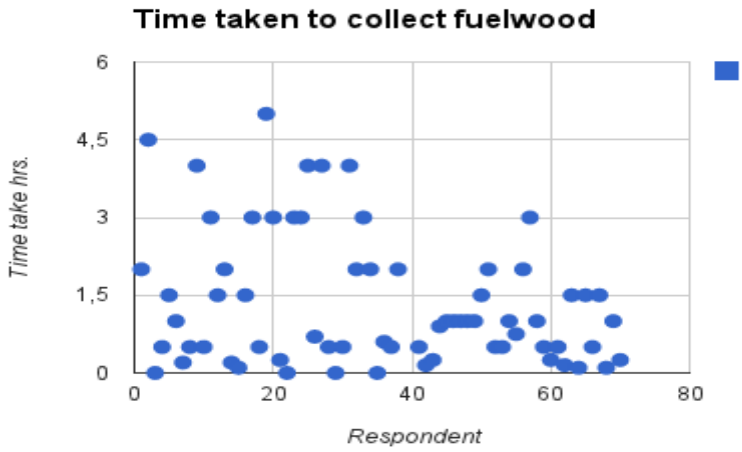
No respondents answered that they sold fuelwood to a third party, also in the case of poles/ timber (only 2 respondents sold these resources) and lastly only one respondent answered that they sold the charcoal. It can be presumed that the amount of fuelwood, timber and poles and charcoal being sold is substantially higher than the data collected under the household survey. However, the sale of these items in the case of timber, poles and charcoal are forbidden, and users found selling these products are apt to be punished through fines. As it is unclear as to what extent violations of rules are followed through by appropriate "conflict resolution mechanisms", whether the CFUG has developed appropriate measures required to achieve long enduring resource governing institutions stands to question whether Elinor Ostrom's (Ostrom, 1991) design principles are satisfied.

In the case of fuelwood, the allotted amount of fuelwood permitted to each household is finite and should primarily be used within the allotted household. In the case of household that due to poor health or old age cannot collect fuelwood personally, neighbours will often help, sell or trade internally. As when asked how respondents acquire fuelwood, 7.4 % answered that they buy the resources. Therefore although not shown in the data, there must be a market for fuelwood locally.

5.3.1.1 Fuelwood

Forest products are collected primarily from secondary forests (85. 1%), it was further explained that most of the accessible forested areas had been extensively extracted from over the last decades, and therefore, the majority of forested areas were now secondary forests, (11. 9% did, however, state that they mostly collect forest products from primary forests).
The total average collected among all users collecting firewood per month stood at 239.2Kg.pr. In the collection process, family labour was the dominant method (74.6%), while (25.4%) stated that they would usually hire external labour. From this observation, the dominant trend of those paying for "external labour" was in cases when the respondent lived alone and was usually not personally and/or physically capable of collecting firewood. Furthermore when collecting fuelwood, labour division showed 40.9% use only men while 9.1% employ only women leaving the majority (50%) who use a mix of men and women. The average time spent by all respondents dependent on collecting fuelwood revealed a large variance; from as little as approx. 1 min (often in the case of private forests) and up to 4.5hrs per. trip. Keeping this in mind, the average time taken by users was 1. 43 hrs. Per time, they collect firewood.

Figure 9: Mean time, fuelwood collection. Nepal, 2012.



5.3.1.2 Wealth-ranking fuelwood characteristics

We will now see if there are any significant differences between the wealth-ranking groups in relation to their fuelwood activities, the table below describes in detail the activity of fuelwood collection.

Table 32: Firewood collection characteristics by wealth-ranking groups, Dolakha District, Nepal, 2012.

Factor	Poor	Middle	Less Poor
Forest type %			
(1) Primary	(1) 3.8	(1) 13	(1) 22.2
(2) Secondary	(2) 92.3	(2) 82.6	(2) 77.8
Ownership %			
(1) Private	(1) 23.1	(1)21.7	(1)44.4
(2) CBFM	(2) 76.9	(2) 78.3	(2) 55.6
Labour type %	(1) 61.5	(1) 69.6	(1)50
(1) Household	(2) 23.1	(2) 17.4	(2) 38.9
(2) Hired (3) Both	(3) 11.5	(3) 13	(3) 5.6
Sex %	(1) 40	(1) 30.4	(1) 55.6
(1) Man	(2) 7.7	(2) 13	(2) 5.6
(2) Woman(3)Mix	(3) 52	(3) 56.5	(3) 38.9
Time taken Hrs.	1.34 (s.d 1.46)	1.44 (s.d 1.31)	1.54 (s.d 1.33)
Own use HH Kg.	219 (s.d 207)	151 (s.d 132)	126 (s.d 90)

The table indicates many similarities between the groups including respondents using mostly timber from secondary forests from CMFM sites extracted using household labour. While the poor and middle groups mostly share the labour between the sexes, the less poor group will typically have men performing the labour. Regarding the time taken to collect firewood the less poor group uses on average more time than the other two groups, but they only consume 57% of the amount the poor group consumes in a month. No respondents declared that they sold the collected firewood to a third party. The Anova test showed no significant differences between any of the groups on any category.

5.3.1.3 CFUG fuelwood characteristics

The data is now analysed through CFUG groups as shown in the table below.

Table 33: Firewood collection characteristics by wealth-ranking groups, Dolakha District, Nepal, 2012.

Factor	Thangsa Deurali	Chyanse Bhagawati
Forest type % *	(1) 22.9	
(1) Primary (2) Secondary	(2) 77.1	(2) 100
Ownership % *		
(1) Private (2) CBFM	(1)35.1	(1) 20
	(2) 64.9	(2) 80
Labour type %	(1)59.5	(1) 63
(1) Household (2) Hired	(2) 35.1	(2) 13
(3) Both	(3) 5.4	(3) 23
Sex %	(1)51.4	(1) 27.6
(1) Man (2) Woman	(2) 8.1	(2) 10.3
(3) Mix	(3) 40.5	(3) 62.1
Time taken Hrs. *	1.9 (s.d 1.46)	0.89 (s.d 0.67)
HH fuelwood use Kg.pr month *	169	320
	(s.d 152)	(s.d 299)

N=68

The independent t-test showed a significant difference on four factors in forest type used ($p<0.005$) by the CFUG. Chyanse Bhagawati extract fuelwood from Secondary forests more than Thangsa Deurali, and forest ownership type ($p<0.006$) Thangsa Deurali use fuelwood

from private forest more often than those from Chyanse Bhagawati. The third significant result is in time taken to collect fuelwood ($p<0.000$) Chyanse Bhagawati use less time collecting fuelwood finally Own use per month ($p<0.010$) Chyanse Bhagawati use more fuelwood than Thangsa Deurali per month.

These results show that, in this case, Chyanse Bhagawati both spends less time collecting fuelwood as well as using on average more than their counter part Thangsa Deurali, also they extract more of this fuelwood from community forests than Thangsa Deurali does. Cross tabulation showed no significant correlations between the amount extracted and time taken when looking at all respondents. Therefore, the difference between the two CFUGs can be attributed to users from Chyanse Bhagawati using less time collecting fuelwood and thus collect more fuelwood. This result is in line with The (Sapkota. A, 2008) study which found that the distance from forest, as well as household wealth, excerpts a strong influence on a household's forest dependence.

5.3.1.3 Private forest use

How households manage forests/tree lots based on all respondents from the household survey shows that 63. 9% had planted woodlots on their properties over the last three years, the main reason for planting trees was 72.1% personal use, while (14%) planted trees to avoid landslides/ forest protection and also because the CFUG only provides a limited quota per. household for fuelwood, so households plant additional trees themselves. Commercial reasons account for 9.3% and finally 4.6% of trees planted are for carbon sequestration.

45. 9% of respondents had cleared forest areas during the same three year period. From the 26 responses, the average area cut was estimated at 15.3m x 15.3m. There were two additional responses but since they fell far from the average respectively 33 ha. and 3375 ha, both which have been added here in case they are true, but must be a data input error, so they were not included in the average. Of the respondents who had cleared forested areas additional questions were asked regarding the cleared forest as shown in the table below. The respondent only gave one main reason for each question; the table thus shows what portion ranked which reason as most important.

Table 34: Household forest management household data, Dolakha District, Nepal.2012

Criteria	Rank 1	Rank 2	Rank 3	Rank 4
Cleared forest land used for (%)	Tree plantation 55.6	Cropping 18.5	Other purposes 14.8	Pasture 11.1
Type of forest cleared (%)	Secondary 85.2	Primary 14.8		
Ownership status of Forest cleared (%)	Private 70.4	CBFM 29.6		

N=34

When asked directly about timber and poles use respondents as mentioned were not willing to confide that any such products were used. The table, however, shows that 29.6% of forest cleared is from CBFM forests. Therefore, it is fair to assume that these products (timber, poles etc.) are also used by the respondents (although predominantly derived from private forested areas).

5.3.1.4 Non Timber Forest Product dependence

NTFPs are an important resource for most users with 88% of all respondents dependent on one or more NTFPs. However, only three respondents noted that they sold any of the collected NTFPs; these respondents were also within the "poor" wealth-ranking groups. Fodder collected from the forest was the most widely used NTFP with 79 % of respondents dependent on the resource, secondly mushrooms 37 %, wild fruits and nuts 24 %. Bamboo was collected by 18% and mostly the reason was that it would be used as scaffolding in construction. 10 % collected medicinal plants but for most respondents this was a resource they had little knowledge of. Lastly 6 % collected nuts; however, most respondents were not aware that this was a resource they had within their forests. Bush meat was collected by 6 % of respondents, under the interview a majority of respondents responded in an irritated manner to having to answer whether or not they collected bush meat as this is generally "looked down on" and also collectively deemed illegal among the within the community. This may be deep-rooted in local values and norms regarding NTFPs in general; based on these perceived values and norms and the respondents may not have been as willing to expose their dependence on NTFPs in general.

Below are the cumulative responses from all respondents regarding how important NTPFs that the members of the household collect from the forest both for personal use and sale are.

Table 35: NTFPs collected by users, Dolakha District, Nepal, 2012.

NTFP	Do not collect	Somewhat important	Important	Very important
Fodder (collected or grazed) (%)	20.6	22.1	55.9	1.5
Bamboo (%)	80.3	18	1.6	-
Medicinal plants (%)	89.7	7.4	2.9	-
Wild fruits and leaves (%)	75.8	16.7	7.6	-
Nuts (%)	93.2	3.3	3.3	-
Bush meat (%)	94.6	6		-
Mushrooms (%)	63.2	25	11.8	-

N=68 (all results shown in %)

The table shows that only fodder (usually for livestock) is seen as an important NTFP for the majority. The majority in all other categories indicate that none of the alternatives is of importance to the household. Also, bush meat is illegal to collect, and results may, therefore, not reflect the real dependence on this resource.

Table 36: NTFP dependence between villages, Dolakha District, Nepal, 2012.

Resource	Thangsa Deurali (dependent at any level)	Chyanse Bhagawati (dependent at any level)
Fodder %	78.9	80
Bamboo %	23.7	10
Medicinal plants %	15.8	3.3
Wild fruits and leaves %	34.2	10
Nuts %	7.9	3.3
Bush meat %	10.5	0
Mushroom %	60.5	6.6

After carrying out an independent samples t-test on NTFPs dependence between CFUGs only dependence on mushrooms showed a significant difference between the groups at ($p<0.000$), indicating that Thangsa Deurali users collect mushrooms while Chyanse Bhagawati users not collect as much, this may be attributed to the prevalence of mushrooms in Thangsa Deurali or perhaps knowledge of which mushroom can be used.

Table 37: NTFP dependence between wealth-ranking groups, Dolakha District, Nepal, 2012

Resource	Poor (dependent at any level)	Middle (dependent at any level)	Less poor (dependent at any level)
Fodder %	69.2	87	84.2
Bamboo %	7.7	17.4	31.6
Medicinal plants %	7.7	8.7	15.8
Wild fruits and leaves %	15.3	30.4	27.8
Nuts %	3.8	13	-
Bush meat %	-	8.7	10.5
Mushroom %	23.1	34.7	57.9

The Anova test showed no significant differences between the groups, however, looking at the table above in almost all cases the "less poor" group extracts and use more of the available NTFP's. This is interesting as one may think that the "poor" group would be most dependent on forest resources including NTFPs. In (Sapkota. A, 2008) study who found that the distance from forest, as well as household wealth, excerpts a strong influence on a household's forest dependence. Where the strongest influence of the two was found to be household wealth, were poor households were highly dependent on forest fuel-wood. Here only fuelwood is mentioned but NTFPs should also fit into this theory.

In conclusion, it is clear that fuelwood is an extremely important forest resource for the vast majority of users as 91.2 % of all respondents are primarily dependent of fuelwood, mostly collected from community forests whereof 85.1% are from secondary growth forest, collected using a mix of men and women but also other NTFPs are widely collected and important

resource for most household livelihoods. The lack of information regarding timber and poles, charcoal and NTFPs deemed illegal or taboo, may not reflect the actual use of these resource. As through casual conversations with interviewees and key persons, it seems probable that these activities also make up and important part of many households income generating activities.

There seems to be a connection between the work needed/time taken and the amount of fuelwood consumed by households as shown when comparing Chyanse Bhagawati and Thangsa Deurali. Finally 88% of all respondents dependent on one or more NTFPs, when asked what were the most important forest product the household used; fuelwood ranked at number one 66% of respondents, Fodder/leaves 25% and finally timber 9%, showing that although the information was not given under surveys, timber is important for many households. The data shows that the majority of respondents are dependent on forest products in an array of ways including directly providing resources for livelihoods as well as a tool for poverty reduction, In the case of some individuals also in the capacity carbon sequestration providing payments for environmental services through initiatives such as REDD+.

5.4 LIVELIHOOD OUTCOMES

Livelihood outcomes are defined by the activities and assets possessed and carried out by the household. The outcomes of the livelihood strategy may, however, affect the assets in turn, on account that if the household exploits their natural capital beyond the limits of the resources potential for replenishment, the total assets of the household may decrease over time. This section presents the outcomes based on the household survey dividing findings into CFUG and wealth/ranking groups when applicable.

Table 38: Total household income and socio-economic characteristics, Dolakha District, Nepal, 2012.

Variable	Coefficient estimate	SE	T ratio	Prob>t
(Constant)	-1137	1510	-.75	0.455
Sex of HHH	-523	714	-0.73	0.467
Marital status*	424	209	2.03	*0.047
Age of HHH	-11	21	-0.53	0.599
Education*	582	231	2.52	*0.015
Other skills	-164	156	-1.05	0.297
Occupation	51	145	0.35	0.727
Years lived in CFUG	14	12	1.12	0.266
Land size*	114	10	0.788	*0.000
Location (CFUG)	915	457	1.99	0.050
HH size	-1.669	87	-0.19	0.985

N=68; R square adj= 0.713, F=17.648 $p< 0.05$

The table shows three relationships to be statistically significant. Firstly married couples tend to have higher incomes than single couples. Education was also statistically significant; here higher education relates to higher income. Lastly the larger the size of land a household owns, the higher the income of the household.

Table 39: Total household income and socio-economic characteristics of the household survey, Dolakha District, Nepal, 2012.

Income source	Annual income (USD)	% of total income	Standard deviation
Agriculture	976	50	2432
Forest environment	80	4	82
Non-farm	758	38	1220
Remittances	151	8	369
Total income	1965	100	-

The table above shows an overview of all respondents' average income subdivided into the different income source groups. The two main income sources shown from the table are those from agricultural activities and non-farm activities.

Now we will see if there are any significant differences between the income groups in regard to different income sources using an Anova test.

Table 40: Annual income sorted by wealth-groups, Dolakha District, Nepal, 2012.

Income source	Poor (USD)	% Total	Middle (USD)	% Total	Rich (USD)	% Total
Agriculture*	582 (592)	45	770 (726)	36	1764 (2204)	64
Forest environment	105 (105)	8	74 (69)	3.5	56 (48)	2
Non-farm	489 (810)	38	1041 (1361)	49	783 (1469)	29
Remittances	108 (290)	8	224 (478)	10	121 (319)	4
Total income*	1284	100	2109	100	2724	100

N=68, Standard deviation in brackets, * indicates a significant difference between groups.

The results from the Anova test show not only that there is a difference between the total income and outcome of the three groups, but also within the income from agricultural practices between groups. The adhoc Tuckey test (agriculture) shows that there is a significant difference between the "poor" group and the "less rich" group, but no significant difference between the "middle" and "less poor" group. The same relationship reveals itself when looking at total income between the groups using the Tuckey adhoc test.

Here is presented the respondents divided into respective CFUGs and look at their income sources and then take another independent t-test test to see if there are significant differences between the groups.

Table 41: Annual income sources by location, Dolakha District, Nepal. 2012.

Source	Thangsa Deurali (USD)	% total income	Chyanse Bhagawati (USD)	% total income
Agriculture	1166 (1742)	71	734 (564)	31
Forest/ environment*	58 (52)	4	110 (102)	5
Non-farm*	251 (576)	15	1400 (1501)	59
Remittances	163 (412)	10	136 (313)	5
Total	1638	-	2381	-

N=68, brackets indicate s.d, * indicates a significant difference between location ($p<0.05$).

Again a large portion of the total income comes from agriculture, but in this divide it is clear that, for Chyanse Bhagawati, the greater part of individuals income come from non-farm activities. The independent t-test presents a significant result between CFUGs when looking at both non- farm activities and forest/environment activities, upholding the statement from the last segment of Chyanse Bhagawati dependence on non-farm income sources.

5.4.1 Agricultural outcome

In total agricultural activities stand for 50% of the overall outcomes (income) of the respondent's households, with an average household holding 2.5 ha of land for cultivation. The data shows that the majority of produce from the households would be used for personal consumption; some typically within the "middle" and especially "less poor" groups would cultivate an approximate equal amount for self-subsistence and sale while a smaller number produced primarily for sale, these users typically cultivate cauliflower. Due to the lack of sufficiently big markets in the immediate area for Thangsa Deurali in particular, produce would often be sent by truck to Kathmandu and other major cities. Another remark along similar lines made by farmers was that due to the lack of demand and possibility of transporting goods to the centres of demand, the price of their produce was negatively affected, meaning that they would receive a payment well under the typical market process for their produce.

In contrast to the easily accessible and fertile soils of the south and south-west regions of Nepal, agricultural activities and potential yields are lower in the high lying hills and mountains of Dolakha, both on account of lower soil fertility but also on account of problems of ease of access and practically of cultivating the region. In conclusion, agricultural activities are more costly in man-hours, but also the soil yields less produce, and lastly the regions distance from major markets further reduce the profit of the yield produced.

