

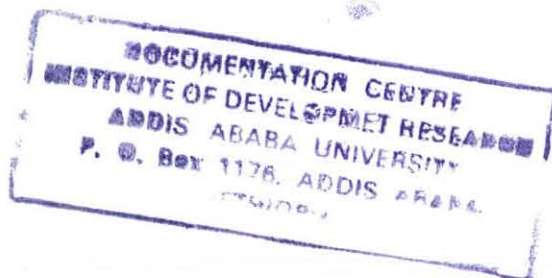
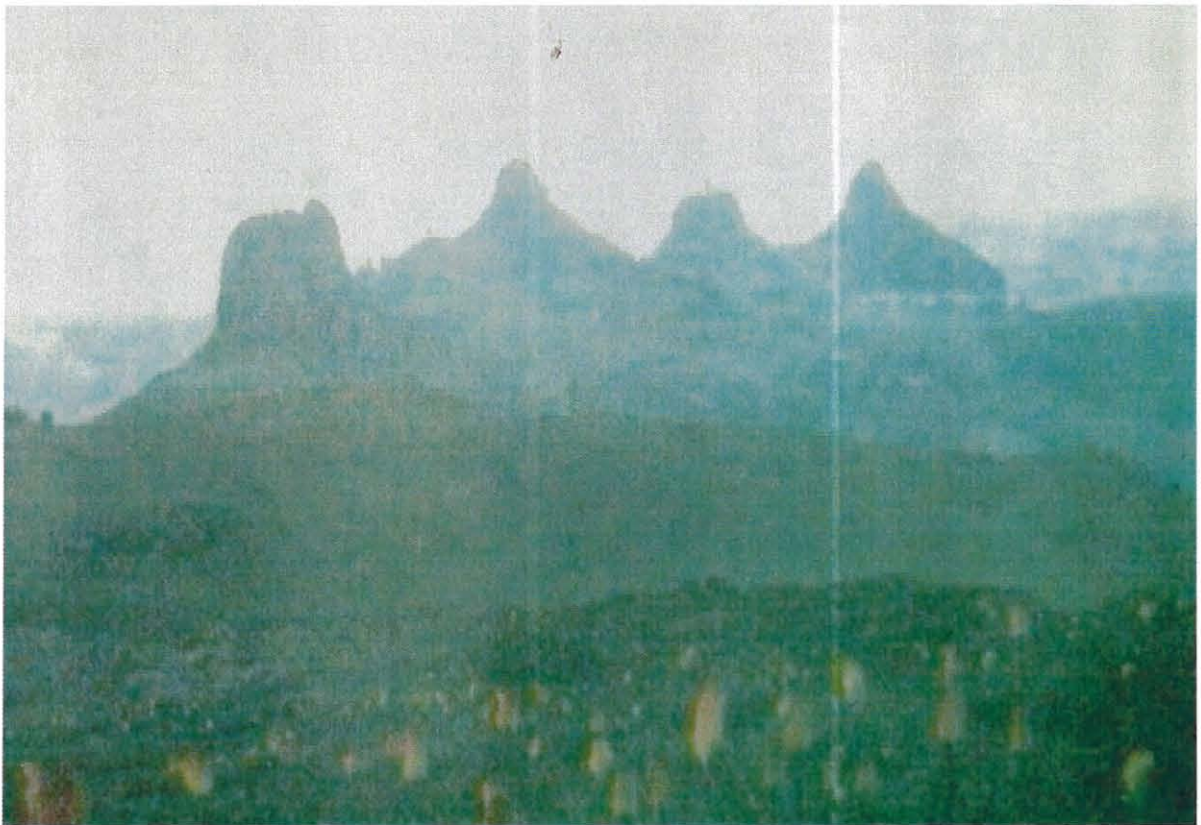
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**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
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**THE INTERFACE BETWEEN RISKS AND FARMER  
LIVELIHOOD DIVERSIFICATION OF MOUNT  
CHOKE COMMUNITY:  
THE CASE OF SINAN DISTRICT IN AMHARA REGIONAL STATE**

**BERHANU GEBREMICHAEL**



**ADDIS ABABA**  
**JUNE 2008**

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**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
**COLLEGE OF DEVELOPMENT STUDIES**

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AMHARA REGIONAL STATE**

**A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES  
OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN  
DEVELOPMENT STUDIES (RURAL LIVELIHOODS AND DEVELOPMENT)**

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**ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
COLLEGE OF DEVELOPMENT STUDIES**

Title

**The Interface Between Risks and Farmer Livelihood Diversification of  
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BY

**Berhanu Gebremichael Challa**

**DEVELOPMENT STUDIES**

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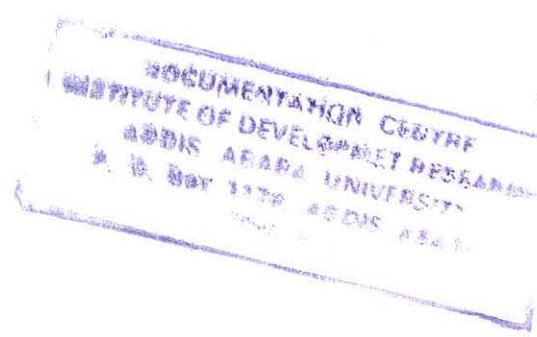
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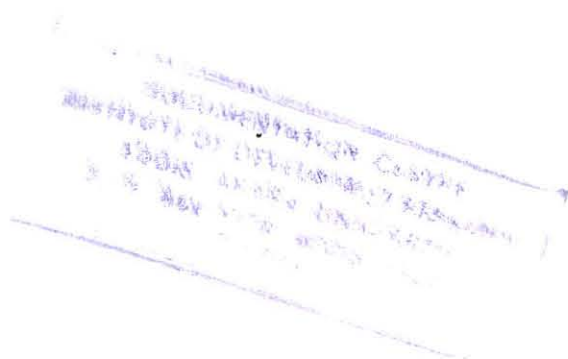
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## ACRONYMS

AAU	Addis Ababa University
df	Degree of Freedom
DFID	Department for International Development
ESSS	Ethiopian Soil Science Society
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
Ha	Hectare
HH	Household
IDS	Institute for Development Studies
IFPRI	International Food Policy Research Institute
LD	Livelihood Diversification
NRM	Natural Resource Management
ODI	Overseas Development Institute
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PRA	Participatory Rural Appraisal
R&V	Risk and Vulnerability
RRA	Rapid Rural Appraisal
SL	Sustainable Livelihood
SLA	Sustainable Livelihoods Approach
SLF	Sustainable Livelihood Framework
UNDP	United Nations Development Programme

## ABSTRACT

*Agriculture is the economic bedrock of most-low income countries like Ethiopia. Its growth is critical as over 60% of the people (more than 96% in the study area) who depend on agriculture for their livelihoods and live on less than one dollar a day in rural areas. As evidenced in the highlands of Ethiopia, the trends of economic activities are threatening biodiversity and posing significant risks to livelihoods. This notion of risk as linked to livelihood diversification in the highlands of Mt. Choke is the centre of the study. The study utilized both qualitative and quantitative methods of data collection and analysis. To gather data, 100 households were randomly selected from three kebeles of Sinan District in East Gojam. It was assumed that not only environmental risks such as land degradation, erosion and diseases affect the kind as well as the degree of livelihood activities but also the types of activities the HHs carry out result in risks instead of building their asset portfolio. In the process, data reduction for independent variables was done by factor analysis (principal component extraction method). The analysis shows that the socio-economic conditions of the HHs determine the individual as well as community level exposure to risks and the degree of HHs' engagement in a number of livelihood options. The results demonstrate that asset endowments, locational settings and the chosen livelihood strategies influence one another and determine the exposure and occurrence of risks. In testing, chi-square shows that there is not significant association between farm/non-farm activities and various socio-economic characteristics among HHs who face similar hazards in the highlands. The analysis also forwards that environmental risks are the most felt and observed risks that impact the livelihood activities and the wellbeing of the HHs as compared to others. When more of social and economic risks are persistent, diversification becomes inexistent and seeking external help will be in place. In this way, the effect of one on the other (risk on livelihood diversification and livelihood diversification on risk) is the function of the complex interwoven highland livelihood system that depends on the depleted natural resources which are the only means in the constrained non-farm activities due to poor natural endowments and poor basic service provision. The degree differs based on the type of risks (covariate or idiosyncratic) and activities that persist among different groups of society. What is more, it was found out that the chronic the risks and the poorer the HHs, the less is the livelihood diversification. The impetus of the findings is that a sound understanding of the highland peasants' risk perceptions of the highland community in relation to livelihood diversification in response to various types of risks is critical for developing sustainable livelihood practices and programmes. They also forward the importance of tackling, in an integrated and sustainable way, the multifaceted problems that the peasants face in a fragile ecosystem on which the poor smallholders rely based on the local level reality.*

**Keywords:** Risk, risk perception, livelihood diversification, sustainable livelihood, smallholder peasants

# CHAPTER ONE

## INTRODUCTION

### 1.1. Background

Since agriculture is the economic bedrock of most-low income countries, its growth is critical for the majority who depend on agriculture for their livelihoods and live on less than one dollar a day (Anley et al., 2007; Gordon and Craig, 2001). Particularly in Sub-Saharan-Africa, small farmers dominate the rural sector and hold more than 90% of agricultural producers (Mwabu, 2001; Belaineh, 2003).

As agricultural productivity that results from proper practices and strategies is a precondition for achieving the goal of eradicating extreme poverty and hunger in the developing world, the rural farmers who do not have the socio-economic and political means to realize their economic rights, and face context based calamities are the focus of development in relation to the local situations (World Bank. 2003b; Anley et al., 2007).

As evidenced in the highlands of East Africa, (including Ethiopia), the trends of agricultural activities are threatening biodiversity and posing significant risks to livelihoods (Belaineh, 2003). In such places, poverty is the result of unproductive agriculture to a large extent as agricultural development, environmental protection and human well-being depend on healthy ecosystem, which is losing enormous natural capital at unprecedented rates and threatening the long term sustainability (Shimeles, 2004).

The situations and actions in the developing world where livelihoods depend on natural resources and the subsistence agriculture are becoming worse and full of risks. Research indicates that a livelihood becomes sustainable when it can cope up with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers and Conways, 1992a; Ashley and Carney, 1999; Carney, 1998; and DFID, 2001). In ways that can contribute to sustain livelihoods as well as achieve the purposes of rural development, any development activity should provide farmers with appropriate risk diffusing operators which help them

adapt to the environment and channel their activity. Where resource access is far from uniform and natural resources are endangered, the constraints on production choices and livelihood strategies are considerable for farmer groups (Jodha, 2000; Mengistu, 2001).

Furthermore, the Ethiopian sector policy, a Plan for Accelerated and Sustained Development to End Poverty (PASDEP), also implies that the strategies such as livelihood diversification needs to be assessed and planned taking into consideration the need for particular strategies suitable to local conditions. At the local level, the availability of technology, information, and other resources are some of the factors that determine the socio-economic characteristics of livelihood options and the performance of farmers and communities in both productive and social terms.

Thus, understanding the existing livelihood diversification strategies of peasants in specific geographic contexts in relation to the existing trends and shocks is a first step toward the identification of appropriate options to increase the potential for sustainable livelihood of particular peasant groups (Delgado and Siamwalla, 1997). In the same token, local-level analysis can help to highlight the primary constraints to the options and the differential nature of risk and vulnerability of particular groups. In addition, such studies can help to prioritize interventions and facilitate the creation of a more sustainable and equitable livelihood as well as environment (Wehbe et al., 2005).

## **1.2. Problem Statement**

As indicated above, smallholder farmers who represent the majority of the population in Sub Saharan Africa particularly take a big share of people living below the poverty line in Africa. They also represent a major link between the economy and the environment because their livelihoods depend directly on the use of land resources. In a bid to alleviate poverty and promote sustainable resource management among rural peasants, a number of policies and initiatives have often had limited success because they are delivered as single component solutions and rarely address the complexity of farmer livelihoods (Moseley, 2003). Burton (1997) stresses that societies and groups within society that are dependent on natural resources for their livelihoods are considered to be particularly vulnerable to risks unless options are diversified.

With current scourge of multifaceted problems in Sub-Saharan Africa, researchers and development practitioners are increasingly advocating for more dynamic models of the smallholder farmer. However, these have little taken into account the emergence of increasing groups of the smallfarmer, changing trends in household structure as well as institutions and the effect of local phenomena like poor natural resource utilisation as well as traditional agricultural practices, diseases and climate change on resource use, productivity and sustainability in an integrated manner to tackle problems and ensure development by employing potentially possible livelihood alternatives.

What is more, there is hardly an emphasis on the local priority and reality based development interventions. If there is any, it is on its own way in one direction, ignoring other focus areas that need to be integrated. It is also stated that rural poor societies and groups that are dependent on natural resources for their livelihoods are considered to be particularly vulnerable to climate change (Burton, 1997). Research further demonstrates that resource-poor and risk exposed peasants in the highlands have different strategies to manage the production systems based on both local and research-driven knowledge and means. Some of these are resource- and /or labour –demanding, and farmers have to make decisions on how to best shift and allocate their scarce resources and labour force between the competing activities within their fields during uncertainty. With many activities competing for the scarce resource at the farmers' disposal, it implies that trade-offs incurred will be crucial when making decisions on which activities to undertake at farm and non –farm level.

One of the limitations to the risk management for the rural households that depend on natural resource and which reside in the uplands has been the type of livelihood diversification which is assumed to increase productivity and income, but with no proper consideration of the risk aspect in the their decision making, changing household structure (Little et al., 2001). The kind of activity which is intended to manage a risk becomes a source for a different or severe risk.

This notion of risk and risk aversion mechanisms through diversification in the community of Mount Choke in Ethiopia is the centre of the study. For the past fifty years, a substantial body of research as related to people's risk perception and its management strategies has been dealt within a wider context and in isolation. Similarly, in Ethiopian context, for example, the

works of Belaineh (2003), Dessalegn (1991), Mesfin (1984) and Gerum (2007) demonstrate this scenario.

However, the pluralistic nature of the Ethiopian societies and resources call for a local based approach to integrated development from which the objective of this research emanates. The study tries to bring the isolated and usually considered as minor issues, i.e. risk and livelihood diversification, in bold for practical and integrated rural development interventions. It is foundout that risk perceptions and risk management strategies (in this study, livelihood diversifications) are shaped by economical, environmental, social and cultural factors and may vary among different social and economic groups of the society. It has been argued that development policies, plans and programmes must address vulnerabilities to various risks by enhancing practical options (Yamin et al., 2005).

The main purpose of this exploratory study is, therefore, to identify the interface between risk and livelihood diversification among poor farm households on the upper catchments of the Choke Mountain. The study specifically deals with identifying the risk of agricultural activities on the livelihoods of the rural catchment community and the most valued functions being threatened, establishing baseline information that guides the formulation of development strategies to promote effective livelihood options as well as biodiversity management, and determining the implications to the stakeholders.

### **1.3. Objectives of the Research**

The study generally aims at identifying the interface between risk and livelihood diversification of smallholder farmers among the rural households of Sinan District in the highlands of Choke Mountain, which is part of the Blue Nile Sub - Basin.

Some of the specific objectives of this study are:

- to identify risks that are features of the mountain community in relation to agricultural practice.
- to describe the nature of risk ( born) and risk based livelihood diversification .

- to identify any livelihood diversification that either promotes or reduces vulnerability to risk on the uplands by different income and social groups.
- to examine risk perceptions of the upland rural households to determine the relationships between risk and livelihood diversification in relation to vulnerability to environmental/natural, social and economical dimensions of livelihoods.
- to establish baseline information that guides risk- diversification relationships to extension work, research, agricultural as well as non- agricultural activities and policies to promote livelihood options and biodiversity management.

## **1.4. Research Questions and Assumptions**

### **Research Questions**

This study addresses the following key research questions.

- What are the peculiar risks of Choke upper catchments in Sinan District? How do farmers perceive them?
- What do they affect in the decisions and livelihood activities of the farmers?
- How are risk and livelihood diversification interrelated? What information in the interface assists development programmes and strategies?
- Who are vulnerable? What promotes or reduces vulnerability to risks on the hills?
- What are the implications of risk – livelihood diversification linkages to training, environment and awareness creation?

### **Assumptions**

Land scarcity, erosion, degradation, less access to market, over cultivation, unseasonal and irregular rain, poor natural resource management, population growth, fragmented land holdings, deforestation, diseases, pests and unemployment are among the major predictor variables that signify risks on the upper catchment. The assumptions are that these influence

the types and number of options which the smallholder farmers opt for in diversifying their livelihoods based on their socio- economic status and the existing local realities. These averting mechanisms can also go the other way by different groups of people in contrast to what many researchers have shown as how risk is interrelated to livelihood diversification (Ellis, 2000; Burton, 1997; Belaineh, 2003 and Scoones, 1998).

This entails that, instead of reducing risks, the activities in which the farmers are engaged to diversify their life through alternative and self-employment rural enterprises (agricultural and non- agricultural) result in risks, affecting the natural base.

### **1.5. Significance of the Study**

A sound understanding of the fragile ecosystem and living conditions of the upper catchment smallholder peasants who rely on the local natural resources for their livelihoods and get exposed to various calamities is critical in order to develop sustainable livelihood practices, programmes and policies. This information which results from the interactions of the local trends in relation to risk-diversification linkage can have contributions to the following.

#### **➤ *Empirical body of Knowledge***

This empirical study obviously has academic relevance in terms of generating contextualized facts concerning the interface between risk and livelihood diversification that has been little discussed in the Ethiopian context. As there is a high scarcity of literature and dearth of research out put on such interface, the findings of the study are expected to bridge the existing literature gap to understand the risk-livelihood diversification linkages.

#### **➤ *Local development practitioners***

Local as well as international NGOs interested in intervening with the aim of promoting rural development into the study area would benefit from the findings of the study.

#### **➤ *Development policies, programmes and plans***

As the study involves all groups in the upper catchment community, development planners and programmers can take into account the findings for successful development programmes

in the area. Besides, the findings may be utilized by policy makers (planners) for the formation of new policies and coping mechanisms as well as policy reforms in the areas of risk and livelihood diversification to respond to the local realities for sustainable development.

➤ *Trainings and extension education*

Trainers and educators of rural development can base their education on the context of the main stakeholders to reduce vulnerability and to build the assets of the community towards the run for poverty reduction.

➤ *Further research undertakings*

The study may be also considered as a foundation for further in-depth empirical research on areas of risk- livelihood diversification interface and a source material.

## **1.6. Scope of the Study**

The scope of the study includes a survey of the Choke highland peasants across three kebeles of Sinan District in the Amhara Regional State in Ethiopia. The survey covered different groups of the agricultural sites and the main categories of production in the catchment: animal, crop and other products. Involving all household members who are more than eighteen years old and both sex groups, the researcher dealt with issues in relation to risk and livelihood diversification linkage.

## **1.7. Limitations of the Study**

In the course of the study, I have encountered two major limitations despite efforts of controlling their consequences on the final outcome. Firstly, risk and livelihood diversification require measurement parameters and complex livelihood analysis respectively by taking into account their diverse dimensions. This made it impossible to follow a determined framework and linkage. Secondly, lack of sufficient resources posed certain threats to the process of the research. In this regard, the researcher tried to revise the plan based on what could be performed. Furthermore, the district administrative officers have

been strong support to cover the problem faced. Materially, I could hardly find references that discuss the relationship between risk and livelihood diversification. In responding to this, I had to have a lot of readings on both wings to grasp the nature of the main body.

## **1.8. Thesis Structure**

Including this chapter, the thesis is classified into eight chapters. Each chapter has its own introduction and summary except the first and the last chapters. The thesis is thematic in its organization. After the presentations of the literature review in chapter two and the methodology section in the third chapter, the fourth presents the socio-economic characteristics of the study area. This is followed by the chapter on risk issues and concerns in the highlands of the sample kebeles. Then, the sixth chapter discusses livelihood diversification matters in relation to the various activities the rural households carry out together with various determinants which are peculiar to the area. Next, the interface between issues in the past two chapters are drawn from the data generated in various forms. This is the real coin which is derived from the two faces: risk and livelihood diversification. Lastly, the final section of the paper gives a tribute to concluding remarks and recommendations.

## CHAPTER TWO

### LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

#### 2.1. Introduction

Poverty is frequently associated with low income but the multi-dimensionality of poverty has increasingly become the focus of development literature. As Sen (2001) identified, there are four dimensions of poverty: opportunity (lack of access to markets and employment); capability (lack of access to health and education); security (vulnerability to risks); and empowerment (disempowered power within and beyond the household). In response to this, the Sustainable Livelihoods (SL) Framework (indicated in Figure 2.1) emerged as a tool that draws on the notion of multidimensionality to improve the understanding of livelihoods (DFID, 1999; Ellis, 2000).

Scoones (1998) also showed that 'Sustainable Livelihoods' is related to a wide set of issues which encompass much of the broader debate about the relationships between poverty and environment. He stated the ability of a livelihood to be able to cope with and recover from stresses and shocks is central to the definition of sustainable livelihoods. Such resilience in the face of stresses and shocks is the key to both livelihood adaptation and coping strategies (Davies, 1996; Ellis, 2004). Communities or HHs who are unable to cope (temporary adjustments in the face of change) or adapt (longer term shifts in livelihood strategies) are inevitably vulnerable and unlikely to achieve sustainable livelihoods. Assessing the ability to positively adapt or successfully cope (in this case livelihood diversification) requires an analysis of a range of factors such as the natural resource base, assets and strategies, including an evaluation of responses to various shocks and stresses, referred to risks.

To link the different components and lay the base for the discussion of the study, this chapter provides literature on both risk and livelihood diversification. Besides, it presents literature of both in Ethiopia, to be followed by the analytical framework.

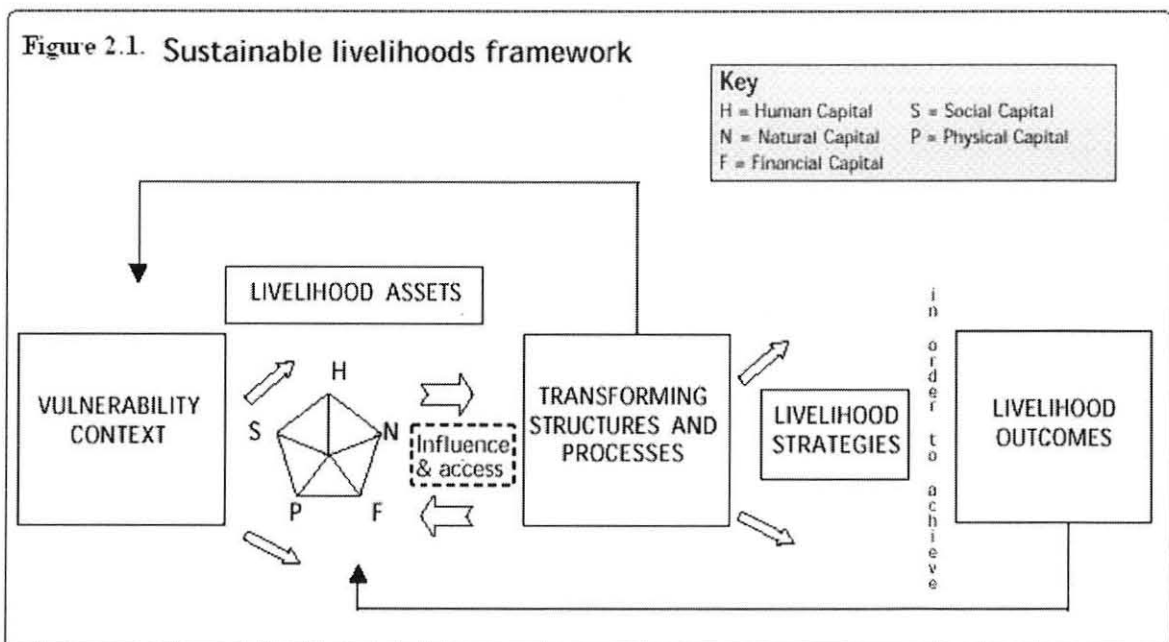
## 2.2. Rural Livelihoods: Sustainability and Reliability

### 2.2.1. Core Elements and Principles of Sustainable Livelihoods

Sustainable Livelihoods approaches have evolved from changing perspectives on poverty, participation and sustainable development (Chambers and Conway, 1992 and Carney, 1999). The long employed and narrow indicators of poverty that had been confined to income and consumption were criticized and led to interest in asset/vulnerability approaches to understanding poverty (Moser, 1998). This has focused on sustainable local-level poverty reduction strategies which strengthen people's own inventive solutions and capability of overcoming shocks as well as stresses.

This is well elaborated by how Chambers and Conway define the concept of livelihood and the SL framework of DFID. As Chambers and Conway (1992:9) state,

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



Source: DFID (1999)

The DFID SLF for livelihoods analysis outlines the major components of the SLF in terms of assets, vulnerabilities, processes, institutions and outcomes that are related to poor livelihoods.

