MEKELLE UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

NON FARM LIVELIHOOD DIVERSIFICATION AS AN ALTERNATIVE LIVELIHOOD STRATEGY OF RURAL HOUSEHOLDS IN DROUGHT PRONE AREAS OF TIGRAY RIGION.THE CASE OF KILTE-AWLAELO WOREDA

By:
Kunom Hailu Tesfay

A THESIS

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Advisors   Frdu Nega(Ph.D)
Girma Tegene(MA)

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Declaration

This is to certify that this thesis entitled **"Non farm livelihood diversification as an alternative livelihood strategy of rural households in drought prone areas of Tigray region. The case of kilte-awlaelo woreda** " submitted in partial fulfillment of the requirements for the award of the degree of MA., in Development Studies to the College of Business and Economics, Mekelle University, through the Department of Management, done by Mr./Ms. **Kunom Hailu Tesfay,** Id.No **FBE/PR 0012/00** is an authentic work carried out by him/her under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name of the student

Kunom Hailu Tesfay   Signature_____   Date_____

Name of the supervisor(s)

1.   **Fredu Nega(Phd)**   Signature_____   Date_____

2.   **Girma Tegene(MA)**   Signature_____   Date_____

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Abstract

The Ethiopian government has been putting more emphasis to the agriculture sector as a strategy to resolve the challenges in food security. However, crop and livestock production is no longer the only sources of rural households´ income. Solely depending on agriculture is unlikely to improve food security because of the increase in population pressure and recurrent drought. Farmers themselves have realized that farming is not enough for meeting their consumption and cash income needs. Thus, many policy makers have an intense interest in promoting income-generating activities via non-farm livelihood diversification at household level. This study was conducted in drought prone area of Tigray region with particular reference to Kilte-Awlaelo Woreda. It attempts to identify how diversification is perceived and the type of non-farm activities, explore the major factors that affect non-farm income and diversification and constraints confronting rural household from diversifying, and assess the implication of adopting non-farm livelihood as alternative livelihood strategy. Both the quantitative and qualitative research methods were employed. As part of quantitative and qualitative research methods, primary data were collected by means of household survey questionnaire and focus group discussions respectively. Descriptive analysis and linear regression model were used as tools of analysis.

In the study area, a number of non-farm activities have been identified from which sand and stone quarrying, is the major one followed by livestock trading, pottery making and petty trading etc. Taking wealth status in to account, 35.3 % of the poor, 25% of the medium and 17.6 % of the better of wealth category have participated in non-farm activities. Implying that the greatest extent of diversification is among the poor and medium households, however, diversification among the better off group is less. The research result from the econometrics analysis indicates that sex of the household head, family size, credit access, livestock holding, oxen ownership, land holding, farm income have significant influence in non farm income and diversification in the study area. Insufficient start up capital, absence of local infrastructure services, and lack of appropriate entrepreneurial skills are the major constraints that prevent households from participating in non-farm livelihood diversification. Therefore, rural development policy should give more emphasis to the non-farm sector to diversify the sources of rural households income to supplement their farm income by improving access to credit, schooling, infrastructures and marketing as part of poverty reduction strategy.

ACRONYMS

ADLI	Agricultural Development-Led Industrialization
CSA	Central Statistics Agency
CARE	Cooperative for Assistance and Relief Everywhere
Das	Development Agents
DECSI	Dedebit Saving and Credit Institutions
DFID	Department for International Development
FCT	Farmers Training center
FDRE	Federal Democratic Republic of Ethiopia
FHHs	Female-headed Households
FGD	Focus Group Discussion
FFW	Food For Work
FSS	Food Security Strategy
GNP	Gross National Product
HHH	Household Head
KAW	Kilte-Aelaelo Woreda
MHH	Meal headed Household
MDGs	Millennium Development Goals
MEDaC	Ministry of Economic Development and Cooperation
MoFED	Ministry of Finance and Economic Development
NGOs	Non Governmental Organizations
PA	Peasant Association
REST	Relief Society Tigray
RDPSI	Rural Development Policies, Strategies and Instruments
SDPRP	Sustainable Development and Poverty Reduction Programme
SLF	Sustainable Livelihood Framework
TLU	Tropical Livestock Unit
UNCCD	United Nations Convention to Combact Desertification
WoARD	Woreda office of Agriculture and Rural Development

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CHAPTER I: INTRODUCTION

1.1. Background of the study

According to World Bank (2005), like many other developing countries Ethiopia presents one of the most important global challenges in agricultural development. Agriculture accounts 40% of the national Gross Domestic Product (GDP), 90 percent of exports, 85% of employment, and 90% of the poor. Although agriculture is the major economic activity and often the sole source of people's livelihood in rural parts of Ethiopia, its productivity has been low and declining over time. The causes of the economic crisis in Ethiopia are complex and interlocked. Structural problems, natural and man-made   calamities and civil strife have stifled economic growth (Mekonen and Abdulhamid, 1994). Among the causes, however, drought has remained the leading cause of disaster and human suffering in terms of frequency; recurrent droughts have had a devastating impact on the natural resource of the country. Moreover, low levels of physical and human capital, exposure to climatic shocks and failure of past policies to provide strategic investments and incentives for efficient decision-making are some among the factors mitigating against smooth functioning of the sector (MoFED, 2005).