As seen from the last table agriculture brings in on average more income than in Chyanse Bhagawati but the lack of non-farm activities in Thangsa Deurali shows the CFUG having lower possibilities for diversification and finally significantly lower incomes than Chyanse Bhagawati.

5.4.2 Environmental outcome

Forest incomes are shown to be quite a small part of the total income when looking at all respondents as it amounts (4%) of the total income. This may, however, be slightly skewed in relation to forest/environmental incomes general importance for households. All forest products whether used by the household or sold are calculated into the total income, but on account of very low wages for this type of work, the typical selling price for one batch of fuelwood 35kg may only be 100NPR or 1 USD. Therefore, 80USD of environmental/forest if

it was only fuelwood would be equivalent to approx. 75 batches of fuelwood or 2625kg of forest product fuelwood. This is a product although perhaps not so valuable in terms of money should not be underestimated for its overall value for households as a whole.

Environmental income is divided between data collected on firewood and sale of NTFPs. Although poles/timber, as well as charcoal, should also be represented, problems encountered due to the illegality of harvesting these resources resulted in none of the respondents being willing to discuss these points. Outside the official survey, respondents explained that to build their household's timber would be extracted. Based on the 10 respondents who discussed this, the average times since extraction lay between 20 and 30 years since the timber and poles had been extracted from the forests for house building. Regarding charcoal this had been a practice which had been outright banned in the watershed with possible fines imposed for those involved, also sale of charcoal and fuelwood had been carried out previously in the city centre of Charikot, but as of current this practice was banned, and police officers would be vigilant to such activities. The production/use of charcoal though not seen personally through my stay in the region was, practiced by users, according to several informal discussions with interviewees and other key persons uncovered.

Table 42: Environmental income and socio-economic characteristics, Dolakha District, Nepal, 2012.

Variable	Coefficient estimate	SE	T ratio	Prob>t
(Constant)	-48	74	-0.647	0.52
Sex of HHH	9	35	0.26	0.794
Marital status	20	10	1.93	0.059
Age of HHH	-2	1	-1.57	0.122
Education	3	11	0.30	0.767
Other skills	3	8	0.33	0.744
Occupation	-9	7	-1.21	0.230
Years lived in CFUG	0.01	0.5	0.14	0.888
Land size*	63	22	2.80	0.007
Location (CFUG)	0.2	0.5	-0.44	0.665
HH size*	14	4	3.29	0.002

N=68; R square adj= 0.176, F=2.432 $p< 0.05$, * indicates statistically significant result.

From the regression, two relationships are shown to be significant that of household size and environmental income dependence, were larger households are more dependent on environmental resources. This of course may be a relative relationship as the larger the household, the more energy and materials are needed from the environment/forests. The second relationship is between the land size of the household and its environmental income. Here the greater the land size of the household, the less of the income is derived from environmental income but also as shown before, the higher the respondent is on the wealth-ranking, the less the respondent extracts fuelwood environmental resources.

Table 43: Forest environmental incomes by wealth-group (USD) , Dolakha District, Nepal, 2012.

Income source	Poor (USD)	% Total	Middle (USD)	% Total	Rich (USD)	% Total
NTFP (sale)	48 (144)	31	0 -	0	0 -	0
Forest environment	105 (105)	69	74 (69)	100	56 (48)	100
Timber/poles + Charcoal	0 -	0	0 -	0	0 -	0
Total income	153	100	74	100	56	100

N=68, Standard deviation in brackets

As seen from the table the "poor" group extracts a larger total quantity of forest/environmental resources than the other groups, also this is the only group deriving income from NTFPs. As mentioned earlier this can be attributed predominantly to the fact that only the lower castes are socially accepted by the community to extract and sell NTFPs. Lastly timber/poles and charcoal have been grouped together; this is because although respondents evidently use and have use for these resources, it was not permissible to discuss the matter on account of the community's strict rules regarding the use of these products to any degree.

Table 44: Forest environmental incomes by wealth-group (USD), Dolakha District, Nepal, 2012.

Source	Thangsa Deurali (USD)	% total income	Chyanse Bhagawati (USD)	% total income
NTFP (sale)	1.5 (7)	2.5	1.5 (8)	2
Forest/environment	58 (52)	97.5	110 (102)	98
Timber/poles + Charcoal	0 -	0	0 -	0
Total	59.5	100	111.5	100

The table dividing forests environmental income between CFUG, again shows that the major part of the income is from fuelwood (environmental income). There are no data on timber/poles and charcoal, and the NTFP income is divided equally between the two CFUGS's. The only difference between the CFUGs is seen when the total incomes from forest/environmental are compared, Thangsa Deurali extracts on average just under half of that which Chyashe does.

5.4.3 Non-farm income

Non-farm income is the second most important income source for the users in general accounting for 38% of total income of which shops and trade and transport activities were most important. Looking at non-farm activities and wealth-ranking groups, the "middle" group both had the highest average income and were most dependent on this income source, while the "poor" group is the second most dependent on this activity and the "less poor" group least.

When looking at location, the largest differences are found in Thangsa Deurali's income from non-farm activities accounting for 15% while Chyanse Bhagawati accounting for 59% of the total environmental income. In monetary terms, Chyashe has on average over five times as high income from this activity as Thangsa Deurali. With non-farm activities associated with a higher level of diversification in general, it stands to question whether diversification is a

positive livelihoods strategy when the majority of the household income derives from “often” market dependent and demand driven activities which swing with the conjectures of the surrounding and national economic landscape. Thangsa Deurali although highly dependent on agriculture for their income are still mostly only at the mercy of climatic conditions in safeguarding their livelihoods, while Chyanse Bhagawati are under pressure from climatic conditions but also dominantly threatened by the whims of market demand.

5.4.4 Remittances

Remittances in general do not constitute a vital factor in most households income security accounting for only 8% (151USD) a year towards the total income of 1965USD. The larger monetary part of remittances comes from transfers made by family members living often in larger cities or abroad. These types of funds would typically be relevant for families that have had the possibility of educating their children to a sufficient level, so that they may acquire a job providing surplus funds to send home, typically “middle” and “less poor” users. One related observation made during the field study was the chronic queue outside Western union, at every working day of the week in Charikot centre. Stately remittances for self-sustaining farmers in the form of pension are regulated to 500NPR per month (5USD) and therefore up an almost insignificant proportion of the total sum of remittances.

When looking at remittances by wealth-ranking groups, the middle group is most dependent 10% of total (224USD); the “poor” group receives least 108USD, but it still makes up 8% of their total income and the “less poor” group are in the middle.

The total sum remittances make up for “the total income” is the same when looking at USD between the two CFUG sites, but the difference in total incomes when comparing the CFUGs shows it makes up 5% of total incomes for Chyanse Bhagawati users and 10% in Thangsa Deurali.

In conclusion, remittances are not vital but yet an important factor in most respondents income situation in the area, both remittances from external sources and those received from family members; it is also a trend in general for Nepal as a country, were social services and funds are not available or at least not typically enough to sustain those outside the working-age group or indisposed for other reasons, it is expected traditionally that family members when capable work towards taking care of their household.

5.4.5 Perceptions of livelihoods and incomes

This section presents the general perception of financial security in general among all respondents as well as within the wealth-ranking groups and between the two CFUGs. First in general 94.1% of all respondents consider their village/community a good place to live while 4.4% find it O.K. and only 1.5% did not find it a good place to live. On a similar note, 97% feel comfortable and safe in their community. When looking at whether the household's income has been sufficient over the last 12 months to cover the needs of the household, the data from all respondents' shows 30.9% feel that their incomes are sufficient, and 33.8% find it to be reasonable, however, a slight majority with 35.3 % don't find their income to be sufficient. When looking at a longer time scale of whether the household feels that it is better off today than 3 years ago 63.2% believe this to be the case while 25% find no difference and 11.8% find their situation has gotten worse over the last three years.
In the table below the data from the same two last questions is presented divided into both wealth-ranking groups and the respective CFUGs.

Table 45: How well-off households perceive themselves. , Dolakha District, Nepal, 2012.

	Poor	Middle	Less poor	Thangsa Deurali	Chyashe
Household income sufficient over last 12 months % reasonable or better	42.3%	60.9	100%	72.2	56.7
Better off today than three years ago % (1) about the same(2) Better off	(1) 15.4 (2) 61.5	(1) 30.4 (2) 69.4	(1) 31.6 (2) 57.9	1= 23.7 2= 68.4	1=26.7 2=56.7

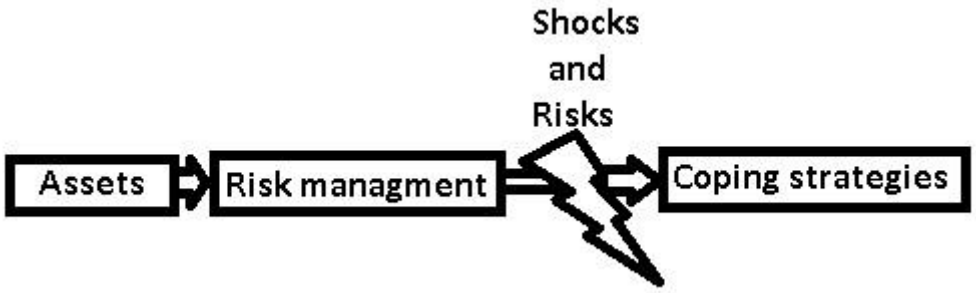
Regarding household income sufficiency over the last 12 months the wealth-ranking groups show clearly that the "less poor" group have had no problems with income while the middle group over a third have and within the poor group the majority have had problems meeting their needs with only 42.3% finding their incomes to be "reasonable" or "good"
Curiously when divided into CFUGs, Thangsa Deurali has 15.5% more respondents who feel that their income has been sufficient over the last 12 months while they only earn 70.2% of the average wage in Chyanse Bhagawati.

5.5 VULNERABILITY AND RISKS

Ellis (2000) defines Vulnerability and risks as "Vulnerability has the dual aspect of external threats to livelihood security due to risk factors such as climate, markets, or sudden disasters, and internal coping capability determined by assets, food stores, support from kin or community and so on" (Ellis,2000 :62).

Vulnerability can be handled according to Ellis either through coping strategies or risk management; coping strategies are mainly activities at the household level and reaction to a shock which has already occurred or perpetual, while risk management is a preventive approach where households prepare and adapt for potential and likely shocks before the event takes place. Not all consequences of shocks can be absorbed by a risk management strategy, as some shocks and risks may overwhelm the best laid plans; coping strategies are then set in place as a reactive strategy, shown in the table below.

Figure 10: Risk management and coping strategies from (Ellis, 2000)



5.5.1 Vulnerability

The theme of vulnerability looks at how people pursue their livelihoods within the context of the external environment, and their exposure to negative effects or risk posed by the external environment. It also addresses individual's level of resilience to such risks and their ability to overcome and recover from shocks brought on by the external environment.

5.5.1.1 Agricultural Vulnerability

It is evident that there are several problems of production in the case study region as 77. 1% of respondents answered yes to problems limiting their agricultural production. Of these reasons, the most prominent were problems of Irrigation (21 cases), fertilizer lack off (21 cases), weather problems of rain shortage (11 cases), 9 cases referring to monkey attacks and 6 cases of insect problems. Problems regarding access to water are obvious in this survey, and relevant coping strategies are limited, increased access to a water source may be possible through improving the irrigation infrastructure at the site, also investments in water wells may alleviate households at times of water shortage. These problems may also be closely linked to problems of fertilizer (usually lack thereof) and in turn problems of insects in agricultural production. Monkey attacks were a response that was quite surprising; several respondents reflected that, on account of forest stocks increasing, the forest limits have encroached upon properties. In confronting this increasing threat many respondents had erected fences and scarecrows around and on properties to deter animal intruders.

Lastly there were not many cases recorded of conflicts over access to land for agriculture over the last three years, with (21. 4%) having such problems. However, of these conflicts 93. 4% have been of intermediate or higher severity. These matters could be resolved at a personal level, or potentially be taken up at the village"Tole" meetings.

5.5.1.2 Livestock Shocks

In total 60.7% of respondents have had problems that limit their livestock production in some way. The table below describes in detail the nature of these problems followed by how the respondents believe some of the challenges may be overcome.

Table 46: Livestock problems, Dolakha District, Nepal, 2012.

Livestock problem	Total accounts
Lack of fodder/ too expensive	21
Disease	8
Death	5
Medicine (scarcity/ too expensive)	3
Water Shortage	1

The number one registered problem is that of lacking fodder or that the individual cannot afford supplementary fodder products for their livestock, followed by disease and death of

livestock which may be grouped together. Supplementary reasons asserted by the respondents are animals are too expensive to keep, the livestock, especially goats, tend to eat other crops and that wild/domestic animals attack their livestock. The problems limiting livestock production were shown to be high (60. 7%) of respondents had or were presently experiencing problems inhibiting their production of livestock. The most obvious reason experienced with livestock was lack of medicines and insufficient funds to treat and keep livestock healthy.

Suggestions of how the respondents might think some of these problems could be resolved where also posed, leading to the following suggestions. Investments should be made for structures that can house livestock, restrictions on access to natural fodder within the CFUG should be relaxed, and lastly action should be taken to improve the infrastructure for water supply within the community so that the livestock may more reliably have access to water.

5.5.1.3 Income vulnerability

In total 59.1% of respondents had experienced major income shortfalls to the household over the last 12 months when looking in more detail as to the cause of these shortfalls an array of reasons were given indicating the typical causes of such shortfalls. The table shows the compiled type and economic implications of the most typical reasons, as well as coping mechanism (were possible).

Table 47: Serious income shortfall description, Dolakha District, Nepal, 2012.

Serious event	Total	Total Loss (USD)	Range (USD)	Average loss (USD)	Coping mechanism
Death/serious illness in family (productive age-group/adult)	28	28,929	121 - 8,100	1,071	-Family help -Loan from SFP -Loan from village -Extra labour
Major livestock loss (drought, disease, etc.)	8	2,294	30 - 1012	287	-Loan from village
Loss of land	5	5,569	1519 -	5,569	-Loan

			10,125		
Serious crop failure	3	243	51 – 122	105	-Loan - Help from neighbours

From the table, death or serious illnesses have been the leading cause for economic shortfalls among the respondents, and the leading coping mechanism for all causes has been taking loans from different actors. When looking at the expenditures of the varied forms of crises, it is clear that there is a gap between average incomes the households make per month and the average cost of resolving the shocks, as can be seen when looking between the average income table below and the average cost of events above.

Table 48: Mean household income categorized by wealth-ranking group, Dolakha District, Nepal, 2012.

Mean:	Poor	Middle	Less Poor
Total Household income USD/Month	107	176	227

N=68

When set side by side it is clear that these types of serious shocks can have dire effects on the household's economy. Especially in the most extreme cases taking into account the most common method of coping with them is through loans, many households are apt to at times fall into perpetual debt.

CHAPTER SIX – FORESTS MANGEGMENT, REDD+ AND COMMUNICATION

This chapter presents the general level of knowledge among forests users regarding climate change, as well as basic rules and regulations, then user's knowledge and perceptions of REDD+ including the current outcomes of the project. The last section reviews the type and level of communication practiced at present.
Establishing a general picture the section may shed light on the whether what is practically followed through by users and their personal standpoints are in congruence.
In conclusion, the discovering whether the principals and guidelines enforced by the local community and promoted by REDD+ reflect a realistic and practical roadmap for forest conservation and livelihoods development.

6.1 USERS GENERAL FOREST RELATED AWARNESS

First a general assessment of the relationship between forest and climate change is presented from the perspective of both users, and key persons, then user's awareness of forest rules and regulations are described. Finally how users perceive the rules and their adherence to them is reviewed as well as their relationship to other users, and awareness of local "spiritual sites".

6.1.1 Users and key person awareness of Forest climate change link

When asked for their perspectives on the relationship and climate change, 79.1% of respondents say that there is a connection with forests and climate change, the table below shows the relationship users stated on this theme.

Table 49: Users perception of climate change/forest relationship, Dolakha District, Nepal, 2012.

Relationship	Frequency	Relative importance (%)
Forest degradation = less water	13	26.5
General negative impact	12	24.5
Forest degradation = Landslides	9	18.4
Forest degradation = Climate change	3	6.1
Habitat destruction /species decline	3	6.1
Soil erosion	2	4.1
Increased temperature	2	4.1
Lack of forest resources	1	2

N=35

The top three responses of the respondents of those who answered this question focus on local effects of climate change such as themes on water, landslides and a "general negative impact". Landslides and "less water" are clearly important for a population highly dependent on water for agriculture and their livelihoods in general. Landslides can affect both the possibility of carrying out their livelihood activities as well as posing a direct threat to individual's safety. Although only 35 respondents chose to specify the direct relationship between forests and climate change, all but 2 respondents stated that the degradation of forests would have direct negative consequences for themselves or a third-party.

6.1.1.1 Local leaders/key persons assessment of forest/ climate change relationship

The relationship between climate change and its impacts was also assessed in the paper presented locally in Charikot "development activities of good governance and payment for community forest through REDD+ in Nepal" for the 2011, 2012 by Agar Tum Mil Jao – Zeher. In establishing the relationship between forests and climate change, the opinions and information were based on the responses from Chyanse Bhagawati Community Forest User Group as well as through the representative of different organizations. Their list in comparison to the list above describes the effects of climate change and is shown below (direct translation from Nepali).

(1)Mountains are turning black.

(2)Water sources are drying up.

(3)Decreases in agricultural productivity.

(4)New diseases are seen.

(5)Snow Lakes are collapsing.

(6)Snow landslides

(7) unusual weather patterns.

(8)Extreme cold on winter season & extreme hot on summer season.

(9)New species of plant are seen. Old plants are vanishing.

(10)Germination and growth of flowers, fruits and crops on unusual time.

(11) Health problems in both women and children.

(12)Rainfall occurrence not in accordance with the season.

(13)Wildlife extinct.

(14)Fruits and flowers disappear.

(15)Bird migration and bird extinct.

(16)Flood and landslide.

A significant difference between the two lists is the scale which climate change will have an effect on; where the users list describes primarily physical implications, local and direct effects which are experienced by the inhabitants of the communities. The report takes a broader perspective and emphasises changes on a larger scale; some points of which although vitally important nevertheless are perhaps not noticeable or even as directly relevant to the users interviewed at the pilot project site.

6.1.2 Forest regulation awareness

(95. 7 %) of all respondents were aware that they were residing within the perimeters of a community forested area and in addition 94 % were aware that they had access to the resources in the community forests. These are basic premises, but an important baseline to establish, indicating an overwhelming majority understand that they reside within the community forest, and the resources are common resources.

When asked whether there were any surrounding forests under the jurisdiction of state/public authorities (81. 4%) did not believe that there were any, showing that the jurisdiction and acceptance of the community forest model is well established among users.