### ***Livelihood Assets***

The SL framework identifies five types of assets or capital upon which livelihoods are built, increasing access (ownership or rights to use) to which can make a central contribution to poverty reduction and well being of the society:

- *Human capital* represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives.
- *Social capital* is the genre of social resources upon which people draw in pursuit of their livelihood objectives, networks and relationships based on trust, reciprocity and exchanges.
- *Natural capital* is the term used for the natural resource stocks from which resource flows and services useful for livelihoods are derived.
- *Physical capital* comprises the basic infrastructure and producer goods needed to support livelihoods.
- *Financial capital* denotes the financial resources that people use to achieve their livelihood such as available stocks, which can be held in several forms such as cash, liquid assets such as livestock and jewellery, or resources obtained through credit-providing institutions and regular inflows of money, including earned income, pensions, other transfers from the state, and remittances.

### ***Vulnerability Context***

The *vulnerability context* includes trends like governance, technology , human health shocks, natural shocks, economic shocks, conflicts, crop/livestock shocks, changing prices, production and employment opportunities.

### ***Policies, Institutions and Processes***

Institutions, organizations and policies are crucial in shaping livelihoods. They operate at all levels, from the household to the international arena, and in all spheres, from the most private to the public. Structures are both private and public organisations that set and implement policy and legislation and deliver services that affect livelihoods. Processes determine the way in which structures and individuals operate and interact. They include elements such as macro, sectoral, policies, international agreements, markets, culture, societal norms and beliefs and power relations associated with gender or class. According to Davies (1997: 24), “institutions are the social cement which link stakeholders to access to capital of different kinds to the means of exercising power and so define the gateways through which they pass on the route to positive or negative [livelihood] adaptation.” With this emphasis, understanding institutional processes allows the identification of restrictions/barriers and opportunities to sustainable livelihoods. Since formal and informal institutions mediate access to livelihood resources and affect the composition of portfolios of livelihood strategies, an understanding of institutions and organizations is a key to designing interventions which improve sustainable livelihood outcomes.

### ***Livelihood strategies***

These are the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals. Livelihood strategies, for example, can be described at an individual, household and village level, as well as at regional or even national levels. But there are differences between scale levels in terms of the net livelihood effects (Mulat, 1997). For an individual, it may be best to pursue a particular set of livelihood strategies in combination, but these may have either positive or negative impacts on other household members or the broader community.

### ***Livelihood Outcomes***

Livelihood outcomes are the achievements or outputs of livelihood strategies. They could include outcomes such as higher income levels, an increased sense of well-being, or reduced

levels of vulnerability. Livelihoods outcomes are sustainable when they are resilient in the face of external shocks and stresses.

### 2.2.2 Principles of Sustainable Livelihoods

The guiding principles of sustainable livelihood are common although the framework and methods slightly differ from place to place and one individual to another (Carney 1999). The following are the major ones which are considered for analysis and design.

- **People-centred:** this approach starts with an analysis of people's livelihoods, focuses on the impact of different policy and institutional arrangements upon people/households and stresses the importance of influencing these policies and institutional arrangements so they promote political participation by poor people.
- **Holistic:** the livelihoods framework recognises multiple influences on people and seeks to understand the relationships between these influences and their joint impact upon livelihoods. It incorporates multiple actors and stakeholders and recognizes multiple livelihood strategies and multiple livelihood outcomes, to be determined and negotiated by people themselves.
- **Unit of analysis:** is an identifiable social group and social divisions that may include those relating to class, caste, age, ethnic origin and gender. In this regard, HHs constitute important unit of analysis.
- **Dynamic:** this seeks to understand and learn from change so that it can support positive patterns of change and help mitigate the negative ones to uncover the nature of complex and the two-way cause-effect relationships and identify chains of events.
- **Building on strengths:** the framework builds on strengths rather than needs of people.
- **Macro-micro links:** development activity tends to focus at *either* the macro *or* the micro level. The livelihoods approach attempts to bridge this gap, emphasising the importance of micro-level / local level policies and institutions to the livelihood options of communities and individuals.

- **Sustainability:** livelihoods are sustainable when they are resilient in the face of external shocks and stresses; are not dependent upon external factors; maintain the long-term productivity of natural resources; and do not undermine the livelihoods of, or compromise the livelihood options open to others.

## 2.3. Risks and Risk Responses

### 2.3.1. Risks and Risk Perceptions

#### *Risk Concept*

Risk is an important concept in many rural development programmes, rural research and policy fields. While risk might be a term used widely across society, its meaning varies and remains somewhat contested. Within the agriculture and natural resource portfolio, risk is central to the policy responses to different hazards.

Risk is generally described as uncertainty that affects an individual's welfare, and is often associated with adversity and loss. Adams (1995: 3) expresses, "The decisions that are made in the face of uncertainty involve weighing the potential rewards of an act against its potential adverse consequences". It is frequently defined as the product of the probability of a hazard and the vulnerability of a group or community. Risk, as a daily term, is conventionally and technically defined to refer to:

*A combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence: how often is a particular potentially harmful event going to occur, [and] what are the consequences of this occurrence? (Harding, 1998: 167)*

Different types of risk generate different reactions. For example, "voluntary activities are not seen as risky as involuntary activities and new risks are regarded differently from familiar hazards" (Finucane, 2000: 31). Natural disasters do not generate the same response as the type of man made hazards. As Blomkvist (1987: 107) argues, hazards "are perceived as much higher when they are manmade disasters, or even caused by a group of people whose willingness to avoid damages to other people has been doubted".

## *Risk and Vulnerability*

Risk and vulnerability(R&V) are two of the major constraints to development. R&V are gaining importance in rural development for 'there is a growing view that reducing R&V in agriculture and rural development does not merely fulfill a social protection (welfare) role, but is essential if the poor are to engage more fully in markets, and so has important production dimensions' (DFID/ODI, 2004:2). *Risk* is the likelihood of occurrence of an adverse shocks and stresses, weighted by the potential severity of the events, and has both idiosyncratic (an event which can be either internal or external to the household) and covariate dimensions (i.e. affecting many simultaneously). These shocks and stresses, underpinning both R&V, have diverse effects on health, social, environmental, political, and economic/market-based conditions. Risk can occur on different scales, and requires scale-specific responses.

Vulnerability is the degree of exposure of communities, households or individuals to such adverse events, and their capacity to prevent, mitigate or cope with them, which are increasingly recognised as being related to the assets they own or can access. Some breakdown of the “rural poor” is important to identify what individuals or households are potentially affected by what kinds of shocks and stresses, and how. Rural HHs have a wide range of traditional ways of reducing risk (for example by jointly managing soil, water and vegetation in watersheds to prevent floods and erosion, and reduce the risk of drought) and vulnerability (by choice of crop, crop combination, crop/livestock enterprises, by increasing assets that can readily be liquidated, diversifying employment etc). If preventative, coping or mitigating action is not taken, risk and vulnerability can cause loss of productive assets and so send rural households on a downward spiral into poverty.

Risk (and/or perceptions of risk) reduce engagement by the rural poor in productive activity and so reduce both efficiency and equity. The poor and better off face different kinds of reduction strategies. In particular, perceptions of high risk among the poor may encourage them to enter interlocked HH economic arrangements which may offer them some degree of social protection. Discrimination based on gender, wealth, background and power may also exacerbate R&V.

Three different views and resulting strategies to address vulnerability are distinguished. The first one refers to nature as cause that employs technological and scientific solutions. This view forwards natural hazard as the cause of people's vulnerability, which fluctuates according to the intensity, magnitude and duration of external events (FAO, 1993). The second deals with cost as cause which has economic and financial solutions. In this case, in spite of increasing technological and scientific capacity, people continue to suffer because prediction and mitigation technologies are costly and the context is backward. In this view, vulnerability will be reduced if national governments adapt safety nets and calamity funds and provide financial assistance to build up people's assets (World Bank, 2001:135). Lastly, societal structures as cause constitute a view of political solutions. This view observes that disasters have a differential impact on people who live in hazard-prone areas. It is not only the exposure to hazards that puts people at risk, but also socio-economic and political processes in society that generate vulnerability. These create the conditions that adversely affect the ability of communities to respond, to cope with or recover from the damaging effects of disaster events. These conditions precede the disaster event, contribute to its severity and may continue to exist even afterwards (Blaikie, 1994:9). The argument is reducing the vulnerability of the poor which must be answered politically as a development question (Jodha, 2000). In this perception, a safer environment can only be achieved if disaster response changes the processes that put people at risk.

R&V factors, in both productive and domestic spheres, will clearly vary according to a wide range of conditions. Agro-ecological conditions will influence the "riskiness" of production, as will the extent to which infrastructure has been constructed to counteract these. Economic risks will impact differentially according to the types of crop typically grown in different areas. Location will also determine the likelihood of events, which will impact on both production and domestic spheres. Differences in social network also determine the extent to which informal protection mechanisms can be called upon during crisis.

## *Categories of Risks*

Several studies have examined the relative importance of different risks and management strategies for different farms and rural livelihoods. The risks that farmers face, according to Topp and Shafron (2006:12), can be generalised into five categories, with drought encompassed within the first category:

- Natural/environmental risks

These refer to production risks which are derived from the uncertain natural growth processes of crops and livestock. These are weather, drought, degradation (soil and land), irregular/unseasonal rainfall disease, frost, weeds, erosion, pests and other factors that affect both the quantity and quality of agricultural commodities produced (Smith, 1996).

- Economic risks

These refer to price or market risks that refer to uncertainty about the prices that producers will receive for commodities or the prices that they pay for inputs. The nature of price risk varies significantly from commodity to commodity. Furthermore, financial risks are in this category which also results when the farm business borrows money and creates an obligation to repay debt. Rising interest rates, the prospect of loans being called in by lenders, and restricted credit availability are also aspects of financial risks. These may include undesirable outcomes like rapid inflation, falling wages, food shortage, declining returns, price shocks, unemployment, and poor farm productivity.

- Social risks

This also has two types: institutional and human. The institutional risks result from uncertainties about government/state actions. Tax laws, regulations for land use and changes to trade barriers are examples of government decisions that can have a major impact on the farm activities. Institutional risks include the possibility that future governments may change the size or nature of policy and provide services of health, infrastructure, population matters, agriculture, financial assistance and education. Besides, this type contains community/human/personal risks which refer to factors such as problems with human health

or personal relationships that can affect the farm work (Nooteboom, 2003). Accidents, culture, values, practices, illness, gender inequality, death and divorce are examples of community or personal crises that can threaten a farm activity.

Note that these risk categories are not necessarily independent — economic and natural risks, for example, are sometimes negatively correlated, creating a natural ‘hedge’ for producers of some agricultural commodities. Also, the risk *environment* faced by farmers, which encompasses the various types of risk outlined above, is not static or fixed. Rather, risk management is a continuous adaptive process that needs to be integrated into all relevant aspects of the decision making procedures of the farm.

### **2.3.2. Farmers and Risk Perceptions**

It is valuable to understand broad trends in perceived risks across societal groups such as farmers and rural communities. There has been a considerable amount of empirical research undertaken on the way people perceive risk, how they manage it and how they live with it (Mula, 1999). It has been suggested that societies select particular risks for attention and that risks are, therefore, exaggerated or minimized according to the social, cultural, and moral acceptability of the underlying activities. Personal experience, memory and other factors influence the way people perceive risks and these may ignore the probability of the event’s occurrence – thus risk perception is socially constructed (Garvin, 2001:450). This socially constructed nature of risk mandates an understanding of risk perceptions.

People are also selective in the evidence they will accept and more likely to see less risk in cases where they see benefits from the activity (Siegrist and Cvetovich, 2000: 714). Supporters of the import of a new product are usually more likely to accept the associated risk than its opponents who will regard it as riskier. In addition, it appears that people have a level of risk with which they feel comfortable and will adjust the riskiness of their behaviour in the presence of safety measures.

In relation to farmers' perceptions of risk, farmers consider many and varied risks in their day-to-day decision-making. In considering risk, one must also understand the overall agro-ecological context, the production systems of the farmers and the main household types

within these broader systems. Farming risks vary greatly among systems, from low- rainfall, extensive, dry land systems to high-rainfall, densely populated highland systems. Many farmers apply multiple livelihood strategies from these diverse local situations. These involve general household risks and more specific agricultural and livestock risks, including disease risk. These farmer pictures persist as agriculture always involves some degree of risk (Geurin and Geurin, 1994), and farmers face considerable uncertainty particularly in relation to climate change and variability on production.

Better understanding of farmers' risk perceptions and how those perceptions influence behaviour is an integral component of developing sustainable land and resource use, effective rural policies and programs that are supported and implemented at local and regional scales. Many research on farmer and rural perceptions of risk focuses on varied topics including climate variability and change; biotechnology; rural locations in risk contexts; salinity hazards; experiences of drought; and capacity to adopt innovation. Greater independence created by the isolation of rural settings might lead to greater risk tolerance, but sometimes feelings of vulnerability resulting from that isolation can heighten concerns about risks. Shrapnel and Davie (2000) state that consideration of personality traits is needed to complement the rural sociological approaches to understanding how people relate to their environments and how likely they are to change their practices.

### **2.3.3. Farmer Responses to Risks: Adaptive and Coping Strategies**

Environmental change, including climate variability and extremes, is a pervasive source of risk to agriculture. However, little attention has been directed towards rural and farm-level risk management strategies in light of the uncertainty associated with the changing and variable climatic conditions (Smit et al., 2000).

To manage risks, rural people pursue a range of livelihood outcomes (health, income, reduced vulnerability, etc.) by drawing on a range of assets to pursue a variety of activities. Even though the activities they carry out and the way they get involved in asset-building are driven in part by their own preferences and priorities, they are influenced by the types of vulnerability, including shocks (such as drought), overall trends (in, for instance, resource stocks) and seasonal variations (rainfall and price) (Fafchamps, 2003). One of the ways to

understand rural livelihood systems in this context is to analyze the coping and adaptive strategies pursued by individuals and communities as a response to external shocks and stresses such as drought, degradation and policy failures.

Farmers manage risk through a continuous adaptive process, whereby decisions are made based on perceptions of the external environment, resources and the farmers' own attitudes and preferences (Scherr, and Hazell, 1994).

Adaptive strategies describe a process of change in the way people creatively reorganize their livelihood systems in response to long term changes and challenges. The term describes the ways in which local individuals, HHs and communities change their mix of productive activities, and modify their community rules and institutions, in response to vulnerabilities, to meet their livelihood needs. These strategies are a mix of traditional livelihood systems, modified by locally or externally induced innovations, and by the incorporation of coping strategies that have become permanent. They arise from the "dynamic interaction and mutual interdependence between human agency and the ecosystem/nature" (Wandel and Smit, 2000). Not all adaptive strategies are sustainable in the long term.

Coping strategies was defined by Davies, (1993) as individual or community responses to change in environmental conditions, or responses to its consequences such as responses to declining food availability during drought. It refers to a short-term response in securing livelihood to periodic stress. Frankenberger and Goldstein (1990) showed that as the severity of the challenge increases with time, the commitment of domestic resources and the degree of irreversibility does the same. Thus, over time, coping strategies may become adaptive strategies and their continued availability is necessary for adaptive strategies to work.

Adaptive strategies have an historical or time dimension. A normal practice may change in the face of stress or shock to become a coping strategy; when the stress is removed, normal practices are resumed. Alternatively, stress (change, pressure, opportunity) may lead to a pervasive change in practice, which then becomes an adaptive strategy. Practices and adaptive strategies may be positive, functional, sustainable, and lead to sustainable livelihoods. Or they may be dysfunctional, leading to non-sustainable livelihoods as in depletion of the environment or human resources, or continued external support.

**Table 2.1. Characteristics of coping and adaptive strategies**

Characteristics	Coping mechanisms	Adaptive strategies
Time dimension	Short-term	Long-term
Cause	Locally or externally induced	Locally or externally induced
Space	Acting within the prevailing rule system	Change the rule systems, or moral economy
Efficiency	Efficient in short terms	Efficient in long term
Nature	Socio-economic in nature	Socio-economic and environmentally responsive. Interactive and dynamic
Resilience	Reversible in short term	Can be sustainable one. Difficult resilience

Source: Davies, 1993

Farmers are not expected to be a homogeneous population since different farm and farmer characteristics influence their risk perceptions and management responses. Hence, in the risk management process, farmers consider and respond to a combination of external and internal factors, such as market access and the resources available to the farm household (Schipper and Pelling, 2006). It is not necessarily only the factors affecting risk, but also the farmers’ perceptions of these, that are crucial in decision-making. And, for an economic risk management, it is not only the farmers’ perceptions of disease risk that are important, but also their perception of potential additional risks associated with the managing strategies.

As a helping tool, Van Raaij’s (1981) model of decision-making environment guides to see the relationship between farm and personal characteristics, risk perceptions and management responses. Figure 2.1 provides a part of the model to demonstrate the nexus of such variables.

**Figure 2.2 Elements of Van Raaij’s (1981) model of decision-making environment**



First, the figure describes how farm and personal variables (P) impact on farmers’ perceptions of risk factors (E/P). Second, the relationship reflects how the farm/personal

variables and risk perceptions influence economic behaviour (B), i.e., their risk management strategies.

In a fast changing environment, local people find that traditional coping strategies are no longer effective. They continuously look for new ways to adjust their livelihood strategies with the aim of reducing risk, sustaining their livelihood, and avoiding entering irreversible strategies, in other words strategies that undermine the basis of their means of survival (Walker, 1989:50). Although local people do not use the concept of 'vulnerability' to describe their worsening situation, they feel the stress, face difficulties, talk about 'risks', and make risk-taking or risk-avoiding decisions. In most cases, risk is reduced in society by increasing certainty in decision-making. This preferred course of action has not been without its consequences.

#### **2.4. Livelihood Diversification (LD)**

The concept of LD is an element in livelihood. It is defined based on the issue and context in focus. Livelihood is defined by Ellis (1999) as the activities, the assets and the access that jointly determine the living gained by an individual or household. In defining rural diversification, Start (2001) mentioned it as economic development of non agricultural activities or a livelihood which has multiple and part time components. Hussein and Nelson (1998), on the other hand, identify LD as attempts by individuals and HHs to find new ways to raise incomes and reduce environmental risk, which differ sharply by the degree of freedom of choice (to diversify or not) and the reversibility of the outcome. Thus, the concept of livelihoods refers to the opportunity set afforded to an individual or household by its asset endowments and the chosen allocation of those assets across various activities to generate a stream of benefits, most commonly measured as income (Barrett et al, 2001; Reardon, 2001). This implies that the opportunity set of a household is formulated from access to assets and activities. It also shows the importance of the link between assets, resource allocation and activities in generating benefits. LD can, then, be defined as the process by which HHs construct a diverse portfolio of activities and assets in order to survive and to improve their standard of living (Ellis, 1998a).

Ellis (1998) distinguishes income diversification from LD by defining the former as the composition of household incomes at a given instant in time while LD is considered as an active social process whereby households are observed to be engaged in increasingly intricate portfolios of activities over time. Other studies also define income diversification as prevalence of different income sources in household income at a given time (Reardon et al, 1992; Valdivia et al, 1996; Tassew, 2000; Escobal, 2001).

## **2.5. Factors Intermediating between Risk and Livelihood Diversification**

When the factors listed below are on the positive trends and contribute to the improvement of livelihoods, they are for LD. However, their poor performance and stand can result in impeding development endeavours. Besides, they become sources of risks when unfavourable. There is also a vice versa relationship in considering (sources of) risks in their role to LD.

### ***Sustainability of Natural Resource Base***

Most rural livelihoods are reliant on the natural resource base at least to some extent. Conway (1985) expressed natural resource base sustainability as to the ability of a system to maintain productivity when subject to disturbing forces, whether a 'stress' (a small, regular, predictable disturbance with a cumulative effect) or a 'shock' (a large infrequent, unpredictable disturbance with immediate impact). The ability of maintaining productivity and well managed natural resources has the potential to safeguard and sustain the well being of the rural HHs. This implies avoiding depleting stocks of natural resources to a level which results in an effectively permanent decline in the rate at which the natural resource base yields useful products or services for livelihoods. On the other hand, a place which has lost its natural base is always vulnerable to the HHs.

### ***Personal choices***

The decisions an individual makes in regard to risk management to diversify or not are inexorably linked to the individual's attitude to risk (Young, 1998). Again, the type of

activity the HH chooses influences the present or the future livelihood standard at various levels.

### ***Education: Availability of knowledge and skills***

Human capital has been identified as one of the important variables with considerable impact on LD. The skills and knowledge required to manage risk are considered both time-consuming and difficult to master (Groth, 1991). Differences regarding this may result in differences of risk perceptions and LD. Reardon (1997) states education and skills can be important determinant of LD. The higher the level of education, the greater will be the incentive to allocate resources to self-employment and wage employment on non farm activities. On the other hand, its absence may hamper their involvement in local self employed non farm sector.

### ***Production risk***

Risk of crop failure or being unproductive, which results from climate change or environmental degradation, may lead to participation in alternative activities. Dercon and Krishnan (1996) argue that risk averse households who can rely on transfers, remittance or help from the community to smooth consumption, despite falls income might make decisions 'as if' it were risk neutral in its preferences. Loans taken for agricultural inputs combined with crop failure causes indebtedness, forcing households to sell critical assets such as oxen and other livestock, there by becoming destitute (Sharp et al (2003).

In the same token, some farmers commit part of their anticipated production for sales when there is less agricultural output and off farm opportunities. The amount of production and sale also vary among different community groups (UNDP, 2004).

### ***Debt and Credit levels***

The level of debt can influence decisions. The greater the debt the less choice the farmer has. At one extreme where high debt – low equity exists; the farmer may be pressured by a creditor to make decisions protecting the creditor's interest while at the same time restricting

the choices (Young, 1998). Even without this external pressure, farmers may respond to their own perceived or imagined fears of risk.

Findings for credit also indicate that the influence of credit on diversification is mixed. Escobal (2001) finds that access to credit plays a key role in self-employment activities both in agriculture and non-farm activities. Gordillo et al (2001), find no influence from access to credit on off farm work in Mexico. However, Davis (2003) found that constrained access to capital (credit) has been the most common obstacle to LD. This implies that finds that access to credit is also a key determinant of self employment and other diversification strategies Escobal, 2002). Lack of credit and the general lack of financial resources in farming communities obviously impede the take up of non-farm activities (Sorensen, 2003).

### ***Social capital***

This is one part of the SLF and a determining factor of LD. It is defined as the features of social organization, such as trust, norms and networks that can improve efficiency of society by facilitating coordinated action. It enables economic agents to reduce transaction costs and partially address access constraints arising from imperfect markets. Gordillo et al (2001) claim that social capital, like other types of assets, can be used to maintain and improve livelihoods. They point out that the creation and use of social capital, which depends on the quantity and quality of interpersonal relationships, is embedded in social structure and social relations as well as the institutions under which they operate.

Social capital can create or break choice of activities and assets used by HHs. The presence of social capital can facilitate the access to relevant market information and buyers, wage employment and business opportunities, formal and informal loans, cash advances, inputs on credit, skills, shared resources for production and marketing, and marketing and migration opportunities (Davis, 2003). Group strategies can enhance access to non farm activities and improve the returns associated with those activities, improve access to service provision, and overcome barriers to entry into income generating activities (Davis, 2003). The deterring effect of social capital might result from the creation of exclusive community groups that build relationships for some individuals may lead to the exclusion of other individuals and preclude personal development or social and financial benefit of individuals. Davis, (2003)

argues that this can lead to unequal and inefficient social and economic outcomes and can be a barrier to entry into business for the majority of the rural population, thus inhibiting competition and reducing confidence in state institutions.

### ***Land***

Non-farm income generation is extremely important for households with only limited land access while households with significant land holdings tend to have more livestock (Gordillo et al, 2001). They indicated that land holding is negatively related to household participation in non-farm activities. As Adugna (2002) also found, households with more total landholding and more income from livestock products participate less in different occupations, as the opportunity cost is higher for these households. The results from a study in China indicated that the predicted probabilities for rural workers to work off farm increase with the decrease of the arable land per worker (Xia, undated).

### ***Public Resource: Infrastructure and Services in Focus***

Access to electricity, roads, health, information, education and safe water is significant in increasing the profitability of both farm and non-farm activities. Davis (2003) suggests that rural roads that allow reliable and regular motor vehicle access serve both the farm and rural non farm economy and supply of reliable and abundant (preferably clean) water can allow some rural non farm activities to take place. Winters, Corral, and Benjamin (2001) find that a number of social and public capital variables significantly influence income generation from farm and non-farm activities in rural Mexico. Delgado and Siamwalla (1997) argue that high transaction costs or their absence are common barriers to diversification into new opportunities especially for the poor and less well informed households. Greater access to physical infrastructures and market likewise consistently improves non farm earning opportunities (Webb et al, 2001). Public services can reduce transactions costs on existing activities and opening up new opportunities that were previously inaccessible to rural populations. This clearly indicates that insufficient services may be an obstacle to income and asset diversification.

### ***HH Composition and Family Size***

HHs with larger number of members who can read and write, more male adults, and more income from main season crop production tend to participate in LD (Adugna, 2002). He also reports that age of HH head is a deterrent to occupation diversification. The older the head of the HH, the less likely HHs engage in LD. The higher the dependency ratio or the more heavy the burden of the household, the higher the probability that the rural workers engage in local non farm self employment or migration. He recaps that gender, marital status, household size and dependency ratio significantly affect the choice of an activity. Reardon (1997) states that family size and structure affects the ability of the HH to supply labour to the non farm sector. Alemu (2003) also finds that age of HH head has a significant influence on participation in self employment. Family size increases the HHs desire to participate in off farm work. HHs with large family size have relatively higher marginal utility of income and stronger desire to participate in off farm work.