According to Ministry of Economic Development and Cooperation (1999) the poverty situation in Ethiopia is much worse in the rural areas, where nearly half (47.5%) of the rural population is living below the poverty line. On the recent experiences of drought and food insecurity Ethiopia is an extremely valuable source of information, every year, more than 4 million people, particularly in the rural areas have problems of getting enough food for themselves (Tassaew, 2004). Rural poverty is further compounded by extreme land shortage in the highlands-per capita land area has fallen from 0.5ha in the 1960s to only 0.2ha by 2005 and by a marginal productivity of labor is estimated at close to zero (World Bank, 2005). In response to the frequent drought and chronic food shortages faced by millions, both the past and present governments of Ethiopia have made efforts to mitigate the problem. Especially, the present government of Ethiopia has given due emphasis to

Agricultural Development Led Industrialization (ADLI). However; because of the instability in agricultural production, agriculture has failed to play the decisive role expected of it (Ayele, 2006:32).

Thus, agriculture cannot afford to continue as a sole economic sector for many rural households as it has become increasingly difficult to expand agricultural employment in the country. Some empirical evidences have also proved that agriculture is not enough for meeting rural household consumption and cash income needs. With this regard, it is believed that most of the economic growth in the 1990s came from non-agricultural sources, despite the governments' emphasis on Agricultural Development-Led Industrialization (Eastrly, 2002). This seems the reason since the past recent years; income diversification has become a widespread attempt to tackle food insecurity in developing countries like Ethiopia, in attempt with this, rural people have three options to improve their livelihoods: through agricultural intensification and increase in farm size, diversification into non-farm activities and migration (Kees, 2006).

In tandem with this, the emergence and rapid expansion of the (mainly private sector) non-farm economy in rural areas and the towns they serve is a major source of growth in incomes and employment. The rural non-farm economy can develop into a major engine of economic growth, not only for the countryside but also for the economy as a whole.(Axel, 2005). This seems the reason that policy makers are focusing on the non-farm sector in their struggle to overcome the high levels of rural unemployment by promoting non-farm livelihood diversification as an alternative livelihood strategy. The indication here is that the existing types of non-farm livelihood strategies adopted may have their own contribution on poverty reduction, which still depends on assets base of each household. The direction of this study is; therefore, to identify the existing non-farm employment adopted and to investigate factors affecting household's non-farm income and diversification and finally to assesses the implication of adopting non-farm livelihood strategy on the well being of rural households in drought affected areas of Tigray Region with particular reference to Kilte-Awlaelo Woreda.

1.2 Statement of the problem

Although the agricultural sector plays a dominant role in the economy in terms of its contribution to national income, foreign currency earning, employment generation and source of input to industry, the level of production obtained from this sector is still low. That is, despite the efforts made to improve productivity of this sector, the country has remained food deficient let alone to produce surplus for structural transformation of the economy. In tandem with this, in Ethiopia policy makers, by tradition, were favoring agriculture as a means of rural economic development for along time (Fikru, 2008). This excluded the rural non-farm activities from much attention, thereby ignoring an important source of livelihood. During the Derg regime, diversification has been actively discouraged in Ethiopia. Farmers were not allowed to engage in off-farm activities, hire of labor was restricted, rather farmers were forced to be members of producer and service cooperatives (Tassew, 2002). The economic challenge is then to absorb workers out of the agricultural sector at a sufficient rapid rate to stop their average productivity from lagging behind (Axel, 2005).

According to a study of income diversification in rural Africa, off-farm and non-farm activities provide 30 to 50 per cent of total rural household incomes (Reardon, 1997). In Ethiopia, compared to other African countries, off-farm and non-farm activities contribute to the overall income of rural agricultural households in only a limited way.(Pernille, 2003). In tandem with this, the current government of Ethiopia is, criticized by some scholars for following rural development policies that neglect the role of rural non-farm economy. The work by Stephen (2000) indicated that food insecurity in Ethiopia derives directly from dependence on an un-diversified livelihoods based on low-input, low out put rain fed agriculture

The work of Ellis and Tassew (2005:xi) also pointed out that households´ livelihood portfolios in rural Ethiopia are amongst the least diversified in Sub-Saharan Africa. The reported level of rural non-farm participation across Ethiopia varies largely between 10-35 per cent (Fikru, 2008). This means that little non-farm growth is occurring in small towns (*woreda* centres). Further more, the findings of Ellis and Tasew(2005) in the participatory poverty assessment (PPA) has clearly   indicated that the Ethiopian rural economy is

characterized by the relative absence of rural non-farm enterprise and the major reasons being lack of encouragement by district and kebele administrators, fear of sanctions such as loss of entitlement to land (even though such fear is not grounded in public policy), social constraints on mobility especially for women, and low cash in circulation in remote rural areas (most people eat their own harvests).Moreover, Tassew (2002) confirmed that ´´the role of the rural non-farm sector is the least understood component of the rural economy, and its role in the broad development process is not well known." It has been and still is unclear which government organization is responsible for the promotion of non-farm activities in rural areas, moreover, the links between farm and non-farm activities are not fully recognized.

These being the strategies, most of the policies formulated in many of the developing nations mainly focus on improving the total production of agricultural sector, with little emphasis devoted to strengthening and widening the non-farm livelihood strategy which may have a grate contribution on the livelihood of rural households. Moreover, many of the researches conducted in Ethiopia have been observed to focus mainly on investigating various non-farm activities applied by rural households with little focus given to the relative importance of the non-farm economy on the wealth status of   rural households as part of strategy to resolve the challenges in food security by supplementing their farm incomes.