6.1.2.1 User awareness of community forest rules

When asked whether the "user" belonged to the nearest CFUG 75.4% answered that they did, in fact, all respondents by default do belong to the nearest CFUG, but a positive response from three quarters of respondents show that most respondents are aware of this.
When asked what type of rights the user had to these areas and resources; whether they were individual or common rights, there was some uncertainty to the definition of "rights" among respondent, but after explaining the definitions 92.1% believed that the common rights defined the access to the community forests; rights are, in fact, common, and is reflected in the majority of the respondent answers. The results from these criteria come under Elinor Ostrom's (Ostrom, 1991) design principles, of clearly defined boundaries of a resource.

On the matter of which resources could be extracted or in other ways used, 81% answered that there are specific restrictions on certain forest products while the remaining respondents believed that there were no such restrictions. The majority are aware that there are particular restriction on which resources may be extracted which are in general that; dead/dry material is to be harvested while raw/live forest-products are to be left alone, with the exception of leaves etc., for fodder, also live material with "crosses" applied are not to be removed.

6.1.2.2 Users forest rule satisfaction

Conjoined with the widespread knowledge CFUG rules, the majority of respondent were also satisfied with the rules that govern the use and management of the community forests; 73% were somewhat satisfied, and 19% were very satisfied leaving 7.9% somewhat dissatisfied and 3.2% very dissatisfied.

Of those not satisfied, the most prominent reasons given were that their interests were not taken into account, they believed there was an unequal distribution of use and benefits, too strong limitations on the use of forest products and finally that the method of governance in its created opportunities for corruption.

Those who wished elaborate on the reasons for their discontentment gave the reasons of; lack of transparency, illegal use of forest resources, some users use forest resources extravagantly while, at the same time, others were denied access. Again it must be noted that these complaints are based on only 4 respondents out the total 68 respondents. Regarding the majority (92%) corresponding of 47 people who were either somewhat satisfied or very satisfied with current rules the reasons for their satisfaction are shown in table below as presenting it in with all the information reflects a perception that most users have few qualms with the current practices and rules.

Table 50: Perceptions of CFUG forest use rules, Dolakha District, Nepal, 2012.

Reason for positive perception of forest use rules	Disagree	Disagree somewhat	Agree somewhat	Agree
My/our interests are well taken into account (%)	-	1.8	15.8	82.5
Clear boundaries/outsiders are kept out (%)	5.4	3.6	7.1	83.9
Equal distribution of use and benefits (%)	-	-	7.1	92.9
Good access to resources (%)	-	-	15.8	84.2
Rules are followed (%)	3.5	-	10.5	86
Local community is involved in making rules (%)	1.8	5.5	10.9	81.8
Conflict resolution mechanisms are appropriate (%)	1.8	1.8	22.8	73.7
Proper enforcement of rules/sanctions (%)	1.8	14		84.2
Good management and coordination (%)	1.8	-	19.6	78.6

Of those who wished to elaborate further regarding this question, the reasons for their contentment with rules are among the following. Activities are done at a common level, use and access to forest resources depend on personal capability, it is positive that there is financial support from CFUG for the welfare of the forest as well as users, there is frequently held tree planting events by the CFUG, cutting of raw trees and other raw forest resources is punished, the rules are in affect for the benefit of the forest, it is good that some medicinal plants are kept secret and finally there is a belief that there is transparency in the financial practices.

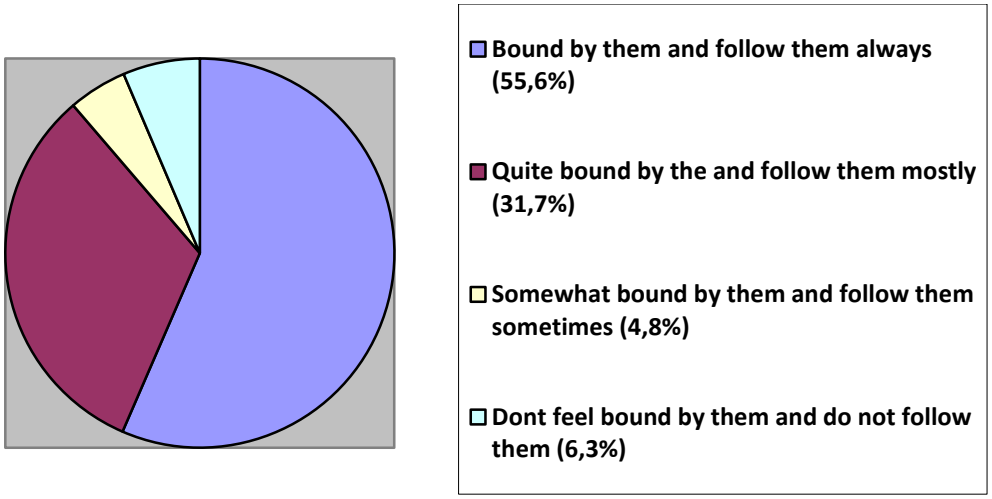
The overarching responses with contentment regarding the current rules are shown to be positive; one reason for this may be the inclusion of local peoples in the formation of these rules. In regard to whether, the local community of the users had developed local measures for the conservation of their surrounding forests (91.4%) responded that locally decided upon measures had been made. In relation to the user's contentment with these measures only (4. 8%) were dissatisfied, the majority were content and somewhat satisfied (83. 9%) and the remainder were very satisfied with ease locally devised measures.

As such, referring to Elinor Ostrom's (Ostrom, 1991) design principle of mutually respected sanctions for rule violations as well as a corresponding conflict resolution mechanism. This outcome fulfils one of the principles describe indicators required to achieve long enduring resource governing institutions characteristics required for a system to be successful.

6.1.2.3 Users adherence to rules

The last section described how users are content with the current forest rules and regulations both imposed and locally devised. Although users may be positive to the rules in theory it is also of interest to uncover if they actually follow them personally, the pie-chart below illustrates the results from this inquiry.

Figure 11: How respondents feel towards forest rules. Nepal, 2012.



N=68

The pie- chart indicates that 87.3% of all respondents do feel bound by the community forest rules to some degree and do follow them. Strengthening the case that the rules set in place both have public support and are followed by users. But how informed and updated users are

on current forest regulations and practices are of importance as well, therefore, an inquiry was made to how updated users were on the current rules and regulations of their particular CFUG and whether the users thought there had been any changes in rules that govern the use and management of the CF over the last three years. An evident divide was uncovered; 39. 7% believing there have been modifications to the rules while 44. 4% believe there have been no changes (15. 9% were not aware whether for or against). This raises the question of although users by majority accept current rules while also feeling bound by them, it stands to question which "rules" users are following.

Looking away from whether users had been updated on the current rules, they were also asked how they felt about the rules as they stood and changes that had been made in the last three years rules as they understood, whether they had had influenced the users use and access to the community forests. 70. 4 % believe the changes in rules have improved their livelihood context somewhat (22. 2%) believe the changes have had no practical implications and did not affect their livelihood context in any ways and 7. 4% find that the changes made have had a negative impact on their livelihood situation.

Regardless of what changes may have been made during this time it is here apparent that not everyone can be right, in conclusion although the majority of respondents are satisfied with the community forest rules and also follow them, the fact that the group is clearly divided on which rules apply to them as of current, indicates that the process of communication is functionally ineffective.

6.1.2.4 Users relationship to other forest users

How users interact and feel towards other fellow users using the community resources is also an important inquiry, respondents were asked to rank how they felt their relationship with other forest users, in terms of access to and use of those forest resources (fuelwood, poles & timber, charcoal) under the current rules and regulation system. Only 9.1% of the respondents found the relationship to be bad, while 16.7% found it fair and 74.2% commented that the relationship was good. There were, however, no respondents who answered that their relationship was very good. These responses indicate that there is a general positive inclination towards the current method of distributing the forest resources.

Although the percentage of respondents who found their relationship to be bad was fairly low, it may still be interesting to look deeper at why they found the relationship to be so, in detail. The table below indicates the main reasons respondents found it to be so.

Table 51: Users perception of access and use of forest products, Dolakha District, Nepal, 2012.

Response	Disagree	Disagree somewhat	Agree somewhat	Agree
No cooperation (%)	38.5	7.7	7.7	46.2
Poor communication and dialogue (%)	35.7	7.1	35.7	21.4
Ethnic conflicts (%)	71.4	7.1		21.4
Unequal distribution of rights and benefits (%)	42.9	7.1	28.6	21.4

Other comments on why relationship and access to and use of forest was bad include, access is based on ability (those who cannot gather the resource physically themselves miss out), also the "higher class" dominates the extraction of resources, the use of the forest is impractical, the poor are dominated, illegal use and finally the rich take advantage of the resources unfairly.

6.1.2.5 Sacred forests

Uncertainty was evident when asked whether there were any sacred forests located in the surrounding forests of the community; 84.7% thought there were no such areas while 15.3% were sure that there were. Those who thought that there were sacred forests in the surrounding community forest were adamant that this was the case, though many referred to the nearby sacred area of Kalinchowk which is not a part of the community forested area. Still those who were sure that this was the case, 62.5% felt that those forests were also sacred to themselves. This split between users of whether there are in fact sacred forests in the area, could have detrimental consequences, if the areas are not given due rights under a potential expansion of the community forested areas.

6.2 REDD+ IMPLEMENTATION

In gauging the success of the project, it is important to uncover to what degree the users are first of all aware of the project existence and further to what extent the rules and mechanism are understood, accepted and followed. This sections aims to establish an overview the progress of implementation of REDD+ in practice through analysing and evaluating the local population's relationship and attitude towards the integration of REDD+ in the Charnawati watershed CFUGs.

The first objective specifically attempts to uncover the basic understanding of the concept of community forest and the fundamental knowledge of the REDD+ project and the principles upon which it is based secondly how they are perceived by the local populous.

6.2.1.1 Users general REDD+ knowledge

When interviewed only 33.3% (N=63) had ever heard of either the REDD+ initiative or carbon trading in general. When put through the one-way Anova test, there were no significant difference between wealth-ranking groups on this knowledge; an independent t-sample did not show any significant relationships for CFUGs either.

When asked whether they were aware of whether their CFUG was a part of an on-going REDD+ again only 37 % (N=54) were aware of the fact (that their CFUG was a part of the REDD+ pilot project, again no significant differences found between wealth-ranking/CFUG groups was found in the Anova test. Although a third of the respondents are aware of the REDD+ project on some level, it may be fair to assume that it is hard to gain traction if the communities REDD+ is working with are not even aware of their presence. Knowledge of the Nepal Swiss community forestry project was widespread among respondents, but it may be added that this project has had a presence in the area in the period 1990-2011. On a related note; a link to the low outcome may be connected with the fact that only (12%) had received any type of informational training regarding REDD+. Furthermore, 94.3% of respondents were not sure of the process of selecting candidates for REDD+ training and information sharing. Tentatively it is fair to note that this low outcome may have a detrimental effect on the potential success of REDD+, as well as their lacking presence in any shape or form in the area.

Even when asked if they were aware of any other organizations affiliated or involved with the same kind of work as REDD+ only 12.9% knew of any such organizations working within their respective areas.

The results from these inquiries show that the public awareness of REDD+ or related organisations is low among respondents belonging to affected CFUGs, as the success of an initiative such as REDD+ is wholly dependent on the actions individuals take for the well-being of forest systems as a whole, it is imperative that those affected within such a project be informed at least of the bare minimum of the fundamental goals of the project for it to be feasible to expect a positive development of REDD+ in the Charnawati watershed.

6.2.1.2 Users perception and adherence to REDD+ requirements

This segment sheds light on the values and dependence CFUG members have on the forest, separate from the rules created in union by the community as well as rules imposed upon the users by a third party.

When asked whether the users would stop clearing forest land for agriculture, as well as stop harvesting wood resources from the forest (fuelwood, poles/timber and/or wood for charcoal production) if in return they would be compensated for their losses. It is clear at least from the results shown below that although important requirement for REDD+ have traction among a number of users, the clear majority simply cannot compromise or substitute access to forest products, regardless of level of compensation or mechanism.

Table 52: Compensation for reduced forest use, Dolakha District, Nepal, 2012.

Compensation mechanism	Disagree	Disagree somewhat	Agree somewhat	Agree
By payments (%)	57.8	7.8	6.3	28.1
More employment opportunities (%)	40.6	6.3	15.6	37.5
Alternative sources of livelihoods (%)	57.8	6.3	10.9	25
Better social services in community (%)	54.1	11.5	6.6	27.9

N=64

When asked if there could be any other way they may reduce or stop using forest products completely, the most cited answer was they may be motivation if they were provided with an alternative substituting source of energy.

In delving deeper into the motivations and values of those who could not be motivated by any means and those that could be motivated by at least one of the available incentives. For those that could not be motivated to stop clearing forests/stop harvesting wood resources from the forest the reasons for this can be conclude concretely from the data below.

Table 53: Explanation from users who could not be motivated by compensation to reduced forest use, Dolakha District, Nepal. 2012.

Response	Disagree	Disagree somewhat	Agree somewhat	Agree
My livelihood depends too much on the forest %	3.2	-	3.2	93.5
Forests have a strong cultural value/ It is wrong to accept compensation to stop present use %	3	3	15.2	78.8
Money cannot compensate for reduced use of the forest %	-	3.4	10.3	86.2
I do not think I will be compensated enough %	-	-	6.1	93.9

N=33

The table indicates that respondents simply rely too heavily on forest products to be able to reduce their current activities, also even if money could be offered in compensation most users would not find this to be a satisfactory substitute for all the services provided by the forests. Moreover even if users were to be compensated they almost all feel that the compensation would not be enough, the services offered by the forests on account of strong cultural ties and these services are too vital to their livelihoods to be forfeited or substituted.

Table 54: Explanation from users that could be motivated by compensation to reduce forest use, Dolakha District, Nepal, 2012.

Response	Disagree	Disagree somewhat	Agree somewhat	Agree
Compensation will make me better off (%)	3.6	-	28.6	67.9
Forest protection is important (%)	-	-	10.3	89.7
It will improve our environmental conditions (%)	3.7	-	14.8	81.5
I need more income (%)	-	-	20	80
It will improve the conditions of our village/community (%)	4.2	-	20.8	75

N=29

For those willing to be compensated by at least one of the options in the first question (financial payments, employment opportunities, alternative livelihood sources or better social services). Respondents found that reducing forest dependence through one of the compensation methods stated above would have positive environmental impacts on their surrounding areas as well as a positive impact on their local community and for their individual households.

A main concern for users willing to accept compensation for reduced forest dependence was that they perceived fuelwood as detrimental for their health and yet they felt that, at present, that there was no viable alternative. Concern was also voiced for the increasing price for fuelwood. Based on this these statements, if changes could be made to compensate households financially or an alternative energy source is provided this group was willing to reduce their dependence on the forests.

At the same time, one may reflect when looking back at the previous section that 65.6% of all respondents could not be swayed by financial payments to stop/ reduce forest product use. Financial being an important instrument in the REDD+ mechanism; it may be argued that at least for the case study at hand, users may find financial compensation to be a poor substitute for an obviously vital component of the majority's livelihood situation.

6.2.1.3 Users Motivated by alternative energy source

Table 55: users motivated to stop reduce forest use by alternative energy, Dolakha, Nepal, 2012.

Energy source	% motivated by compensation medium
Biogas	52.9
Electricity (general)	32.4
LPG	14.7
Solar	-
Total	100

N=34

As the table shows only 50% of all respondents could be motivated by an alternative energy source. However as discussed earlier, the reduction in forest product use is necessarily dependent on users being provided with a substitute which may adequately compensate for the loss of forest product service the individual is dependent for their livelihoods.

From the table, Biogas is the preferable form of compensation as seen by the users. Programs working with installation of "biodigesters" are already present in Nepal. As in a program called; Community owned biogas for livelihood enhancement (COBLE). COBLE as stated verbatim on their site is a program in which "Renewable World is working with local partner Biogas Sector Partnerships Nepal (BSP-N) to install biogas digesters in three communities in the districts of Kapilvastu and Sindhupalchowk in the Western and Central Development regions of Nepal."(COBLE).

The program aims to provide several benefits which are relevant to both CFUGs as they predominantly consist of users which are; forest dependent, mainly working within agricultural professions, suffer from detrimental on health due to the burning of fuelwood. The benefits (COBLE) through the instalment of "biodigesters" hope to provide are the following;

• Increased income for local dairy farmers as processed dairy products can be sold for longer and for higher prices as the durability and safety of the product is enhanced.

• Economic benefits for vegetable farmers within the community as the slurry output from the biogas plant is an excellent fertiliser with nutrients in a form more easily taken up by plants – increasing yields and reducing costs.

• Reduced dependence on fuel wood and fossil fuel (saving both costs and carbon emissions and preventing further environmental degradation)

• Improved sanitation (systems can also be designed to take human waste directly from latrines).

• Improved health through using excess biogas for clean cooking and lighting and reducing indoor air pollution from burning grass, wood or animal dung which kills over 2 million people, mainly women and children, each year.

(Information from COBLE website.)

In conclusion, similar initiatives as the one presented above, may be a viable tool for REDD+ in providing a carbon stock increasing, sustainable approach towards working fulfilling its "triple win" strategy (climate, biodiversity and people). The two other alternatives in the table may be less realistic or viable to incorporate into the REDD+ funding scheme. As providing direct investment/funds towards an electricity scheme such as landlines/hydroelectric infrastructure would demand a gargantuan budgetary and planning mechanism only possible at a national level. However, this said Hydro-power is a relatively clean energy source and a promising prospect for the Dolakha district, and Nepal in general. As the country at present only makes use of 600MW of a potential pool of 40,000MW (IPPAN). Compensating users with LPG may potentially reduce household's dependence on fuelwood, however, when considering the requirements for the "triple win" approach. LPG produces 70% of CO2 if substituting for coal (LPG, 2013). This ratio would be negative when comparing with fuelwood (Fuelwood emissions, 1833 kg co2 per tonne approx. LPG emissions; 41900 MJ = 1.000Tonne oil equivalent, 41900MJ LPG= 2933 kg co2 emissions per tonne approx. Adding emissions from transportation of LPG would make would make the total co2 emissions difference even greater. Therefore, substituting fuelwood for LPG would have a negative effect creating higher levels of climate harming pollutants, leaving the REDD+ (climate) goal as zero sum or even minus sum game.

6.2.1.4 Long term project success perceptions

When asked whether users believe in the long term success of community based forest management a majority of (58.7%) believed that it will succeed, (19. 5%) did not believe in it and (21. 7%) simply could not decide whether the project would be viable in the long run or not (total N=46). An underlying reason for enthusiasm regarding the success of community forestry was as several respondents stated "the forest was their (the community's) forest and their community". Thus if they worked together they would be able to "make it work". Furthermore, the steps the users were willing to commit to themselves in making the community forest a sustainable system (avoid unsustainable deforestation) are summed up in the table below.