### ***Gender Relationships***

As Start (2001) pointed out, differential access to assets may be determined by gender. The labour markets may exclude women, or pay different rates or access to essential assets or product markets may be male domains. Similarly, Ellis (1999) points out that men and women have different assets, access to resources, and opportunities. Women rarely own land, may have lower education due to discriminatory access as children and their access to productive resources as well as decision making tends to occur through the mediation of men. Reardon (1997) points out that women appear to be limited to the low-wage activities in the non farm sector, and businesses with low start up costs.

Hussein and Nelson (1998) further state that diversification activities open to women are often less attractive than those pursued by men. Hussein and Nelson (1998) also indicate that household involvement in LD process is affected by location, availability of sufficient time, wealth, and gender. Many LD strategies are frequently gender specific.

### ***Religion***

Sorneson (2003) mentions the influence of religion on activity choice. Trade is usually dominated by Muslims as compared to the Christians. The Christians mostly devote themselves to warfare and agriculture and are hardly acquainted with commercial transaction. Religious laws may also have direct influence on the type and the degree of work.

### ***Political/ Institutional factor***

Political factors or non-market factors, like being a party member or having a local government official at home helps the rural workers get local non-farm wage jobs, while it discourages them from engaging in local non-farm self-employment or migration occupations. The latter two off farm occupations' earnings are much higher than that of the former one in the rural part. Belaineh (2003:14) adds this is related to 'changes in government policies such as land tenure related issues, tax levels, subsidies and possible closure of the illegal trade route.'

### ***Local Development Trends and Factors***

Davis (2003) summarizes several factors beyond the household level which affect the viability of the rural activities. He identified agricultural development, natural or resource endowment, economic infrastructure, the level of public service, rural town development, and the business environment of the locality as important. He points out that demand dynamics arising from agricultural growth are usually very significant. Agricultural development generates increased surpluses that can be saved and channelled into rural non-farm activities by farming HHs or the financial system. Davis (2003) explained that rural towns usually offer better conditions than villages for the development of agro-processing industries and other manufacturing activities due to the availability of administrative and support services, a concentration of consumers and better access to transport and public utility infrastructure. Rural towns can constitute important links between the rural hinterland and more distant markets, playing the role of intermediate marketing centres.

### *Degree of Poverty*

Rural HHs with different asset bases are likely to face different levels of risks and to have various degree of LD. Poorer HHs may have more difficulty diversifying into new activities than more wealthy ones. That is why the poor diversify in less advantageous labour markets than the better off, i.e. in casual, part time and unskilled work compared to full time work or substantive self employment (Dercon and Krishnan, 1996; Ellis, 1999 and Webb et al, 2001) explain that the entry barrier tend to leave the poor with less diversified asset and income portfolio, thereby forcing them to bear both lower expected returns and higher variability in earning. Income portfolio must be seen in relation to the asset portfolio and other options available.

### *Asset Endowments*

Reardon (1997) shows that initial endowments that create differential capacity to enter the non farm labour market can affect HH and gender income differentiation over time. Reardon et al (1992) also show that although the pattern of income diversification between farm and non-farm activities varies sharply across regions, it is clearly linked to the asset or endowment of rural HHs. As Escobal (2001) states, income diversification varies in extent and nature with household wealth. He reports that the location and ownership of private and public assets are key determinants of HH income diversification. In this case, the ownership of fixed agricultural assets increases the share of own farm income in total HH income, and reduces the need for undertaking wage employment in farm and non-farm sectors.

### *Farm Characteristics*

Agricultural extension and advice has a significant negative effect on off farm work participation, which may be related to limited availability of surplus labour for non agricultural activity and larger income generation from farming (Chaplin et al, 2002). Reardon (1997) finds that farm sector characteristics such as technology, chemical fertilizer use and irrigation, affect the size and nature of the non-farm sector. The use of labour intensive technology creates competition between farm and non-farm sector. Tassew (2002) find that farm characteristics such as land, capital and technology have negative indirect

impact on both the off farm work participation decision and the level of off farm labour income.

### ***Transfer and Remittances***

Chaplin et al (2002) report that unearned income has a significant negative effect on off farm employment alone and combined with diversified enterprise. The same effect has been observed for all forms of diversification. Sorensen (2003) points out that the widespread allocation of food aid seems to have created a dependency syndrome, as people apparently give priority to waiting or qualifying for selection for food-for-work and employment generation schemes, rather than getting involved in other income generating activities.

## **2.6. Some Empirical Literature on LD in Ethiopia**

In examining the determinants and impacts of rural household income diversification, Demissie (2003) and Adugna (2005) indicated that the asset endowment of the household has a significant effect on households' choice of livelihood strategy and the level of income diversity. Block and Webb (2001) also show that the effect of asset on livelihood choice and income diversity is dependent on the type of asset as well as on the particular livelihood strategy. In addition, farm land holding, distant to market, involvement in cash crop production, ox holding, use of agricultural extension and possession of senior secondary education by head lower the likelihood of involvement in livelihood diversification.

In a similar scenario, Adugna (2002) showed that most demographic factors lower the number of family members who are engaged in farming. The study also indicates that number of family members who can read and write, and agricultural risk factors promote households to engage in different activities.

In investigating the role, scope, and link between farm and non-farm activities in North Shoa of Ethiopia, Mulat and Teferi (1996) found that farmers are engaged in various off farm economic activities to maintain their subsistence income levels. According to the study, the non-farm activities are viewed as the survival strategies rather than as remunerative sources of livelihood.

Evidence from southern Ethiopia presents that non-farm and off farm activities are carried out by significant proportion of adults and make an important contribution to livelihoods, showing high involvement of women, high cash income contribution to poorer households and high importance of laboring for others next to trading in highland of Wolayta where LD has long history (Carswell, 2001). In a similar zone, Kindness (1994) showed that small land holdings, high population density, and small number of livestock forced a large number of farmers to diversify their income sources and non farm income sources (petty trading, and craft activities). The study also noted that the income from the livestock and crop sales is either none or low for poor HHs while LD in the two sites for the poor are petty trading and craft activities, which generate large proportion of their income. Having relatively large farmland and livestock number, rich households receive large portion of their income from crop sales and livestock products.

Tassew (2000), in his survey of rural households in Tigray region of Ethiopia, showed that 81% of farm households diversify their income into off farm activities. The result showed that the most important factors that determine the choices of farmer between off farm wage and self employment are farm income, ownership of transport animals, area of land cultivated, family size and location.

In Delil (2001) study on factors that influence the probability of involvement in off farm employment at HH level and the impact of off farm employment on rural poverty alleviation in Oromia region, the results showed that age of HH head, family size, religion (orthodox), own account working, 'enset' land, credit received, proximity to market and road positively affect the decision of involvement in off farm employment while getting married, education, cultivated land, coffee and chat production, fertilizer use and total cattle ownership affect it negatively.

Analysing the determinants of occupational diversification of HHs using, Dercon and Krishinan (1996) found that different income portfolio held by HHs cannot be explained by their behaviors towards risk rather better explained by differences in ability of HH to adopt more profitable diversification strategies which depend on access to the means required (such as skill, location, livestock ownership, access to capital and credit) to pursue such activities.

The study also identified that the availability of higher male labour and larger farm size allow HHs to take up high return activity such as cattle rearing. The study identified demographic and economic factors as the major determinants of LD.

## **2.7. Some Empirical Literature on Risks in Ethiopian Highlands**

A number of studies indicate that environmental degradation and deterioration of natural resource base have become serious problems in Ethiopia, mainly in the Ethiopian highlands (Fitsum et al, 1999; Girma, 2001; Sahlu, 2004 and Bedru, 2007). The existing risks witness the severity of the natural resources and livelihoods deterioration. Findings indicate that about half of the highland areas (27 million hectares) are significantly eroded by the mid 1980s. Over one fourth (14 million hectares) was seriously eroded and over 2 million hectares are beyond the point of no turn.

Furthermore, it is shown that the interactions of numerous economic, demographic, social, environmental and policy factors are the defining scenes of the highlands that are highly deteriorating every year. For example, as Desta (2005) shows the rate of mean annual soil loss from crop land is 57t/ha/yr. It is also shown that factors such as high degree of livelihood dependence on natural resources, backward agricultural practices, lack of alternative income sources, tenure insecurity, persistent poverty, rapid population growth, poor natural resource management, and lack of investments on resource development as well as rehabilitation activities have led such areas barren and unsustainable.

As Dessalegn (1991) also showed, farming is undertaken on fragile environments under constant threat of drought, famine, food insecurity and characterised by overgrazing and resource degradation in the highlands. Climatic change coupled with outbreaks of pests and diseases make agriculture more risky and livelihoods very difficult.

In his study of risk management strategies of smallholder farmers in the Eastern highlands of Ethiopia, Belaineh (2003) found that the HHs are vulnerable to a wide variety of risks (financial, health, institutional and political) that can materially disrupt various aspects of livelihoods and which are both covariate risks (that may take the form of widespread shocks such as drought and degradation) or/and idiosyncratic (such as localized shocks and

problems). In the study, it emerges that risks are differently perceived based on differences of asset endowments, locational settings and different dimensions of LD strategies.

As these risks influence the amount and the productivity of their assets, the types of livelihood strategies such as LD will be negatively influence as they lack the capacity and the capability,

## **2.8. Analytical Framework of the Study**

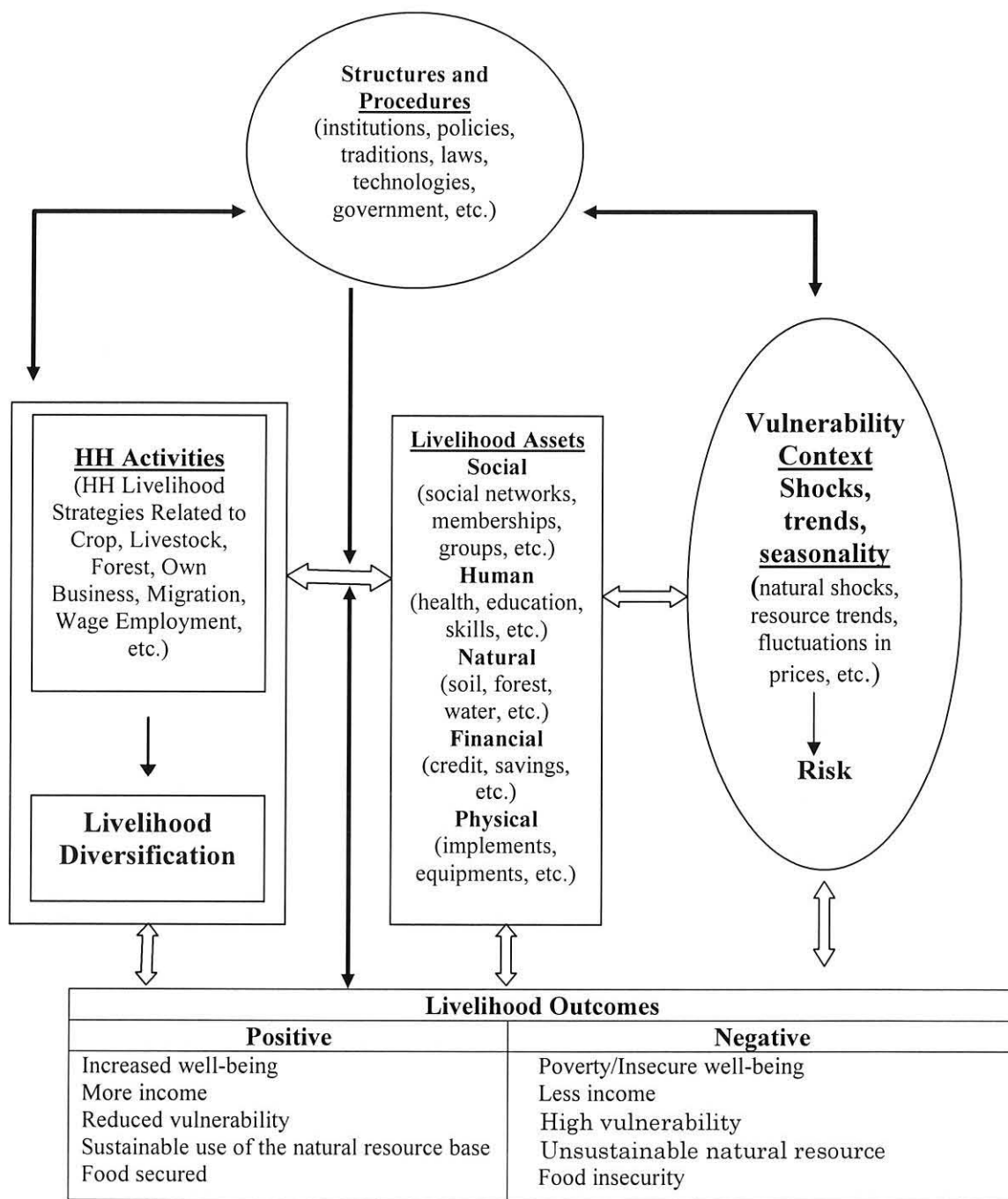
This study is based on SLF aspects and behaviour under risk, in relation to livelihood diversification. It developed an interface model that takes into account the dimensions of the two (risk and livelihood diversification) within the contextual complexity of farmer livelihoods. With this, the research studied and defined the links between the various variables that intermediate between the two for positive or negative outcomes.

The adaptation is due to the holistic principle of the framework that may not respond to the local peculiar livelihoods and trends as well as the sum of all livelihood global factors.

The framework constitutes five basic elements that interact and influence each other (see Figure 2.2). At its heart, there is the study organ: HH activities or livelihood strategies choice. On the basis of the framework, the choice of a HH to pursue a particular activity is conditioned by its asset holding (or access or endowment) which is influenced by all other components.

Many studies indicate that LD has multifarious determinants, linked with a wide range of activities that may result in positive or negative outcomes. In light of this study, the vulnerability context is also influenced by and influences livelihood outcomes and asset endowments. This, in turn, determines the type and the degree of LD.

**Figure 2.3. Analytical Framework of the Study**



**Key:** (Direct Impact) (Influencing Relationship) (Defining Outcome)

The framework is adapted from DFID (1999), Carney (1999), Scoones (1998) and Ellis (1998).

## CHAPTER THREE

### METHODOLOGY

#### 3.1. Research approach

The research used an analogue approach by studying human adaptation to current and past risks to improve understanding of the interface between risk and livelihood diversification. In this approach, historical responses to risk are used as an analogue for the diversification that has persisted in the study area. An improved knowledge of processes and limits to societal responses is potentially useful for addressing the issue to be dealt with (Burton, 1997). The usefulness of the analogy is dependent on the similarity of future risk impacts to current and historical risk impacts and on the degree of the diversification change related to other factors. Glantz (1991) suggests that, as societies slowly change, societal responses to the change in the near future are likely to be similar to those of the recent past.

In order to carry out a study in an interdisciplinary fashion that examines both the social and the environmental features and their interactions, I employed a mixed research approach. The research paradigm under which the thesis was conceived and carried out is principally pragmatic, consistent with the social science disciplines from which I draw on for part of the research and my own social science background (Corbetta, 2003). Seeking to explain reality by building and testing theories, I used quantitative research methods to quantify livelihood diversity, the asset base of the households, in an attempt to observe and explain the relationship between these variables. I also widely used qualitative research methods that are often associated with an alternative research paradigm broadly described as interpretivism (Corbetta, 2003).

These methods were used in order to understand how various variables contribute to the nature and the degree of risk and the livelihood diversification.

During the research process, I mainly used deductive approach, by answering research questions, defined by applying previously developed theory and concepts to the research objective of understanding the relationship between risk and livelihood diversification.

Theoretical concepts used in this way were used to generalise, to some degree, the findings of the case studies. Although I followed mainly deductive approach in the main phase of field work, I employed more inductive approach during the initial exploratory phase of fieldwork.

My aim for this exploratory stage of fieldwork was to see what issues could emerge from observations and interviews, which would be guided by the research objective. I, then, used the observations and information from interviews to decide on the most appropriate theories and concepts to use in the main phase of research as well as to decide on the research questions, research design and suitable locations for case studies. I was open to investigating issues of interest, relevant to the research questions, that arose during the group discussions and semi-structured interviews that were anticipated in the research design and specifically in the design of the questionnaire for the HH sample survey.

A methodological approach, the use of case studies, was chosen for the study because of the explanatory power of case study research (Yin, 2003) that led to the generalisation. The multiple methods that used sample survey with a questionnaire, group discussions, semi-structured interviews, and observations provided the opportunity to obtain both a broad understanding of the context within which resource dependent societies responded to the risks pertinent in the area and a specific understanding of the 'how' and the 'why' of people's responses through diversification. Quantitative data from the household survey provided answers to questions about 'what' is occurring. Qualitative data was used to explain patterns observed in the quantitative data. Statistical analysis of quantitative data could also provide some opportunity for generalisation of findings to the village population, whilst qualitative data from semi-structured interviews were specific to the HH interviewed together with the village level information.

The analysis was guided by the research questions based on the chosen theoretical concepts. However, my method of analysis also provided the opportunity for me to see what could come out of the data in a more interpretative way. The quantitative data from the sample survey were analysed statistically, whilst the data from open-ended questions in the sample survey, group discussions, observations and semi-structured interviews were analysed qualitatively.

## 3.2. Research Design

Robson (2002) classifies research designs as either ‘fixed’ or ‘flexible’. The approach I took in this thesis had both elements: fixed and flexible research designs. I used a questionnaire based survey method to collect quantitative data on specific variables, a fixed design method. I also used a range of methods to collect qualitative data from the different perspectives of the research participants, a flexible design approach. On balance, I believe my use of a range of methods, both qualitative and quantitative, my use of case studies and the nature in which the research was designed indicate both designs at different stages of the survey. At a point, one of the two was observed to dominate the research process.

### *Targeted Community Case Study Design*

In order to study the interface between risks and livelihood diversification, detailed empirical research is needed in a specific geographical context. For this reason, I chose various case studies under different topics of discussion. Yin (2003) describes a case study as “an empirical enquiry that investigates a contemporary phenomenon within its real-life context”. The case studies could answer the “how” and “why” questions of the research design as believed by Yin (2003).

### *Sampling Strategy*

I used the household as the unit of analysis for the sample survey, following the livelihoods approach (Ellis, 2000; Allison and Ellis, 2001) as it is considered a suitable unit of analysis for the study of livelihoods due to the strong social and economic interdependence between the group of individuals that constitute a household (Ellis, 2000). I purposely selected the household type and number from each *kebele* to sample within each wealth and social strata in consultation with sample *kebele* officials.

For the sample survey, the household is the unit of interest whereas for the other methods such as semi-structured interviews, the responses were regarded as those of individuals although they might be relevant to a particular household. The sampling procedure also

➤ *Key informant interviews*

I conducted 8 semi-structured interviews with key-informants during the exploratory and main phases of fieldwork. The term ‘key informants’ is used to describe people who are interviewed for their special knowledge or expertise of the phenomena being observed due to their privileged observational position (Corbetta, 2003). The people I interviewed as key-informants for the case studies included village dwellers, local government officials and agricultural extension workers. These people provided an overview of various issues of interest including the history, geography, natural resources, institutions, infrastructure and impact of shocks and trends in the villages and district.

➤ *Observations*

I used observation as a supplementary method throughout the fieldwork, in the exploratory, main and follow up phases. I made observations on a range of things related to risks, livelihood activities and capital, for example: who was doing what activities; crops grown; living conditions; interactions between people in village meetings, etc. I was also able to observe the environment: the highland; the vegetation; and the weather. The methods I used for making observations include watching and making notes on things seen as I went about our other research activities; keeping a field journal; guided walks with a village resident; taking photographs; making notes of village gossip and casual conversations; observing meetings (either as a participant or as a detached observer) and participating in village life (e.g. buying things from the village, using local transport, eating meals with locals, attending gatherings, etc.).

The strategy for making and recording observations was opportunistic and descriptive rather than structured and quantitative as Robson (2002) indicated. Observations, in this case, were useful in assisting overall understanding of the context of the research and checking the accuracy of some of the information given by respondents.

### ***Household sample survey***

I used a household sample survey as one of the main sources of social data, alongside semi-structured interviewing. My assistants administered the sample survey questionnaire on 100 households. The sample survey provided quantitative, as well as some qualitative data from open-ended questions, on a range of subjects focused on livelihoods variables and the impacts of risk events.

I designed the questionnaire following the exploratory phase of fieldwork in the three case study villages. This ensured that the questions I used were both relevant to the research questions and the local context as revealed by the RRA methods to be used in the exploratory fieldwork.

The questionnaire was written in English and translated into Amharic as the interview took place. Then, the questionnaire had a pilot on residents in one of the case study villages, whilst I observed how they used the questionnaire, how long it took to administer, etc. Following this period of piloting and training, I amended the questionnaire, re-tested it and then produced the final version. The main purpose of the questionnaire was to obtain quantitative as well as qualitative data on household characteristics, livelihood activities, risk perceptions, livelihood diversification and assets. Data was also collected on changes in livelihood activities, the impacts of risk events, change in overall situation of the household, problems affecting the household, adaptation or coping strategies, and social networks.

The research assistants administered the questionnaire in the 100 households sampled and selected. I also checked the quality and consistency of the questionnaire administration by recording several of the survey interviews.

### ***Semi-structured Interviews***

Semi-structured interviews were widely used in flexible research designs and frequently combined with other methods (Robson, 2002). Semi-structured interviews formed a major part of my social and agro-ecological data in all phases of the research: exploratory, main data collection and follow-up. I used semi-structured interviews with key informants and village residents.

### ***Document Collection***

I collected documents and reports from individuals and organizations; governmental and non-governmental. These were useful for understanding the historical, social, economical, political and geographical context of the study and complementing the semi-structured interviews. I used the documentary data to complement interview data and to build up a picture of the highland social and ecological systems.

### **3.4. Data Analysis**

I analysed data from the initial exploratory field trip by applying special codes to the text in my notebooks and collating the text into various broad themes that emerge from the data. From this data, I identified key factors that may appear to be important for diversification to risk in the area. Based on these key factors, I selected the theoretical concepts on which to base the research questions.

I, then, analysed the data to be collected on subsequent fieldtrips in three stages. Firstly, I carried out exploratory analysis of the questionnaire data, for example producing summary statistics for variables of household characteristics, assets and activities. I, then, performed preliminary analysis of the qualitative data (e.g. coding and summaries). After this, I began writing the results chapter, which required further detailed analysis of both quantitative and qualitative data. For the HH survey, I note that the percent is the same as the frequency as the number of the respondents is 100.

#### ***Analysis of household survey data***

I carried out analysis of the household survey data in SPSS. I performed exploratory analysis (Robson, 2002) by producing summary statistics of a range of variables to be displayed in tables and graphically. I used this exploratory analysis to become familiar with my data and identify any interesting or unexpected patterns in the data.

I, then, moved on to confirmatory analysis (Ibid) in which I tested predictions based on my research questions. I calculated the different types of diversity and social capital in relation to risks. I used several different groupings of the cases (households) to compare the mean

values of different variables. I grouped data by case study or village and also by other variables including level of education and sex. Mean values and standard deviations were displayed in tables allowing comparison of variables between different groups of households. I tested statistical difference in the means for two independent samples (of non-parametric data).

### *Analysis of qualitative data*

My analysis of qualitative data from interviews, group discussions and observations exhibits the three components of data analysis outlined by Robson (Ibid): data reduction, data display and conclusion drawing and verification.

As soon as the interviews, group discussions and observations were transcribed, I entered the texts in order to perform the data reduction. I coded the texts based on the theoretically derived research questions. Coding is a process of splitting the data up into segments of empirical evidence. To balance this segmentation of the data, I also wrote summaries of many of the interviews, to be supplemented with additional information from the household survey where available. Whilst I was coding and summarising the interviews, I also read the corresponding pages of my personal field journal and field notebooks. This helped me to bring the interview alive again, allowing me to draw on observations I made during the interview and gained new insights, which I incorporated in the summaries. Observations that I made during the interviews were also important for judging the validity of the data.

## CHAPTER FOUR

### STUDY AREA DESCRIPTION

#### 4.1. Introduction

This research was conducted in the Blue Nile Basin, known as the Abay in Ethiopia with particular emphasis to one of the districts that are found on the Choke Mountain, which is the source of more than thirty rivers which create the Blue Nile River together with others. This area is an important research intervention due to the increasing water demand of the downstream, the impact of human interventions on the water resource generation in the upstream areas and the sensitivity of the region to the climate change.

The Blue Nile contributes more than 60% of the Nile water resources. The Choke mountain, which forms one of the major headwaters of the Blue Nile as 'water tower', determines the regional water cycle by intercepting the rain-bearing winds from the Atlantic and Indian oceans resulting in high levels of rainfall (1200 - 2000 mm/a)

The livelihoods of several million people located on the slopes of mountain range are primarily dependent on a biomass-based subsistence economy. The natural resource base is under intense pressure from population growth and inappropriate farming practices. The livelihoods of the farming communities face sever constraints related to intensive cultivation, overgrazing, deforestation, soil erosion, soil fertility decline, water scarcity and shortage of livestock feed.