One can simply understand from the previous explanations that there is a research gap in promoting the non-farm livelihood diversification in drought prone areas as part of strategy used to meet challenges in food security. To close this gap, the current research intends to identify and understand the existing adopted non-farm activities and seeks to assess the implication of adopting these activities on the economic well being of the rural households as well as to examine the dominant factors that influence household's   participation in non farm employment in order poor farmers get out of poverty. Hence, a better understanding of the relative importance of the non-farm employment with respect to wealth statuses may help informing policy makers to incorporate issues at macro level and planners and experts at micro level

1.3 Research Questions

The study is an attempt to address the following research questions:

1. What are the existing types of rural non-farm livelihood activities adopted with respect to the various wealth statuses of the sample households in the study area?

2. What major determinant factors and motives do influence rural households participation in non-farm livelihood diversification?

3. What are the major constraints and opportunities for the development of non-farm livelihood diversification?

4. What is the relative importance of adopting the non-farm livelihood strategy in improving the livelihood of rural households with respect to various wealth groups?

1.4 Objective of the study

The general objectives of the study is to identify various non farm activities adopted by the rural households to supplement their farm income and assess the link between these activities and wealth status of rural household and to examine the dominant factors that affect rural household's non-farm income and diversification. Thus, the specific objectives of the study are:

1. To identify the existing types of rural non-farm livelihood activities adopted in the study area taking various wealth status of rural households in to account.

2. To explore the major factors determining households decision in adopting non-farm livelihood diversification strategies

3. To identify the key constraints and opportunities in facilitating or hindering rural households to participate in non- farm livelihood diversification activities

4. To assess the relative implication of adopting non-farm livelihood diversification strategies in improving the livelihood status of rural households.

1.5 A conceptual framework for the study

For the purpose of tackling the above research questions and to achieve the research objectives, a conceptual framework is developed based on the sustainable livelihood analysis framework developed by the Department for International Development (DFID) of the British government and the CARE international livelihood security framework. As depicted in figure 1.1 below the study framework attempts to understand

i) The relationships between the type and nature of household livelihood strategies and

- Relative well-being status of the household
- The gender of the household head
- The age of the household head
- The family size of the household
- The educational status of the household

ii) The link between households' choice of livelihood strategies and their access and control over important "livelihood assets" such as

- Land
- Draught power (oxen)
- Other livestock
- Labour
- Finance (credit)
- Social support and network

Figure 1.1. Determinants of household livelihood strategies

Household Socio-economic and Demographic Characteristics	Livelihood Assets	Livelihood Strategies

Relative wealth status

Sex of household heads

Age of household heads

Family size of the household

Educational status of the household

Asset resources
Land
Draught animals
Other livestock
Labour
Credit
Social support

Livelihood strategies

- Farm
- Non-farm
- Migration
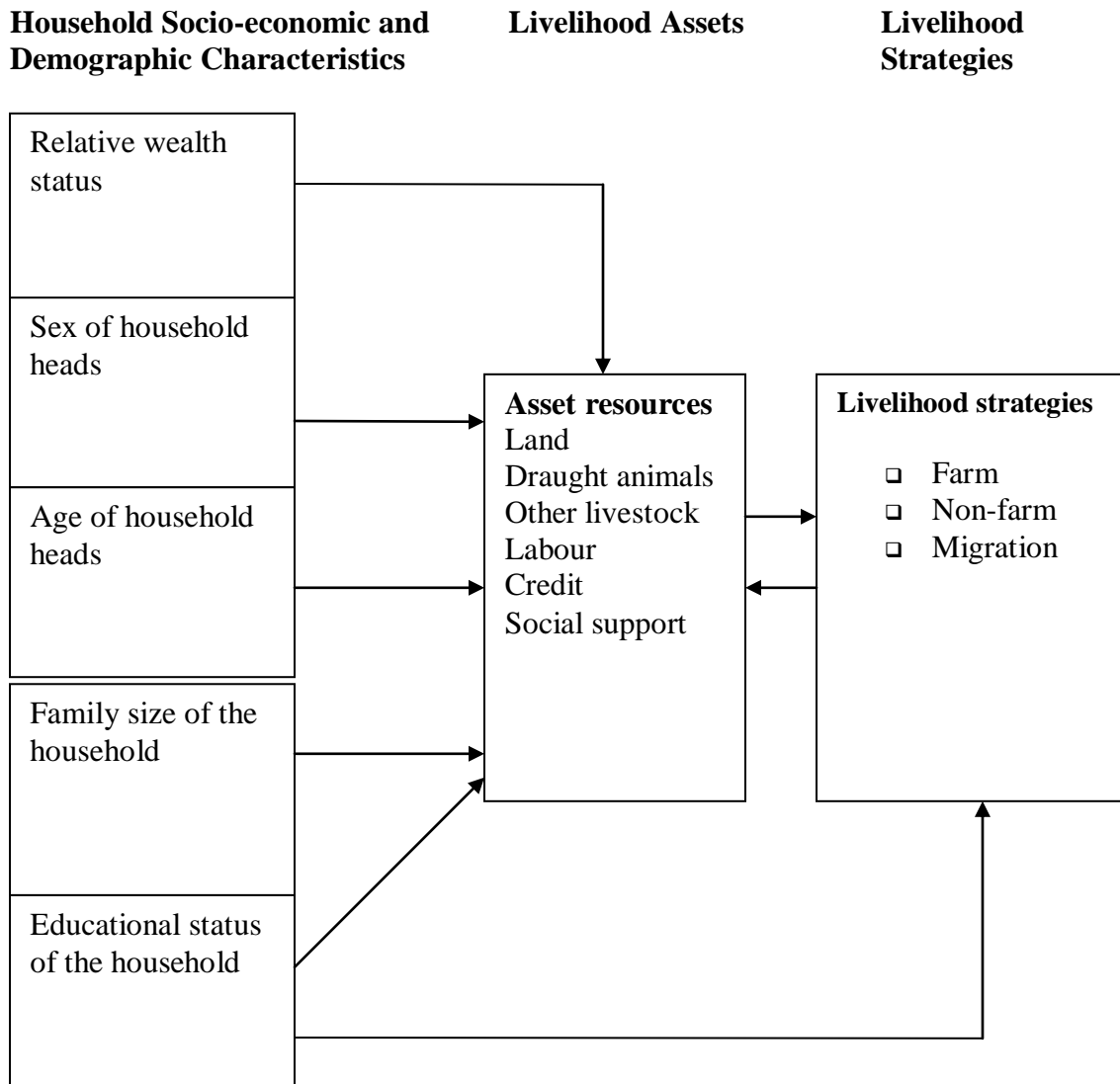
Source: Adapted from the DfID's 'Sustainable Livelihood Framework' (Carney, 1998) and CARE's '
Livelihood Security Framework' (CARE,2001)(cited in Mesfine,2006)