Table 56: Users proposals for decreasing forest product use, Dolakha District, Nepal, 2012.

Response	Disagree	Disagree somewhat	Agree somewhat	Agree
Stop expansion of farming activity in forests (%)	2		2	95.9
Reduce wildfires in forest (%)	3.2		14.5	82.3
Stop harvesting fuelwood (%)	58.1	9.7	11.3	21
Stop harvesting poles/timber (%)	59	13.1	6.6	21.3
Stop producing charcoal (%)	56.3			43.8

N=61

When asked whether the conservation measures being carried out are having an effect on the way users use the forest resources, the majority found that they didn't have a big impact. This may, reflect the results shown above, that many users are unwilling to stop harvesting firewood and producing charcoal and therefore, the conservation measures do not concern them. As users are not able or willing to reduce forest product dependency, and there not sufficient mechanisms at presently in place to monitor the current extraction behaviour of users. This poses a problem for the success of REDD+ as the reduction of forest products are primary principles of the success of the REDD+ mechanism, therefore there is a violation of (Ostrom, 1991) design principle of "active monitoring" in order to achieve long enduring resource governing institutions

Table 57: Are users being affected by conservation measures, Dolakha, Nepal, 2012.

	Not at all %	Not so much %	Quite a lot %	Very much %
Have forest conservation measures affect your way of using the forest?	12.9	72.6	12.9	1.6

Concluding remarks

The fact is that the majority of all respondents could not be motivated by monetary compensation to stop harvesting forest products. Incentives such as added employment opportunities, other sources of income and better social services did not have popular support either, but may be motivations that could become important, if combined with increased employment opportunities. Assessing this outcome pragmatically it seems evident that although the compensation mechanisms proposed to the respondents are all factors that would have positive impacts on the local livelihoods situation. One cannot avoid the fact that forest products extracted and used, because they are vitally necessary for the individuals that depend on them. So although there are alternatives to timber, coal, fuelwood and fodder, it is clear that if the potential substitutes are not practically locally available and/or economically viable, it is understandable that users are not willing to sacrifice their access to a fundament of their livelihoods. The five main principles of the REDD+ initiative promote "climate" and the reduction of greenhouse gas emissions, "biodiversity" through enhancing biodiversity and ecosystem services, "livelihoods" through sustainable and equitable development. These first three principles are deeply intertwined in such a way that they may not be easily untangled through the middle of "cash". The fourth principle "rights" of the indigenous peoples of local communities must be respected. Through the fifth pillar "fair and effective funding" defined as providing immediate, adequate and predictable funding would be as such if it in reality practically worked towards providing a viable substitute or means of increased efficiency of the "forest products" already in use, the rights of the indigenous population could be respected will also tackling the first three pillars of the REDD+ initiative. This subject will be explored further in the next chapter where REDD+ current outcomes and distribution will be discussed.

6.3 REDD+ DISTRIBUTION AND OUTCOMES

This section moves on to the analysis of the actual outcomes and effects of the REDD+ initiative on the two CFUGS in the Charnawati watershed as of current. We begin first with the data collected through the household survey, and then taking the perspective of the local leadership and mezzo level in general. An attempt is made to see whether the situation described by the local populous is in accord with the views presented at higher levels, in other words "is theory being carried out in practice". This includes how benefits and costs are being distributed physically, which mechanism distribution is based on and concluding with the practical consequences of the REDD+ project.

6.3.1 REDD+ fund distribution in Charnawati watershed

The CFUGs have decided to distribute REDD+ funds through a loan system where the interest rate as stated by the chairpersons of both CFUGs are to be set at zero per cent, and the loans may only go to "lower caste" peoples or otherwise financially troubled CFUG members.

The respondents were asked in the household survey about whether they had received such funds through the carbon project. Firstly if the household had received any cash or in kind payment or compensation related to any carbon forest services over the past 12 months, then specifically regarding if they had received any financial or material support from the REDD+ project in particular. The first question provided 7 positive responses and the second 8 positive responses, as the first question encompassed all possible carbon projects and the second only the REDD+ project an error must have occurred as the first gave fewer responses than the second question.

The individual that that received such funds, gave figures that varied to a degree, therefore it therefore rather than presenting an average all values will be presented. The distribution was as follows; 10 USD for (3), 15 USD (1), 40USD (1) and 120USD (1) person, the remaining two respondents could not recollect the exact amount of funds received. So in total 8 out of the 68 participants had received funds from the REDD+ project amounting to 205USD for the latter half of 2012.

As mentioned both the chairpersons of both Thangsa Deurali and Chyanse Bhagawati state that REDD+ funds are to be allocated specifically to those in the least well of economic

situations. However based on the wealth-ranking and taking into account the average income of all respondents, the number of respondents which fit the category of "poor" is a substantial proportion (38.2% approx.). Which is not represented through the household survey data, as only 8 out 68 respondents received funds (12% of total)? Even when one disregards the low number of REDD+ funds recipients, the total received payments only amount to 205USD total 23USD average per person, which is meagre amount even when comparing to the average incomes of the "poor group" (1284USD.Yr). The point can be made that since not all members of the CFUG had been contacted for the household interviews it is clear that much of the funds may (statistically) have been distributed to other members not interviewed under the study.

6.3.1.1 Theoretical fund distribution

This segment presents an example of how the organisation of distribution of funds is handled at the local level "in theory" as stated by the Chairperson Ram of the Thangsa Deurali CFUG.

When sum X arrives in donations from the REDD+ project the CFUG will receive 50% in advance, and the DFO provides an in-depth breakdown of these funds in an aim to increase the level of transparency. The CFUG then creates a paper of how they have decided upon dividing the funds, the DFO, Masong and The Nepal Swiss Community forest project executives (until 2011) then review and accept these transcripts if the parties are in agreement. The distribution of funds should follow a standardized and agreed upon division by which generally entails; 35% of donations are to be spent on forest development and community expenditures, as well as tree plantation, 35% should go to the guards protecting the forest. 30% are to be held for road constructions, schools, underprivileged students, those who cannot become pregnant, also compensation in the case of accidental death and finally medical treatment for those in need. The remainder of funds in the case such a surplus exist are for building and maintaining various facilities and offices.

As noted 30% of funds are then handed to the "underprivileged" (Dalit) predominantly in the form of loans without interest, generally the range of possible loans is from 5-60 USD. In the case that the recipients are handicapped, have very meagre incomes, or simply cannot pay back the funds, a general assembly is held, and a consensus is reached of whether to pardon the loan taker or not.

This breakdown shows how funds are divided within the CFUG of Thangsa Deurali, and it takes into account the overarching values of livelihoods improvement as presented by the overarching REDD+ framework. But it is clear that there are very many parties that are a part of the distribution and the available funds are even in Nepalese terms, meagre as will be presented in the following section.

6.3.1.2 CFUG fund distribution in numbers

We will now look at the physical fund instalment breakdown to CFUGs (2011/2012), using Thangsa Deurali as reference. Problems where incurred when recording the breakdown of Chyanse Bhagawati unfortunately. The sum total of funds received in the 2011-2012 period amounts to 2496 USD for the Thangsa Deurali CFUG. The total funds are presented in the table and a detailed breakdown follows.

Table 58: REDD+ fund allocation, Dolakha, Thangsa Deurali CFUG District, Nepal, 2012.

Factor	2011 (USD)	2012 (USD)
First instalment (6mnths)	626 USD	621
Second instalment (6mnths)	626	621
Total	1253	1243

The chairperson of Thangsa Deurali CFUG has stated that the funds for the second instalment of 2012 (621 USD), was in its entirety distributed to the underprivileged, and was used for purposes such as; cremation, single mothers and Dalit. The funds when divided amounted to on average 60 USD per. head (divided among 10 recipients), comparing to the 34USD per head average presented earlier.

When asked about how the process of distributing funds as shown above, the Chairperson of Thangsa Deurali presented the method. The typical code of conduct when distributing the REDD+ funds is to assemble 50/60 applicants (the number of applicants that will typically apply), those applicants are then filtered into categories of priority. From the 60 applicants, only some will be eligible to receive funds (dependent on the total funds available). The chairperson admits that there are often demonstrations as a result of this process, where

applicants who do not receive funds claim that the reason for this is due to among other things, corruption.

The rules for distribution, are believed to be fair as they are decided upon in the general assembly, where a consensus is reached on how much of the REDD+ funds should be given to the underprivileged. At the end of every month, the CFUG heads are updated on these figures, while users are only informed when necessary, therefore, when there are no funds no information is given. The chairperson notes that it is unfortunate that, when funds are to be distributed users are often not given much notice or information until two weeks prior to the actual distribution of funds.

From these statements, there are obviously some discrepancies between the format of distribution presented in the prior segment where funds should be "theoretically" distributed as follows; 35% community expenditure, 35% guard, 30% underprivileged.
As shown above all funds have been allocated to the underprivileged (Thangsa Deurali) in the 2012 period, this focus appeases one of the criteria of the REDD+ goals (Poverty reduction). However the DFID have presented a paper discussing challenges that have arisen in the distribution process of which; "There is little disaggregation of who 'the poor' are in REDD+ and carbon markets in general, with aggregate terms such as 'local communities' being most common. This has important implications for targeting and what constitutes 'pro-poor' REDD+;" (DFID). This problem statement may also be relevant in Thangsa Deurali REDD+ fund distribution process, as the village council have the final say in how these funds are distributed. Linking the sentiment that some "unsuccessful" applicants believe they have been so due to corruption, it is imperative that the selection process is kept transparent to the "applicants" as well as user group in general, so as objections can be voiced and heard.

In conclusion although the distribution of funds is focused primarily on the "underprivileged" and does not satisfy all distribution goals of the CFUG or REDD+ Nepal in general. Realistically with a total fund "pot" of only 621USD (6months), divided among 400 households, it is limited what impact these funds can have. However, as these funds are generally given on a low to zero based interest loan system, the fund will at a point in time re-enter the community "pot" so as to be reallocated while also increasing the total funds available. As presented by Elinor Ostrom's (Ostrom, 1991) design principles required to achieve long enduring resource governing institutions, there must be proportional equivalence

between benefits and costs of resource use. As shown the benefits of reducing current forest product use consumption patterns is not beneficial for users, if they cannot be compensated to an equivalent degree. AIGAs projects may however be an area of focus for future distribution of funds as these investments are regarded positively both among REDD+ leaders as well as the interviewed users. In addition they have the potential to create jobs and economic growth in the local economy, thereby raising the livelihood situation of the local community.

The REDD+ leader from the Thangsa Deurali CFUG, was interviewed and asked his opinion REDD+ distribution themes in his CFUG. He notes that there are aspects lacking in the current REDD+ mechanism of which; carbon measurement should be more exact, so that those who increase carbon stock can be compensated respectively and those who do not vice-versa. In order for the project to work Thangsa Deurali's REDD+ leader believes it is imperative that the current "price" of carbon unit costs must be communicated so that the affected people are updated.

On this theme, an important mechanism still under discussion at the macro level is of whether payments should be performance-based through REDD+, and if this method may be a coherent strategy in tackling deforestation (performance-based payments would occur after REDD+ activities reduce deforestation, and monitoring has occurred). I find describing the Thangsa Deurali REDD+ Leaders perspective on this matter, is very interesting on account that he someone who is at the ground level actually "doing the work". He feels that if an added value is placed on the forests through economic incentives, it will work as motivating incentive to keep the forests intact or even improve its condition. Therefore, "yes I do believe performance based payment could be a major incentive in tackling forest degradation" the Thangsa Deurali REDD+ leader concluded.

When reflecting upon the current mechanism of fund distribution at the Thangsa Deurali CFUG he finds that those in need of funds receive them from the project in the form of loans without interest, which at present is an agreement that is working, and they are grateful for. However funds may be better spent through investing in ventures which in turn increase employment opportunities in the CF area; this will also help combat the roots of forest dependency. An important component of the funding mechanism is a functioning mechanism for checking cash flow in relation to corruption should be established by a group of third party monitors.

6.4 COMMUNICATION

This section addresses the current communication activities within the CFUGs as well as between different actors at different levels, also the presence of weaknesses such as corruption and elite capture are also explored. First describing communication at the individual level, user's opinions and perceptions are presented; similar themes are then discussed based on the local leadership and key person's perspectives. Finally, the same issues are taken up at the mezzo level, including summaries and recommendations from the locally devised report (Jao, 2012).

6.4.1 Local communication

Taking into consideration the lack of knowledge among users about the REDD+ project in general as presented in the preceding section "users general knowledge of REDD+". The first line of inquiry here may naturally be of whether users thought CFUG Leaders were aware and had knowledge about the REDD+ initiative in the CFUG themselves. The data shows that, in fact, 4/5 of people thought they did (82. 6%); in comparison only 33% of all respondents had themselves heard about REDD+. Respondents were then asked why they leaders should know about REDD+ and yet they themselves had not been informed, the answers were many and varied the following statements are a collection of the most cited reflections.

The lack of communication is connected with leaders being "to busy" with their own work to have time to engage in such matters with users. Also the CFUG simply does not regularly inform users about their doings. While some respondents felt a lack of empowerment "We don't have influence so we don't go", similarly some simply did not feel invited to participate "We are not invited to meetings". Likewise many thought "They" (the leaders) make the rules and the community forest users are only "users" so it was not necessary to include or inform the community about forest matters. However a number of respondents simply were unaware or did not comprehend the REDD+ mechanism. "I do not understand the mechanism, so it is does not interest me".

As noted before users are generally satisfied with the management committee in charge of the CFUG, also these statements do not reflect the perceptions of the respondent group as whole, as they are only uttered by a number of individuals. Several users are of the opinion that information regarding initiatives such as REDD+ need not be communicated to them they are administrative affairs. This belief may be a negative development for mechanisms such as REDD+ if they are to be successful require that users are aware and updated of guiding principles for the project to be practically viable. Secondly the sentiment that user's opinions bear no weight if they are invited to share them at all violates the "inclusive" bottom up approach promoted by the REDD+ architects. Lastly the statement "I do not understand the mechanism, so it is does not interest me." May be closely linked to the lack of inclusion, which fundamentally can be attributed to the lack of clarity and use of "colloquial terms" in the often highly academic and complex format REDD+ guidelines and theory is presented.

6.4.1.1 Methods of local communication

Communication in general at the CFUGs is traditionally conducted through village meetings where information is exchanged, local matters are discussed and users are informed and updated on changes in rules/regulations, these meetings are often referred to as "Tole" meetings which is a form of "village council". The general practicalities and perceptions of these meetings in the eyes of the users are now described based on the household survey. Regarding how often users had been invited to meetings pertaining to forest matters at the community level, the average duration of time since last the user had personally been invited varied greatly from one day ago to 600 days ago (the average time being 88.5 days). An independent t-test showed no significant difference between the duration since the respondent has last been invited to a meeting and which CFUG they belong to. The Anova also test revealed no significant difference between wealth-ranking groups. The large variance, however, indicates that some users involve themselves or are included by others more than other, which is important in relation to the user being able to contribute and voice an opinion on locally decided upon policies and rules.

When asked whether the users had been asked for their opinion on any matter under the meetings (forest related) 60.3% answered they had while (39.7%) said they had not been asked. The independent sample test revealed a significant relationship of ($p< 0.000$) between CFUGs, indicating that users at Chyanse Bhagawati are more likely to have been asked for their opinion during a meeting. The Anova test revealed no such significant relationship

between wealth-ranking groups. In addition, the reasons for why users had not been asked to contribute in meetings as voiced by the respondents were among the following; Dalit are not allowed to talk in meetings, the respondent could talk if they wanted to but chose not to, only seniors are allowed to talk and lastly they have simply not been asked to contribute.

A similar question was posed where users were asked if they had had the opportunity to present their opinions and the potential to influence the rules that govern use and management of the community within any context (not specifically forest matters).

Table 59: Users participation in meetings (rule formation), Dolakha District, Nepal, 2012.

Yes, during Tole meetings (Out of 100%)	Yes, during other meetings (Out of 100%)	Yes, through general discus-sions in my community (Out of 100%)	No, we have not taken part at all (Out of 100%)
76.5%	22.1%	29.4%	5.9%

N=68

Tole meetings refer to a general village council where the village residents are invited to contribute their views on current local issues. The venue where most respondents feel they may contribute is through such Tole meetings, with lower outcomes for the other two forms of communication, leaving only 5.9% who do not feel they may contribute in any forum.

The question does not reveal whether the users actually have contributed in such meetings, it simply shows that respondents feel that if they wish to contribute that option is available to them.

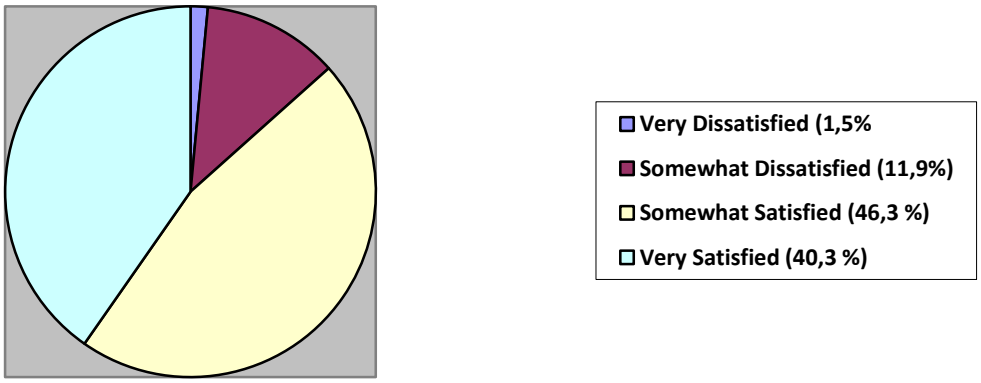
The Tole meeting communication data indicates that users do feel comfortable stating their opinions on particular village matters within the context of a village meeting (Tole), but on matter pertaining to forest matters a considerable majority are not included at a meaningful level in the formation of decisions. The fact that the variance between users regarding the last time they were invited to a meeting varies from two weeks to close to two years, mean that the enforcement of practical and coherent common guidelines are not strengthened to a sufficient degree through awareness on the account of local REDD+ leaders. Lastly the inclusion of users and enforcement of a flat-structured bottom up approach is dependent on the leadership style of the CFUG not the guiding principles of the overarching REDD+ mechanism. In regard to Elinor Ostrom's (Ostrom, 1991) design principles decisions must be based on collective arrangements, as such, if the CFUGs do not include and allow participation of all relevant parties under the development of community forestry matters, the process cannot be considered, to be truly "collective".