#### 4.2. Sinan District <sup>ii</sup>

##### *Rational for Selecting the District*

The district has gone through various historical changes in relation to administrative structure and is a constituent of diverse agro-ecological zones that have affected the livelihood of the rural people in general and the rural poor in particular. The current structure came to existence in October 2006, only a year ago. Many *kebeles* had been administered under other

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<sup>ii</sup> Information under this part is from Sectoral Offices of Sinan Woreda (secondary and interviews)

districts which had had different exposure and practice. Hence, as a new established district, it requires close examination of the people's livelihood that depends on the fragile natural resources in the highlands. Furthermore, it is an intervention area of the Blue Nile Basin watershed management that has intricate environmental and livelihood components for the sustainable development not only of the local area but also of the region as a whole.

### ***Location and Watershed Patterns***

Natural resources base of Choke Mountain has enormously deteriorated due to natural and human causes. Consequently, as in other districts, the livelihoods of the farming communities in this part are threatened by various hazards such as land degradation, deforestation, drought, soil erosion, water scarcity, acidic soil, shortage of grazing land, poor infrastructure, backward human capital and poor livelihood assets. These are becoming worse and worse as the current actions and conditions persist due to the high population growth in the area. The greater livelihood dependence on the natural resources and the traditional living styles of the upland communities as well as lack of capabilities as a result of poverty have been among the major factors that deteriorated the biodiversity of the study area.

This mountain ranges from  $10^{\circ} 33' 06''$  to  $10^{\circ} 50' 24''$  North latitude and  $37^{\circ} 42' 36''$  to  $37^{\circ} 58' 24''$  longitude. Its watershed topography lies in the altitudes of 2300 to 4199 meters above sea level. Its altitudinal variations, about 23 %, 75%, and 2% of the watershed is found in *Woina Dega* (temperate agro-climate), *Dega* (highland cold agro-climate) and *Wourch* (hail) agro-ecological zones. These altitudes and weather conditions in the district have had different positive and negative effects on the local environment and community livelihoods. This time, the negative outweigh and the future is becoming unpredictably in threats.

The study was specifically conducted in three kebeles of a district called Sinan, which is one of the districts on the upper catchment and one of the 17 districts in the zone. On the way to this district, Debremarkos (the capital town of the East Gojam Zone, which administers Sinan District among others) is located 300 kms from Addis Ababa to the North Western of Ethiopia. Sinan acts as the gate way to the Choke Mountain in this direction. It is bordered by Debay Tilat Gen, Gozamen, Bubugn, and Machakel to the east, to the south, to the north and

to the west respectively. Debay Tilat Gen and Gozamen, in addition, border to the north and the east respectively.

This district is one of the newly established districts in October 2006. Its number of population is estimated to be 114, 994. The following table shows the total number in towns.

**Table 4.1. Population Distribution of Sinan District**

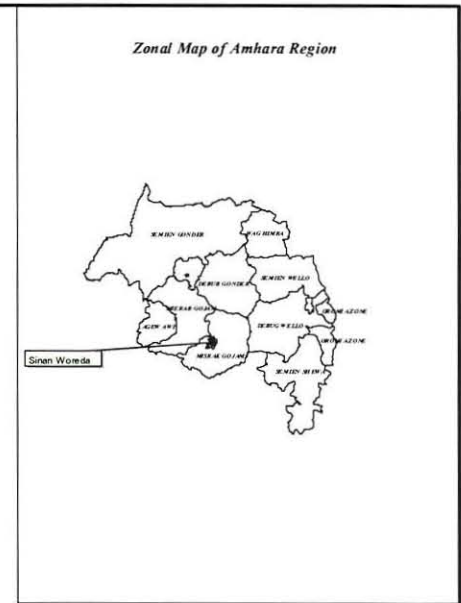
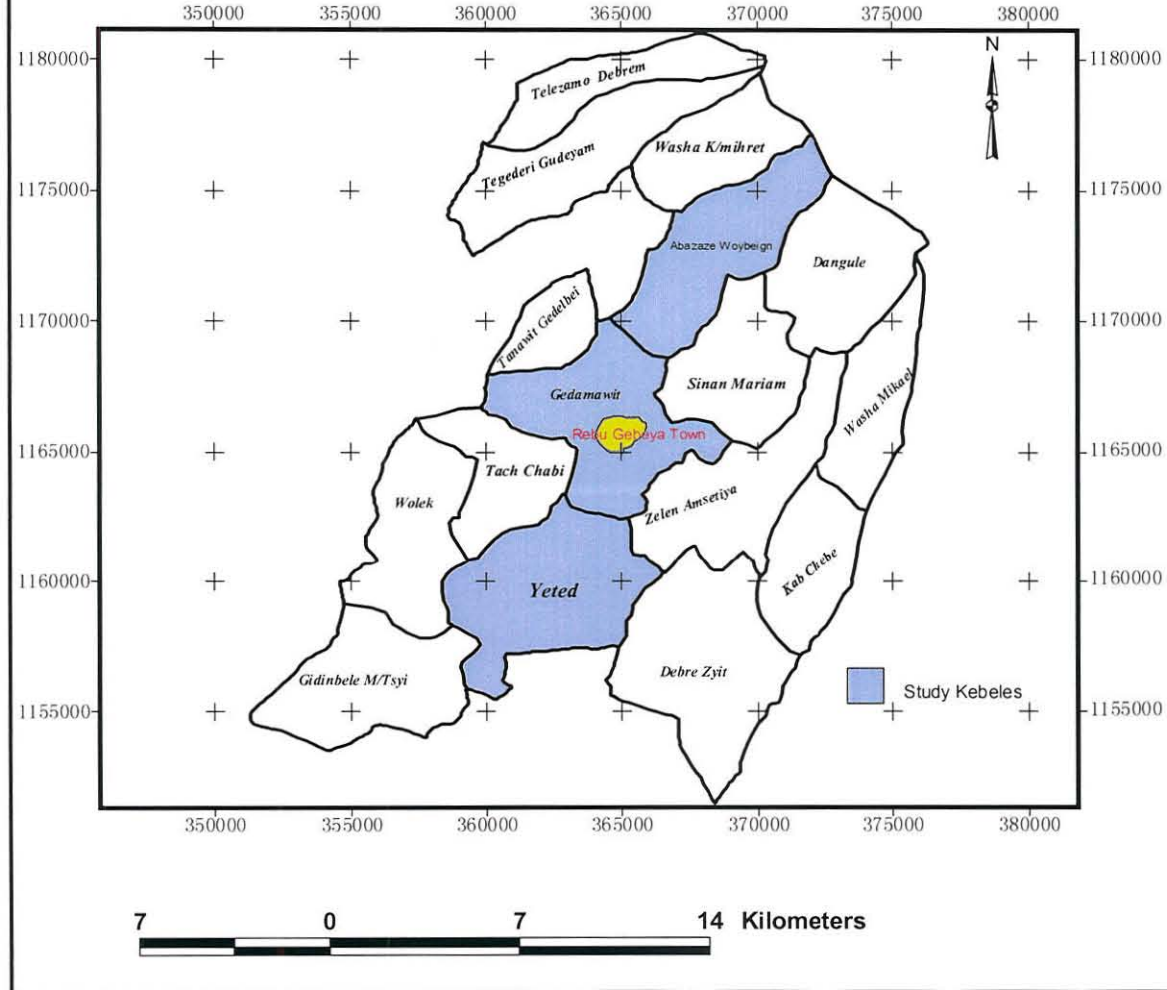
<b>Sex</b>	<b>Rural</b>	<b>Urban</b>	<b>Total</b>
<b>Male</b>	55,386	1,487	56,873
<b>Female</b>	55,917	2,154	58,071
<b>Total</b>	111,303	3,641	114,944

Source: Sinan District Administrative Office, 2008

Its head administrative town is called Rebu Gebeya, which is 27 kilometers from Debre Markos. Sinan shares most of the extremes and diverse characteristics of others in the watersheds to be taken as a representative from demographic, socio-economic and agro-ecological perspectives. It is the home for 16 rural kebeles and one administrative town.

In the district, the average annual rainfall is 1150mm and its average temperature is 15<sup>0</sup> c. The place has monomodal type of rainfall (on average for three months usually in June, July and August). The rainfall months differ from *kebele* to *kebele* from the foot of the mountain to the head. Hail storms usually occur towards the peak from October to December.

**Figure 4.1 Map of Sinan Woreda**



There is also a frost hazard, which affects beans, potatoes, wheat and barely. In this watershed, drought also occurs in every 3, 4 and 9 years. This incidence results in heavy loss of livestock, crop failures, food shortage and sometimes human migration.

***Land Cover and Use***

The district land covers the total area estimated to be 58,122.94 hectares. Its arable land is 20,670 hectares. The types of land cover and use of the upper catchments are cultivated land, grazing land, forest and shrub/bushes land together, barren land and built up area in descending order. Of these, cultivated land covers the largest percent which accounts about 70% of the total land cover/ use of the area.

**Table 4.2. Types of Land Use at Sinan District**

Type of Land Use	% out of the Total	
Cultivated land	70	
Grazing Land	16	
Forest + Shrubs/bushes	7.5 + 1.5	9
Barren Land	3	
Built up Area	2	

Source: Sinan District Administrative Office, 2008

As shown in Table 3.2.3, mountains take the lion’s share of the catchments (>60%).

**Table 4.3. Land Area Coverage of Sinan District**

Land Form Type	Area Coverage in %
Plain	25
Mountain	60
Valley	15

Source: Sinan District Administrative Office, 2008

## *Agricultural and Rural Development*

More than 96% of the population depend on the subsistence agriculture. To be productive, the district's agricultural and rural development office is endeavouring to introduce technological means to treat unproductive land and to create viable livelihood options such as fruits suitable for the agro-ecological zone and modern bee hives.

### **4.3. Description of Sample Kebeles**

As indicated on the map, the sample *kebeles* range from the bottom (foot) of the (mountain entrance to Sinan District from Debre Markos) to the peak (head) of the mountain. The bottom is called *Yeted Kebele*. Then, moving to the uplands, there is *Gedamawit kebele*, which surrounds the head town of the district known as *Rebui Gebeya*. Passing by this *kebele* to the peak, one finds *Abazaze Weybign kebele* a representative of the head.

#### *Yeted Kebele*

This *kebele* covers a total area of 4,352.8 ha and has a total population of about 7,702.

**Table 4.4: Total Population by Headship and Kebele**

<i>Kebeles</i>	Headship		Number other than Heads		Total
	Male heads	Female Heads	Male	Female	
<b>Yeted</b>	1,349	171	3,230	2,952	7,702
<b>Gedamawit</b>	1,355	136	5,132	3,896	10,519
<b>Abazaze</b>	1,322	131	3,749	4,005	9,204

Source: Sinan District Administrative Office, 2008

Its topography lies in the altitudes of 2300 to 2800m.a.s.l. With these altitudinal variations, its agro-ecological zone constitutes *Dega* (60%) and *Woina Dega* (40%). Its soil types include red (72.45%), grey (20.23%) and black (7.32%). Concerning land forms, the *kebele* is covered by mountain (2%), hills/valley (74%) and plain (24%).

The area, as in other kebeles, of the district is populated by Amharic language speakers (100%) and Orthodox Tewahido Church followers (100%). As the data from the *kebele* demonstrate, the majority of the people depend on crop and livestock production.

**Table 4.5: Distribution of HH Activities at Yeted Kebele**

HH livelihood Activities	Percent
Crop + livestock	97%
Daily labour	2%
Trading	1%

Source: Yeted *Kebele* Administrative Office, 2008

The major types of crops and vegetables include barley, potatoes, ‘engido’, beans, wheat, teff, maize, onions and linseed. Similar to other parts of the district, horses, like oxen, are used for ploughing agricultural lands.

**Table 4.6. Number of HHS who own horses and oxen**

Types of animals	Number of HHs who own horses and oxen				Remark	Those who use both
	No	1	2	> 2		
Horse (s)	745	474	166	125	Means of transport, too	162
Ox (en)	759	492	244	25	---	

Source: Yeted *Kebele* Administrative Office, 2008

In relation to the land use and landholding issues, a total of 996 ha of land is for production use; of which, 988 ha are used for annual crop production. Besides, there is a total of 105a ha covered by forest (natural forest = 85 ha, man - planted = 1,435 ha and shrubs = 165 ha). Only 2.5 ha are used for construction/housing purpose.

The average landholding in this *Kebele* is 0.5ha. As illustrated in the bracket, there is a high variation in this minimal landholding (those without land = 160, 0-0.25ha = 111, 0.25-0.50 = 252, 0.5-1ha = 427, 1 ha -2ha = 520 and > 2= 50).

### ***Gedamawit Kebele***

Gedamawit, surrounding the administrative town of the district, constitutes 7 sub- kebeles. It borders six *kebeles*: Tamawit , Abazaze Woibeign, Sinan Mariam, Zelen Amistiya, Yeted and Tach Chabi. It covers a total land area of 4,614 ha. As shown in Table 3.2.1, it has a total population of 10,519. Its altitude ranges from 2300 to 2850 m.a.s.l. The land form is more of hills and mountain (mountain with 35%, hills with 50% and plain with only 15%). The forest coverage constitutes natural (190 ha), private (210 ha) and community (119 ha).

As different from the other two kebeles, the livelihood options are more diversified.

**Table 4.7. Gedamawit HH Livelihood Activities**

<b>Types of Activities</b>	<b>Percent</b>
Only crop	10
Crop + livestock	50
Handicrafts	5
Petty trade/ business	15
Daily Wage Labour	10
Others	10

Source: Yeted *Kebele* Administrative Office, 2008

The major crops that are produced in this area include barley, potatoes, engido, beans, peas, wheat, onions and linseed.

Table 3.2.5 indicates the various livestock production in the three *kebeles*; the differences of the figures demonstrate difference of agro-ecology and proximity to towns that can be a gate to alternative sources of income like employment in government office.

### ***Abazaze Woibign Kebele***

This *kebele* has three sub- kebeles (Woibeign, Asterio and Abazaze). Abazaze, located at the peak, is better than the other two in terms of landholding and production except its being out of infrastructure reach. Its average landholding is 1 ha according to the informant from the *kebele*. Furthermore, the informant mentioned:

*The people at the peak are more illiterate and far from the knowledge of the world as compared to other parts due to being separated from others. They are also resistant to changes. They are better than others in their farm economy due to the better landholding they have and better productive lands they have.*

Abazaze Woibign has a total land area of 3,218.5 ha. Its landscape is a constituent of plain land (971.9 ha), mountain (1943.8 ha) and hills/ valley (302.8 ha.). It lies in 2300 to 3200 m.a.s.l. Due to this wide variation, it has the agro-ecological zones *wurch* (5%), *dega* (88%) and *woina-dega* (7%).

The following are additional features of the *kebele*.

- Soil type: brown (58%), red (40%) and grey 2%
- Land used for agriculture = 775 ha
- Grazing land = common (720ha) and private (559ha)
- Forest coverage = 887ha  
(Natural forest = 207 ha, private = 340 ha and common = 340 ha).
- Land used for construction, housing = 268.5ha.

**Table 4.8: Livestock Production and Beehives in the three Kebeles**

Livestock type and bee hives	Abazaze Woibign	Gedamawit	Yeted
Cattle	4,408	2,353	3,750
Oxen	910	631	1,304
Goats	61	245	142
Sheep	16,331	10,679	11,284
Donkeys	-	2	417
Mules	249	124	9
Horses	1,621	660	608
Poultry	891	518	960
Traditional bee hives	550	280	291
Modern bee hives	8	34	98
Transitional bee hives	1	No data	16

Source: Field Survey, 2008

## CHAPTER FIVE

### SOCIO-ECONOMIC STATUS OF THE RESPONDENTS

#### 5.1. Introduction

Sustainable livelihood outcomes are possible if the various elements (trends, assets, institutions and strategies) interact for a common purpose. Among such features, there are demographic and socio-economic characteristics that define and distinguish HHs in a particular society in terms of their possessions, access to resources, opportunities they have, guiding as well as influencing trends and their relationships.

As socio-economic differences exist within any site, and these also have a major impact on the composition of livelihood portfolios, a wide number of specific economic and social axes are relevant, including contrasts of asset ownership, income levels, gender, age, religious affiliation, social or political ideology and so on.

Basically, the socio-economic characteristics of a community can explain the features of livelihoods in a particular area and signify the degree of wellbeing. They can be effects of certain causes or causes of certain effects in a society to indicate their intricate relationships with others: risks and livelihood diversification.

Accordingly, this chapter gives the socio-economic status of the respondents that indicate the socio-economic conditions of the highlands. It starts with the socio-economic contexts of the HHs and leads to the assets they possess. From this information, one can tell the status of the people whether they are resource constrained or not towards defining, in the next chapters, the capacity and the vulnerability of the HHs that results in the livelihood outcome.

Furthermore, the description entails the highlands are not only influencing the livelihoods of the highlanders with all its constraints but also they are being influenced by the activities of the people.

## **5.2. Socio-economic Contexts of the Surveyed Households**

The socio-economic characteristics of surveyed farmers in respect to educational level, sex, family size, religion, ethnic group, language, and age are summarized in Table 5.1.

### ***Educational Level***

Among the HHs covered in the survey, Table 5.2 indicates, 76 % of them were illiterate (with no formal education). Of the 18 female respondents, 13 of them are under this category. Again, on the ladder of educational level, except the one in the second cycle (5-8 grade level), the rest are grouped in the first cycle of the primary education (1- 4 grade level). Though the number places men in a better position, the figure demonstrates that men have not also enjoyed the required education. Except the 6 % in the second cycle and the high school education (9 – 12 grade level), 13 % of the respondents are at the lowest level of education.

In the study area, there are two observed facts in relation to education. First, the adult education (non-formal) which many rural HHs attended during the national campaign of the Derg regime is at its fading effects at present. Having this education in the past cannot be a guarantee to one's ability of reading and writing due to its discontinuity and lack of further development at present. Second, the current literacy level of the HHs also depends on the access and opportunities that HHs have had in the past seventeen years of the current Ethiopian government.

Low education levels typically indicate that the households are excluded from large segments of the labour market. Most of the households who depend on agriculture for a living are facing, as a result, challenges such as land degradation, decline of production output, land slides, lack of farm inputs which are necessary for better production, depletion of the environment, lack of rainfall and lack of skills on modern technology to look for livelihood options. Some of the challenges raised during the FGD are selected, collated and presented in Box 5.1.

### **Box 5.1. Impact of Lack of Education**

- *Lack of access to employment*

‘With the current drought, I could think of no livelihood option as I am illiterate. I am sitting at home waiting for any fate that comes towards me...’ (A female headed HH from Yeted Kebele)

- *Being Vulnerable to Calamities*

‘I collect what nature provides me. I use only the traditional means of agriculture. I do not use others as I have no education. When my resources go wrong, I become hopeless and the whole family suffers....’ (An elderly farmer during FGD)

- *Deforestation and Degradation- Damaging the Natural Resource Base*

‘We are in trouble due to our own actions. We cleared the forest. We did not care for our land and environment...now the nature has given its back to us. All happened due to lack of awareness....’ (From an informal talk with a resident at Gedamawit)

Source: Field Study, 2008

### ***Religion, Ethnic Group and Language***

All the respondents are Orthodox Christians. This is homogeneous throughout the district. Similarly, all are from Amhara Ethnic group, Amharic language speakers.

### ***Households’ Age and Sex Composition***

Table 5.2 shows that, of the four age groups, 43% of the HHs are found in the age group of 36 – 50. The next maximum number lies in the age group of 51 – 65 (25%) which is considered a productive age in the rural areas. The third group (20 – 35) constitutes 21% of the HHs. The last group (> 65) with the least distribution makes 11%. Age of farmers is said to influence farmer’s maturity and decision making ability (Rahman, 2003). More males (82%) than females (18%) were interviewed. The 18% of the female respondents are from three age groups: 20- 35 (6%), 36-50 (9%) and 51-65(3%).

The gender gap can be explained by an observational incident that some women will not like to take part in the interview if their husbands are not around. This dependence of women on

men for any family affair clearly demonstrates the relevance of gender consideration in agricultural development. Research shows that it is with labour intensive crops and particularly cash crops that gender division of labour and gender relation of production plays a pivotal role in the production systems and its integration into the farming system. The survey shows that the women saw themselves as playing one role while their husbands played another and as such they might not be able to provide all the relevant information needed.

**HH Family Size**

As Table 5.1 illustrates, the average family size of the HH respondents is 6. Across HHs' level of education, there is not a significant difference from the fact that people who have no education have high fertility as compared to the education. Similarly, the findings in this study show that the family size of those with lower educational level is of the same degree. Then, with the increase of education, it is observed that family size decreases (what is 6.06 on average at the first cycle of primary education is 5.04 on average for the second cycle of primary education which is followed by the same trend in the secondary level of education).

In addition, across the various levels of education and age groups, the female respondents have less family size than the male ones. This is also the case for total difference between the two sexes (while the female have 5.28 on average, it is 6.16 for the male).

**Table 5.1. Correlation of Family Size and Level of Education**

Respondents' family size	HH Head's Level of Education (in %)				Total	X <sup>2</sup>	df	P Value
	Illiterate	1 - 4	5 - 8	Some High School				
<= 4	8	2	1	2	13	17.512	9	0.041
5 - 6	48	8	3	0	59			
7 - 8	17	7	1	0	25			
>=9	3	0	0	0	3			

Source: Field Study, 2008

**Table 5.2. HHs' Family Size by Sex, Age Group and Educational Level**

HH Heads' Level of Education	HH Heads' Age	HH Heads' Sex	Percent	Mean (Family Size)	Mean for both Sex
<b>Illiterate</b>	20 - 35	Male	14	6.57	6.47
		Female	3	6.00	
	36 - 50	Male	24	5.88	5.73
		Female	6	5.17	
	51 - 65	Male	15	6.13	6.00
		Female	4	5.50	
	Above 65	Male	10	6.60	6.60
	Total	Male	63	6.21	6.08
Female		13	5.46		
<b>1 - 4 (First Cycle of Primary Education)</b>	20 - 35	Female	1	5.00	5.00
	36 - 50	Male	9	7.00	6.55
		Female	2	4.50	
	51 - 65	Male	3	5.00	4.75
		Female	1	4.00	
	Above 65	Male	1	7.00	7.00
	Total	Male	13	6.54	6.06
		Female	4	4.50	
<b>5 - 8 (Second Cycle of Primary Education)</b>	20 - 35	Male	1	7.00	6.50
		Female	1	6.00	
	36 - 50	Male	1	5.00	5.00
	51 - 65	Male	2	4.50	4.50
	Total	Male	4	5.25	5.40
		Female	1	6.00	
<b>Some High School</b>	20 - 35	Male	1	4.00	4.00
	36 - 50	Male	1	4.00	
<b>Total</b>	20 - 35	Male	16	6.44	6.29
		Female	5	5.80	
	36 - 50	Male	35	6.09	5.88
		Female	8	5.00	
	51 - 65	Male	20	5.80	5.68
		Female	5	5.20	
	Above 65	Male	11	6.64	6.64
	<b>Total</b>	Male	82	6.16	6.00
Female		18	5.28		

Source: Field Survey, March 2008

### 5.3. Livelihood Assets

Resources the HHs have that are referred to as assets are presented between five asset groups: human capital, physical capital, financial capital, natural capital and social capital.

#### *Human Assets*

Based on the framework, information on skills, education and health of the HHs was gathered. With regard to the educational level, as discussed earlier, 76 % of the HHs are without formal education. From among the rest, the majority are at the lower level of education (17 %).

**Table 5.3. Respondents' Level of Education by Kebeles**

HH Head's Level of Education	Name of <i>kebele</i>			Total Percent
	Yeted	Gedamawit	Abazaze	
Illiterate	22	25	29	76
1 - 4	3	10	4	17
5 - 8	3	-	2	5
High School	2	-	-	2

Source: Field Survey, March 2008

As the data in Table 5.3 illustrates and an informant mentioned, the degree of illiteracy is higher for the peak *Kebele* (Abazaze). Those who are nearest to the capital town, where there has been access to education for long, the literacy level is better than the other places. The case of Yeted is different from its two basic trends: its being under another district that brought the difference a year ago and its current advantage over the others due to its location. As the informant further showed,

*The people in the highlands of the Abazaze Kebele have less education and trainings due to its being far from the schools and the centre. It has not similarly enjoyed the infrastructure that others have had due to its topography and distance. Recently, there are changes for the current generation in respect to schools and education.*

In relation to health status and services, 79% of the respondents indicated that they get regular health services. While 10% say they have access to the health services to some

degree, 11% show lacking access to the services. As observed during the field survey, the farmers in a *kebele* live scattered on a wide area of land and surrounded by abundant hills that make access to such services difficult. As also found out from the district administrative offices, there is only one health centre (a recently constructed) throughout at Rebuy Gebeya. The health post (*tena kelas*) that are found in each *kebele* provide only primary health care by the health officers. When the diseases require laboratory examination and further treatments, the patients come to the town.

### ***Physical Assets***

These assets refer to basic infrastructure and producer goods needed to support livelihoods. These, as used in the study, include HHs possessions (like farm materials, radios, tape recorders, livestock owned and housing) and distances in relation to services they need for their day to day lives.