1.6. Significance of the study

Since the past recent years, attempts have been made to study and understand the contribution of income diversification on the economic well being of rural households. Thus, understanding the nature, determinants factors and motives for diversification is believed to give clues about the character of socio-economic changes that could be induced for the adoption of appropriate livelihood strategies in rural areas. This study, therefore, mainly strives to create a better understanding of the various non farm activities adopted by drought affected rural households with particular reference to Kilte-Awlaelo Woreda and their relative importance on the livelihood status of rural households which is believed as a vital issue for designing an appropriate agricultural and rural development programs and projects to bring about sustainable rural development

Therefore, the outcome of this study may serve as a source of additional information, which may be of significant use to policy makers and planners during the designing, and implementation of agriculture and rural development programs by showing the opportunities and constraints in diversifying rural non-farm livelihood and the dynamics of the rural non farm economy in providing income diversification employments. Moreover, since this study is an empirical study, it will help add to empirical literature which uses both quantitative and qualitative approach in assessing the link among the various non farm-livelihood diversification strategies with respect to different wealth status and exploring the dominant factors and motives that affect rural household's participation in non-farm livelihood and income diversification.

1.7 Scope and Limitation of the study

A comprehensive analysis of rural livelihood diversification involves a range of activities, which needs an ample time to cover all the details; it requires understanding the resource base of a particular area in relation to a particular group of people. Thus, livelihood strategies are usually recognized at individual and household level. Moreover, rural livelihood diversification strategies are numerous, and vary from one household to the other. Likewise, factors that affect household's participation in non-farm diversification also

varies. However, since it is difficult to exhaust all the non-farm employment strategies and factors influencing non-farm income diversification, the study confined itself to the major and common ones, which are found to be relevant to the topic and the research area. In line with this, for reasons associated with time and resources, the scope of the study was limited to one draught prone Woreda(kilte-Awlaelo) in Tigray region.

It is indicated in the methodology part of this thesis that the research has employed cross sectional survey. However, such data do not permit analysis of the dynamics of livelihood diversification. That is, to examine the pattern of non-farm income diversification, time series or panel data was needed which is the fundamental limitation of this study. However, it is customary to collect data from the rural farm households retrospectively with careful assumptions and interpretations. The other limitation is unavailability of baseline data. Such data would reflect the condition of the farm households' agricultural production, non farm income and asset ownership which would have been helpful to compare more comprehensively and evaluate the relative effect of income diversification on rural households' well being. Finally, there are some parameters used to examine wealth status of households. These include the income/consumption, and asset ownership, which are explained in physical terms. Each of the parameters has got their own drawbacks. However, we choose to examine wealth status of rural households in terms of asset ownership i.e based on traditionally perceived measure and criteria's with the help of key informants for categorizing rural households among four different wealth groups since this technique is considered more reliable as compared to the first one.

1.8 Organization of the paper

This research paper contains some five chapters. The first chapter deals with background, statement of the problem, research questions, objectives, significance, and scope and limitations of the study. The second chapter focuses on review of related conceptual as well as empirical literatures pertinent to the objectives of the study. While, chapter three exclusively deals with the description of the study area and research methodology pursued; chapter four presents the major descriptive findings and discussions and interpretation of econometric results. Finally, conclusion and recommendations are presented in chapter five.

CHAPTER II: REVIEW OF RELATED LITERATURE

Introduction

Since the prominent objective of the thesis is to assess the link between households' level non-farm diversification decision and their socio-economic characteristics and to identify and examine the determinant factors that affect rural household's non farm income and diversification, the researcher found it meaningful to visit various literatures, which are believed to be relevant to the topic. Thus, the basic concepts of poverty, drought, food security and livelihood diversification, motives and determinants that influence households non-farm income and diversification, linkage between farm and non-farm activities, non-farm diversification and poverty reduction, dimensions of rural non farm diversification in Ethiopia, government policies, strategies and programs adopted in the country and various asset types up on which the livelihood of a given society is built in are presented below.