6.4.1.2 Users relationship to local leadership

An important factor in determining the "success" of communication practices are users satisfaction with the current leadership as well as satisfaction with the method of community forest management implemented, these factors will be explored now.

Most respondents have a positive relationship with the local committee managing the community forests 68.8% deeming the relationship as good and (14.1%) as very good leaving only 3.2% which have a bad relationship to the local committee, the remaining participants find it to be "fair"(13.9%). The pattern may be linked with the results of the pie chart shown below which indicates the level of satisfaction with Community forest management among users.

Figure 12: Users satisfaction with community forest management. Nepal, 2012.



The pie chart above indicates that the overwhelming majority were content with the current practices set in place by the community forest management and (86. 6%).

The positive relationship voiced by users regarding local leadership and local method of forest management bring into question the results of the last section. As although there is overwhelming approval of the current management of the community forest and communication, the point is that close as half of respondents have not been asked for their opinions during meetings moreover the large variance of how often users have been invited to meetings, may show that the bond between practical activities carried out by users and the stipulated rules and regulations may not in complete accordance, especially considering the majority not feeling that current conservation methods affect the way they use the forest.

6.4.2 Local leadership on REDD+

Based on the in-depth interviews with the local REDD+ leader, the following list presents the concrete activities performed by the CFUG (Chyashe) including activities of 2011/2012; REDD+ network meetings have been conducted 14 times, and a "watershed criteria preparation symposium" of a forest carbon store distribution mechanism has been conducted at district level 1 time. There has been REDD+ advisory committee meeting 6 times; the REDD+ following committee has had 3 meetings. There have also been discussions and interactions related to REDD+ and forest Carbon store among district level government office, different organization, political parties, journalist as well as concerned bodies. This section is included as to underscore the fact that REDD+ meetings, committees and other information forums have been conducted among certain member of the CFUGs. This fact indicates that it is at the ground level, problems of lack of information among users about REDD+ can be found. As mentioned before, the success of conservation measure aimed at conserving and improving carbon stock hinge on the premise that the users are aware of these conservation methods. There are obviously individuals in the area with knowledge about REDD+, therefore, spreading this awareness to users should be incentivized and promoted.

6.4.2.1 Local leadership and key persons on communication

The REDD+ leader from the Thangsa Deurali CFUG, was interviewed and asked his opinion on current REDD+ themes in his CFUG. Firstly he believes the affected local populous have a generally positive perception of REDD+, but that they lack concrete information about the project. Since he finds that there little awareness and knowledge regarding REDD+ in his CFUG, mediums such as radio, TV and other media sources should be employed more frequently in increasing awareness of the project and practical information about how to become involved in the project. Also, he believes more effort should be made to promote awareness about the project to the illiterate part of the population more effectively. The point of lacking communication as presented in the "users" section is also mirrored here in the opinions of the local leadership; the acknowledgement of current challenges indicates introspection and the potential for improvement in communication method. The Nepal Readiness Proposal Plan for 2010-13 also addresses the problem of awareness and outreach. And also proposes array of tools and media forms to raise awareness, including; the use of

Radio Programs, TV Programs, newspaper/journal articles, extension material, website updates and awareness workshops to raise awareness. (NRPP, 2010)

6.4.2.2 Local CFUG leaders communication with the mezzo level

Based on the "communication and collaboration" interview conducted with both CFUGs leaders, their perceptions on the current state of communication are presented.
The chairperson of Thangsa Deurali finds that collaboration with governmental institutions and other organizations to be productive, his enterprising understanding of governmental institutions is based on the fact that these institutions provide donations, which in turn are good for the community. He also finds the current decision making process to be a collaborative one. The process of which is that they discuss financial items at the CFUG, and send the data up the "chain", so where to spend the money is decided at CFUG. However the CFUG only shows what must be done, and the final decisions made by the CFUG are then presented by the CFUG and then (if necessary) edited by the DFO. He concludes by stating that the fund distribution process is collaborative, but other rules are made by higher levels, in other words distribution of REDD+ funds are a collaborative activity, while the establishment of rules and regulations are done at higher levels.

6.4.3 Mezzo level on communication

From the subheading REDD+ and general forest related local knowledge/communication as mentioned earlier shows evidently that, there is clearly lacking a concrete understanding of REDD+ even in its simplest definition by the majority of the users of both CFUG groups. This issue is also discussed and presented in the report (Development activities of good governance and payment for community forest through REDD+ in Nepal, 2011, 2012, Agar Tum Mil Jao – Zeher). The report focuses on the overarching goals and tentative findings based on the current situation. Based on the perception of local leaders and executive members managing the implementation of the project, the report loos at what progress has been made on communicating and creating a participatory platform for REDD+.

The points taken from the report are translated into English; translation has been conducted by my accompanying translator. Faults in translation (if there should be any) would be on account of incorrect translation on our part.

According to the report (Jao, 2012) concrete developments in the establishment of rules relating to financial privilege have been made by the CFUG leaders and executive members, with the consent from users, regarding which groups can receive funds through the REDD+ programme. Related to this there has been "efficiency enhancement" of user's personal information about REDD+ within the Charnawati watershed. This has been done in the format of dividing the informational training into a group-wise fact archive, with an emphasis on highlighting and improving the livelihoods of underprivileged, institutional development, good governance and conceptualization of REDD+. In the practical management of the REDD+ program the report states that attention has been placed on the active participation of female; Dalit (low caste) and Janajati (ethnic group) and in conjunction with varied meetings with concerned bodies. There have also been developments in the activation of human resources (increase in carbon observation efficiency) related to REDD+ at the local level. Where priority has been placed on recording and archiving the current work done by the REDD+ group i.e. the REDD+ process has been is institutionalized within the group. The report states that coordination and contact has been established between parties and users both vertically and horizontally.

6.4.3.1 Mezzo level Communication Challenges

The report states that it is evident that there does not exist a clear and unified understanding regarding REDD+ and forest carbon storage, among group users. The work committee and concerned bodies also see that there has been and continues to be a reduced ability or at times even inability to keep records/archives of the different groups activities. On top of this, it is said that plans pertaining to some CFUGs activities, in general take time to construct and are slow to implement at the local level. A concrete example of the lack of communication as stated by the report can be seen in the fact that many of the users are unaware of basic information pertaining to alternative sources of energy such as Biogas, improved stove, and Iron Stove etc. Within the program itself, there are also challenges concerning the possibility of castism/ intolerance among group users which affects the success of a collaborative approach to forest carbon storage methods.

In relation to raising awareness on subjects of technical training and forest related information, there is a belief (from higher levels) that the user groups may not be capable of

fully grasping, following through and handling the responsibilities bestowed upon them. This perception may enforce the tendency of developing policies within the context of a top down approach. Lastly a critical overarching challenge is that as of current there are no legal arrangements for forest carbon trade and market, creating a problem of legitimacy and lack of potential to enforce guidelines as overarching principles are perpetually in flux.

6.4.3.2 Communication between mezzo and macro level

The report (Jao, 2012) describes how communication channels between the mezzo level and macro level are functioning. The report also presents what it concludes are the present shortcomings and defects of the project. The points taken from the report are clarified and at times expanded upon from the original text so that they may be presented in a coherent manner; attention has been taken not to manipulate the original statements.

The report as mentioned earlier concludes that coordination seems to be a problem; one reason for this is that sufficient levels of information regarding coordination matters derived from consultants at the "state level" have not been satisfactorily communicated to parties at the district level. The breakdown of lacking communication contains the following sentiments. There is little discussion/interaction regarding the "fact collection papers" which come from the "central powers" to local groups. There is also often little or no coordination with local parties when consultants come from the "centre" to the district offices and local CFUGs. This is evident as when "central powers" meet at the local level there are often clashes regarding the programme, between the "higher powers" and their local counterparts, as not everyone has the "same" information. A problem conjoined with this is that confusion often arises as there are frequent changes of forest representatives and other actors working with the REDD+ programme.

The evident fundamental problems of communication between local powers and "higher powers" have arisen due to lack of communication from "higher levels" down to the local level, resulting in poor coordination. The effects of this have led to uncertainty and a fragmented understanding within local committees about REDD+ goals but also between the local committee and higher offices.

6.4.3.3 Mezzo level Problem resolution proposals

The report (Jao, 2012) as well discussing present shortcomings has consequently also presented a range of methods intended to solve these challenges which are described now. There should regular investigations of plans and implementations measures for the programme in the community forest user groups were the REDD+ programmes are being conducted. Information about alternative energy (bio gas, improved stove, iron stove etc.) should be provided to the user in relevant areas as well as at the personal household level. A small assembly should be organized at the district level to raise awareness about the energy related themes.

It is important that precedence is given to proper coordination/connection when consultants from "the centre" meet with representatives from the districts, and the groups have a collaborate in order to properly deciding upon how the division of labour should be dived among the varied actors at different levels. A method of improving this situation is by distributing the fact collection papers which come from the "centre" to the local groups. So that relevant parties are updated and can effectively discuss current matters (from the district to the individual level). This will result in group users, work committees of the REDD+ framework and concerned bodies being able to work towards maintaining the same understanding about REDD+ and forest carbon store directory.

Although some of these problems seem troublesome for the overall success of the REDD+ project, it is clear that the local committee's candidness about these present shortcoming may also reveal a hidden strength. The report is not afraid of presenting shortcomings and discussing potential fitting solutions to confront these challenges, this is a vital part of "triple loop learning" which is an approach supported by the overarching REDD+ framework. It is also interesting to see that many of the shortcomings uncovered at the "individual level" based on the household surveys are mirrored by the governing committee themselves, revealing that there is coherency between different levels and their understanding of the project.

6.4.4 Corruption, transparency and elite capture

An important focus of the study was to establish to some degree the general consensus of the level of trust between the leadership and users. A question to probe at this was whether the respondents felt the leaders or executive members would at times hold back information, the results show that in general (68.9%) believed that this was the case. Of course there may be many reasons for information being withheld from users, and yet it might be deduced that users are accustomed to "higher powers" withholding information. The basis for this argument from a subjective standpoint could be that in Nepal, there is a more prominent hierarchical top-down structure in regard to power, in contrast to a flat structured feminine model. As such "information" may be retained by those who possess it as it can be used as a tool for maintaining power (as explained by colleagues of Nepalese decent). This perspective also has some grounds in the results from the question of whether the users thought the leaders behave in an elitist way were of (28. 3%) believe that they did.

In the distribution of funds at the local level by the REDD+ leaders, challenges in categorizing and choosing fitting "candidates". This problem of little disaggregation is also discussed in the DRIF report "There is little disaggregation of who 'the poor' are in REDD+ and carbon markets in general, with aggregate terms such as 'local communities' being most common. This has important implications for targeting and what constitutes 'pro-poor' REDD+;" (DFID). The problem of defining "poor" groups was also voiced, by those believing that the qualified for REDD+ funds at the CFUGs, and yet did not receive them from the REDD+ fund distribution process. As the village council have the final say in how these funds are distributed. some "unsuccessful" applicants believe they have been so due to corruption. Therefore, it is imperative that the selection process is kept transparent to the "applicants" as well as user group in general, so as objections can be voiced and heard. It should be added that the leader of the REDD+ Thangsa Deurali CFUG, when asked about the shortcomings of the current mechanism of fund distribution. He stated that an important component of the funding mechanism is a functioning mechanism for checking cash flow in relation to corruption should be established by a group of third party monitors.

In addressing how problems of corruption within the REDD+ fund distribution approach may best be confronted Dipak B.K a researcher working at Forest Action, Kathmandu was interviewed. Forest Action is on a side note is a politically non-aligned, self-governed civil

society organization. In his opinion a payment scheme might best be managed by local leaders, by local government, by local NGOs, or by some external actors (foreign NGO). He believes that how money is channelized is important, and therefore, using the local government would be the best vessel, as then the local government can channel funds directly to local groups. However if the funds are channelled directly through CFUG, this may have the added benefit of reducing the transaction and administration costs. If the funds are channelled through NGO's or other organisations there will be higher transaction and administration costs. Therefore, In short, the best option to channel funds would be; Government- local government – CFUG.
When asked to identify and describe any problems he thought could be associated with these types of payments (e.g., security of payment, ability to deliver, corrupt practice and misuse). The following challenges were presented; corruption or bribes should not be a relevant problem, if the funds are channelled described. Possibilities of elite capture within the CFUG are still possible though. To confront this possibility one should promote building a benefit sharing mechanism, to stop elite capture and marginalization.

As the findings have presented there does not seem to be an overbearing problem of corruption and elite capture within the REDD+ funding system as of current. Both users and the local leadership are generally content with the current checks and mechanism for approving and distributing funds, which are based on a collaborative and democratic decision making process at the village level which is then approved by the DFO. On a side note this may be a factor which should be kept under continues supervision based on Nepal's level of transparency in an international context ranks at 146th out the total 178 countries in the international corruption index of 2010 (ICI, 2010). With a score of 2.3/10 the only country ranked below it in south-east Asia is Afghanistan, and the score has fallen form the 2006 2.5/10 score.

CHAPTER SEVEN – CONCLUDING SUMMARY, CONCLUSION

In identifying the livelihood situation of the study site, the assets, activities, outcomes and finally the vulnerabilities and coping mechanisms described of the two CFUG sites. Beginning by presenting how individuals gain and secure their incomes and assets which constitute the "activities". When looking at access to land which lies under "Natural capital" it was shown that Thangsa Deurali has access to close to twice that of Chyanse Bhagawati. The theory for this being that Thangsa Deurali is further away from the "prime real-estate" of Charikot, hence lower real- estate prices and a lower population density. At the same time, Thangsa Deurali is relatively further away from markets, and access to other means of non-farm income generating activities. Which is shown as Chyashe Bhagawati was more dependent than Thangsa on other forms of income than agriculture and hence the average land area was smaller. For those (the majority) involved in agricultural activities, access to water was seen as the most pressing challenge, whereof irrigation especially that of rain feed irrigation methods often failing due to lack of water, thus increasing vulnerability. Such vulnerabilities could be reduced by the generally high levels of social capital the possessed, were the majority of respondents had a good relationship with their fellow neighbours as well as organizations and representatives from institutions, which could be made use of through assistance, loans and barter in times of hardship.

When looking at the diversification of activities and assets it is evident that most households in the study areas fall within the professions of agriculture, forestry and on/off-farm activities. Agriculture is also the most common profession and income generating activity in Nepal with 65.7% of the national work force within this sector in 2001 (UN, Data, Nepal, 2009). This ratio was also mirrored at the study area, with the vast majority with 69% of respondents primarily dependent on this activity. The most important crop for subsistence were found to be; rice, maize and millet, and although the majority did not sell their crops, the main cash crops of the area were cauliflower and for some millet in the form of the local alcoholic beverage "thomba". The keeping of livestock as an income source as well as means of subsistence represented a form of income flow to the household, but could also be used as a bartering "asset" when necessary. Goats were the most commonly kept type of livestock,

which have many benefits such as low maintenance, providing both milk and meat, but also importantly could be used as a good source of fertilization for crops.

Non-farm activities at both the CFUGs, but at Chyashe Bhagawati in particular where important contributors to the overall income of the household. In total 28 % had a primary occupation which was not a farm related activity, the most common of which were businesses within shop/ trade and transport related ventures. The fact that these non-farm activities constitute a large portion of the overall income of the households increases diversification, which in turn can provide a safety net, in case of sudden "shocks". The off-farm activity of hiring labour locally to carry out planting, maintenance and harvesting activities for primary crops was done by 44 % of the communities, amounting to a substantial portion of the household's income.

The type of forest activities and level of dependence the CFUG users had on the surrounding forests was the primary focus of the study, although not being a main contributor to the household's total income. The forest resources thereof in particular fuelwood were shown to be of great importance with 91 % of all respondents being primarily dependent on this resource for cooking, heating and other capacities. The majority collected fuelwood from secondary growth forests in the REDD+ pilot project areas (community forest). However, no respondents answered that they sold either, poles, timber or charcoal. However it can be presumed that these practices do occur. But as the sale of these items (timber, poles and charcoal) are forbidden and can incur fines, and users found selling these products are apt to be punished through fines. This conviction can only be substantiated through personal informal conversations and indirectly through the data as of those clearing forested land 30% (including poles/timber) is cleared from CBFM forests. Therefore, it is fair to assume that these products (timber, poles etc.) are also used by the community forest users (although predominantly derived from private forested areas). The fact that Chyanse Bhagawati both spends less time collecting fuelwood as well as using on average more fuelwood than Thangsa Deurali, indicates as the (Sapkota. A, 2008) study found, that the distance from forest, as well as household wealth, excerpts a strong influence on a household's forest dependence. Likewise in the study, Chyanse Bhagawati uses less time collecting fuelwood and thus collects more fuelwood. The most important NTFPs were fodder, especially for feeding livestock, which most respondents kept. The sale of NTFPs was almost non-existent due to traditional norms which dictate that the use and sale of NTFPs should be reserved exclusively for individuals in a poor economic situation.

The outcomes of these activities which sustain the livelihoods of the CFUGs, through physical incomes and the attainment of food security, found that in general agricultural and non-farm activities where the most important income generating activities. But when looking at Chyashe Bhagawati the order was reversed. Also within the wealth groups the total household income was not perceived as sufficient for the majority of respondents within the "poor groups" as well as third of those within the "middle" group, while the "less poor" group had no such problems. Indicating many households had problems sustaining their livelihood situation sufficiently adding pressure to households and creating potential vulnerabilities.
In delving further into the aspects of vulnerability, those presented by agriculture, livestock and income were a factor in the CFUG sites. The most important agricultural vulnerabilities uncovered were those of water shortage, lack of fertilizers and animals attacking crops. Water shortages, could potentially be resolved through building irrigation infrastructure, animal attacks could be deterred by building fences and fertilizers shortages were chronic on account of high market prices and had no apparent solution. Vulnerabilities as experienced by the majority of respondents caused by sudden household incomes shocks, particularly that of death and serious illness had an especially detrimental effect on the household livelihood situation. The range of economic costs incurred by such events as well as those from the loss of land would be greater than the average yearly income of most respondent. Thereby, possibly leading to many households falling into perpetual debt, as loans are one of the few ways of handling such shocks.

When describing the local knowledge users have regarding forests and climate change, 80% of respondents believed there was a connection between the two. The most important were the detrimental effects of climate change on forest degradation leading to less water and also the increased probability of land slides.
Looking specifically at local community forest governance rules awareness, 96% of users were aware that they were residing within the perimeters of a community forested area and 94 % were aware that they had access to the resources in the community forests. 82% believed that their surrounding forests were not under the jurisdiction of state/public authorities. 92% believed that rights to the forests were common, 82% thought there that the rights had specific restrictions, on certain forest products. Finally three quarters were aware that they belonged to the nearest CFUG. These characteristics amount to the majority of the local populous being aware of the fundamental juridical properties of community forestry.