The open ended question on HH possessions had diverse responses. Concerning livestock distribution, there are local level production differences and similarities. In relation to cattle production, oxen possession and sheep ownership, Table 5.3 shows that there are similarities of the total number of production but slight variations are observed in the computed means and standard deviations among HHs within and among the *kebeles*.

However, while there is a declining trend of horse number from the top to the peak of the mountain, it was observed that there is a rise trend in the number of mules from the bottom to the top across the three *kebeles*. The number of cases about goat and donkey is less which may be attributed to the topographical features in the highlands. In all types of livestock production, there is a high gap between the male heads and the female ones (as indicated in Table 5.4).

The other important point refers to possessions of farm implements. During the discussion, the participants indicated that farm tool possession depends on two things. The first one is the landholding of the farmer. A male or female farmer who has more than a hectare of land usually owns the traditional farm implements. When a female or a male who is the head of the family is to share crop out the land, the one who crops in is in charge of possessing the

**Table 5.4. Distribution of Households' Livestock Ownership by Kebele**

Name of kebele	Respondents' Sex	Measurements	Cattle owned	Oxen owned	Goats owned	Sheep owned	Donkeys owned	Mules owned	Horses owned	Poultry/chicken owned
Yeted	Male	Mean	2.96	1.52	.00	6.48	.13	.04	1.04	3.17
		Sum	68	35	0	149	3	1	24	73
	Female	Mean	2.00	.57	.00	2.86	.00	.00	.14	2.86
		Sum	14	4	0	20	0	0	1	20
	Total	Mean	2.73	1.30	.00	5.63	.10	.03	.83	3.10
		Sum	82	39	0	169	3	1	25	93
Gedamawit	Male	Mean	2.38	1.21	.00	6.55	.00	.28	.66	.66
		Sum	69	35	0	190	0	8	19	19
	Female	Mean	1.50	.33	.00	3.00	.00	.00	.00	2.83
		Sum	9	2	0	18	0	0	0	17
	Total	Mean	2.23	1.06	.00	5.94	.00	.23	.54	1.03
		Sum	78	37	0	208	0	8	19	36
Abazaze	Male	Mean	2.67	1.40	.20	6.23	.07	.40	.53	.97
		Sum	80	42	6	187	2	12	16	29
	Female	Mean	1.60	.60	.00	3.00	.00	.00	.20	3.40
		Sum	8	3	0	15	0	0	1	17
	Total	Mean	2.51	1.29	.17	5.77	.06	.34	.49	1.31
		Sum	88	45	6	202	2	12	17	46
Total	Male	Mean	2.65	1.37	.07	6.41	.06	.26	.72	1.48
		Sum	217	112	6	526	5	21	59	121
		Std. Deviation	1.337	.556	.663	2.880	.241	.439	.946	2.466
	Female	Mean	1.72	.50	.00	2.94	.00	.00	.11	3.00
		Sum	31	9	0	53	0	0	2	54
		Std. Deviation	1.227	.707	.000	.725	.000	.000	.323	.686
	Total	Mean	2.48	1.21	.06	5.79	.05	.21	.61	1.75
		Sum	248	121	6	579	5	21	61	175
		Std. Deviation	1.359	.671	.600	2.945	.219	.409	.898	2.324

Source: Field Survey, 2008

**Table 5.5. Distribution of HH Heads by Distance from Various Locations**

Distance to Various Locations (Minutes)	Abazaze			Gedamawit			Yeted			Overall		
	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean
To gather firewood	5	60	14.71	5	60	13.29	5	30	10.07	5	60	12.82
To fetch water	10	35	28.43	10	35	28.14	3	30	13.40	3	35	23.82
To market	20	180	76.86	20	180	64.57	20	240	102.00	20	240	72.80
To nearest school	10	90	34.14	10	60	35.57	10	60	31.50	10	90	33.85
To health service	10	60	39.86	10	60	39.00	10	90	27.33	10	90	35.80
To nearest paved road	5	60	31.43	5	60	29.86	10	120	28.50	5	120	30.00

Source: Field Survey, March 2008

agricultural materials. Second, households who do not have land often do not have the farm implements for big plots; however, they usually own small tools for planting vegetables on their backyard.

With regard to distance, the households were asked to estimate the time it takes them to fetch water, to go to market, to nearest school, to gather firewood, to health service and to nearest paved road. Table 5.5. shows that this information differs based on the type of services sought and locations. Across services, school is the farthest of all (with average distance of 72.80 minutes). Health on average 35.80 minute and market on average 33.85 minutes take the second and the third respectively farthest from the list.

### ***Financial Assets***

This refers to the money, savings and loan access the households have. In relation to saving and credit, I could observe and interview the Amhara Credit and Saving Institute office working in line with other government offices to give saving and credit services to the rural people. However, from the service render and service receiver sides, it was possible to observe the capacity problem to reach all. This is substantiated by the information in Table 5.6.

**Table 5.6. Availability of Saving and Credit Services**

Type of financial service	Degree of availability	Name of kebele			Overall Percent
		Yeted (%)	Gedamawit (%)	Abazaze (%)	
Savings and credit	Available regularly	53.3	74.3	34.3	54.0
	Some	16.7	8.6	8.6	11.0
	Not available	30.0	17.1	57.1	35.0

Source: Field Survey, March 2008

The figure (74.3% availability) shows that Gedamawit Kebele has more access than others. On the other hand, the most disadvantaged is Abazaze with 57.1% unavailability of the services. Furthermore, for the question whether the HHs use external income transfer as a

means of livelihood, no one at Abazaze responded it as a means from the three major sources every respondent claimed. But, though the number of HHs who rely on this is less, (17 chose it as a second and third in Yeted and Gedamawit), it is considered as a source.

### *Natural Assets*

These constitute the natural resources (land, water, trees, etc.) that the rural HHs employ for their livelihoods. Officially land in Ethiopia is owned by the state. The pattern of landholding and inheritance in the study area, just like in the rest of the country is characteristically patrilineal. The study presented four ways of acquiring land (inheritance, redistribution, inheritance as well as redistribution and sharecropping).

**Table 5.7. Distribution of Land Acquisition by Sex of HH Head**

<b>HH Head Sex</b>	<b>Inheritance (I)</b>	<b>Redistribution (R)</b>	<b>I+R</b>	<b>Share cropping</b>	<b>Landless</b>
Male	7	48	14	10	3
Female	5	10	0	0	3
Total	12	58	14	10	6

Source: Field Survey, March 2008

It can be deduced from the Table 5.7 that the main form of land ownership is redistribution. The land acquired through inheritance, the combination of inheritance and redistribution, and sharecropping makes 12%, 14% and 10% respectively.

**Table 5.8. Mean Land Size (ha) by Sex and Age Categories**

HH Head's Age (Year)	HH Head's Sex	Size of land owned (Mean)	X <sup>2</sup>	df	P Value
20 - 35	Male	.84	41.24	24	0.016
	Female	.75			
	Total	.82			
36 - 50	Male	.95			
	Female	.63			
	Total	.89			
51 - 65	Male	1.25			
	Female	.70			
	Total	1.14			
Above 65	Male	.95			
	Total	.95			
Total	Male	1.00			
	Female	.68			
Total		.95			

Source: Field Survey, March 2008

Table 5.8 indicates the average land holding is 0.95 hectares. The distribution shown in the table is negatively skewed in that only a small number of the total respondents own big plots. The chi-square (0.016) for age and size of land shows statistical significance. Small plots which range from 1-2 hectares are said to be a constraint in crop and livestock production and this has made other alternatives more attractive, including exploitation of forest resources.

As a result of having little land and low levels of capital and education, the sample households were willing to allocate labour to the enterprises such as unskilled wage work but the chance was meager as there were little development activities in the district. The Pearson chi-square test in Table 5.9. shows statistically significant ( $P < 0.05$ ) relationship between HH age and size of land. The data in the Table 5.8 also stresses the gender gap of landholding.

**Table 5.9. Size of HH Land by HH Heads' Age**

HH Head's Age	Size of HH land in Hectare					Total	X <sup>2</sup>	df	P-Value
	None	0.01 - 0.50	0.51 - 1.00	1.01 - 1.50	≥ 1.51				
20 - 35	2	7	9	1	2	21	30.02	12	0.003
36 - 50	3	2	31	6	1	43			
51 - 65	1	0	11	10	3	25			
Above 65	0	2	6	2	1	11			
Total	6	11	57	19	7	100			
Cumulative	6	17	74	93	100	-			

Source: Field Survey, March 2008

Furthermore, the cumulative demonstrates that three-quarter (74%) of the HHs operate on land less than 1.00 ha.

### ***Social Assets***

This encompasses the different networks and associations of the local community in which almost every HH is a member for various social affairs such as *senbete*, *idir* and *mahiber* in a society. As mentioned earlier, the homogeneity of the society in respect to religion and language plays a part in any development campaign in the community. This tells that these should be taken into account for the success of any development programme. Ignoring them and acting differently may result in an unfavourable result.

Another observation regarding on community based organizations was the response given for the question on the availability of any NGO that supports the development endeavours of the local area. As found out, there is a local NGO (from Debre Markos) which helps the education sector materially and financially. In its activities, there is no community participation and decision making. It only intervenes in a problem it observed or was requested to act for. The respondents' response in the survey supports this fact (90% of the say NGOs are not available while 10% mention there is some engagement by NGOs).

## 5.4. Perceptions of Own Wellbeing

Sustainable livelihood is possible when livelihood outcomes are positive in defining the wellbeing of the society. This results from the complex interactions of the environment, economic factors, social matters, degree of vulnerability to hazards and others that define the current HH livelihood position in terms of wealth.

In finding out this from the HH participants during the survey and the FGDs, they were asked where they place themselves. Except few of them who say they are better than other people in their livelihood, almost all agreed they are poor due to the climate change and environmental hazards like drought and decline of production that are affecting their agricultural activities. Besides, they mentioned that scarcity of resources like land and rapid growth of population are staggering the sustainability of their livelihoods.

This being vulnerable across the highlands is due to the common catastrophes of degradation, drought, price inflation and diseases (crop and animal) which are eroding their capacity and assets possessed.

**Table 5.10. Meeting HH Needs and Consumption from Sales and Production**

Meeting needs from sales (in Percent)		Own crop production meeting annual HH consumption (in Percent)	
Yes	No	Yes	No
2	98	8	92

Source: Field Survey, March 2008

This information is supported by responses in Table 5.10. Despite the less productivity of the land, they were asked if the crops they produced could meet their annual consumption and 92% of them say the crops do not. That is why the same percent of the HHs stated that they buy food crops from the market for more than five months a year. In addition, 98% of the HHs responded that their sales also do not meet their needs. Workneh (2004:2) also indicated that food production in Ethiopia has never been sufficient to enable the rural population to be

food secure' in the past three decades; as a result, subsistence, mixed smallholder agriculture is the dominant farming system in the highlands of Ethiopia.

These figures could tell how the livelihoods of the people with small landholding and eroded natural resources can stand with the outcomes in which they feel there is no way out. In their wellbeing, there is no significance difference among them. That is why they grouped themselves on the average scale.

**Table 5.11. Perceptions of Own Wellbeing**

Kinds of Wellbeing Perceptions	Scale	Name of kebele			Perceptions in %
		Yeted	Gedamawit	Abazaj	
Perception of own food	Below average	9	9	10	28
	About average	17	25	24	66
	Above average	4	1	1	6
Perception of own landholding	Below average	6	8	6	20
	About average	16	18	21	55
	Above average	8	9	8	25
Perception of own livestock	Below average	6	6	3	15
	About average	19	24	28	71
	Above average	5	5	4	14
Perception of own housing	Below average	7	6	3	16
	About average	14	25	26	65
	Above average	9	4	6	19

Source: Field Survey, March 2008

Similarly, Table 5.11 demonstrates the little difference of well being among HHs. In FGDs and interviews, the participants and the respondents mentioned that the people in the three

kebeles can be categorised under very poor due to the poor living conditions and vulnerability to various shocks in the highlands. As the question was concerned with their wellbeing in comparison with other community members, the majority (66 %, 55%, 71% and 65%) say they have average wellbeing status in own food, landholding, livestock and housing respectively.

## **5.5. Summary**

Key-assets (such as savings, land, labor, education, access to market, employment opportunities, availability of road, access to other public services) is an evident requisite in making rural households and individuals more or less capable and sustainable (Dercon and Krishan, 1996). This study has also described the socio-economic characteristics and assets of the HHs to later see the link between risk and livelihood diversification.

As described, the study area possesses similar features in terms of literacy level (generally low but with slight better condition in places that are nearest to the capital town of the district), family size (on average 6), landholding (0.95ha on average), religion (Orthodox throughout) and composition of ethnic group (only Amhara) but the gender gap within these features.

Furthermore, though all agro-ecological zones of the three kebeles are poor in their socio-economic conditions, it is clearly observed that places which have advantage of proximity to services are better than others in terms of access and opportunities.

## **CHAPTER SIX**

### **RISK PERCEPTIONS AND RISK FACTORS IN THE HIGHLANDS**

#### **6.1. Introduction**

Risk is a defining feature of the rural HHs in the developing world, especially in Sub-Saharan Africa. Its variability and responses undertaken are among those factors that have intensified poverty in the region. These multitude characteristics originate due to the sufferings of the natural, social, economical and political realities that result in deteriorating rural livelihoods. The changing conditions and the multiple local reactions to risk require an examination of the local context that differs not only among places but also among individual households. Chambers (1994) have stressed, from this concern, both the richness of local perceptions and the need to take them in to account in any development planning.

With this similar reality but different context, the study has tried to describe the various types and sources of risks that impact the livelihoods of the rural people in Choke highlands of North Western Ethiopia with particular reference to Sinan District. In this place, the people depend on the natural resource base for their livelihoods and well being. The findings indicate that their farm economy, the base of their living but subsistence, is under constant pressure and threats due to the fragile ecosystem. The observations also demonstrate that the area is characterized by drought, low agricultural productivity, poverty, vulnerability to natural calamities, degradation and food shortage. As observed, some risks are more prominent than others as their consequences are difficult for the disadvantaged to withstand and come out of the trap.

The key target of this part is that, grasping the real picture of the local area in terms of identifying risk views and experiences of the smallholder peasants, risk information in the fast changing environment of the highlands and risk responses to minimize and curb unfavourable outcomes could serve as a spring board in the effort of implementing development programmes for poverty reduction strategies in the highlands of the study site.

## 6.2. Some Common Risks being experienced in the Highlands

### *Environmental Risks*

Mountains are crucial for human needs since they contain resources such as water, energy and biological diversity. What is more, they are homes for forest products, agricultural activities and recreation in the world. They are also essential to the survival of the global ecosystem. However, the changing global climate is highly threatening these fragile ecosystems as the highlands are susceptible to accelerated soil erosion, landslides, deforestation, and loss of genetic diversity (Blaikie and Brookefield, 1987). On the human side, there is widespread poverty among mountain inhabitants.

From this concern, to examine the environmental degradation effects of the mountain, there was an effort to identify what specific risks govern and influence the livelihoods of the people. As Table 6.1. shows, the five most serious risks (100% for all) faced by all agro-ecological zones of the study area are deforestation, degradation, drought, soil erosion and diseases (human, crop as well as animals). Similarly, in the discussions, the participants indicated that these are the sources for all the problems they have. Next, unseasonal/irregular rainfall (82 %) and frost (75%) that affect their farm economy. As observed, frost or hail is present at the head of the mountain. Still, when other climate problems are added, the extent of the effect greatly damages the resource base of the mountain livelihoods. However, the issues of pests, wild fires and weeds are not serious as indicated by the respondents.

When these are compared across the height of the mountain, two important implications are derived in risks related to environment in highlands. The first one refers to the most serious and frequent ones that are affecting the natural base of the rural poor. These do not make any discrimination among members of the community, locations of the society, age of the people and level of education. Such risks are covariate, which affect the majority within the given geographical site. Second, those risks which result due to the damaged environment like diseases and the ignored economic incentives such as infrastructure, the severity as well as the effects may direct to HH level, a specific area or the whole society. The central tendency indicated in the mean and the standard deviation in Table 6.1 demonstrate this view as tools of centre of tendency.

**Table 6.1. Environmental Risks being experienced in the Highlands**

Types of Environmental Risks	Risks Experienced y the Respondents									Average		
	Yeted			Gedamarwit			Abazaze					
	N	$\xi$	SD	N	$\xi$	SD	N	$\xi$	SD	N	$\xi$	SD
Degradation	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Deforestation	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Frost/hail	18	1.40	0.498	28	1.20	0.406	29	1.17	0.382	75	1.25	0.435
Floods/erosion	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Pests	10	1.67	0.479	8	1.77	0.426	6	1.83	0.382	24	1.76	0.429
Drought	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Wild fire	-	-	-	-	-	-	1	1.97	0.169	1	1.99	0.100
Diseases	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Weeds	1	1.10	0.403	1	1.03	0.296	1	1.09	0.373	3	1.07	0.355
Unseasonal/irregular rainfall	24	1.20	0.407	29	1.17	0.382	29	1.17	0.382	82	1.18	0.386

(Key:  $\xi$  = Mean and SD = Standard Deviation)

Source: Field Survey, 2008

A natural resource expert at Sinan Woreda mentioned:

*The declining trend of soil fertility started with the destruction of natural vegetation cover. Forests have been cleared mainly for firewood and house construction, which could be for own consumption and/or market. Deforestation has been quite high in the past three decades. Deterioration of the forest resources caused deterioration of the agro-ecology and shortage of fuelwood. This called a shift from fuelwood to the use of animal dung and crop residues. The burning of these sources brought about an extreme damage and deterioration in soil structure, infiltration capacity, moisture storage, and fertility. In effect, the land lost its productive capacity or degraded.*

He further indicated that clearing forests made life difficult for Sinan peasants. According to him, this resulted in high degradation, and frequent drought hit the people. Wild animals also

lost their shelter and could not withstand the rapidly changing situations. Lastly, their fate was sickness and death. The land also became unproductive. The crops could little come out green and healthy. This was serious with some crops such as potatoes, onions, wheat and barely that used to abundantly support the income and the livelihoods of the rural people. This trend was even more difficult for women who gathered forest products and get worried about the food they make for the family. As Hagere, a female peasant from Gedamawit said,

*We are highlanders. Our lives depend on the forests and the land. Without forests and land, we have no life. We need water, domestic animals, firewood, vegetables, teff, potatoes, wheat and onions from the land. The forests and the lands were our protectors, our lives. Now, they denied us. We have nothing to rely on.*

As collated from FGD data, flooding is also overwhelmingly identified as the primary hazard. It includes property damage, loss of revenue, sickness, social disruption and negative psychological effects. The environment change could also create health hazards for humans and domestic animals and worsen existing risks.

### ***Economic Risks***

The economic base of rural Ethiopia, common to all developing countries, is dependent on the constrained and deteriorating farm economy. In the absence of conducive sources of natural resources for agricultural productivity, there will not be enough return, even sustaining the subsistence. This is expressed by the four major economic risks: declining returns with 97%, poor farm productivity with 96%, food shortage with 89% and unemployment with 85% voicing of the HH respondents. Those risks which are perceived as less risky are only low wages and migration as indicated in Table 6.3. In examining the degree of the problems and their dispersion, the central tendency used shows no significant differences among the kebeles.

The interwoven nature of the frequent hazards is indicated in Table 6.2 on the serious life issue: food, the urgent need and the core intervention area in the local development.

As found during the survey and FGDs, the HHs do not have sufficient skills and knowledge to get engaged in non-farm activities that might support their livelihoods. Their core means is the farm which could not even reach the subsistence target. This was the major pushing

factor that forced them to buy from market. As seen in Table 6.2, 92% of the respondents buy food items from market for more than five months a year in the absence of other options.

**Table 6.2. Food Shortage Severity and its Causes in the Highlands**

<b>Main Variable</b>	<b>Number of months to buy food from market</b>	<b>Percent</b>	<b>Major Causes</b>
<b>Food Secure</b>	None	5	<ul style="list-style-type: none"> <li>▪ Better land (size and fertility)</li> <li>▪ Additional means of income</li> <li>▪ External income transfer</li> <li>▪ Being near wetlands (having access to water)</li> </ul>
<b>Food Insecure</b>	Three to four months	3	<ul style="list-style-type: none"> <li>▪ Land degradation</li> <li>▪ Diseases (crop and animal)</li> <li>▪ Poverty</li> <li>▪ Climate change</li> <li>▪ Declining yields</li> <li>▪ Poor capacity due to high price</li> <li>▪ Meager size of land</li> <li>▪ Lack of rainfall</li> <li>▪ Lack of resource access and opportunities</li> <li>▪ Drought</li> <li>▪ Unemployment</li> </ul>
	Five to six months	64	
	More than six months	28	

Source: Field Survey, 2008

The decline in productivity growth is largely due to decreased and non-optimal size of holdings and environmental degradation of land. It is also observed that Sinan Woreda as all other rural areas of Ethiopia has a high unemployment rate. This is constituted by little job opportunities (only governmental) and high competition for the jobs. As more than 76% of the HHs are illiterate and the majority do not have skills for job creation or employment, they are likely to be left out of any employment and to be dependent on the environmentally agonized agricultural sector.

**Table 6.3. Economic Risks being experienced in the Highlands**

Types of Economic Risks	Risks Experienced by the Respondents									Average		
	Yeted			Gedamawit			Abazaze					
	N	$\xi$	SD	N	$\xi$	SD	N	$\xi$	SD	N	$\xi$	SD
Rapid inflation	21	1.40	0.675	21	1.43	0.558	21	1.43	0.558	63	1.42	0.589
Falling wages	11	2.10	0.923	17	1.69	0.758	14	1.86	0.810	42	1.87	0.837
Food shortage	24	1.37	0.765	33	1.09	0.373	32	1.17	0.568	89	1.20	0.586
Unemployment	23	1.40	0.770	31	1.17	0.514	31	1.17	0.514	85	1.24	0.605
Migration	10	1.93	0.785	13	1.63	0.490	13	1.69	0.583	36	1.74	0.630
Declining returns	27	1.10	0.305	35	1.00	0.000	35	1.00	0.000	97	1.03	0.171
Price shocks	24	1.40	0.621	20	1.34	0.639	22	1.49	0.658	66	1.41	0.637
Lack of credit	13	1.57	0.504	19	1.46	0.505	20	1.43	0.502	52	1.48	0.502
Poor farm productivity	28	1.00	0.263	34	0.97	0.169	34	0.97	0.169	96	0.98	0.200

(Key: N= Number of Cases,  $\xi$  = Mean)

Source: Field Survey, 2008

### ***Social Risks***

All respondents place population growth and poor natural resource management at the head of all risks under this category. Next to this, fragmented landholding (94%); overgrazing (91%); over cultivation (88%); lack of skills (87%); less access to market (86%); land confiscation (82%) and lack of farm inputs (81%) are the major livelihood messing risks in sequence.