2.1. Poverty, drought and food security situation in Ethiopia

Poverty

The World Bank defines poverty as the inability of people to attain a minimum standard of living. Poverty not only means low income and consumption and low levels of human development in terms of education, and healthcare but also feelings of powerlessness, vulnerability and fear because poor people are not free and are exposed to grate risk, living on the margin of subsistence (Thirlwall, 2006). The major causes of individuals' poverty can be linked to a lack of assets and or a low return on assets. Important assets to enable people to grow out of poverty include

1 Natural Asset such as land

2 Human Assets such as education and health

3 Financial Assets including access to credit and

4 Social assets such as net works of contacts

Ethiopia is a large country with over 75 million people of which the majority or 85 percent are engaged in rural and agricultural based economic activities. It has one of the lowest per

capita incomes in the world. In fact, the miserable condition of the Ethiopian economy is reflected in every sector and by all standard social and economic indicators one prefers to use (Tilaye, 2004). In fact, Ethiopia has reasonably good resource potential for development-agriculture, biodiversity, water resources, minerals, etc. Yet, Ethiopia is faced with complex poverty, which is broad, deep and structural. The proportion of the population below the poverty line is 44 per cent in 1999/2000 (MoFED, 2002).

Drought

Due to pervasive global environmental change, drought has become the common and universal phenomenon, irrespective of level of development of nations. But, its sever consequences has been repeatedly manifested in those of nations which are found at low level of development. In this regard, many researches identified that the occurrence of recurrent drought is one among the various factors resulting in agricultural production failure in many of developing nations especially in the arid and semi arid areas. Although various scientists from various disciplines defined drought in many ways, the United Nations Convention to Combact Desertification (UNCCD)(2006) as cited in Aby(2009) defined drought as it is naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource systems.

In one way or the other the definitions assert that drought is commonly taken as a physical event consisting of some degree of short fall in rainfall over a period of time which in turn affects the level of production in particular and human lives in general. In addition to this, displacement of people, social disruption due to change in gender roles and split of families, reduced school attendance, environmental degradation, malnutrition, death, diseases and loss of sprit are some among the visible adverse effects of droughts imposed on the livelihood of the rural households. Taking the case of Ethiopia, rural farmers' current circumstances reflect the challenges faced by the country over the last decades. In particular, the country is extremely vulnerable to drought and since the early 1980s, has experienced seven major droughts, five of which resulted in famine. The most recent drought, which occurred in 2002/2003, affected approximately 13 million people (MOFED, 2005). Thus, to protect and/

or mitigate the adverse consequences of drought, rural households has long been adopting non-farm livelihood diversification activities as coping strategies depending on their local natural resource endowment, institutional arrangement, social relations, human capital and so on. The basic concepts of livelihood strategies in general and non-farm livelihood strategy in particular are, therefore, presented below

Food security situations

Food security shall be the prime and most important achievement of a developing country, like Ethiopia. Food security is "the availability at all times of adequate world supplies of basic food stuffs to sustain a steady expansion of food consumption and to off set fluctuation in production and price" (Alem, 2003). At the national level, the major features of food security in Ethiopia are a persistent deficit in aggregate food supply, a downward trend in per capita food production, and large variability in output of food items (Alem, 1999). Ethiopia has been a net importer of food for more than three decades. In the decade between 1985 and 1994, net domestic production of cereals that on average account for about 85 per cent of household food consumption ranged between 82.7 and 93.8 per cent of total supply. Domestic food supply has failed to meet the food requirement of the country. In fact, per capita food out put of the country has been declining for nearly over 30 years and the ability of the country to feed its population, growing at about 3 per cent per annum, is deteriorating from bad to worse (Astatke, 2002).

2.2. Livelihood (S)

Although various scholars define it at different times and in different ways, these days, the concept of livelihood is increasingly gaining importance and is widely used in various articles and texts written on poverty and rural development. In relation to this, Conway and Chambers, as cited in Ellis F. (2000) define livelihood as it includes the capabilities, assets, and activities, which are considered crucially important for means of living. This definition helps one to note that livelihood is associated with a means of one's living which is influenced by the ability of individuals in realizing their potential as human beings, varying degree of individuals' access to and portfolios of assets and activities in which they are engaged in to support and sustain their living.

Moreover, with some modifications, Ellis (2000) defined livelihood in the following way

> As it *"comprises the assets (natural, physical, financial, human*
> *and social capital), and activities and the access to those*
> *(mediated by institutions and social relations) that together*
> *determine the living gained by an individual or household."*

In this case, Ellis has precisely categorized the type of assets, access to these assets and activities determining the livelihood enjoyed by an individuals and households. . In tandem with this, adding to previous definition of Conwey and Chambers, he went on to say that various types of institutions with in a society and social relations among groups play a pivotal role in determining access to assets that individuals are expected to have. This helps one to understand that the varying degree of access to and portfolios of assets among rural society possibly makes the livelihood of one household to be different from the other