With these premises, it was revealed that the majority of community forest users were also satisfied with the rules that govern the use and management of the community forests. The minority of users stated that there were still challenges of lack of transparency, illegal use of forest resources, extravagantly forest resource use and exclusion of certain community members. This being said the vast majority of community forest users adhere to the forest rules, and most felt that the current rules had improved their livelihood situation.

When it comes to the implementation of the REDD+ mechanism at the two sites, the first and most apparent challenge is that of awareness. As only one third of respondents had ever heard of either the REDD+ initiative or carbon trading in general, likewise only a third were aware that their CFUG was a part of an on-going REDD+. These findings were supported by the fact that only 12% of respondents had had any type of informational training regarding REDD+. The low level of awareness locally of organisations and initiatives, was mirrored by only 13% knowing of any other actors working in the area. The low level of awareness of REDD+ goals, along with the fact that the majority 80% of respondents did not feel that forest conservation measures had affected their way of using the forests. These factors combined may form an answer to why users are unwilling to reduce their dependence on fuelwood, harvesting poles/timber and making coal.

As seen in the distribution section of the paper, the incentives to stop using forest products have only been available to a small group of CFUG users, in particular the "underprivileged". These funds should in theory be distributed to; forest development, tree plantation, forest protection, road construction, underprivileged, those afflicted by a sudden death or illness in the household and investments in job employment creating initiatives. However, the total REDD+ funds allocated to the Thangsa CFUG amount to less than the total sum income of even the "poor" wealth-ranking group. This is a very humble amount considering that there are 400 households within the CFUG. The fact that the funds are distributed in the form of zero % loans, will over time increase the total pot of available funds, but yet the funds cannot monetarily compensate the forest users for not being able to access or even reducing the access to forest products.

In establishing the level of communication and the evident gap thereof, The first line of inquiry was as whether users thought CFUG Leaders were aware and had knowledge about the REDD+ initiative in the CFUG themselves. The data shows that, in fact, 4/5 of people

thought they did. Yet as shown the users had not been informed, the lack of communication as seen by the respondents was based on leaders being “to busy” to have time to engage with users. Also the leaders simply do not regularly inform users about their doings. Some users felt they had no influence, and therefore a lack of empowerment, some were not invited to contribute to meeting, but also a number of respondents simply were unaware or did not comprehend the REDD+ mechanism

In regard to increasing awareness on forestry and REDD+ related matters, the inclusion of users in meetings varies to a large degree. The large variance indicates that some users involve themselves or are included by others more than other, which is important in relation to the user being able to contribute and voice an opinion on locally decided upon forest policies and rules. Of those who had been included in meetings 60% had been asked for their opinion on any matter under the meetings (forest related). When divided into CFUGS users where more often included in meetings in Chyanse Bhagawati than in Thangsa, indicating that the level of inclusion is dependent on the leaders installed. Most respondents however have a positive relationship with the local committee managing the community forests (83%), and the overwhelming majority consent with the current rules and practices of their respective CFUGs.

The mezzo levels perception of the awareness among the forest users of the REDD+ project, mirrors that of the users, namely that awareness is lacking. The leaders believed that to confront this challenge information should be more frequently spread through available media sources, and resource be given to train local REDD+ representatives. The mezzo level has also presented issues regarding communication between the “themselves” and higher “levels”. As although local REDD+ leaders find the fund distribution process to be collaborative, REDD+ rules and regulations are made by higher levels, in other words distribution of REDD+ funds are a collaborative activity, while the establishment of rules and regulations are done at higher levels.

The (Jao, 2012) report also finds that coordination between the mezzo and “higher levels” seems to be a problem as sufficient levels of information on REDD+ derived from consultants at the “state level” have not been satisfactorily communicated locally. There has also been little or no coordination with local parties when consultants come from the “centre” to the district offices and local CFUGs, which has led to not everyone having the “same” information. The effects of this have led to uncertainty and a fragmented understanding within local committees about REDD+ goals but also between the local committee and higher

offices. The mezzo level also cite challenges internally within the program itself, concerning the possibility of castism/ intolerance among group users which may jeopardise the success of a successful collaborative approach to community forest and REDD+ in particular. Lastly regarding Corruption, there has been evidence of users feeling that they have been excluded from REDD+ funds, as well as not being included in REDD+ activities. However, these points are voiced by the mezzo level also and are therefore, presumably points that have been taken into consideration. To minimize the possibility of corruption and elite capture, a mechanism which provides direct transfer of funds from the donor to the local CFU groups is recommended.

8.1 CONCLUSION

The thesis has attempted to form a picture of the prevailing situation and developments of the REDD+ pilot project in the Charnawati watershed. As the project had been initiated two years before this study was conducted it may best be described as a follow up evaluation of a baseline study. Focusing primarily on describing the activities and outcomes of community based forest management in the area that can be measured, in contrast to macro analysis/situational analysis which would address things outside the control of the project. As the study has been of a small scale and no baseline study exists for the study area, some indicators have been hard to evaluate. As such it has it has seemed appropriate under certain sections of the paper to only determine and measure indicators. Although at times theories and reflections have been added to findings, it has felt to be prudent to restrain from over extrapolations, and where relevant supress the urge to transpose findings into a larger context.

This thesis has aimed at creating an overview of the REDD+ project's progress three years down the line in the Dolakha district, focusing on computing the primary overarching attributes and factors which would help build a nuanced and comprehensive picture of the current condition and likely prospects of the project. The findings of the study have revealed that the livelihoods situation at the CFUGs in general can be described as highly involved in agricultural practices, primarily focusing on subsistence, with varying levels of diversification depending on location. The majority of community forest users are dependent for their livelihoods on both fuelwood and NTFPs collected from the community forests. The outcomes of the CFUGs livelihood strategies the majority of the household's income is

derived from a combination of agricultural and non-farm activities. Revealing large differences between wealth- ranking groups in total income, and primary activity between CFUGs, Thangsa being primarily agricultural while Chyanse Bhagawati deriving most of their income from non-farm activities. Regarding vulnerabilities the dominant ones were those presented by agriculture, livestock and income related. The most important agricultural vulnerabilities uncovered were those of water shortage, lack of fertilizers and animals attacking crops. Shocks incurred by sudden death, illness or loss of land, were shown to be potentially catastrophic for households possibly leading to many households falling into perpetual debt, as loans are one of the few ways of handling such shocks

There was a high level of community forest user knowledge showing that the majority of users were aware of the fundamental juridical properties of community forestry. Community forestry within the area is evidently successful as the majority of users are content with local leader, present rules and regulations, and relationship to other forest users, users also stated that they followed these rules.

When it comes to the implementation of the REDD+ mechanism at the two sites, the first and most apparent challenge is that of awareness among users. As very knew of the project or carbon trading, and almost no one had had any informational training on the subject. Regarding distribution of REDD+ only a small group of CFUG users, in particular the "underprivileged" had access to this. Users were in general not interested in reducing their dependence on forest products through monetary compensation, and their forest activities had not changed since the implementation of REDD+. Looking at communication the majority of community forest users could express their opinions in "tole" meetings, but few had contributed to REDD+ related activities. At the mezzo level it clear that only matter of distribution are handled at this level, while there is not much possibility for collaboration and participation by the mezzo level in the continued efforts of developing REDD+ policies.

8.3 Future Research

This study has uncovered that the community forest users of the study area are highly dependent on the forest resources available in both private and community forests. As the methods of compensation for reduced forest product use discussed in this paper, have only been of mild interest to many respondents, future research may inquire as to what form of

compensation may be suitable for forest users. In particular the potential for “biodigesters” as a method for substituting a portion of current fuelwood consumption, but also the possibility of providing residents of the CFUG with improved fire stoves. Fire stoves although unfortunately not covered in this study may have the advantage of reducing total fuelwood consumption through efficient burning, positive health benefits from not using open air fire places and their construction and instalment in households could provide temporary work for some local residents

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APPENDIX

Appendix 1. Household survey questionnaire

QUESTIONNAIRE FOR THE HOUSEHOLD SURVEY

1.Questionnaire number:	2.Country:	
3.CFUG:	4.Name of household head:	
5.Date:	6.Pilot/study area:	
	Starting time:	Finishing time:

SECTION A: Household structure and livelihood assessment

A1. HOUSEHOLD CHARACTERISTICS AND COMPOSITION

		A1[1)]	A2[2)]	A3	A4a[3)]	A4b[4)]	A5[5)]	A6
ID	Position in HH	Sex	Marital status	Age (yrs.)	Education (years)	Other skills training	Main occupation	How long have you lived here (no of yrs.)
1	Head of HH							
2	Spouse							

1) Codes: 1=male; 2=female
2) Codes: 1= single; 2=married; 3=divorced; 4=separated; 5=widowed; 6=cohabiting
3) Codes: 1= no formal education; 2=primary; 3=secondary; 4=higher education (college, university or similar)
4) Codes= 1=agricultural management skills; 2=forest management skills; 3=other
5) Codes: 1=agriculture; 2=forestry/forest use (NTFPs); 3=hunting; 4=fishing; 5=other

A2. Please indicate the number of permanent household members:

	Sex	Age group			
		0 to 15 (1)	16 to 45 (2)	46 to 60 (3)	Above 60 (4)
1	Male				
2	Female				

I. SOCIAL ASSETS

A3. Do you consider your village/community a good place to live?
Code: 1=Yes; 2=It is OK; 3=No ☐

A4. On a scale how comfortable and safe do you feel in your village/community?

1 Not all	2 A little	3 Fair	4 High	5 Very high

A5. How do you rate your household's relationship with the following?

No		1 Very bad	2 Bad	3 Fair	4 Good	5 Very good
1	Neighbors					
2	People from other communities					
3	NGO workers					
4	VDC (village district council)					
5	Forest government officials					
6	CFUGS Committee					

A6**.** Does any member of your household belong to the following groups?

No	Groups	Member[1)]	Function in the group[2)]
1	Farm groups		
2	Village committee		
3	Local NGOs		
4	Traditional council		
5	Local political group		
6	Religious group		
7	REDD network		
8.	Savings group		
9.	Other:_____		

1) *Code: 1=belong; 2=do not belong: 9=does not exist*
2) *Code: 1= leader; 2=ordinary member*

A7. Has the household's income over the past 12 months been sufficient to cover what you consider to be the needs of your household? ☐
Codes: 1=yes; 2=reasonably; 3=no

A8. How well-off is your household today compared to the situation 3 years ago? ☐
Codes: 1=less well-off now; 2=about the same; 3=better off now

A9. Has your household faced any major income shortfalls or unexpectedly large expenditures during the past 12 months? ☐
Codes: 1=Yes; 2=No (If 'no', go to Section B)

A9a. If 'yes', please complete the table

No	Serious event	How severe[1)]?	How did you cope with the income loss or costs? *Please indicate the most important strategy*
1	Serious crop failure		
2	Death/serious illness in family (productive age-group/adult)		

3	Loss of land		
4	Major livestock loss (drought, disease, etc.)		
5	Loss of waged employment		
6	Climate/drought/floods		
7	Price changes on products and consumer goods		
8	Protected area establishment		
9	Other:_____		

1) *Codes: 1=somewhat severe; 2= severe; 3= very severe; 9= not relevant*

II. LAND

A10. Please indicate the size of farmland (in local measure) that currently has been in **use** (last 12 months). If type of ownership, rental status and land conversion is the same for all land, please treat as one 'parcel'. If there are different tenure arrangements for different part of the farmland, please specify accordingly.

	Area used (ha)	Ownership (tenure)[1)]	Rented[2)]	Land conversion type[3)]
'Parcel 1'				
'Parcel 2'				
'Parcel 3'				
'Parcel 4'				
'Parcel 5'				
'Parcel 6'				
Total				

1) *Codes: 1= private; 2= state (ordinary); 3= state (JFM); 4= state (CBFM); 5= state (individual); 6=common property;7= open access*
2) *Codes:1=not rented; 2= rented from state; 3=rented from non-state, e.g. community or individuals,*
3) *Codes: 1= permanent agriculture land (cleared more than 10 years ago); 2= land cleared in shifting cultivation areas; 3= cleared forest last 10 years to become permanent agricultural land; 4= other.*

III. ASSETS AND SAVINGS

Habitation		
A11	Housing contract *Code: 1=owner; 2=tenant; 3=free; 4=not owner; but exclusive use rights*	
A12	What is the main source of potable water used by the household *Code: 1=personal tap; 2=public tap; 3=improved well/spring; 4=traditional well 5=surface water (river/lake/pond, etc.); 6= other* *If 'other', please specify here:*	

A13	What is the most important source(s) of energy for	Rank 1[2)]	Rank 2	Rank 3

	cooking?[1)] Please rank your answer in the order of importance[2)]			

1) *Code: 1=fuelwood collected from REDD pilot forest; 2= fuelwood collected from other forested landscapes; 3=bought fuel-wood; 4=kerosene;5=gas;6=charcoal;7=electricity 8=Biogas*
2) *Please rank (1, 2,.) if more than one type of energy is used. (If 'fuelwood collected from area that is REDD pilot forest'' is most important, write '1' in the column for 'Rank 1'. If 'bought fuelwood' is the second most important, write '3' in the column for 'Rank 2').*

SECTION B: Resource use, income and constraints

The main aim of this section is to map out the livelihood activities and strategies of the household in the pilot areas. The household's use of land resources includes both forests and agriculture. We will also map livelihood outcomes, constraints and major changes in the use of land resources over time. This data will form the basis for assessing the local livelihood outcomes and offer information for the opportunity cost analysis of forest land in the different pilot areas.

I. AGRICULTURAL PRODUCTION FOR THE PAST 12 MONTHS

B1. List the most important crops that your household has produced, consumed and/or sold the **last 12 months.**

No	Crop type[1)]	Area (bighah/Muri/ Ropa/ Hall)	Labour[2)]	Total output(kg)[3)]	Sold (kg)[3)]
1					
2					
3					
4					
5					

1) Codes: 1= Rice, 2= Maize, 3= Millet, 4= Wheat 5=Cauliflower 6=Other

2)Codes: 1= household; 2= hired; 3=both. Please use the number for the dominant category. If one category clearly dominates, do not use 'both'.

3)Please convert local units (e.g. bushels of corn, sacks of potatoes, etc.) into kg when entering data to database.

B2. Do you have any problem(s) that limit your agricultural production? ☐

Codes: 1=Yes; 2 =No (If 'no', go to B3)

B2a. If 'yes', what do you consider to be the most important problem limiting your agricultural production? _____

B3. Have you had any conflicts over access to land for agriculture in the last 3 years? ☐

Codes: 1=Yes; 2=No (If 'no', go to B5)

B3a. If 'yes', how would you describe the seriousness of these conflicts?

1 Very low	2 Low	3 Intermediate	4 High	5 Very high

II. LIVESTOCK PRODUCTION FOR THE PAST 12 MONTHS

B4. What is the number of livestock and livestock products that your household has sold, bought, slaughtered or lost during **the last 12 months**? What is the present number of livestock?

No	Livestock	No	Product produced	Sold (incl. barter)[1)]	For own use	Total number owned
1	Cattle	1	Live animal (no)			
		2	Milk (liters)			
2	Buffalo	3	Live animal (no)			
		4	Milk (liters)			
3	Goat	5	Live animal (no)			
		6	Meat (kg)			
4	Sheep	7	Live animal (no)			
		8	Meat (kg)			
5	Pig	9	Live animal (no)			
		10	Meat (kg)			
6	Poultry	11	Live animal (no)			
		12	Egg (kg)			
		13	Meat (kg)			
7	Fish	14	Fish (kg)			

1) *Please indicate sold live animals in numbers and sold meat from slaughtered animals in kg – please convert local measuring units into kilos and liters as appropriate when entering into database.*

B5. Do you have any problem(s) that limit your livestock production? ☐

Codes: 1=Yes; 2=No (If 'no', go to B7)

B5a. If 'yes', what do you consider to be the most important problem limiting your livestock production? _____

B6. What do you consider to be the most important suggestion to improve your livestock production? _____

III. FOREST RESOURCE USE

B7. What is the importance of the following forest products that the members of your household have collected from the forest both for own use and sale over the last month? Were and how is it collected?

	Main forest products	Collected were		Collected by whom		Time taken to reach item area	Own use (kg)	For sale (kg)
		Forest type[1)]	Owner-ship[2)]	Labour[3)]	Sex/age group[4)]			
1	Fuelwood							
2	Poles &							

	timber							
3	Charcoal							

When coding, use the number for the dominant category. Hence, if one category clearly dominates, do not use 'mix'/'both'.

1) *Codes: 1= primary forest; 2= secondary forest; 3= mix*
2) *Codes: 1= private; 2= state (CBFM); 3= open access;4= mix*
3) *Codes: 1= household; 2= hired; 3= both 4= Trade*
4) *Codes: 1= men; 2= women; 3= children; 4= mix*

B8. How would you rate your access to and use of forest products (fuelwood, poles & timber, charcoal) today compared to three years ago?

	1 Much reduced	2 Reduced	3 The same	4 Increased	5 Much increased
Fuelwood					
Poles & Timber					
Charcoal					

B8a. If 'much reduced' or 'reduced', what do you consider to be the most important factor(s) limiting your access to and use of these forest products today? If more than one, please rank up to the three most important factors.

1	
2	
3	

B8b. If 'increased' or 'much increased', what do you consider the most important factor(s) for increasing your access to and use of these forest products today? If more than one, please rank up to the three most important factors.

1	
2	
3	

B9. How important are the other forest products, i. e. non-timber forest products (NTPF)that the members of your household collect from the forest both for own use and sale?

No	Other forest products	1 Do not collect	2 Somewhat important	3 Important	4 Very important
1	Fodder (collected or grazed)				
2	Bamboo				
3	Other				
4	Medicinal plants				
5	Wild fruits and leaves				
6	Nuts				
7	Bush meat				
8	Mushroom				

B10. If you sell any of the above products (question B9), how much income does your household make on average in a month (in NRs.): _____

B11. How satisfied are you with how the forests of your community are managed?

1 Very dissatisfied	2 Somewhat dissatisfied	3 Somewhat satisfied	4 Very satisfied

B12. How would you rank your relationship with other forest users in terms of access to and use of forest resources (fuelwood, poles & timber, charcoal)?