**Table 6.4. Social Risks being Experienced in the Study Area**

Types of Social Risks	Risks Experienced by the Respondents									Average		
	Yeted			Gedamawit			Abazaze					
	N	$\xi$	SD	N	$\xi$	SD	N	$\xi$	SD	N	$\xi$	SD
Poor social networks	11	1.63	0.490	9	1.74	0.443	7	1.80	0.406	27	1.73	0.446
Lack of farm inputs	19	1.30	0.535	30	1.09	0.373	32	1.03	0.296	81	1.13	0.418
Lack of subsidies	11	1.63	0.490	15	1.57	0.502	15	1.57	0.502	41	1.59	0.494
High tax	4	1.87	0.346	7	1.80	0.406	6	1.83	0.382	17	1.83	0.378
Inadequate health services	18	1.40	0.498	23	1.34	0.482	26	1.26	0.443	67	1.33	0.473
Unrecognising traditions and practices	13	1.57	0.504	21	1.40	0.497	24	1.31	0.471	58	1.42	0.496
Few government-community coordination	3	1.90	0.305	21	1.40	0.497	18	1.49	0.507	42	1.58	0.496
Gender inequality	12	1.60	0.498	28	1.20	0.406	27	1.23	0.426	63	1.33	0.473
Fragmented landholdings	28	1.07	0.254	34	1.03	0.169	32	1.09	0.284	94	1.06	0.239
Land confiscation	21	1.30	0.466	31	1.11	0.323	30	1.14	0.355	82	1.18	0.386
Less access to market	26	1.13	0.346	29	1.17	0.382	31	1.11	0.323	86	1.14	0.349
Lack of skills	26	1.13	0.346	31	1.11	0.323	30	1.14	0.355	87	1.13	0.338
Population growth	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Poor NRM	30	1.00	0.000	35	1.00	0.000	35	1.00	0.000	100	1.00	0.000
Overgrazing	27	1.10	0.305	31	1.11	0.323	33	1.06	0.236	91	1.09	0.288
Over cultivation	26	1.13	0.346	30	1.14	0.355	32	1.09	0.284	88	1.12	0.327
Poor rural infrastructure	16	1.47	0.507	16	1.54	0.505	15	1.57	0.502	47	1.53	0.502
Insecure tenure rights	16	1.47	0.507	8	1.77	0.426	12	1.66	0.482	36	1.64	0.482
HIV/AIDS	16	1.47	0.507	28	1.20	0.406	25	1.31	0.530	69	1.32	0.490

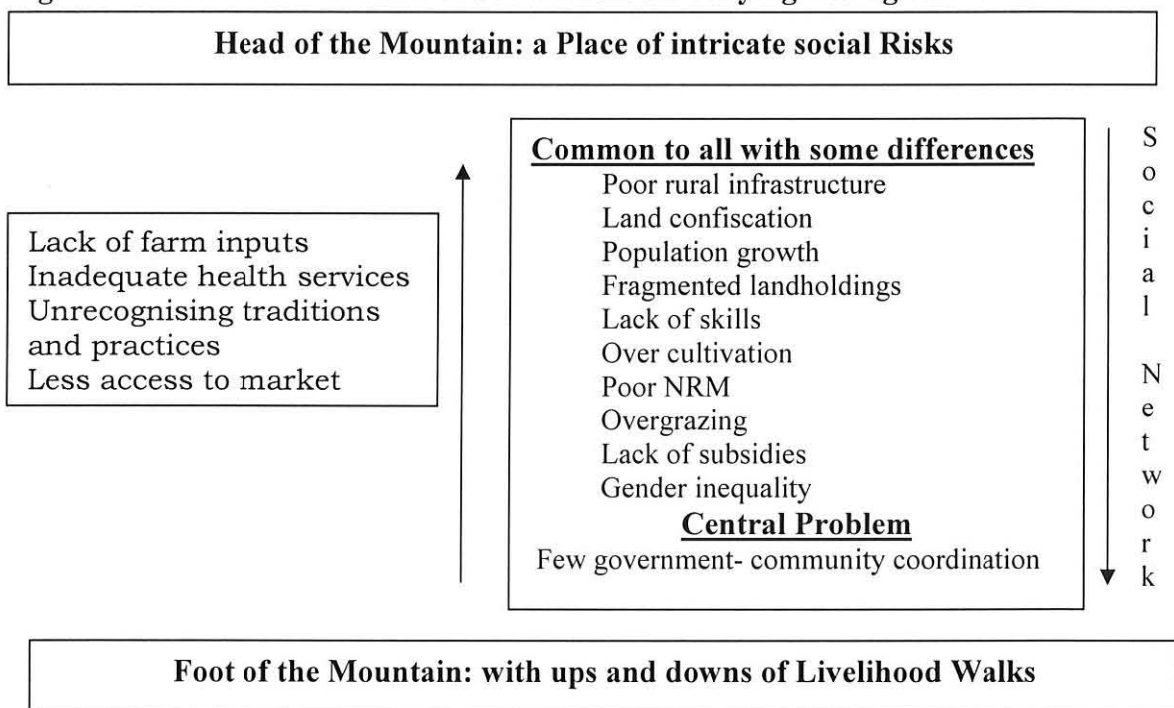
Source: Field Survey, 2008

The other group that calls interpretation behind the figure is peasants' perception of HIV/AIDS (69%), gender inequality (63%), unrecognized traditions and practices (58%),

poor rural infrastructure (47%), few government-community coordination (42%) and lack of subsidies (41%). The explanation for this may be attributed to the present positive (as in rural infrastructure and gender matters) or negative (as in subsidies and HIV/AIDS) changes being observed.

With regard to differences, this group of category (the social risk) has slight gaps across kebeles and HHs of different ecological zones as demonstrated in the means and standard deviations of the three kebeles in Table 6.4. Among the differences, the main ones are grouped in Figure 6.1 together with information found in the discussions.

**Figure 6.1. Direction and Load of Social Risks on Varying Ecological Zones**



*(Key:* The arrows show the direction of risk severity as they point. Risks to the left become more severe as one moves to the top of the mountain in contrast to the social network. The ones in the middle box are common to all parts in the study area )

Source: Field Study: HH Survey and FGDs, 2008

All women and men say it is their ignorance that has resulted in the current reality of the mountain. The social risks, as they recommend require developing awareness. This is possible through education (formal or informal) and critical for achieving environmental and

ethical awareness, values and attitudes, skills and behaviour consistent with sustainable rural development and for effective public participation in decision-making.

To be effective, environment and development education should deal with the dynamics of both the physical and socio-economic environment.

### **6.3. Vulnerability to Risks**

Different social groups in and around Sinan District and the Choke mountain areas are vulnerable to potential future global change. While poverty in general increases vulnerability, so physical location, dependence of certain economic activities and other non-poverty related characteristics as seen in the early sections. Successful adaptation to the mountain change, particularly in advance of the right knowledge of future conditions, will require an understanding of the relatively vulnerability of different social groups.

To make clear the information presented in Table 6.5, rows under each group demonstrate who occupies the rank from the first to the last member in the group. What is more, the number in parenthesis shows the counted load given by the HH respondents. Columns present the type of risk.

#### ***Vulnerability on Age Variation***

Table 6.5 starts with who is more vulnerable to different risks by age group. First, it states children take the lion's share of the most vulnerability in relation to environmental, economic and community based social risks. Furthermore, it tells there is no second age group concerning environmental risks other than children. Children are also the second most affected by state based social risks, next to the youth in this case. Table 6.5 also points out that the youth are the second most affected after children to different risks such as community based and economic risks. Except the information that the adult are the third affected by environmental and economic risks, there is no third or fourth affected age group other than the children and the adults in the highlands.

This means a lot in development. As research shows children not only will inherit the responsibility of looking after the earth, but in many developing countries they comprise

nearly half the population. Furthermore, children in developing countries are highly vulnerable to the effects of environmental degradation. They are also highly aware supporters of environmental thinking. The specific interests of children need to be taken fully into account in the participatory process on environment and development in order to safeguard the future sustainability of any actions taken to improve the environment.

In addition, it is imperative that youth from all parts of the world participate actively in all relevant levels of decision-making processes because it affects their lives today and has implications for their futures. In addition to their intellectual contribution and their ability to mobilize support, they bring unique perspectives that need to be taken into account.

Numerous actions and recommendations within the international community have been proposed to ensure that youth are provided a secure and healthy future, including an environment of quality, improved standards of living and access to education and employment. These issues need to be addressed in development planning.

#### ***Vulnerability on Wealth Variation***

Ethiopia is the second most populous nations in the continent. According to the National Central Statistics Authority of Ethiopia (2006), the total population is estimated to be 74 million, of which 85 % are rural residents and predominantly dependent on traditional mode of agriculture based livelihood system, leading a subsistence level life. Ethiopia is also ranked 170 (of 177) in the 2006 human development index of least developed nations. As this study also found out, natural calamities such as drought as well as degradation induced crop failure, animal and crop epidemics, diseases and erosion are major disasters experienced in the mountains. This is too deepened in such a place where the social and the economical conditions are constrained and the effects primarily hit the destitute before it affects others on wealth group ladder as shown in Table 6.5. It also shows no counted load is as extreme as the poorest group in society to be affected by all kinds of risks.

#### ***Vulnerability on Location and Distance Variations***

At the local level, the availability of technology, information, and other resources determine the socio-economic characteristics of peasants and communities in both productive and social

terms. This is usually hampered in the highlands as a result of the agro-ecological location and the distance from economic sources.

In responding to these two related issues, the respondents mentioned that those at the peak are more vulnerable than those who reside in and around the waist or the foot of the mountain. Similarly, they indicated that those far from the paved road and the town are the most vulnerable of all others.

**Table 6.5. Vulnerability to Risks across various Social Groups and Locations**

Categories for Variable Treatment	Rank loaded of Vulnerability	Types of Risks			
		Environ-mental Risks	Social Risks		Economic Risks
			State	Community	
<b>Across Age Groups</b>	1. Children	1( 59)	2(42)	1(79)	1(61)
	2. Youth	1( 46)	1(76)	2(63)	2(46)
	3. Adult	3(54)	2(37)	2(47)	3(42)
	4. The Old	1( 35)	2(31)	1(45)	1(55)
<b>Wealth Group</b>	1. Poorest	1(98)	1(86)	1(99)	1(99)
	2. Poor	2(77)	2(48)	1(57)	2(62)
	3. Non-poor	3(73)	3(43)	2(44)	3(60)
<b>Location</b>	1. The peak	1(87)	1(91)	1(88)	1(98)
	2. The waist	2(64)	2(53)	1(74)	2(63)
	3. The bottom	3(51)	1(58)	1(68)	3(61)
<b>Distance</b>	1. Near the paved Road, far from the town	2(56)	2(75)	2(58)	2(68)
	2. Far from the paved road and the town	1(95)	1(94)	1(91)	1(97)
	3. Near the town	3(53)	3(69)	3(61)	3(64)
<b>Across Sex Groups</b>	1. Men	2(86)	2(58)	2(78)	2(53)
	2. Women	1(97)	1(81)	1(96)	1(97)
<b>Education</b>	1. Illiterate	1(88)	1(75)	1(97)	1(89)
	2. Literate	2(79)	2(57)	2(68)	2(62)

Source: Field Survey, 2008

### *Vulnerability on Sex and Level of Education Variations*

The international community has endorsed several plans of action and conventions for the full, equal and beneficial integration of women in all development activities, in particular the Nairobi Forward-looking Strategies for the Advancement of Women which emphasize women's participation in ecosystem management and control of environment degradation. Several conventions, including the Convention on the Elimination of All Forms of Discrimination against Women, have also been adopted to end gender-based discrimination and ensure women access to land and other resources. However, they are seen as the most disadvantaged across all opportunities and access to resources (education, landholding, natural resource benefit sharing and employment) in the study area (refer to Table 5.1). As compared to men, they are more illiterate.

As Degefa (2004:110) states, ‘...development initiatives in a fragile area have to pay special attention to poverty alleviation, by empowering the poorest and the vulnerable segments of the population.’

#### **6.4. Risk Coping and Managing Strategies: Diversifying or Die -Verifying?**

A large number of respondents (77%), mainly the marginal peasants drastically cut food intake during calamity or bad year when drought persists. Furthermore, their preparedness to consume inferior diet helps match the demand with the limited supply situation. Diet during this year mainly consists of food from ‘engido’.

The survey reveals that HH expenditures of sample households during calamity years decline by half. As an informant indicated, the magnitude of decline is highest for expenditures towards ceremonies of social obligations like holiday celebrations followed by food, education and medical expenses.

The need for cash, particularly to buy food and other basic necessities, as well as to pay medical bills and school fees, strongly influences the choice of money earning activities undertaken by the households. Children are also being used by their families as a source of

income during calamity years to generate some money. The girl children are withdrawn from school and engaged in any activity that assists the family income.

The other complementary side of household strategies to reduce vulnerability is related to livestock keeping. This is a HH phenomenon that signifies the family's being destitute.

Livestock (cattle and sheep) rearing is being reduced in recent years at the mountains due to shortage of grazing land and diseases as a result of drought. Instead of producing different types of domestic animals, the peasants opt for reducing the existing number to avoid further loss. This is necessary because it minimizes the degree of losses during severe droughts or floods as the peasants could not tell the unpredictable future environmental stress conditions. As fodder becomes less and degree of death (risk) increases, the selling of animals also rises. As found out during the interview, the distress selling price of cattle is less than the normal price.

Besides, all farmers in all kebeles said they experience low yield because of soil infertility and absence of good seeds. They stated that they only continue to grow acacia trees because the land has become acidic so that it does not produce crops. This coincides with the statement of the district offices and observations made in that overdependence on such tree is a contributing factor to poverty in the district. Thus to the peasants, the wide spread of this will be a good idea. This trend, which started at the bottom of the mountain, is spreading towards the peak of the mountain fast. However, as an informant stated,

*Every farmer is planting trees on at least 1/4<sup>th</sup> of his holding. A tree takes about 7 years before sale. After the seven years, a farmer can get about 10,000 ETB. Some of the activities and means of livelihoods have been affected by the changing environment and diseases. These trees have a long term negative effect on the future of the land. Once it is used for trees, it will not be used for crop production again. As trees grow tall, their shades and their leaves [which prevent hydration and do not get decomposed] affect the owners plot and the neighbouring ones. This practice is becoming a source of conflict among many HHs in the society.*

To remind, 'A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers and Conway 1992). The above instances cannot maintain both the present as well as the future.

The children, being deprived of the global rights they are entitled for, are servants of their own parents. Girls cannot make their own decisions. The land is being depressed more. All these contrast the basic concept of sustainable development. Let me raise the end of an end.

Is it the livelihood or the risk which is diversifying in the empty bottle necked lives of the rural poor? This was the question I suddenly raised to an informant at the end of my data collection. The answer was simple. The Risk.

## **6.5. Summary**

Risk minimizing and risk mitigation strategies needs to take into account the multifaceted development aspects for sustainable environment and the well being of the society after understanding the perceptions of the local community. Similar to Degefa's (2005: 96) statement in justifying that 'Poverty incidence is higher in the rural settings than in urban areas, the rural poor have less physical access to basic social and economic structure in addition to being highly vulnerable to natural disasters in rural settings.

At Choke, as identified in this section, the three types of risks (environmental, social and economic) brought about low yields, loss of assets, death of livestock and livelihood insecurity among the rural poor. In particular, the study areas are experiencing serious environmental problems, poor access to services, inequitable markets, lack of viable economic alternatives. Hence, proper management of mountain resources and socio-economic development deserves immediate action. As the mountain is facing severe problems of agricultural stagnation and decline, high population growth, and degradation of the natural resource base, the place is precariously affected by recurrent food shortages. The groups that are extremely vulnerable in these mountain regions include the poor, the children, the women, the remote from infrastructure and the uneducated. Yet in order to achieve global development agendas for poverty reduction, it is these people who must be reached. Current practices have failed to either significantly reduce poverty in these marginal areas, or to broadly stem the pace of environmental degradation. Smallholder peasants who represent the majority of the population represent a major link between the economy and the environment because their livelihoods depend so directly on the use of land resources.

## 7.2. Types and Degree of Livelihood Diversification

Degree of diversity and types of activities, as shown in Table 7.1 and Table 7.2, are dependent on the economic activities of the local reality and the natural base of the setting. From the total number of HHs' engagement, it is observed that growing crops (97% of the HHs), rearing animals (79% of the HHs) and forest product sales (57% of the HHs) take the three most frequent practiced activities. When these are compared with off-farm activities (trading with 29%, salary/wage labour with 15% and external income transfers with 9%), the on-farm ones take the huge share which is also demonstrated by the mean. This entails the basic distinguishing features of livelihoods among studied HHs that depend on the natural resources. The same was found out during the interviews and FGD but with uncovering the unseen features in the figures extracted from the time line questions on changes (Box 7.1.).

	%	Mean
4	97	1.03
9	79	1.21
7	57	1.43
0	29	1.71
	15	1.85
	9	1.91

### Box 7.1. HH Sources of Livelihoods: Changes across Sites and Times (Summary)

- Thirty years back, there were huge natural endowments (generous as well as abundant land, forest, healthy environment, excessive water and so on). From among the crops, barley, wheat, beans, peas and teff were common across the locations. Then, the serious problem for the peak watershed highlanders was the frost. However, there were other crops like potatoes by which Choke was reputable.
- Currently, with no improvement of livelihood strategies and practices, when the then existing rich activities have become poor in their existence, the rural people have become poor together by practising what has been inherited. The activities are there but not the enjoyment.
- The shift of activities in the same income source category was first observed at the bottom of the mountain due to the serious land degradation. The land could no more produce what it used to. What was the feed of livestock (a barley type of crop called 'engido') started to be used. This trend, then took its way to the uplands that started to share the same hazards.

Source: Field Survey, 2008

The information indicated in Box 7.1 implies that the agricultural diversification and the substitution activities are not carried out to increase their income level but are performed for survival purposes. In addition, as perceived from HHs responses, the actions primarily target towards risk management at HH level, not minimizing the environmental risks as conceptualized by research (Ellis, 1999 and Hussein and Nelson, 1998).

ly and access to resources seem to  
to their differences. While Table  
es, which do not signify significant  
strates the degree of livelihood  
ivities in ranking. In responding to  
Is chose growing crops while 14%  
rce was scattered in five activities  
/wage labour, 11%-forest product  
io means together with the total of  
as their third source of engagement

irt of the mountain and the nearest  
ce activites as their first source are  
(%), rearing animals (8%), trading  
second and third livelihood options  
rm is very small. This trend works

for Yeted *Kebele*, which is located in between two head towns (Debre Markos of the zone and Rebui Gebeya of the district) and at the foot of the mountain.

**Table 7.2. Diversification of Sources of Income**

Types of HH Income Sources	Percent of ranking the three most HH income sources											
	Abazaze			Gedamawit			Yeted			Total		
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
<b>Growing Crops</b>	86	14	-	66	20	-	47	17	10	66	17	3
<b>Rearing animals</b>	14	58	25	8	40	40	23	40	6	15	46	23
<b>Forest product sales</b>	-	11	45	6	26	23	14	30	67	7	22	45
<b>Trading</b>	-	3	-	8	6	14	13	7	14	7	5	9
<b>Salary/wage labour</b>	-	14	-	9	8	6	3	3	-	4	8	2
<b>Others</b>	-	-	28	-	3	16	-	3	3	-	2	16

Source: Field Study, 2008

One possible explanation for the differences among kebeles refers to the historical aspect which is explained in the fourth chapter. To justify this, the case of Yeted can be considered. As it had been under different *woredas* that were nearest to the main road and big towns in the district, it could get exposed to better opportunities of training and experiences from others before its merging in the new Sinan District. Another explanation for the gap is related to the proximity and the opportunities that one enjoys being nearer to the centre of the district. Regarding this, mentioning the case of Gedamawit Kebele is satisfactory. As it surrounds the small head town of the district, its residents are close to information, market, health centre and the only high school in the district. This might have opened the gate for the small differences in trading, wage labour and external income transfers. This was further substantiated during the market observation. Small business people from Gedamawit are as many as the ones in the town, Rebui Gebeya. There were also some peasants on non-farm (like pottery, handicrafts and bamboo products) from the other kebeles in the district.

**Figure 7.1. Bamboo Traditional Outputs on Market Day**



Source: Field Study, 2008

### **7.3. Utility of HH Activities: Rationale for LD**

#### **7.3.1. Cultivation Utility of HH Activities**

The data gathered on the contribution of farm activities signify the divergent LD responses, especially considering rural HHs that are resource and access constrained due to natural hazards in the highlands. In the struggle for survival, such people (with emphasis of the sampled HHs) take farm activities like crop production, vegetable farming, working in others' farm plots and share cropping. Though the information is provided in *kebeles*, significant differences have not been observed.

As Table 7.3 entails, 82% of the respondents answer that the crop they produce is a subsistence income. Concerning vegetable farming, though 27% are involved in the activity

**Table 7.4. Livestock Production Utility by Kebeles**

HH Activities on Livestock Production	Utility Types	Percent Share by Kebele			Total Percent
		Yeted	Gedamawit	Abazaze	
Contribution of cattle keeping	Subsistence income	1	6	3	10
	Cash income	3	0	0	3
	Subsistence and cash	8	13	17	38
	Not practised	18	16	15	49
Contribution of cattle breeding	Subsistence income	5	1	1	7
	Cash income	2	2	0	4
	Subsistence and cash	20	29	32	81
	Not practised	3	3	2	8
Contribution of sheep/goat breeding	Subsistence income	2	0	0	2
	Cash income	5	4	2	11
	Subsistence and cash	18	30	32	80
	Not practised	5	1	1	7
Contribution of horses/mules	Subsistence income	3	15	12	30
	Cash income	1	0	0	1
	Subsistence and cash	7	10	13	30
	Not practised	19	10	10	39
Contribution of poultry	Subsistence income	0	6	3	9
	Cash income	8	5	3	16
	Subsistence and cash	10	7	15	32
	Not practised	12	17	14	43

Source: Field Study, 2008

### 7.3.3. Non-Farm Engagement Utility of HH Activities

As Table 7.5 illustrates, this is the most disadvantaged and ignored segment of HH livelihood sources. Activities such as migration (by 76%), wage labour (by 67%), making local drinks (by 79%), lending money to others (by 80%), handicrafts (by 75%), petty trade (by 75%), renting tools/animals (by 87%) and community services (by 60%) are not practiced in the study area. The small number of the HHs that are engaged in these activities produce the cash they need for their subsistence livelihood. As the place does not provide activities that can generate strong economic capacity and the HHs do not have the capacity to create profitable activities, they tend to get engaged in traditional and subsistence activities.

**Figure 7.3. Some Outcomes of Non-Farm Activities in Rebuy Gebeya Market**



Source: Field Study, 2008

**Table 7.5. Non- Farm Activities Utility by Kebeles**

HH Activities on non-farm Activities	Utility Types	Percent Share by Kebele			Total Percent
		Yeted	Gedamawit	Abazaze	
Contribution of migration	Subsistence income	1	4	5	10
	cash income	2	5	7	14
	Not practised	27	26	23	76
Contribution of wage labour	Subsistence income	3	6	5	14
	Cash income	1	0	0	1
	Subsistence and cash income	3	5	10	18
	Not practised	23	24	20	67
Contribution of local drinks	Subsistence income	3	0	1	4
	Cash income	3	3	1	7
	Subsistence and cash income	0	4	6	10
	Not practised	24	28	27	79
Contribution of money lending	Cash income	4	3	2	9
	Subsistence and cash income	1	4	6	11
	Not practised	25	28	27	80
Contribution of forest product	Subsistence income	1	0	0	1
	Cash income	3	3	1	7
	Subsistence and cash income	9	18	15	42
	Not practised	17	14	19	50
Contribution of handicraft	Subsistence income	1	0	0	1
	Cash income	6	4	4	14
	Subsistence and cash income	0	4	6	10
	Not practised	23	27	25	75
Contribution of petty trade	Subsistence income	1	0	0	1
	Cash income	3	2	0	5
	Subsistence and cash income	3	7	9	19
	Not practised	23	26	26	75
Contribution of renting tools/animals	Cash income	1	2	0	3
	Subsistence and cash income	0	4	6	10
	Not practised	29	29	29	87
Contribution of community services	Subsistence income	5	7	5	17
	Cash income	2	2	0	4
	Subsistence and cash income	0	10	9	19
	Not practised	23	16	21	60

Source: Field Survey, March 2008

## **7.4. Availability and Usefulness of Services in LD**

### **7.4.1. Availability of Services and LD**

From among the ones used as predictable variables for the existent or inexistent of LD at different levels, we find the basic services indicated in Table 7.5. The results shown do not necessarily indicate the absence or presence of LD in the study area. Their facilitating and deterring role is explained by the reality gathered at various phases of the research.

#### ***Education: Formal and non-formal***

As the HH survey witness, there is a high access to the formal education (for which the HHs assure 80% availability), especially at the lower level. The distance the students travel to go to school is decreasing year after year with the construction of new schools. This has helped the young children to attend their education in their proximity. More importantly, it could give the chance to the girls who were not allowed to go far to avoid the abuse they might have come across. The problem is in the schools that do not have the next phase, especially at the lower level. As all students from the seventeen kebeles in the district have to travel to the centre within the average radius distance of twenty kilometers after grade eight completion, some drop and many continue. Again, the ones who are able to continue the next two grades at the high school in Rebuy Gebeya are forced to go to Debre Markos, to attend the next phase with own expense. At this level the backwash effect persists; the majority of the students quit their education as their parents cannot pay their bills. Then, they continue the peasant life with no gained capacity that creates job.

In regard to training, the degree of availability changes from *kebele* to *kebele*. It is shown that HHs in the proximity of the administrative town get better opportunities as compared to the ones that are farther.

However, in general, the results indicate that there is only some chance. Besides, the cases highlight the inequity of chances in getting training. For example, to have the chance, one needs to be extrovertly approach the officials in charge or one needs to have acceptance by individuals or one has to be a well off to support the programmes.

### ***Health Services***

HH respondents and informants indicated that this is another service that has reached all the kebeles, at least in small scale with the Satellite Clinics (locally called 'Tena Kela' which gives primary health services to the patients if simple). They also stated, as in other parts of the country, there is not a serious health problem due to its climate (though it is currently changing according to discussants). 'The national health extension programme has its hands on the development,' says a district official.

### ***Paved Road***

There is only one mount crossing paved road that passes by Rebuy Gebeya Town and links districts on the mountain. The participants of the two FGDs stressed the need for connecting kebeles to the town if sustainable livelihood is to be observed. In the present situation, the peasants are discouraged by the distance to transport their tree products that can generate a significant amount of income. Had vehicles could reach every corner, there could have been ways that could benefit their economy and social relations. The unavailability of this service becomes more apparent in LD as we travel back to the border of the district.

### ***Savings and Credit***

During my visit of the Amhara Credit and Saving Institute branch office at Rebuy Gebeya town, the officer informed me that the institute is giving the services as a sole microfinance service provider in the district on the line of the government administrative structure. As mentioned, the office goes to the grassroot levels to create awareness and make the rural people become regular customers to improve their living conditions. It is indicated that, from the experience of other parts of the country, the people in the highlands of Choke have not had the benefits as the places have been difficult to reach. Similarly, responses from the HHs support this fact (more than half say the service exists).