2.2.1. Livelihood Assets (Capital)

The Sustainable Livelihood Framework (SLF) identifies five types of assets or capital up on which livelihoods are built; increasing access (ownership or right to use) to these assets create a great contribution to poverty reduction and improves the well-being of the society. These are: human capital, natural capital, financial capital, social capital, and physical capital. People's choice of livelihood strategies, as well as the degree of influence they have over policy, institutions and processes, depends partly upon the nature and mix of the assets they have available to them. Some combination of them is required by people to achieve positive livelihood outcomes –that is, to improve their quality of life significantly on a sustainable basis. No single category of assets on its own is sufficient to achieve this, but not all assets may be required in equal measure. It is important to note that a single asset can generate multiple benefits. For example, if someone has secure access to land (natural capital) they may also be able to get better access to financial capital, as they can use the land both for productive uses and as security for a loan (Mesfine, 2006)

A. Human Capital;

Human capital represents the skills, knowledge, ability to labor and good health that together enable people to pursue different livelihood strategies and achieve their livelihood

objectives. At a household level human capital is a factor of the amount and quality of labour available; this varies according to household size, skill levels, leadership potential, health status, etc.

B.Natural capital;

Natural capital is the term used for the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived. There is a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production (trees, land, etc.). Within the sustainable livelihoods framework, the relationship between natural capital and the Vulnerability Context is particularly close. Many of the shocks that devastate the livelihoods of the poor are themselves natural processes that destroy natural capital (e.g. fires that destroy forests, floods and earthquakes that destroy agricultural land) and seasonality is largely due to changes in the value or productivity of natural capital over the year.

C. Financial Capital

Financial capital denotes the financial resources that people use to achieve their livelihood objectives. The definition used here is not economically robust in that it includes flows as well as stocks and it can contribute to consumption as well as production. However, it has been adopted to try to capture an important livelihood building block, namely the availability of cash or equivalent that enables people to adopt different livelihood strategies

D. Social Capital

There is much debate about what exactly is meant by the term 'social capital'. In the context of the sustainable livelihoods framework it is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives, networks and relationships based on trust, reciprocity and exchanges

E. Physical Capital

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. Producer goods are the tools and equipment that people use to function more productively (Cambers and Conway, 1992)

2.2.2 Livelihood strategies

The term livelihood strategy is used to denote the range and combination of activities and choices that people make in order to achieve their livelihood objectives (Carney 1998). It includes: how people combine their income generating activities; the way in which they use their assets; which assets they chose to invest in; and how they manage to preserve existing assets and income. Strategies may reflect underlying priorities, such as to diversify risk. Livelihood Strategies are diverse at every level. For example, members of a household may live and work in different places, engaging in various activities, either temporarily or permanently. Individuals themselves may rely on a range of different income generating activities at the same time, and are likely to be pursuing a variety of goals.

There are different ways of categorizing household livelihood strategies and income sources. Household livelihood strategies could be categorized into three broader groups as Agriculture, which encompasses intensification and extensification of crop and livestock farming activities, livelihood diversification in which off-farm activities and non-farm activities are included and Migration (Scoones, and Wolmer , 2002).Income sources can be categorized as those activities that are 'natural resource based activities 'and 'non-natural resource based activities. Others categorize household income sources as farm, off-farm, non-farm income sources and remittance income from migratory labor (Ellis 1998:54). Definitions are given as follows:

Farm income: this refers to income generated from own-account farming, whether on owner occupied land or on land accessed via cash or share tenancy. Farm income broadly defined, includes livestock as well as crop income.

Off-farm income: refers to wage or exchange labor on other farms (i.e. within agriculture). It may also include income obtained from local environmental resources such as firewood, charcoal, house building materials, wild plants and so on.

Non-farm income: refers to non-agricultural income sources. Several sub-categories of non-farm income are commonly identified. These are: non-farm rural wage, non-farm rural self-employment, and rental income obtained from leasing land or property, urban-to-rural

remittance. It is important to point here is that in this, study off-farm activities are considered as non-farm income.

Migration: means that one or more family members leave the resident household for varying Periods of time and in so doing are able to make new and different contributions to the household's well being.

There are different types of migration: seasonal migration (temporary migration according to agricultural seasons), circular migration: refers to temporary migration that is not necessarily tied to seasonal factors in agriculture, and that may be for varying duration, permanent migration: implies that the family member makes a long-duration move to a different location and sets up domicile at destination, international migration: a family member moves either temporarily or permanently abroad (Ellis, 1998 cited in Mesfine, 2006).However, this study gives more emphases to non- farm livelihood strategy.

2.2.3 Livelihood diversification

Various literatures indicated that diversification of activities is used widely in rural areas of developing countries as a mechanism to reduce the outcome of future expected shocks such as drought. Diversification can either refer to an increasing multiplicity of activities (regardless of the sector), or it can refer to a shift away from traditional rural sectors such as agriculture to non-traditional activities in either rural or urban space (Start and Jonson, 2004). Minot et al. (2006) also defines diversification as the expansion in the importance of non-crop or non-farm income and increase in the number of sources of income In this regard, Ellis (2000) defined rural livelihood diversification "as a process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and improve their standard of living." This implies that diversification recognizes that people survive and widen their income source by doing many different things, rather than just one thing or a few things. This is associated with the fact that farming, on its own, does not provide a sufficient means of survival in rural areas. For this reason, most rural households are found to depend on diverse portfolio of activities and income sources such as crop and livestock production, non-farm self employment and wage employment for their livelihoods, although the degree of dependence on these activities varies according to the socio economic status of the households.