1Very bad	2 Bad	3 Fair	4 Good	5 Very good

If 'Fair', 'Good' or 'Very good, go to B13

B12a. If 'bad' or 'very bad', why is it so? Please rank

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	No cooperation				
2	Poor communication and dialogue				
3	Ethnic conflicts				
4	Unequal distribution of rights and benefits				
5	Others (specify)				

B13. Has your household planted any woodlots or trees on the farm over the past 3 years? ☐
Codes: 1=Yes; 2=No (If 'no', go to B18)

B13a. If 'yes', what are the main purpose(s) of the trees planted? You may emphasize more than one purpose

	Purpose	Ranking[1)]
1	For own use	
2	For commercial use	
3	Carbon sequestration	
4	Other environmental services If 'other', please specify here:	

1) Indicate importance by ranking the purpose(s): 1,2,3…

B14. Did your household clear any forest during the past three years? ☐
Codes: 1=Yes; 2=No (If 'no', go to B16)

B14a. If 'yes' to B14, how much forest was cleared on average per year: _____ (Ropi)

B14b. If 'yes' to B14, answer also the following questions concerning cleared forests over the last five years

		Rank 1[1)]	Rank 2	Rank 3
1	What was the cleared forest (land) used for? *Codes: 1=cropping; 2=tree plantation; 3=pasture; 4=other*			
2	What type of forest did you clear? *Codes: 1= primary forest; 2=secondary forest; 3=mix*			
3	What was the ownership status of the forest cleared *Codes: 1=private; 2= state (ordinary); 3= state (JFM);*			

	4= state (CBFM); 5= state (individual); 6=common property; 7= open access			

1) Ranking using row 1 as example: If e.g., 'pasture' is the most important use of cleared forests, write '3' in the column 'Rank 1'. Similarly, if 'cropping' is the second most important use of cleared forests, write '1' in column 'Rank 2', etc. Do similar for rows 2 and 3

B15. How much land used by your household has been abandoned on average over the last 5 years?(Left to fallow or converted to natural re-vegetation). Please denote as ha per year

(NB: READ THE MANUAL ON INCOME CAREFULLY (End of Section 5.3.2))

B16. Has the household received any cash or in kind payment or compensation related to the following forest services over the past 12 months?

No	Principal purpose	Received[1)]	If 'yes', please indicate the amount received ($)
1	Tourism		
2	Carbon projects		
3	Water catchment projects		
4	Tree planting		
5	Timber traders		
6	Other, please specify here:		

1) Code: 1=Yes; 2=No

B17. What is the average income from paid work that the household members together receive in a month (in NRs): _____
NOTE: Payments already covered in B16 must not be included here

B18. Are you or any other member(s) of the household involved in any type of business, and if so, what is the **net income** related to that business **per month?**
NOTE: Income directly from crops (B1), livestock (B5), forest products (B8, B14) or income covered above in questions B20; B21and B22 must not be included here
NOTE: If the household is involved in different types of business fill in one column for each business.

	Business 1	Business 2	Business 3
1. What is your type of business?[1)]			
2. Net income (in NRs)			

1) Codes: 1=shop/trade; 2=agricultural processing;3=handicraft; 4=carpentry; 5=other forest based; 6=transport (car, boat,…); 7=lodging/restaurant; 8=brewing; 9=brick making; 10=landlord/real estate; 13=herbalist/traditional healer; 12=quarrying; 13=fishing outside of the forest; 14: Other

B19.What is the average income received from income transfers (state support; remittances etc.) the household members together receive in a month (in $):
_____*NOTE: Must not overlap any income already covered in questions B16-B18.*

SECTION C: Property rights, use rights and management

The main issue here is to map out ownership, management and use rights to forests land and forest resources. We also want to map people's views on management systems and the rules defined for use rights. A more detailed examination of the rules regulating access and use of forest and forest resources in the different pilot areas will be dealt with in the PRA interviews. **(NB: READ THE MANUAL ON PROPERTY/USE RIGHTS CAREFULLY (Section 4.8))**

I. COMMUNITY FORESTS

C1. Are there any community forest(s) in your village/community? ☐
Codes: 1=Yes; 2=No ***(If 'no', go to Section D)***

C2. Do you have access to resources in the community forest(s)? ☐
Codes: 1=Yes; 2=No ***(If 'no', go to Section D)***

C2a. Are you a member of CFUG? ☐
Codes: 1=Yes; 2=No

C2b. Do you have individual use rights or use rights in common? ☐
Codes: 1=Individual; 2=Common; 3=Both

Use the number for the dominant category. If one category clearly dominates, do not use 'both'.

C2c. Are your user rights limited to particular resources in the community forest(s)? ☐
Codes: 1=Yes; 2=No (If 'no', go to C3)

C2d. If 'yes', which are the most important forest resources you can use?

_____

C3. Do you have any influence on the rules that govern use and management of the community forest(s)? You may tick more than one alternative.

1 Yes, during tole meetings	2 Yes, during other meetings	3 Yes, through general discussions in my community	4 No, we have not taken part at all	5 I do not know

C4. How satisfied are you with the rules that govern use and management of the community forest(s)?

1 Very dissatisfied	2 Somewhat dissatisfied	3 Somewhat satisfied	4 Very satisfied

(Note: Dependent on responses to C4, you proceed by going to C4a or C4b)

C4a. If 'somewhat dissatisfied' or 'very dissatisfied' with the rules, why is it so?

No		1 Dis-	2 Disagree	3 Agree	4 Agree

		agree	somewhat	somewhat	
1	My/our interests are not taken into account				
2	Unclear boundaries/outsiders are intruding				
3	Unequal distribution of use and benefits				
4	Too strong limitation on access to resources				
5	Rules are not followed				
6	The local community is not enough involved in making rules				
7	Conflict resolution mechanisms are inappropriate				
8	Too weak enforcement of rules/sanctions				
9	Creates opportunities for corruption				
10	Bad management/lack of coordination				
11	Other (specify)				

C4b. If 'somewhat satisfied' or 'very satisfied' with the rules, why is it so?

No		1 Dis-agree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	My/our interests are well taken into account				
2	Clear boundaries/outsiders are kept out				
3	Equal distribution of use and benefits				
4	Good access to resources				
5	Rules are followed				
6	The local community is involved in making rules				
7	Conflict resolution mechanisms are appropriate				
8	Proper enforcement of rules/sanctions				
9	Good management and coordination				
10	Other (specify)				

C5. Do you feel bound by the rules that govern use and management of the community forest(s)?

1 I feel bound by them and follow them always	2 I feel quite bound by them and follow them mostly	3 I feel somewhat bound by them and follow them sometimes	4 I don't feel bound by them and do usually not follow them	5 Not relevant to me

C6. Have there been any changes in the rules that govern use and management of the community forest(s) in the last three years (Since REDD+ pilot started)? *Codes:* ☐
1=Yes; 2=No; 3=Not aware

C6a. If 'yes', have the changes influenced your use of community owned forest(s)?

1 It has worsened my	2 It has worsened my livelihood to	3 It did not have any effect on my	4 It has improved my livelihood to	5 It has improved my

livelihood a lot	some extent	livelihood	some extent	livelihood a lot

C7 How is your relationship with the local committee managing the community forest(s)?

1 Very bad	2 Bad	3 Fair	4 Good	5 Very good	6 Not relevant

C8. Do you think the Leaders/CFUG Leaders know about REDD? _____
C9. If yes, why do you think they know and you do not?
_____
C10. Do you think some executive members keep information from people? _____
C11. When was the last time you were personally invited to a meeting? _____
C12. Have you been asked for your opinion during a meeting? _____
C13. Do you think the leaders behave in an elitist way? _____

SECTION D: REDD Analysis

The aim of this section is to gain insights about what type of REDD policies local residents would prefer. The interviewer must evaluate if the below questions are of any relevance to the respondent. The interview might in a few instances stop here. In the case of a person who does not depend on land for agriculture or does not harvest any forest wood resources (see question B11), the below questions will be irrelevant.

D1. Are you aware of the role forests play in climate change? ☐
Codes: 1=Yes; 2=No (If 'no', go to D1.a)

D1a. If 'yes', what relationship between deforestation and climate change do you find especially important?_____
_____
D2 Have you ever heard about REDD or Carbon trading? _____
D3 Do you know that your CFUG is part of REDD Pilot project? _____
D4 Have you got any informational training related to REDD? _____
D5 Could you tell us the process of selecting candidates for those trainings ?
1. From General meeting 2. User committee decides 3. NGO person decide 4. other

D6 Have you got any financial or other material support for your household from this project? if yes, how much and when? _____

D6a if no, why do you think you have not gotten any? _____

D7 Are you aware that number of organizations are involved in REDD Project at your area?

D7a. If yes, could you give us the name of those organizations if you remember?
_____

D8 Could you tell us if those same organization were working here before three years?

D9. Are there any forests in your community that are protected by the state/public authorities?
Codes: 1=Yes; 2=No (If 'no', go to question D3) ☐

D10. If 'yes', how do you feel about this protection?

1 Against	2 Somewhat against	3 Somewhat supportive	4 Supportive

D10a. If 'against' or 'somewhat against', why is it so?

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	It restricts my access to forests				
2	No compensation for losses				
3	No access to benefits from tourists				
4	Other (please specify)				

D10b. If 'supportive' or 'somewhat supportive', why is it so?

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	Protection is important				
2	Protection increases long-term access to forests resources				
3	Receive compensation for reduced use				
4	Secures access to income from tourists				
5	Other (please specify)				

D11. Does your community have any locally developed conservation measures for the forest?
Codes: 1=Yes; 2=No (If 'no', go to D6) ☐

D11a. If 'yes', what are these measures?

No		Response[1)]
1	Controlling harvest of forest products	
2	Limiting farm land in the forest	
3	Protecting some areas in the forest	
4	Placing guards to control illegal use of the forest	
5	Other (please specify):	

1) Codes: 1=Yes; 2=No

D12. How satisfied are you with these locally developed conservation measures?

1 Very dissatisfied	2 Somewhat dissatisfied	3 Somewhat satisfied	4 Very satisfied

D13. If ‘very dissatisfied’ or ‘somewhat dissatisfied’, why is it so?

No		1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	It restricts my access to the forest				
2	Unequal distribution of benefits				
3	Increased illegal use of forests				
4	Other (please specify)				

D13b. If ‘somewhat satisfied’ or ‘very satisfied’, why is it so?

No		1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	Increases long-term access to forests resources				
2	Equal distribution of benefits				
3	Reduced illegal use of forests				
4	Other (please specify)				

D14. Have these conservation measures affected the way you use forests resources?

1 Not at all	2 Not so much	3 Quite a lot	4 Very much

D15. Are there any sacred forest(s) in your community? ☐
Codes: 1=Yes; 2=No (If ‘no’, go to Section E)

D16. Are the sacred forests sacred to you as well? ☐
Codes: 1=Yes; 2=No (If ‘no’, go to Section E)

D17. In what ways is this/are these forest(s) important to you?

_____

D18. Does the fact that some forest(s) are sacred to you influence your view about forests in general? ☐
Codes: 1=Yes; 2=No (If ‘no’, go to Section E)

D18a. If ‘yes’, explain in what ways this influences your views about forests more generally.

_____

D19. Do you think you would stop clearing forest land for agriculture/stop harvesting wood resources from the forest (fuelwood, poles/timber and/or wood for charcoal production) if you get compensation for your loss of income? Please evaluate the below options.

No	Types of compensation	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	By payments				
2	By increased employment opportunities				
3	By alternative sources of livelihoods				
4	By better social services in my community				
5	Other (specify)				

(Note: Dependent on the responses to D19, please proceed to D19a, D19b or D19c)

D19a. If you cannot be motivated by the above options to stop clearing forests/stop harvesting wood resources from the forest (the respondent has answered 'disagree' or 'somewhat disagree' **to all options** 1-4 in question D19), why is it so?

No		1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	My livelihood depends too much on the forest				
2	The forest has a strong cultural value to me and it is wrong to accept compen-sation to stop present use				
3	Money cannot compensate for reduced use of the forest				
4	I do not think I will be compensated enough				
5	Other (please specify):				

D19b. If you can be motivated by some of the above options to stop clearing forests/stop harvesting wood resources (the respondent has answered 'strongly agree' or 'agree' to **at least one** of the options in question D19), why is it so?

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	The compensation will make me equally well or better off				
2	Forest protection is important				
3	It will improve our environmental conditions				
4	I need more income				
5	It will improve the conditions of our village/community				
6	Other (please specify)				

D19c. What commitments could you make to avoid deforestation in your community if compensated for that specific activity? (D19b)

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	Stop expansion of farming activity in forests				
2	Reduce wildfires in forest				
3	Stop harvesting fuelwood				
4	Stop harvesting poles/timber				
5	Stop producing charcoal				
6	Other (please specify)				

D20. Could the following manage a program against deforestation in your community well?

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	Government officials (DFO)				
2	The village leader(s)				
3	Specially elected village committee				
4	NGOs				
5	FCTF Advisory committee				
6	CFUG itself				
7	Other (please specify)				

D21. What kind of issues do you think could be associated with such a program?

No	Response	1 Disagree	2 Disagree somewhat	3 Agree somewhat	4 Agree
1	The overall income situation in the village/community will be better				
2	It will result in corruption				
3	Unequal distribution of payments				
4	Payments will go only to land owners				
5	There will be less conflicts in the village/ community				
6	It will increase privatization of land				
7	Other (specify)				

D22. If you foresee any problems, how do you think they could be best handled?
_____

D23. Do you believe in the long term success of community based forest management, and why?_____

D24. Why is the environment important to you?

Appendix 2. Focus group discussion guide

PRA part II: Questions for focus group discussions at community level

NOTE: A **manual** is developed for the project. It is important to read the manual before interviewing (**Sections 1-4 and Section 7** are the most relevant for this part of the data collection).

The purpose of this project component is to provide an insight into how local people see and express their general livelihood situation, how they evaluate local governance and power structures, and local informal and formal tenure rights. We also want to probe into their general attitudes, values and norms in relation to forest resource management and use and what kind of ideas and suggestions they would have for possible REDD schemes in their local community.

More specifically, the guide includes questions concerning:

- General livelihood conditions – outcome changes (income, food security, health, education.)
- Institutional, organizational and policy changes (local actors, policies and governance, social relations, donors)
- Property rights and tenure
- Local peoples' attitudes, values and norms
- Pre-REDD analysis, opportunities and expected problems

The local research team decides how many focus groups to establish, were to do these and how to recruit participants, see also the Manual (Section 7). The aim is to cover the pilot area – or the chosen sub-section of the pilot area[5] – as well as possible. The size of the pilot area,– including number of inhabitants, and the form of dwellings – villages or scattered houses – will influence this choice. Also the homogeneity of the area is important concerning e.g., livelihoods, property rights and ethnicity. Certainly, important variations should be covered. The basis for selecting members of the group should be geographical, i.e., each focus group should include people from the same village/sub-section of the pilot area. If different ethnic groups live in the same area/village, separate focus groups should be established for these. We also advise having separate meetings with women and men.

In the following, we will systematically refer to 'the village' as the place were people live and are recruited to form the focus group. This is thought to be the geographical reference point for the questions. Certainly, this delimitation also includes the land that the members of the village use/own. In areas were people do not live in villages, other forms of community borders need to be drawn by the research team and the members of the focus groups must be informed about what 'municipality' they are going to talk about.

[5] If the pilot area is large, it may be that only a sub-section of the area will be covered – the study area.

Note: The interviewer should write down all the answers on separate sheets including the questions number. It should be clear were the focus group discussion is undertaken and who participated.

A. General livelihood conditions

This section is structured to address the vulnerability context of the village as in the livelihood framework. The main issues here will be:

1. Livelihood security
2. Technological change
3. Shocks and coping strategies
4. Prices and price changes
5. Gender division of labour
6. Environmental conditions

A1. How do you consider the general livelihood conditions of the village today (income, food security, health, access to natural resources, social infrastructures (such as health centres, schools, piped water, electricity etc.)?

A2. Have these livelihood conditions (income, food security, health, access to resources, social infrastructures) changed over the last 5 years? What has worsened, respectively improved? Discuss the coping strategies of any livelihood conditions that have become worse. Are there more or less poor people today than 5 years ago?

A3. Have there been any major changes occurring with regard to e.g. the adoption of new technologies and innovations over the last 5 years? How has this impacted upon the way people make their livelihoods in the village?

A4. What major shocks (droughts, floods, pests, diseases, bush fires, political unrest, war, large-scale migration or land expropriation) has the village experienced over the last 5 years? Discuss the coping strategies and livelihood outcome effects of these shocks.

A5. Describe the most important changes in prices for agricultural inputs and outputs, labour, and land over the last 5 years? How have these changes had an impact on peoples' livelihood conditions (income, food security and access to resources)?

A6. Describe the general market conditions and credit arrangements of the village. Please raise issues here such as access to external market, credit institutions including saving groups.

A7. What are the dominant divisions of labour between men and women concerning resource use (land clearing, planting, harvesting, collection of fuelwood, collection of NTFPs, production of charcoal, off-farm activity).

A7. Are there activities that women do now that they did not do before? Are there activities that they are not permitted to do?

A8. Do you observe any recent changes in the climate conditions of the village?

B. Actors, power relations and institutional structure of the village

This section addresses issues related to the policy and institutional context of peoples' livelihoods. The main issues here will include:

1. Key formal and informal actors, organizations and institutional structures in the village
2. The power positions, functions and impacts in the village
3. The villagers interactions with different organizations and institutional structures

B1. What are the most important positions in terms of the governance of the village? What are the most important actors with respect to land allocation and forest management?

B2. How does the leadership of the village function? We are interested in issues especially concerning land allocation, forest management and deforestation.

B3. Have there been any major changes in this leadership recently? If so, what are the changes? How have these changes affected the functioning of this leadership on land allocation and forest management?

B4. Describe the interactions and relationships between villagers and the village leadership.

B5. How do different social groups (ethnic, wealth, religious, local opposition groups) engage in the processes in the village concerning land allocation and forest management? Please, emphasize here both formal and informal structures when relevant.

B6. Are there people in the village who are particularly disadvantaged or favoured by the way resources are distributed and controlled?

B7. How would you describe the conflict level related to distribution, acquisition and use of land in the village (very low, low, fair, high, very high)? What are the main conflicting issues?

B8. What important external actors (NGOs, extension service, state officials, and donor agents) are engaged in the management of village business? How do they interact and relate to the village leadership specifically concerning land allocation and management of forest?

C. Rules for resource access and management. Forest status

This section address issues related common property resource management. The main issues here include:

1. The rules and regulation of access and use
2. The participation of local people in the formulation of rules and regulations
3. The governance structure
4. Enforcement of rules and sanctions
5. Conflict resolution mechanisms
6. Status of forest resources

This section will be divided in three, covering separately state forests, community forests and forests under open access.

State forest(s) (if any).