However, there is a hesitation from the parts of the rural peasants. To mention one,

*The office is there. Who gets the service? The well off in the town or the poor? Why do many rural people receive credit? They take to improve their houses to the tin. This is the*

*unhealthy competition being observed. There are some who take the credit to buy fertilizer. Nowadays, we are desperate. Our farm land has denied us any product. To have other options, we do not have any education. If the rural places are to grow, the rural poor must be assisted and must be the centre of attention.*

### ***Agriculture Extension***

This is the most available and the closest service hand to the peasants. Extension workers live and work with the rural people in all corners. In responding to this, about 90% assure the existence. The peasants are closely assisted and advised to improve their living conditions in natural resource management, crop production, animal production and other agricultural activities. However, irrigation is not available as indicated by 72% of the HHs.

Similarly, the availability of soil conservation is responded with 70%. Despite the efforts, the education and the practical interventions could not impact the wide range of the mountain. As a peasant recommends, ‘...there has to be a campaign, national or regional, for which every peasant promises and acts.’

### ***Safe Water***



This is one of the highly constrained services that is suffering the rural households as emphasized by men and women during FGDs and the interviews conducted. Though the peak is better in finding water in proximity (refer to Table 5.4.), the wells cannot give the safe water. At a water well in Yeted, the women who were there to

have their turn and to fill their jug had to wait half a day minimum. The water they extracted was too muddy. A water source is common for domestic animals and human use.

**Table 7.6. Degree of Service Availability**

Services	Scale	Percent in each kebele			Total Percent
		Yeted	Gedamawit	Abazaze	
School	Available	76.7	91.4	71.4	80.0
	Not available	23.3	8.6	28.6	20.0
Training	Available	16.7	40.0	14.3	24.0
	Some	73.3	25.7	57.1	51.0
	Not available	10.0	34.3	28.6	25.0
Health services	Available	100.0	65.7	74.3	79.0
	Some	-	28.6	-	10.0
	Not available	-	5.7	25.7	11.0
Paved road	Available regularly	30.0	62.9	40.0	45.0
	Some	13.3	20.0	5.7	13.0
	Not available	56.7	17.1	54.3	42.0
Savings and credit	Available	53.3	74.3	34.3	54.0
	Some	16.7	8.6	8.6	11.0
	Not available	30.0	17.1	57.1	35.0
Agriculture extension	Available regularly	96.7	91.4	74.3	87.0
	Some	3.3	8.6	25.7	13.0
Soil conservation	Available	70.0	79.4	60.0	69.7
	Some	30.0	14.7	40.0	28.3
	Not available	-	5.9	-	2.0
Safe water	Available	16.7	5.7	14.3	12.0
	Some	10.0	28.6	11.4	17.0
	Not available	73.3	65.7	74.3	71.0
Market	Available	73.3	77.1	71.4	74.0
	Not available	26.7	22.9	28.6	26.0
NGOs	Available regularly	3.3	-	-	1.0
	Some	3.3	22.9	-	9.0
	Not available	93.3	77.1	100.0	90.0
Local authorities' assistance	Available	43.3	51.4	54.3	50.0
	Some	56.7	48.6	45.7	50.0
Veterinary services	Available regularly	66.7	74.3	80.0	74.0
	Some (times)	6.7	8.6	2.9	6.0
	Not available	26.7	17.1	17.1	20.0
Information	Available regularly	10.0	5.7	8.6	8.0
	Some (times)	13.3	62.9	34.3	38.0
	Not available	76.7	31.4	57.1	54.0
Irrigation	Available regularly	13.3	25.7	-	13.0
	Some (times)	33.3	8.6	5.7	15.0
	Not available	53.4	65.7	94.3	72.0

Source: Field Survey, March 2008

### ***Market***

This is a route in which lives are connected and balanced for mutual existence. When it goes wrong or it gets constrained, livelihood becomes staggered. In availability term, it is there (as responded by 74% of the HHs) but the processes and the outcomes that identify its picture need to be taken into account. Among these, distance, available outputs, its linkages with urban, information and communication are the major defining factors for its serving the right purpose.

### ***Local Authorities/State and NGOs Assistance***

The result for this subsection needs the high concern of all stakeholders of the rural development. It is not common to see HHs respond the availability of state assistance only as half. The rest half express there is some support. Similarly, but with more serious concern, it is not also customary to lack any support from the thousands of the non-governmental organizations that are meant to reach the unreached, to touch the untouched, to benefit the disadvantaged, to rehabilitate the endangered and to empower the ignored as emphatically 90% of the HHs demonstrated.

### ***Veterinary Services***

As there is a department of such services in the agricultural office and rural development office at kebele level, there is no question of its availability (as 74% do agree) but the ability of giving the necessary services when animals get sick and need treatment. This put it at its nominal position as the rest respondents forwarded.

### ***Information***

The responses given for this differs based on the way the HHs understand. As observed during the HH survey, the ones in Abazaze got it more difficult to understand than the ones in the other kebeles. This may be due to the proximity to towns that exposes HHs to the knowledge of what other places and people experience in their lives.

#### 7.4.2. Perceptions of Service Usefulness and LD Responses: Voices and Choices

Though the domain of service giving is under the service givers, the success of the service depends on the perceptions of the service beneficiaries. In the place which has been eroded by others and which is eroding the livelihoods of the majority by denying the benefits it has been rendering, the majority of the HHs are for the usefulness of the services described under the previous sub-section. What is important to be considered in this section is the most weight that the respondents have forwarded for any development priority intervention.

##### **Box 7.3. Gender Dimensions on Water Constraint and Use**

- ***Women's Water Concern***

- ✓ Water wells have dried. There is little for drink
- ✓ A lot of time is consumed. It is taking the time of the other work.
- ✓ Water induced diseases are suffering the children
- ✓ Houses and surroundings are dirty. No water to clean clothes
- ✓ Homestead vegetables have died due to lack of water

- ***Men's Water Concern***

- ✓ No rain, no farming; no farming, nothing to feed the family
- ✓ The cattle are dying because the water they drink has the problem
- ✓ The changing climate endangered the water resource

Source: Field Survey, March 2008

Of all the services, safe water had the most emphatic concern by the HHs.

The next two are agricultural extension and market which have a great role in the lives of the rural people. Both can serve as the motor of development with practical and innovative approaches.

The responses also entail that the less perceived services need to be perceived more through education and awareness creation strategies.

**Table 7.7. HHs' Perceptions of Service Usefulness for LD**

Services	Respondents' Perceptions of Service Usefulness for LD (in %)				
	Extremely useful	Mostly useful	Some (times) useful	Uncertain	Not Useful
Education/school	60	29	5	6	0
Education/Trainings	21	55	18	6	0
Health/'Tena Kela'	55	42	3	0	0
Roads/Linking R-U	61	39	0	0	0
Access to Savings and Credit	61	18	10	2	9
Agriculture extension	81	9	0	10	0
Soil conservation schemes	65	20	6	9	0
Safe water	99	1	0	0	0
Market	80	9	10	1	0
Support from NGOs/CBOs	31	52	11	6	0
Assistance from local authorities /politicians	40	25	35	0	0
Veterinary	66	32	1	1	0
Information	24	14	8	53	1
Irrigation work	37	30	11	23	0

Source: Field Survey, March 2008

## 7.5. Summary

Agriculture is the main source of the people from which the rural poor have varied choices and outcomes, depending on social factors, agro-ecological zones and economic levels. There is no uniform ride of livelihood strategies in a place characterized by different risks, even in the same setting.

The smallholder and poor farmers have limited, not multiple, chances of diversifying their assets to escape from risks. What they choose to produce as crops (like 'teff') and what they practice in reality (like 'engedo') are different.

Diversifying in an activity that results in better income and productivity is the function of the natural resource base for the rural highland people who depend on such resources for their well being. People pursue a range of livelihood outcomes (health, income, reduced vulnerability, etc.) by drawing on a range of assets to pursue a variety of activities in normal conditions. The activities they adopt and the way they reinvest in asset-building are driven in part by their own preferences and priorities. However, they are also influenced by the types of vulnerability, including shocks (such as drought), overall trends (in, for instance, resource stocks) and seasonal variations. Options are also determined by the structures (such as the roles of government or of the private sector) and processes (such as institutional, policy and cultural factors) which people face. In aggregate, these conditions determine their access to assets and livelihood opportunities, and the way in which these can be converted into outcomes.

# CHAPTER EIGHT

## LINKAGES BETWEEN RISK AND LIVELIHOOD

### DIVERSIFICATION

#### **8.1. Introduction**

Rural livelihood strategies of peasants are often heavily reliant on the natural resource base in mountains. This base differs from place to place and is the source of the well being of the community or the livelihood insecurity due to the specific calamities it faces.

So as to diversify, HHs consider risks, consumption smoothing, market failures and coping with shocks like a drought or an economic crisis. In the smallholder peasants case, risk includes soil degradation, decrease in the degree of vegetation cover, increased tillage, over cultivation, land scarcity, climatic change, local traditions, poverty, erosion) population growth, fragmented holdings, traditional agricultural practice, effects of intensive farming, and underemployment. It can have impact, and generate responses, at different levels: for example, the household (micro), community or regional (meso), and country or global (macro) levels.

In the study area, poor people have developed adaptive strategies for coping with their vulnerability to risk, including diversifying out of natural resource dependency. But they fall short when the event is severe, unanticipated, or occurs with high spatial covariance (for example, drought). The poorest people have fewer or weaker alternative livelihood strategies, and in some circumstances can fall on a downward spiral into destitution.

Diversification, as discussed in the literature, may involve developing a wide income earning portfolio (farm and non-farm) to cover all types of shocks or stress jointly or the strategy may involve focusing on developing responses to handle a particular type of common shock or stress through well developed coping mechanisms. In the case of the study area, the natural base is so damaged that there are little opportunities of the non-farm sector. First, it is observed that the place is characterized by poor diversification. Second, the type of activities

such as planting trees for income generation has a long term negative effect on the natural resources and the people in the surrounding despite what the activity temporarily produces.

Furthermore, the results can be recapped in common livelihood options in which the degree of diversification may relate to the resource endowments available and the level of risk associated with alternative options. To confront risks, five alternatives are identified:

- livelihood resources may be accumulated so that reserves and buffers are created for times when stresses and shocks are felt (there is no accumulation in the case of the study site);
- activities associated with different livelihood strategies may be spread over space or over time, such that a particular risk, such as a drought event, does not affect all livelihood activities (activities cannot be spread since the resource or asset constraints cannot allow the spread of activities);
- the mix of activities may be changed to reduce the covariance among different sources of stress or shock (very limited in the case study);
- risk pooling options may be employed through various forms of consumption smoothing, so the effects of a shock or stress are ameliorated (this is also limited due to poverty and the poor capitals); and,
- finally, the overall resilience of the system may be enhanced such that the impacts of stresses and shocks are less dramatically felt (resilience has been difficult with the above reasons to minimize the effects of the risks).

It is not only the total number of sustainable livelihoods created that is important, but also the level of livelihood intensity (Chambers, 1987). Livelihood resources may be combined to create more livelihood options in a particular area. For example, degraded land may be transformed with the investment of labour and skill in watershed management, resulting in the accumulation of natural capital, offering the potential for more livelihood opportunities. Equally, through the creation of local economic linkages and the recirculation of knowledge, skills and resources, livelihood intensity may be increased in an area.

Thus, investigating the multiplier effects (both positive and negative) of particular options is an important issue in assessing sustainable livelihood outcomes as related to risks. The impacts of one person's livelihood activities on others, both now and in the future is, thus, important.

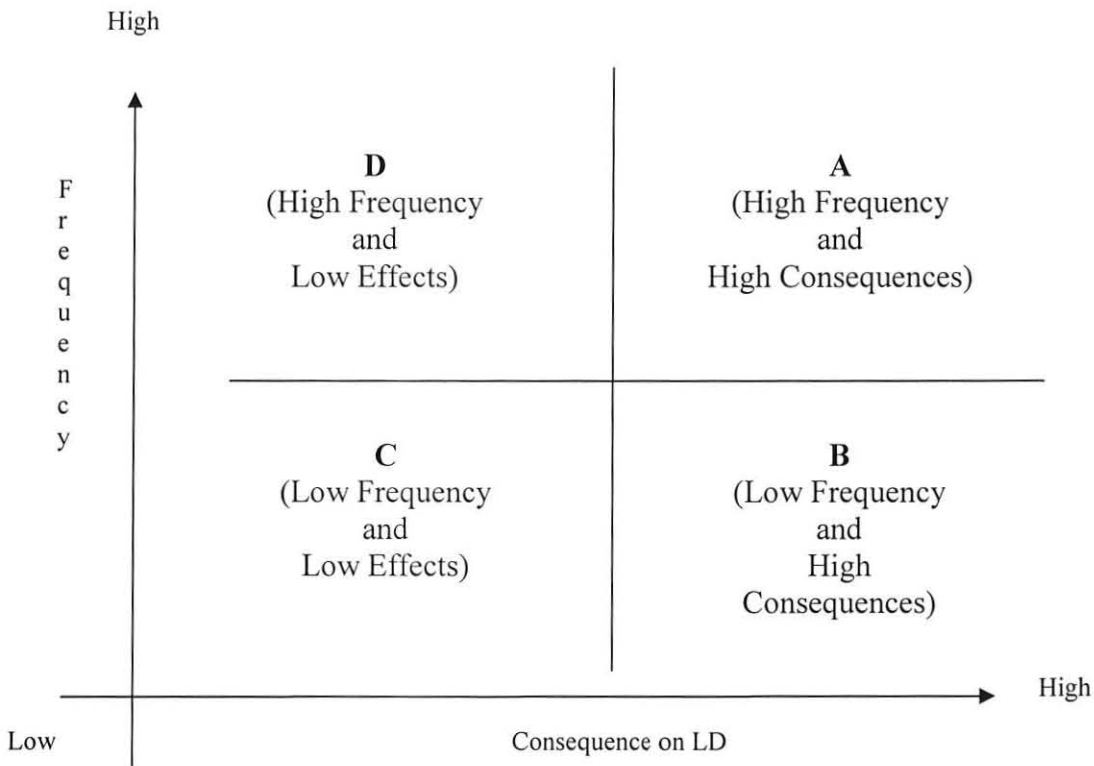
## **8.2. Risk Link to LD: Risk Type Analysis**

To identify this, findings from the mixed methods were utilized. The first one is the information found from the HH survey. After the list of risks was made, the respondents were asked to categorise their relationship with their livelihood activities as strong, loose or none. This created the line indexed data in both directions: the horizontal on their perception of the risks in affecting their farm or HH economy and the vertical on the frequency of the cases. To substantiate these data, information from FGDs and interviews was employed.

Accordingly, the risks grouped under Group A (from the most to the least in the group) are drought, declining return, flood/erosion during rainy season, degradation, shortage of water, food shortage, deforestation, unemployment, high population growth, poor farm production, land scarcity, animal/crop diseases, land expropriation, rapid inflation, fragmented landholding, price shock and less access to market. These are the most LD determining factors. They are covariate risks and include all risk types: environmental, economic and social. As observed, the result is more of environmental than others.

The respondents noted that these risks are the major sources of their poverty. All of them are beyond their capability, out of their control. As they are covariate risks, they have equally affected all the highlanders and taken away their assets. That is why they say these risks are deadly to them. Being in this trap, according to the HHs, diversification is impossible because it requires resources from internal or external of the diversifier. The more they are, the less the diversification, even to the level of inexistent. In the highland case, both of the major assets (land and labour) are deficient. What is more, when the risks are diverse, they restrict any option that the poor may shift to for their subsistence needs.

**Figure 8.1. Peasants' Classification of Risks based on the Aggregate Data in Box 7.1.**



**Box 8.1. Aggregate Data Box for Figure 7.1.**

*Sources of risks under Group A:* (From the most to the least in the group) Drought, declining return, flood/erosion during rainy season, degradation, shortage of water, food shortage, deforestation, unemployment, high population growth, poor farm production, land scarcity, animal/crop diseases, land confiscation, rapid inflation, fragmented landholding, price shock and less access to market.

*Sources of risks under Group B:* (From the most to the least in the group) HIV/AIDS, lack of locally appropriate farm inputs, lack of skills/knowledge, insecure tenure, inadequate health service, irregular rain, weeds, lack of credit, frost, deterioration of social network and gender inequality.

*Sources of risks under Group C:* (From the most to the least in group) Falling wage, pests, fire and high tax.

*Sources of risks under Group D:* (From the most to the least in the group) Absence of subsidies, migration, unrecognizing local traditions, few coordination between the government and the local community.

Source: Own Aggregated Data of Field Study, 2008

### **Box 8.2. Extracts on Risks from FGDs**

‘Potato is the main means of livelihood. Currently, we can't have it due to drought. Water is also another serious problem in the area. Due to lack of rainfall, we can't plant potatoes and other vegetables. There is a decline in agricultural products. Even in rainy season, it is becoming difficult as it is unseasonal and the plantation doesn't go in line with it.’ (A woman from Abazaze)

‘The area is no more alive. The land has reached a stage that can't produce any without technological treatments. It is acidic. It does not produce crops we are accustomed for such as teff, barley and wheat. The land is so degraded and eroded that life is becoming darker and darker to us. There is high scarcity food. We can't buy sufficient crops due to high price. Adult women and the young girls have no school opportunity like trainings to create livelihood options.’ (A man from Yeted)

‘My husband is sick. He cannot work anymore. I have to look after him. I have to look after the whole family. We have less than a hectare of land. As we share crop out, we get less. To support the family, I make Areke (a local traditional alcoholic drink).’ (A woman from Yeted)

‘We stopped long to produce onions as an unknown disease attacked it. Onions used to be better means of income. Plant science experts at kebele and district levels are always promising to look for the solution in consultation with zonal or regional offices’ (A man from Gedamawit)

‘I used to produce vegetables for family consumption and income generation. Now, the drought is affecting all aspects of our lives. We are frightened of the future. I am anxious about what to feed my family. I sometimes dream not to have another day.’ (A woman from Gedamawit)

‘The young have no land. As the land every HH head possesses is small, one cannot give part of it to the children who are old enough to lead their own life by farming. Other than this activity, the young have no job opportunity. The government should search for a means of land redistribution and minimizing the unemployment.’ (A man from Abazaze)

...The climate change is changing our lives. There is no safe water. Land slide and degradation have made the arable land be unproductive. The place was cold in the past but now it is hot much of the time in the year. Besides, as there is no paved road that connects one village to another, they cannot frequently bring what they should to the market. (Reporter summary)

‘I am a poor woman who does not even have a hen. I have half hectare of land on which I plant vegetables making compost. As there was nothing to eat, my three children deserted me five month ago. I do not know where they are now.’ (A widowed woman from Yeted)

‘The land we have cannot satisfy family needs due to its size and failure of production. To get better product, we must use fertilizer and other means which are expensive for the poor. As we have the fear of return, we don't dare to go forward for action. We know this is not a solution. Hence, we need subsidies, and aid on agricultural inputs.’ (A man from Yeted)

Source: Field Study, 2008

In the case of risks under Group B ( HIV/AIDS, lack of locally appropriate farm inputs, lack of skills/knowledge, insecure tenure, inadequate health service, irregular rain, weeds, lack of credit, frost, deterioration of social network and gender inequality), though they are not as frequent as those in Group A, they greatly affect the degree of livelihood diversification. HHs who are sick may not be able to get engaged in income generation activities. Similarly, the farm inputs that may be seasonally needed can influence their farm economy if they are not available when sought.

Risks under Group C (falling wage, pests, fire and high tax) and those under Group D (absence of subsidies, migration, unrecognizing local traditions, few coordination between the government and the local community) have less effect on LD as compared to those in A and B, according to the respondents.

From this category, we can deduce that people perceive the hazards of some risks more influential than others for LD. As also indicated in Box 8.1, land degradation, scarcity of land, shortage of water, poor infrastructure, diseases, drought and food shortage are the major LD inhibiting factors.

### **8.3. Activities as Responses to Risks**

HH livelihood strategies in a changing environment change from time to time to respond to calamities. What is practiced as a way of common strategy during healthy living conditions may take the form of responding to risks when livelihood options are challenged by serious hazards.

As Table 8.1 demonstrates, growing crops as a source of livelihood activities is carried out by 96% of the HHs; out of which 69% get involved in the activity as a response to risk. As responded by the HHs during the discussions, crop production was a risk free activity in the past. It was used to be produced with no risk in mind. Though rearing animals as a source is less than growing crops, the response to risk slightly exceeds in the case of the former. The third major source of farm economy in the highlands, i.e. growing trees for sale, is performed solely to avert the risks the HHs face. Trading, like growing crops, has both features. In the case of wage labour and external income transfer, the trend of growing trees is observed.

This shows that as the highlands are affected more by various calamities, almost all activities are carried out in response to manage or cope up with risks. This also differs from one activity to another based on its role.

**Table 8.1. Activities as Responses to Risks**

<b>Involvement and Response to Risk</b>	<b>Growing crops as a source</b>	<b>Rearing animals as a source</b>	<b>Forest product sales as a source</b>	<b>Trading as a source</b>	<b>Salary/wage labour as a source</b>	<b>External income transfers as a source</b>
<b>HHs' Involvement (in %)</b>	96	82	59	29	15	9
<b>Number of HHs who do the activity as a response to Risk</b>	69	71	59	18	12	9

Source: Field Study, 2008

#### **8.4. Impact of Services on LD**

The information provided in Table 8.2 presents perceptions of the HHs concerning the impact of services on livelihoods. In all cases, the majority of the respondents agreed that the services are important in improving their livelihoods. This is also similar to the information which was found out during the FGDs and interviews. However, their impact is not similar as indicated in the percent difference. The sum of the results show that safe water, market, veterinary, agriculture extension, support from NGOs, trainings and access to credit have greater impact in their livelihoods. In addition, the less they feel the impact does not mean the service has fewer roles in their life. First, the peasants have their own ways of giving priority, analyzing their local contexts and weighing the benefits they get out of it. Second, their response is based on the knowledge they have about the services as in the case of knowledge.

It is also important to note differences of perceptions from their responses under 'No'. Those who say the services do not affect LD range from 22 – 43 %. This may be associated with their familiarity as well as access to the services and/or priority concerns in relation to other problems they have.

**Table 8.2. HH's Response to Service Impact on farm economy**

Services	Service Impact on Livelihood (in%)		
	Yes	No	Uncertain
Education/school	68	32	-
Education/Trainings	73	27	-
Health/'Tena Kela'	68	32	-
Roads/Linking R-U	66	34	-
Access to Savings and Credit	74	26	-
Agriculture extension	75	25	-
Soil conservation schemes	67	33	-
Safe water	78	22	-
Market	78	22	-
Support from NGOs/ CBOs	74	26	-
Assistance from local authorities /politicians	66	34	-
Veterinary	75	20	5
Information	54	43	3
Irrigation work	65	31	4

Source: Field Study, 2008

All in all, the result points out that services have significant roles in improving their livelihoods and wellbeing in their presence and they also negatively influence their wellbeing in their absence.

### **8.5. Effects of Activities on Risk Environment**

This information expresses the perceptions of the HHs in relation to the impact of the activities they are engaged in on the risk environment. The diverse information given demonstrates that what may reduce for one may promote for others. In addition, it shows that livelihood activities in the highlands are full of uncertainties in many instances.

The effects are related to what was raised in first sub-section of this Chapter and the risk issues raised in Chapter 6. The more the risks are the less the HHs are able to diversify as they become poorer and the risks are down to earth as a result of the environmental,

economic and social problems in the highlands. The results in the study area also show that the poor diversify less than the 'better off'. As shown in this part, some of the activities which have not been risky for long are becoming risky day after day.

**Table 8.3. Perceptions of HHs about Effects of Activities on Risk**

HHs Activities	Effects on Risk (in Percent)				
	Promotes	Reduces	Neither	Either	Uncertain
Crops	34	46	9	7	4
Vegetables	23	37	14	-	26
Working in others' plots	4	28	-	-	68
Share cropping out	10	11	-	-	79
Cattle keeping	26	41	10	-	25
Cattle breeding	41	29	10	12	8
Sheep/goat breeding	-	83	10	-	7
Horses/mules	-	51	-	-	39
Poultry	-	41	26	10	23
Migration	10	14	-	-	76
Wage labour	-	23	10	-	67
Local drinks	29	11	12	16	32
Money lending	40	12	15	3	30
Forest product	14	57	9	7	13
Handicraft	-	15	10	-	75
Petty trade	-	14	1	10	75
Renting tools/animals	-	3	10	-	87
Community services	-	29	-	1	60

Source: Field Study, 2008

We only see activities that reduce risks in the case of sheep breeding and growing trees by more than half of the respondents. In some cases, activities meant to reduce risks promote further risk on the farm economy. Again, this promotion differs from activity to activity. In crop production, the way the agriculture is performed on the degraded land can add an additional constraint to the damaged land. In considering, vegetables and cattle production, diseases as well as drought can damage the product of the activities and influence the return. During money lending, the money may not be returned whenever needed and affects the plan of the lender. In this way, it is possible to state that activities carried out by the highlanders who face various types of calamities do not necessarily reduce the risks. With differences

among the different types of activities, it is observed that uncertainties as well as their belief of activities as promoters of risks are deterring engagements of the poor in the activities.