In recent years, it has been realized that livelihood diversification is contributing a lot to rural livelihoods even if policy makers have neglected it. In this respect, as cited in Aby (2009), the findings of Belanieh (2002) indicated that although the contribution of rural livelihood diversification is often ignored in policy agenda, it is an important feature of survival in rural areas of Ethiopia. Based on his findings, he concluded that the misconception of rural development that is focused on enhancing the productivity of agriculture need to be re examined and emphasized on food security as only one of the central concerns of households but not the only one.

Likewise, a research conducted in southern Ethiopia indicated that diversification of activities are crucially important in the study region outlining that caste, household size, structure, gender of household head, wealth group, ownership and access to asset and access to transport, market and other services are some of the important variables determining diversification activities applied at different levels. (Carswell et al,2002). In confirming the importance of livelihood diversification, Easterly (2000) asserted that Ethiopia's food insecurity problem drives directly from its dependence on diversify livelihoods that are based on low input rain fed agricultural activities. Thus, Livelihood diversification assumed to play a role in overcoming the consumption-smoothing problem created by the seasonality of agricultural output patterns. For rural households, risks are particularly related to natural shocks (floods, drought etc.). All households, whether rural or urban, are prone to the personal shocks of chronic illness, accidents and death and reduces all the risks by diversifying their livelihoods (Ellis, 1998)

2.2.4 Non-farm livelihood diversification

Non-farm means (any) activity outside agriculture and non-farm employment means (any types of) employment of the rural household members in these activities (Reardon et al., 2001). In this study, non-farm activity consists of all economic activities in the rural areas, which are different from farming (which is specified as somebody who works on her/his own farm or is hired by the others to work on their farms as farmer laborer). Given this, households might belong to one of the two employment outcomes according to their primary and secondary jobs. In this regard, both wage employment and self-employment activities are

means of income earned from non-farm activities. The first outcome (wage or salary employment) refers to those who participate in non-farm activities against payment to cash or in kind (hired by others) such as working for paid development work (such as food for work), regular jobs (such as masonry and carpentry) and casual daily work. And the second out come (self employment or own business) refers to those who participate in non farm activities (such as Trading in livestock and grain, selling fire wood and homemade charcoal, stone mining, hiring out of pack animals (such as transport animals, like donkey horse and camels), petty trading and handcraft).

Studies of rural income portfolios generally converge on the once startling figure that, on average, roughly 50 per cent of rural household incomes in low income countries are generated from engagement in non-farm activities and from transfers from urban areas or abroad (remittances and pension payments (Bryceson & Jamal, 1997). Rural structural transformation involving diversification out of agriculture is also increasingly becoming both research and policy issue in Ethiopia. As elaborated by PASDEP, the rural development strategy of the country will be broadened beyond the initial focus on agricultural intensification, with recognition of the need to stimulate income diversification and rural-urban linkages.

In relation to this, the work of Tassew's (2000) conducted in the Northern part of Ethiopia (Tigray) on the basis of farm household survey data collected shows that off farm income can be complementary to farm income if farm households are constrained in their borrowing. It also shows that farm households with more diversified sources of income have a higher agricultural productivity. One of the key findings of the study is that expenditure on farm input is dependent not only on agricultural production, but also on off-farm and non - farm income because of capital market imperfections (borrowing constraints). Farmers involved in better paying off-farm activities such as masonry, carpentry and trading are in a better position to hire farm labour. In the study area a substantial proportion of farm households (81%) have found diversified their income into off-farm activities.

According to Fredu et al (2006) using data from 385 rural households in Northern Ethiopia (Tigray) found out that diversification intensifies income inequality. Income sources outside

crop production have an inequality increasing effect. A rise in income from non-farm income and livestock increases income inequality. They also indicate that social capital is an important factor that determines non-farm income diversification but does not affect for crop income. The same author further pointed out supporting evidences that social capital is more important to women headed than male-headed household. Nigisti (2007) who studied An economical analysis of farmers risk attitudes and farm households response to rainfall risk in Tigray Northern part of Ethiopia, has also indicated that the better off households with more than two oxen were more reliant on non farm self employment and less reliant on wage employment and non labor income (such as food aid) than those who were considered poorer. This, definitely, indicates that better wealth status of households is positively related with self-employment non-farm self-employment and negatively related with farm wage employment.

In addition to this, many studies assess that non- farm employment opportunities in rural areas are limited having a lower income generating potential (Devereux, 2000). These can be substantiated by the fact that the survey reported from Ethiopia ministry of labor in 1996 indicated that only 44% of rural households surveyed pursued non-farm livelihood activities as source of their income and these sources constituted only 10% to household income (Befekdu and Berhau, 2000 cited in Aby, 2009). In tandem with this, the findings Fikru (2008) in Oromiya zone indicated that lack of waged labor opportunities, lack of initial start up capital, limited knowledge and skill, lack of raw materials and limited markets are discouraging factors against expanding non-farm income earning activities. However, it is important to note at this point that there are many conflicting propositions about the cause and consequences of income diversifying activities. That is, diversification of activities may be considered both as a deliberate household strategy and as an involuntary response to crises and hence it can be taken as a safety valve for rural poor and as a means of wealth accumulation for rural rich (Ellis, 2000). The above statement helps one to understand that diversification of activities can be adopted at household level as copying strategies to compensate the harvest failure   in agriculture which mainly depend on various variables such as location, access to assets, income level, opportunity, institutions and social relation.