We have separated state forests into four sub-categories, which reflect the degree of management responsibility:

- State forest (ordinary)
- State forest (JFM)
- State forest (CBFM)
- State forest (individual)

If more than one type exist in the pilot/study area, please go through the below questions C1-C12 separately for each type. Most probably you would like to do these interviews yourself. If, however, you hire somebody to do them, you might want to duplicate the interview guide on this issue and add a letter to the question C1-C12 to clarify which ownership type it refers to – e.g., C1(Ord) of 'State forest ordinary' and C1(JFM) if 'State forest (JFM)'. You may also want to specify the questions differently – e.g., say 'ordinary state owned forests' or 'state owned forests under JFM' instead of just 'state owned forests' or 'state forests' as are the terms used below. Whatever way you choose to do this, please **make clear** in the report which type of state forest the data concerns.

C1. What is the status of state owned forests in the village area – level of degradation? Has the level of degradation changed over the last 5 years?

C2. What is the operational form of management, how is the forest managed, and what are the main activities of the management entity?

C3. If the village is involved in the management of state forest(s), please describe how it is involved.

C4 Describe the rules concerning to what extent you are allowed to engage in productive activities in the forest, and how much is allowed to harvest, when and by whom in state owned forests in the pilot/study area. Please distinguish between timber resources/wood on the one hand and NTFPs on the other.

C5. Do the villagers feel bound by the management rules and tend to follow them?

C6. How are access and use of resources monitored?

C7. How are the rules concerning access and use of resources being enforced?

C8. Please identify and describe the sanctions associated with breaking the rules of access and use of state forest(s) (effectiveness, graduation of sanctions).

C9. How do the villagers view the enforcement and sanctioning of the rules? Has this affected their use of the forest?

C10. Is the system to resolve conflicts over use of state forest resources well formulated (both internal and external conflicts)? What are the rules for this system? Are you satisfied with them? Please describe how such conflicts are resolved? If there is no system to resolve conflicts, why is it so?

C11. Are there any major changes in the rules governing access to state forest(s) over the last 5 years? If yes, what are these changes and how have they affected the general livelihood conditions (income and food security) of the village?

C12. Please describe the relationship between the villagers and the management entity of the state forest(s)?

Community forest(s) (if any)

C13. What is the status of community owned forest(s) in the village area – level of degradation? Has the level of degradation changed over the last 5 years?

C14. How is this forest managed, and what are the main activities of the management system in place?

C15. Are the extent of the community forest(s) well defined (physical boundary)?

C16. Describe the rules concerning how much is allowed to harvest, when and by whom in community forest(s) in the pilot/study area. Please distinguish between timber resources/wood on the one hand and NTFPs on the other.

C17. Do the villagers feel bound by the management rules and tend to follow them?

C18. How are access and use of resources monitored?

C19. How are the rules concerning access and use of resources being enforced?

C20. Please identify and describe the sanctions associated with breaking the rules of access and use of resources in the community forest(s) (effectiveness, graduation of sanctions).

C21. How do the villagers view the enforcement and sanctioning of the rules? Has this affected their use of the forest?

C22. Is the system to resolve conflicts over use of state forest resources well formulated (both internal and external conflicts)? What are the rules for this system? Are you satisfied with them? Please describe how such conflicts are resolved? If there is no system to resolve conflicts, why is it so?

C23. Are there any major changes in the rules governing community forest(s) over the last 5 years? If yes, what are these changes and how have they affected the general livelihood conditions (income and food security) of the village?

C24. Please describe the relationship between the villagers and the management committee of the community forest(s)?

C25. How would describe the relationship between the management committee and the leadership of the village and relevant external actors?

Open access forest(s) (if any)

C26. Are there any forest areas in the village that people are allowed to access and use without any control?

C27. Please describe the area of the village regarded as open access.

C28. What is the status of this area – level of degradation? Has the level of degradation changed over the last 5 years?

C29. What are the main resources that are extracted in the open access areas? Are they important for the livelihood of the villagers/community?

C30. Do people from other villages access these forests?

D. Local peoples' attitudes, values and norms related to forest resources use, conservation measures and conflicts

The main focus in this section will be on

1. Local peoples' attitudes towards the forest
2. Their relationships with the forest
3. Local practices of forest resource use

D1. What does your community think about the forest of the village/community? What is the importance of the forest concerning:

- livelihoods/income,
- life mode,
- safety net,
- cultural and spiritual values

D2. Has the importance of the forest along the above dimensions changed over the past 5 years? If there are changes, what has caused these?

D3. Are there any norms concerning what is considered proper forest use and management? How do these influence access to and use of forest resources? Are there any important changes over the last 5 years in these norms?

D4. How would you describe the villagers' knowledge about the forest today compared to 10 years ago?

D5. Please list and describe the main conflicts over forest resources in the village (if any) over the last 5 years (e.g., access, use, conservation). Have any of them been resolved? How do the villagers handle unresolved conflicts?

E. Pre-REDD analysis, opportunities and expected problems

This section covers issues concerning:

1. Risk perception
2. Willingness to accept payment
3. Alternative payment formats

You will need to briefly introduce that there is a REDD project that will be started soon and explain the aim of reducing deforestation/less use of forest resources – especially wood and timber.

E1. What do you think would be the best form of compensation for reduced access to forest resources – e.g., individual payments in cash or investment in the community or a combination? If in kind payments are of any relevance, which form(s) would be best?

E2. If payments in cash, how do you think the villagers will use these payments?

E3. How do you think you could compensate for reduced access to forest resources like land for agriculture, fuelwood, timber, wood for charcoal production etc? (Please see Section 7.3.5 in the manual for guidance on this question).

E4. How should such a payment scheme be managed – e.g., by local leaders, by local government, by local NGOs, or by some external actors (foreign NGO)? Who would you trust the most and why?

E5. Please identify and describe any problem you think could be associated to these types of payments (e.g., security of payment, ability to deliver, corrupt practice and misuse).

E6. Are there any aspects of the institutional and organizational structures of the village that could impact the way the payment scheme could work? (Discuss issues like elite capture, corruption, unequal distribution and marginalization).

Appendix 3. Key Informant interview guide

RPRA part I: Questions for local resource person(s)

NOTE: A **manual** is developed for the project. It is important to read the manual before interviewing (**Sections 1-4 and Section 6** is most relevant for this part of the data collection).

The purpose of this project component is to provide general **factual** information about the situation in the pilot/study area. The note covers the following issues:

- Demographics and general livelihood conditions in the pilot/study area
- Property rights/tenure and management rules
- Market for land

We expect interviews with local resource persons to be the most important source of information. The interviewer should, however, feel free to use whatever sources of information necessary to establish the best basis for the data demanded by this note – i.e., also written sources, maps etc. when that is suitable/available – see also Manual (Section 6). It is important that the sources used are well documented. This is of importance both for reporting reasons and in case we need to go back and check data.

Note: The interviewer should write down all the answers/data on separate sheets (except tables), including the question numbers and how data was obtained. When interviewing, using a **recorder** is recommended to facilitate easy flow of the interview sessions and also to improve the quality of the information. But please do take notes as well to avoid any loss of data resulting from recorder failure, etc.

The choice of person(s) to be interviewed is very important. For this reason, the local team must make this choice based on their experience with the pilot/study areas. The data required in this note must cover the situation in the entire pilot, or if a subsection of this area is chosen for our study, it must cover the whole of that sub-section. When the note later refers to 'the pilot/study area', it is this entity that we have in mind.

If there are important variations in the pilot/study area – as defined above – for some of the issues covered by this note, you might have to divide the area into sub-areas for these issues. This is fine, as long as the whole pilot/study area is covered and you have made clear which subarea the data covers.

A. Demographics and general livelihood conditions in the pilot/study area

This section focuses on providing general information at the level of the pilot/study area, important trends in changes of conditions over the last 5 years and major shocks that impact on general livelihoods conditions of local people:

- Demography and demographic changes
- Technological changes
- Changes in economic frame conditions (input and output prices)
- Shocks (climate, drought, floods, pests, diseases, civil unrest, war)
- Livelihood outcome changes (income, food security, health, education)

A1. How many villages does the pilot/study area contain?

A2. What are the population and number of households in the pilot/study area today and 5 years ago?

A3. What are dominant in- and out-migration trends of the pilot/study area today? Are there any major changes in this pattern over the last 5 years?

A4. Has the pilot/study area experienced any particular innovations of importance for livelihood outcomes over the last 5 years?

A5. Describe – if any – major shocks (drought, floods, cyclones, pests, diseases, civil unrest, war, etc.) that have occurred in the pilot/study area in the last 5 years. How have these affected the livelihood conditions for the people living in the area (income and food security)? If there is any important variation across different ethnic groups, classes, gender and other relevant categories, it is important to note these.

A6. Describe briefly the general livelihood conditions (income, food security, health, education and social infrastructures) of the households in the pilot/study area today and the main changes over the last 5 years. If there is any important variation across different ethnic groups, classes, gender and other relevant categories, it is important to note these.

A7. Detailed list of input and output prices. The national research team must define the most important crops in the study area – must be the same as those covered by the household questionnaire. We will use this information in calculating the gross income for the household, so crops that generate income of significant importance, even if it is for just few households, should be included.

Categories	**Prices ($)**	
	Local market (village level)	External market (non-village; nearest town)
Outputs		
Crop types (prices per kg)		
1		
2		
3		
4		
5		
6		
7		
8		
Main Forest products		
Fuelwood		
Poles & timber		
Charcoal		
Inputs (prices per unit)		
Tractor - hire (per day)[1] - purchase		
Hand hoe and cutlass		
Ox plough - hire (per day)[1] - purchase		
Other inputs (specify): - -		
Credit market (interest rates)		
Labour market		
- Permanent paid (per hour)		
- Hire periodic (per hour)		
Land for agriculture *(per ha)*		
- Buy		
- Rent		
-		
-		
-		

1) If this is not the local custom,, recalculate per hour

A7a. What is the 'typical distance' from a village to the nearest main marketplace beyond that of the villages?

A8. Are there any types of exchange in the pilot/study area that does not involve monetary transfer such as barter (reciprocity or in-kind payment) and how do the communities engage in this type of exchange?

A9. How have the changes in input and output prices affected people's livelihood conditions (income, food security) over the last 5 years?

A10. Has there been any change in relative profitability between agriculture, livestock, forest and off-farm opportunities over the last 5 years? Which of these activities has become relatively more profitable?

A11. Describe the present job market (off-farm jobs) situation and 5 years ago

A12. Describe the poverty situation of the pilot/study area. Are there more poor people today than 5 years ago? If there is any important variation across different ethnic groups, classes, gender and other relevant categories, it is important to note these.

A13 *Addendum to question A7*, detailed list of input and output prices. Please could you also provide the prices for the following outputs:

No	Livestock	Product produced	**Prices ($)**	
			Local market (village level)	External market (non-village; nearest town)
1	Cattle	Live animal (per single unit)		
		Meat (per kg)		
		Milk (per liter)		
		Dung (per kg)		
3	Goat	Live animal (per single unit)		
		Meat (per kg)		
		Milk (per liter)		
4	Sheep	Live animal (per single unit)		
		Meat (per kg)		
		Milk (per litwr)		
5	Pig	Live animal (per single unit)		
		Meat (per kg)		
6	Poultry	Live animal (per single unit)		
		Egg (per kg)		
		Meat (per kg)		

B. Property rights, rules and forest status

This section focuses on

- Ownership classification of land and forest
- Rules concerning use
- Level of degradation of forests

B1. How would you classify the land in the pilot/study area?

Land cat. (code land)	Total area (ha)	Private property (ha)	State property (ordinary) (ha)	State property (JFM) (ha)	State property (CBFM) (ha)	State property (individ.) (ha)	Common property (ha)	Open access (ha)
	Forest:							
Primary								
Secondary								
Plantations								
Protected [1)]								
Scattered								

1) This category will cover sub-sections of the other three forest categories – especially primary and secondary forests

B1 (cont.)

Land category (code-land)	Total area (ha)	Private property (ha)	State property (ha)	Common property (ha)	Open access (ha)
Agricultural land:					
Cropland					
Pasture					
Agroforestry					
Fallow					
Waste land					
Other land categories:					
Shrubs					
Grassland					
Wetland					

B2. Describe if there have been any major shifts in land distribution between the above ownership categories over the last 5 years.

B3. Give a description of the ecology of the forest types (primary, secondary and plantations).

B4. Categorize the use rights to resources in **state owned forests** (if any such forests in the pilot/study area). Clarify the dominant form of both categories below. Use 'mix' only if no category clearly dominates. (You may want to add a description of what resources are governed by which category, if e.g., type of formalization is both formal and informal).

Degree of formalization			Degree of collectivity		
Formal	Informal	Mix	Collective	Individual	Mix

B4a Also, please include a description of the **operational forms** of state-owned forests:

Ordinary State	State Company (wholly state funded)	State Company (joint-stock)	Non-state company (national)	Multinational company	Other

B5. Categorize the use rights to resources in **community forests (common property)** (if any such forests in the pilot/study area). Clarify the dominant form of both categories below. Use 'mix' only if no category clearly dominates. (You may want to add a description of what resources are governed by which category, if e.g., type of formalization is both formal and informal

Degree of formalization			Degree of collectivity		
Formal	Informal	Mix	Collective	Individual	Mix

B6. Describe the rules concerning how much is allowed to harvest, when and by whom in **state owned forests** in the pilot/study area. Distinguish between timber resources/wood and NTFPs. Has there been any major changes in these rules over the last 5 years?

B7. Describe the rules concerning how much is allowed to harvest, when and by whom in **community forests (common property)** in the pilot/study area. Distinguish between timber resources/wood and NTFPs. Are there any major changes in these rules over the last 5 years?

B8. How are the rules enforced (monitored and controlled) and what are the associated sanctions if broken? Please, distinguish between state owned and community owned forests if relevant.

B9. What are the impacts of the rules on the general livelihood conditions (income and food security) in the village? Please, distinguish between state owned and community owned forests if relevant.

B10. How would you characterize the status of the forests in the different forest ownership categories in your community?

Forest ownership types	Status				
	1Very degraded	2 Degraded	3 Fair	4 Good status	5 Very good status

Private forests					
State property (ordinary)					
State property (JFM)					
State property (CBFM)					
State property (individual)					
Common property					
Open access					

B11. In your opinion, which of the following do you think is the most important source of forest degradation in the different forest ownership types? Please rank if more than one source apply. So if 'timber extraction' is dominant source for private forests, write 1 in that square. Next if 'clearing for agriculture' is the second most important, write 2 in the relevant square.

No	Ownership types	Source of forest degradation			
		1 Over use of forest products	2 Clearing for agriculture	3 Encroachments on forest land	4 Timber extraction
1	Private forests				
2	State property (ordinary)				
3	State property (JFM)				
4	State property (CBFM)				
5	State property (individual)				
6	Common property				
7	Open access				

B12. How would you expect the status of the different forest types in your community to be in 5 years from now compared to to-days status concerning degradation?

Forest ownership types	Status				
	1Much worse	2 Somewhat worse	3 As to-day	4 Somewhat better	5 Much better
Private forests					
State property (ordinary)					
State property (JFM)					
State property (CBFM)					
State property (individual)					
Common property					
Open access					

B13. How is the distribution of land between the households in the pilot/study area? Note both owned land and land were the households have use rights. Note also if there are any important variation across different ethnic groups, classes, gender and other relevant categories.

C. Markets for land

The issues here include;

- Land prices and changes over time
- Cost of establishing a title deed or a permit to land and property
- Land acquisition by external agents
- Alienation rules for different types of property rights

C1. How is land typically distributed across households in the pilot/study area? Does the distributional pattern have any major impact on the general livelihood conditions (income and food security) of the pilot/study area and different groups of people?

C2. What are the current prices per ha – for purchasing and for renting – average quality land of the following categories?

- Primary forest (average deforestation) – purchase; renting
- Secondary forest (average deforestation) – purchase; renting
- Crop land – purchase; renting
- Pasture – purchase; renting

You might need to split into sub-categories if these categories are too coarse to give a reasonable picture of the prices

C3. Describe the rules that regulate the purchase of land in the pilot/study area today. Have there been any important changes over the last 5 years?

C4. Have there been any important changes in the price of land over the last 5 years. How have these changes affected the livelihood conditions (income and food security) in the pilot/study area?

C5. What is the cost of acquiring a title or permit/sub-lease for a piece of land from the authorities? How does this cost affect peoples' access and use of land in the pilot/study area?

C6. Do inhabitants in the pilot/study area have the right to sell land within and out of the villages they live in?

C7. Is there available land for the establishment of new households in the pilot/study area?

C8. How would you describe the rules regarding transfer of ownership of

a) privately owned land,
b) land allocated by the State,
c) land assigned by a State company or similar, and
d) community-owned land in the pilot/study area

C9. How would you describe the rules regarding transfer of user rights in the pilot/study area concerning

a) privately-owned land,
b) state-owned land,
c) land allocated by the state,
d) land assigned by state company or similar,
e) community-owned land

C9a What is the extent of informal land sales in the study area (black market) – is it a big issue?

C10. Describe if the pilot/study area has experienced any form of land acquisition (buying or leasing) by external agents over the last 5 years. How has this affected the livelihood conditions (income and food security)?

Section E: Communication and collaboration (For KEY persons)

E1. Which governmental institution, NGOs or other Organizations do you belong to?

_____

E2. Which governmental institution, NGOs or other Organizations do you collaborate with?

_____

E3. Do you find your collaboration with this/these governmental institution, NGOs or other Organizations to be productive?

Disagree	Disagree somewhat	Agree somewhat	Agree

E3a. Please elaborate:

E4. What type of structure do you believe the current decision making process has regarding REDD+?

Top- Down	Collaborative	Bottom - up	Other:

E5. Do you find the decision making process transparent?

Disagree	Disagree somewhat	Agree somewhat	Agree

E6. Do feel that the local populous is an integrated actor in the formation of plans and the general decision making process in regard to REDD+?

Disagree	Disagree somewhat	Agree somewhat	Agree

E7. What perception do you have personally of the REDD project?

Negative	Somewhat negative	Somewhat Positive	Positive

F7a.Please elaborate:_____
_____
_____

E8. What perception do you believe the affected local populous has towards the REDD project?

Negative	Somewhat negative	Somewhat Positive	Positive

E8a. Please elaborate:_____
_____
_____

E9. Can you note in which aspects of the REDD+ mechanism which you find lacking or in need of re-
working?_____

E10. What type of information (if any) do you believe is still needed in order for REDD+ to be successful?_____

E11. Do you believe performance-based payments though REDD could be a major incentive for implementing a more coherent strategy to tackle deforestation? Please, explain why. (i.e., performance-based payments would occur after REDD activities reduce deforestation, and monitoring has occurred)
_____