## **8.6. Summary**

A better understanding of the link between risk and livelihood diversification, not only as a source of poverty, but as a property of natural and economic systems, requiring management, is needed urgently. Linkages between livelihood activities in a resource constrained society and risk related to people's dependency on natural resources should include the dynamic elements just identified. There is a need to assess the elements of risk emanating from the natural resource sector as a proportion of the total risk exposure of poorer households. A major focus should be the reduction of risk and vulnerability which are attributable to natural causes or changes in natural resource endowments. In relation to service factors, the poor (the majority of the HHs) are more affected and unable to have the means. The poor who live on higher, steeper or less fertile land, often far from markets and basic services have to work harder, and travel further, for less reward than better placed groups and individuals. They are less likely to hear of development benefits on offer, and less likely to be targeted. This leaves them more prone to risk, less able to recover from natural disasters and other shocks, and less able to take advantage of the existing or new livelihood opportunities. Besides, People also harvest wood for firewood, fencing and construction of houses which further contribute to deforestation near the village. In addition, the scarcity of land is deterring the livelihoods of the majority who are dependent on the farm economy. The poor also have little access to non-agricultural income opportunities such as skilled jobs or businesses. Consequently, the poor rely largely on crop cultivation for their subsistence, supplemented by sheep keeping and forest product sales. In some cases they receive remittances from household members living and working in urban areas.

A starting point should be a search for enhanced NRM by poor people themselves as a strategy for achieving an impact on poverty. Such management includes both adapting to fluctuations through integrated self help community based packages and asset protection, the key to capital accumulation.

## CHAPTER NINE

### CONCLUSION AND RECOMMENDATIONS

#### 9.1. Conclusion

This paper identifies that there is a complex local based relationship between risk and livelihood diversification as different from the separate concept given to each term that may be a global understanding and as different from rural areas that have healthy natural endowments, different levels of risks, close support from various bodies, long as well as continuous history of development integration and infrastructural connectedness.

Understanding the existing risks and strategies of peasants in specific geographic contexts is a first step toward the identification of appropriate options to increase the potential for sustainable livelihood of particular peasant groups. As elsewhere in the country, smallholder peasant agriculture is the main sector of the economy in the study area.

Though it has been the base of the rural livelihoods for centuries, the mountain people are facing severe environmental, economical and social risks such as agricultural stagnation and decline, diseases, food shortage, drought, poor infrastructure, unemployment, deforestation, over cultivation, soil fertility decline, overgrazing, fragmented landholding, gender inequality, land scarcity, lack of safe water, declining returns of the farm economy, lack of skills, shortage of livestock feed, unseasonal rainfall, poor NRM and high population growth that hampered the capacity of the people to diversify. In particular, according to the HHs, land degradation due to natural and human actions is a principal environmental and socio-economic problem.

As a result, the highlanders are precariously affected by recurrent food shortages and poverty that need to be the central and primary concern of the study site as integrated with the rehabilitation of the natural resources to ensure sustainable development.

The results indicate that the local people have knowledge about their locality, the history of disasters in their place, and how vulnerability to disasters has changed over time. As it is shown, vulnerability is high among the disadvantaged (the poorest, the uneducated, the distant, the unprivileged social groups, and the voiceless in the development endeavours) and the destitute. It can be reduced when assets are retained, created or strengthened in the face of shocks and stresses in the mountains, and this progression mostly depends on higher and more stable levels of income and expenditure which are difficult in the case of Sinan District. In a similar scenario, to especially young members, ineffective agricultural practices combined with the decreasing availability of land make agricultural work discouraging that leads to the increasing trend of preference to engage in non-agricultural work or even hiring labour as they are unable to have land.

It is further observed that human resources development, together with access to social resources is crucially important in acquiring non-agricultural work and wage agricultural work.

Towards the best end, availability of sufficient services such as trainings, credit, infrastructure, safe water, market, sympathetic support (government and non-government), livelihood integrated soil conservation development programmes, veterinary services and irrigation are crucial to promote livelihood diversification away from traditional low-income farm and non-farm activities. Besides, their diverse and degree of availability has the power to reduce risks in similar pace. The more they exist, the less becomes the risks and the more the LD will be.

According to the findings, local-level analyses can also help highlight the primary constraints to the livelihood options and the differential nature of risk and vulnerability of particular groups. It has been recognized that different classes of people are not affected equally or in the same way by the drought effects.

The general conclusion is that efforts to reduce the effects of risk relies at least as much on improving the implementation of existing ideas and practices.

## 9.2. Recommendations

In winding up this study, which aimed at identifying the interface between risk and livelihood diversification, I would like to present the following recommendations based on the findings and observations.

- Given the significance of understanding risks to the implementation of various livelihood options, the possible interventions (farm such as fruit tree plantation and non-farm like livelihood options from handcrafts from bamboo and red soil) require rigorous evaluation within a participatory and collaborative local context where interventions have the greatest potential to foster the sustainability of the farm sector and lay the base for non-farm livelihood diversification and, thus, positively impact economic, social, and environmental conditions of the highland communities.
- Flexible and integrated government policies and programs that concern the rural poor in areas of natural resource management, education, environment, health and non-farm activities are sufficiently needed to respond to the variable and dynamic nature of perceived risks. The government needs to, hence, assure equal opportunities as well as access to resources (like land and forest) and ensure the risks of the remote poor in particular are heard to build the human, social, natural, economical and physical capital through which broader livelihood opportunities can be identified and acted as a way to livelihood diversification, (the way out of chronic poverty).
- Rural development policies and approaches need to be more locally based and community driven, and should relate to the resource-poor and risk-averse and involve all groups in the plans and benefits. Long-term commitment and flexibility which are based on the local reality are essential for successful development interventions.
- There is a high need of activities through integrated and community driven approaches that would address soil and land degradation; water control; forest and

woodland management; alternative sources of rural livelihoods; livestock management; biodiversity management and conservation, and development of wetland ecosystem.

- Credit services, training, environmental education, appropriate technology, well thought natural resource management and formation of partnership among all stakeholders in the rural development should equally widespread in all the places among all groups of the highlands to eradicate poverty.
- Public investment in physical infrastructure such as rural roads, safe water provision and irrigation should be strengthened since such investment directly reduces income risk faced by poor households.
- Policies in agriculture and related sectors should mainstream risk-reducing measures in ways that are compatible with the kinds of livelihood options already available to the rural poor. The identified information suggests strong prospects for the mainstreaming but also indicates that some of the measures should be ‘targeted’ towards particular groups or geographical areas, especially to address structural problems of exclusion from markets, market segmentation and interlocking. One core finding is that affirmative action is likely to be needed to prevent pervasive discrimination by gender, wealth or ideology.
- Participation of people at risk such as children, women and the elderly in different development programmes is essential for effective disaster risk reduction.

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## **Annexes**

## Annexes I

### Household Survey Questionnaire

#### 1. Household Profile

No.	Name	sex	Age	Relation-ship to HH	Mar ital Status	Level of Education	Religion	Employ- ment	Years in Community																				
1																													
2																													
3																													
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<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;"><b>Key:</b></td> <td style="width: 15%;"><b><u>Sex</u></b></td> <td style="width: 15%;"><b><u>Age</u></b></td> <td style="width: 15%;"><b><u>Relationship To HH</u></b></td> <td style="width: 15%;"><b><u>Marital Status</u></b></td> <td style="width: 15%;"><b><u>Level of Education</u></b></td> <td style="width: 15%;"><b><u>Religion</u></b></td> <td style="width: 15%;"><b><u>Employment</u></b></td> <td colspan="2"></td> </tr> <tr> <td></td> <td>1. Male 2. Female</td> <td>1. Under 20 2. 20-35 3. 36-50 4. 51-65 5. 65+</td> <td>1. HH Head 2. Wife 3. Husband 4. Son 5. Daughter 6. Brother 7. Sister 8. Grand Child 9. Other Relative 10. Not Related</td> <td>1. Single 2. Married 3. Widowed 4. Divorced 5. Separated</td> <td>1. Illiterate (for &gt;5 years old) 2. 1-4 3. 5-8 4. Some High School 5. High School Complete 6. Post Secondary</td> <td>1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Other</td> <td>1. Student 2. Full Time Farmer 3. Part Time Farmer 4. Stay at Home 5. Employed 6. Retired 7. Not Employed</td> <td colspan="2"></td> </tr> </table>										<b>Key:</b>	<b><u>Sex</u></b>	<b><u>Age</u></b>	<b><u>Relationship To HH</u></b>	<b><u>Marital Status</u></b>	<b><u>Level of Education</u></b>	<b><u>Religion</u></b>	<b><u>Employment</u></b>				1. Male 2. Female	1. Under 20 2. 20-35 3. 36-50 4. 51-65 5. 65+	1. HH Head 2. Wife 3. Husband 4. Son 5. Daughter 6. Brother 7. Sister 8. Grand Child 9. Other Relative 10. Not Related	1. Single 2. Married 3. Widowed 4. Divorced 5. Separated	1. Illiterate (for >5 years old) 2. 1-4 3. 5-8 4. Some High School 5. High School Complete 6. Post Secondary	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Other	1. Student 2. Full Time Farmer 3. Part Time Farmer 4. Stay at Home 5. Employed 6. Retired 7. Not Employed		
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## 2. Wealth Status

### 2.1. Housing

- 2.1.1. Type of main house: Hut  Tin  Other (specify): \_\_\_\_\_
- 2.1.2. Area of the main house: \_\_\_\_\_ (m<sup>2</sup>)
- 2.1.3. Number of rooms in the house (main +others): \_\_\_\_\_
- 2.1.4. Possessions: radio/tape, etc: \_\_\_\_\_  
 Toilet: \_\_\_\_\_  
 Related others: \_\_\_\_\_
- 2.1.5. Place for animal residence: With HHs  Separate  Other: \_\_\_\_\_

### 2.2 Property of Household

- 2.2.1. Means of land acquisition (Multiple response is possible):  
 Inheritance  Redistribution  I+R  Share cropping   
 No land  Other (specify): \_\_\_\_\_
- 2.2.2. Size of land owned (in local unit): \_\_\_\_\_  
 (One hectare= 4 Timad)
- 2.2.3. Size of land share cropped in: \_\_\_\_\_ out: \_\_\_\_\_ NA: \_\_\_\_\_
- 2.2.4. Size of land farmed: \_\_\_\_\_
- 2.2.5. Number of livestock owned: Cattle: \_\_\_\_\_ Oxen: \_\_\_\_\_ Goats: \_\_\_\_\_  
 Sheep: \_\_\_\_\_ Donkeys: \_\_\_\_\_ Mules: \_\_\_\_\_ Horse: \_\_\_\_\_ Poultry: \_\_\_\_\_
3. Does landholding result in risk? Yes  No
4. If 'Yes' to 3, how? \_\_\_\_\_  
 \_\_\_\_\_
5. Is your landholding suitable for livelihood diversification? Yes  No
6. Justify your answer to 5. \_\_\_\_\_  
 \_\_\_\_\_

### 7. Distance from amenities

7.1. How many minutes do you travel for a one way walking distance?

To gather firewood	To fetch water	To Market	To a nearest primary school	To health service	To nearest paved road

7.2. Does distance result in any risk? Yes  No

7.3. Justify your answer to 7.2. \_\_\_\_\_

\_\_\_\_\_

7.4. Does distance affect livelihood diversification? Yes  No

7.5. Justify your answer to 7.4. \_\_\_\_\_

\_\_\_\_\_

8. Sources of household gross income (livelihood)

Sources	1= Yes 2= No	Income*	Rank your main three sources	Response to risk? 1= Yes 2= No
8.1. Growing Crops (local unit)				
8.2. Rearing animals				
8.3. Forest product sales				
8.4. Trading / business				
8.5. Salary /wage labour				
8.6. External income transfers (food aid , remittances, etc)				
8.7. Other (specify):				

\* Annual average income

9. What are your three main sales? \_\_\_\_\_

10. Do your sales meet your needs? Yes  No

11. If 'No' to '10', why not? \_\_\_\_\_

12. If 'No' to '10', then what do you do? \_\_\_\_\_

\_\_\_\_\_

13. What are your main products? \_\_\_\_\_

14. Do your crops meet the yearly house hold consumption?

Yes  No

15. If 'No' to '14', why not? \_\_\_\_\_

16. If 'No' to '14', then what do you do? \_\_\_\_\_

\_\_\_\_\_

17. How many months do you need to buy food each year? \_\_\_\_\_

18. Locations of farm plots: Same place  Different places   
 Far from residence  Near residence

**19. Costs (Expenses) per year (in birr)**

19.1. Farm Costs

Items of Cost Types	Is it a cost? 1= Yes 2= no	If 'Yes', give average cost per year.	If 'Yes', 1= able to pay 2= unable to pay within the deadline.
19.1.1. Paid labour			
19.1.2. Pesticides/ herbicides			
19.1.3. Fertilizer			
19.1.4. Seeds			
19.1.5. Irrigation			
19.1.6. Health and feed of animals			
19.1.7. Agricultural equipment			
19.1.8. Other (specify):			

19.2. Family Costs

Types Cost Types	Is it a cost? 1= Yes 2= no	If 'Yes', give average cost per year.	If 'Yes', 1= able to pay 2= unable to pay within the deadline.
19.2.1. School /Edu cation			
19.2.2. Health			
19.2.3. Food and Consumables			
19.2.4. Transport			
19.2.5. Clothing			
19.2.6. Housing			
19.2.7. Social obligations/ Festivals			
19.2.8. Loan repayment			
19.2.9. Other (specify):			

20. How do you cover your costs? \_\_\_\_\_  
 \_\_\_\_\_

21. Which three major costs result in higher risks? \_\_\_\_\_  
 \_\_\_\_\_

22. Availability and Usefulness of Services

Services	Availability	Usefulness for LD	Does it adversely affect hh livelihood (farm economy)? 1= Yes 2= No
22.1. Education/school			
22.2. Education/Trainings			
22.3. Health/ 'Tena Kela'			
22.4. Roads/Linking R-U			
22.5. Access to Savings and Credit			
22.6. Agriculture extension			
22.7. Soil conservation schemes			
22.8. Safe water			
22.9. Market			
22.10. Support from NGOs/ CBOs			
22.11. Assistance from local authorities /politicians			
22.12. Veterinary			
22.13. Information			
22.14. Irrigation work			
<b>Scale :</b> <b>Availability</b> 1= Available (Regularly) 2= Some (times) 3= Not available		<b>Usefulness</b> 1= Extremely useful 2= Mostly useful 3= Some (times) useful 4= Uncertain 5= Not Useful	

23. Which three major services support your income? \_\_\_\_\_

\_\_\_\_\_

24. Which three major services result in higher risks if not available?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

25. Activities the households are engaged in

Activities	1=Subsistence Income(s) 2=Cash Income 3=Both (C and S)	Is it due to risk? 1= Always 2= Sometimes 3= Never	Does it promote /P/ or reduce /R/ risk? 1=P 2=R 3=Neither 4= Either 5= Both 6= Don't know.
<b>25.1. Cultivation</b>			
25.1.1. Cultivation of cereals			
25.1.2. Cultivation of vegetables			
25.1.3. Cultivation of fruit			
25.1.4. Working in others' gardens			
25.1.5. Renting land to others			
25.1.6. Others (specify):			
<b>25.2. Animal production</b>			
25.2.1. Cattle keeping			
25.2.2. Cattle breeding			
25.2.3. Sheep/goat breeding			
25.2.4. Horses/donkeys			
25.2.5. Poultry			
25.2.6 Others (specify ):			
<b>25.3. Non-farm activities</b>			
25.3.1. Migration			
25.3.2. Wage labour			
25.3.3. Making local drinks			
25.3.4. Money lending			
25.3.5. Selling forest product			
25.3.6. Handicraft work			
25.3.7. Petty trade			
25.3.8. Renting tools/animals			
25.3.9. Giving community services			
25.3.10.Others (specify):			

26. Risks and their Sources in the Community

No.	Types of risk	Risks to household livelihood security	Risks being experienced 1=Yes 2=No	Link to LD 1=Strong 2=Loose 3=Nothing	Rank the three most from each type
1	ER <sup>1</sup>	Degradation (soil and land)			
2	ER	Deforestation			
3	ER	Frost/hail			
4	ER	Floods/erosion			
5	ER	Pests			
6	ER	Drought			
7	ER	Wild fire			
8	ER	HIV/AIDS			
9	ER	Diseases (human+animal+crop)			
10	ER	Weeds			
11	ER	Unseasonal/irregular rainfall			
12	Er <sup>2</sup>	Rapid inflation			
13	Er	Falling wages			
14	Er	Food shortage			
15	Er	Unemployment			
16	Er	Migration for employment			
17	Er	Declining returns			
18	Er	Price shocks			
19	SR <sup>3</sup>	Deteriorating social networks			
20	SR	Lack of appropriate farm inputs			
21	SR	Declining subsidies			
22	SR	High tax			
23	SR	Inadequate health services			
24	SR	Unrecognising traditional organizations and practices			
25	SR	Few coordination between government and local community			
26	SR	Gender inequality			
27	SR	Fragmented landholdings			
28	SR	Land confiscation			
29	SR	Less access to market			
30	SR	Lack of skills/knowledge			
31	SR	Increasing population			
32	SR	Lack of credit			
33	SR	Poor NRM			
34	SR	Overgrazing			
35	SR	Over cultivation			
36	SR	Poor rural infrastructure			
37	SR	Poor farm productivity			
38	SR	Insecure tenure rights			

<sup>1</sup> Environmental Risk

<sup>2</sup> Economic Risk

<sup>3</sup> Social Risk

27. Vulnerability to Risks (Rank where possible; give the same number if equal:  
1 for the most....)

Who are most vulnerable to...	...environmental risks?	...social risks?		...economic risks?
		State	Community	
<b>27.1. Across age groups</b>				
27.1.1. Children				
27.1.2. Youth				
27.1.3. Adult people				
27.1.4. The old				
<b>27.2. Wealth group</b>				
27.2.1. The poorest				
27.2.2. The poor				
27.2.3. The non-poor				
<b>27.3. Location</b>				
27.3.1. Those at the peak				
27.3.2. Those at the waist				
27.3.3. Those at the bottom				
<b>27.4. Distance</b>				
27.4.1. Near the paved road but far from the town				
27.4.2. Far from the paved road and the town				
27.4.3. Near the town				
<b>27.5. Across sex groups</b>				
27.5.1. Men				
27.5.2. Women				
<b>27.6. Education</b>				
27.6.1. Illiterate				
27.6.2. Literate				

28. Is politics related to your livelihood security? Yes  No

29. If 'Yes' to 28, give examples. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

30. Ways of coping with risks (Tick to show your agreement)

How do you cope with...	...environmental risks?	...social risks?		...economic risks?
		State	Community	
30.1. Technological means				
30.2. Political power				
30.3. Financial attributes				
30.4. Having a voice				
30.5. Education				
30.6. Don't know				

31. Proposed measures of averting risks

- 31.1. \_\_\_\_\_
- 31.2. \_\_\_\_\_
- 31.3. \_\_\_\_\_
- 31.4. \_\_\_\_\_

32. Perception of own well-being

Items	1= Below average 2= About Average 3= Above Average
32.1. Your landholdings compared with others in the community	
32.2. Your livestock number compared with others in the community	
32.3. Food storage compared with others in the community	
2.4. Housing compared with others in the community	

33. Additional comments on risk and livelihood diversification: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Annex II

### Key Informants Interview Protocol

Name of respondent: \_\_\_\_\_

Age : \_\_\_\_\_

Educational Status: \_\_\_\_\_

Sex: Code: Male  Female

Date of interview (Day/ Month/ year): \_\_\_\_\_ E.C.

#### Guiding Questions

(Answers need to focus on issues related to risk and livelihood diversification)

1. Can you in brief describe the society?
2. What is improving and worsening in the lives of the society?
3. What are risks and their sources?
4. What are the major sources of income?
5. Are the activities responses to risks they may face? What determines them?
6. How are risks and livelihood strategies related?
6. Does the income the HHs generate meet their needs and consumption?  
If 'Not', why not?
7. What year is a 'good' year?
8. What do people do during the 'good' year?
9. What year is a 'bad' year?
10. What do people do during the 'bad' year?
11. Can the HHs pay their costs (farm and family)?
12. What are the effects of costs?
13. What are the main challenges for various groups (households, GOs, and NGOs) to avert risks and diversity livelihoods?
14. How is the landholding of each HH?
15. What are the implications of risks and LD?

## Annex III

### Development Agents Interview Protocol

Name of respondent: \_\_\_\_\_

Age : \_\_\_\_\_

Educational Status: \_\_\_\_\_

Sex: Code: Male  Female

Date of interview (Day/ Month/ year): \_\_\_\_\_ E.C.

#### Guiding Questions

(Answers need to focus on issues related to risk and livelihood diversification)

1. Can you in brief describe the status of the society in relation to their assets and well-being?
2. What are risks? What risks call the attention of local development?
3. What have caused the risks?
4. How are the community members coping with risks? What do you comment on these?
5. Who are vulnerable to environmental, social and economic risks? Why?
6. What livelihood strategies promote risks?
7. What livelihood strategies reduce risks?
8. What are the causes and effects of diseases (human, animal, and crop) in the area?
9. How are risks and LD linked in the area?
10. What determines the relationship between risk and LD?
11. What are the major implications of risk-LD linkages?

## Annex IV

### Case Informants Interview Protocol

Name of respondent: \_\_\_\_\_

Age : \_\_\_\_\_

Educational Status: \_\_\_\_\_

Sex: Code: Male  Female

Date of interview (Day/ Month/ year): \_\_\_\_\_ E.C.

#### Guiding Questions

(Answers need to focus on issues related to risk and livelihood diversification)

1. Tell me in brief your household profile (age, relationship to HH, marital status, children if any, level of education, religion and employment).
2. Would you brief your properties and possessions (house, electronic equipment, house furniture, land owned, number of livestock (cattle oxen, goats, sheep, donkeys, poultry, horses, mules, farm tools, etc.)?)
3. What are your sources of income?
4. What are your major expenses?
5. What do you sale? How do you meet the unmet needs?
6. How is your food consumption? Do you buy? When?
7. How are the provisions of services like education, health, road, safe water, irrigation, veterinary, NRM, NGO support, extension, etc.?
8. Does the presence or absence of such services influence your livelihoods?
9. What is a risk in this community? What major risks have you faced so far?
10. How have you tried to cope up with them?
11. What major activities are you engaged in to secure your livelihoods?
12. How are risk and LD related in the community?
13. What determines their relationship?
14. What do you propose for secured livelihoods in the community?
15. How do you measure your well-being as compared with others in the community?

## Annex V

### Local Government Officials Interview Protocol

Name of respondent: \_\_\_\_\_

Age : \_\_\_\_\_

Educational Status: \_\_\_\_\_

Sex: Code: Male  Female

Date of interview (Day/ Month/ year): \_\_\_\_\_ E.C.

#### Guiding Questions

(Answers need to focus on issues related to risk and livelihood diversification)

1. What have been the major risks of the area in the development process?
2. What are the main sources of these risks?
3. What livelihood options are in place to curb the risks?
4. Has any of such options resulted in any risk?
5. If 'yes' to '4', why?
6. How is the relationship between the smallholder farmers, the government bodies and NGOs in dealing with risks and livelihood activities?
7. Do they trust each other?
8. How is their coordination and support in development plans?
9. How are the socio-economic conditions of the Sinan Woreda?
10. What affects the relationships between risk and LD?
11. What do you recommend to avert risks and promote LD?
12. What are difficult to deal with as a government agent to improve the livelihoods of the society?
13. What government policies or programmes respond to risks and livelihood options?
14. How do you see services of education, health, water, extension, irrigation and other services?
15. Any further comments?

## Annex VI

### Chi-square Tests for HH Activities by some Socio-economic Factors

Scale	Landholding Computed			Family Size Computed			Level of Education Computed		
	X <sup>2</sup>	df	p-Value	X <sup>2</sup>	df	p-Value	X <sup>2</sup>	df	p-Value
Crops	15.51	8	0.050	6.84	6	0.335	15.29	6	0.018
Vegetables	46.56	12	0.000	10.68	9	0.298	12.09	9	0.208
Working in others' plots	39.89	12	0.000	11.12	9	0.267	7.17	9	0.619
Share cropping	18.46	8	0.018	10.80	6	0.095	13.14	6	0.041
Cattle keeping	27.49	12	0.007	35.05	9	0.000	26.47	9	0.020
Cattle breeding	27.50	12	0.007	32.87	9	0.000	19.06	9	0.025
Sheep/goat breeding	19.13	12	0.085	29.01	9	0.001	16.41	9	0.059
Horses/mules	33.33	12	0.001	14.79	9	0.097	10.38	9	0.320
Poultry	77.37	12	0.000	12.13	9	0.206	4.26	9	0.893
Migration	48.01	8	0.000	6.52	6	0.367	7.32	6	0.292
Wage labour	31.37	12	0.002	8.17	9	0.517	6.20	9	0.720
Local drinks	31.05	12	0.002	9.06	9	0.432	24.89	9	0.003
Money lending	15.81	8	0.045	6.56	6	0.363	9.62	6	0.142
Forest product	60.88	12	0.000	21.89	9	0.009	7.45	9	0.590
Handicraft	38.01	12	0.000	36.74	9	0.000	7.64	9	0.570
Petty trade	21.96	12	0.038	17.72	9	0.039	32.92	9	0.000
Renting tools/animals	11.27	8	0.187	9.79	6	0.133	17.98	6	0.006
Community services	48.64	12	0.000	25.47	9	0.002	20.36	9	0.016

Source: Field Study, 2008