2.2.5 Motives and determinants for livelihood diversification

In studying households' livelihood diversification strategies, it is important to account for the fact that the motives, means, and outcomes of diversifying are heterogeneous. Diversification of livelihood strategies occurs for many different reasons. According to Junior et al (2003) farm households may diversify their income sources for at least two motives (i.e. Pull factor and push factors). Diversification could be for reasons of necessity or people may diversify their livelihood by choice (Ellis, 1998). The reasons for diversifying income sources vary for different families in different times and places. Clearly, extreme misfortune is more likely to result in people making involuntary decisions to diversify rather than voluntary ones (Ibid). But it is important to remember that it is not only poor households that are forced to diversify in order to make ends meet as best they can. Richer households also diversify their economic activities and this can be a path to accumulation (Murray 2001). Furthermore, engagement in non-agricultural activities in rural areas can be classified into survival-led or opportunity-led. Survival-led diversification would decrease inequality by increasing the incomes of poorer households and thus reduce poverty. By contrast, opportunity-led diversification would increase inequality and have a minor effect on poverty, as it tends to be confined to non-poor households.

Distress-push diversification typically occurs in an environment of risk, market imperfections, and of hidden agricultural unemployment, and is typically triggered by economic adversity, which sets the household on a downward income trajectory. It implies engaging in economic activities that are less productive than agricultural production could be on a full-employment basis, and is motivated by the need to avoid further income decreases. Demand-pull diversification, on the other hand, is characterized as a response to evolving market or technological opportunities, which offer the opportunity of increasing labour productivity and household incomes[8]. This distinction suggests a number of specific inferences in terms of the relationship between diversification strategies, household characteristics and the socio-economic environment. Within any rural area, distress-push diversification attracts households in a rural population, which are less well endowed, or which have lower incomes. These households will enter nonagricultural activities that are, on average, less rewarding (e.g. in terms of labour productivity) than demand-pull

diversification activities, since the higher-return activities typically require higher investment that only the richer households can afford. For instance, poorer households will obtain a larger share of their non-agricultural income from wage employment, while richer households have better opportunities to enter non-agricultural activities in their own independent enterprise. Third, since income inequality is typically such that there are more relatively poor than relatively rich households, distress-push diversification will be more prevalent than demand-pull diversification. Fourth, distress-push and demand-pull diversification activities will be more clearly separately observable as inequality is larger (Davis R. et al, 2003).

Determinants of livelihood diversification fall into two broad categories: "push" versus "pull" factors. The "coping" literature examines how farmers in low-potential and risky environments-those subject to drought, flooding, or environmental degradation – often adapt by deploying household resources to a range of farm and non-farm activities " a growing landlessness also pushes households into non-farm activity by default. Many farm households in medium to high-potential environments are also "pooled" by opportunities for diversification into attractive non-farm activities (Bryceson, 1997)

Infrastructure development is generally believed to have impact on rural non-farm activity. Roads, telecommunications, credit and electricity all contribute to increased non-farm activity. Haggblade et al, (2007), observed that in a specific case of the rural non-farm economy, infrastructure is a double-edged sword. He further note that adequate roads, communication facilities, and other public goods are necessary fixed inputs into production; and, hence, would be expected to facilitate the development and expansion of rural industries. On the other hand, connecting rural places to urban places, via infrastructure expansion and improvement, may well lead to inadvertent "crowding out" of more remote rural firms and industries by virtue of lowering the cost of distance and their competitiveness with urban firms.

2.3. Linkage between farm and non-farm activities

Although agriculture remains the backbone of most rural economies like that of Ethiopia, the notion of rural economies as purely agricultural is nowadays considered simplistic and

obsolete. The rural non-farm economy alone cannot act as a driver for the rural economy, independently of agriculture or other primary activities However, certain non-farm activities are not only reactive to rising production and income in primary sectors but can also facilitate, or even initiate, growth in these primary activities (Davis, 2004). A profitable and productive agricultural sector is the main stimulus to rural non-farm growth, until late in the development process. However, there is already evidence in Asia and Latin America of increasing linkages to urban industrialization, e.g. outsourcing of textile assembly, independent of agricultural growth. In any event, from a public policy viewpoint, investment in infrastructure and education is the key to a vibrant rural non-farm sector that supports both agricultural and non-agricultural sectors. For most countries, economic growth and sustained poverty reduction are unlikely to be achieved without initially stimulating sustained agricultural production (Axel, 2005).

2.4 Non-farm diversification and poverty reduction

The non-farm sector offers potential to absorb a growing rural labor force, slow rural - urban migration, contribute to national income growth, and promote a more equitable distribution of income (Lanjouw and Lanjouw, 1997). Given low capital requirements and the small-scale nature of many rural non-farm enterprises, poor households dominate many of them. For these reasons, policy makers are increasingly forced to view the rural non-farm economy as a potentially important contributor to foster local economic growth and alleviate the rural-urban income gap and rural poverty (Davis and Bezemer, 2004). There is thus a growing consensus that poverty declines as the share of income from non-agricultural sources rises. In this regard, Ellis (2004) pointed out that, occupational diversity needs to be distinguished from the income proportions to which it gives rise.

The better off and the poor may exhibit similar degrees of diversity (as measured, for example, by count frequencies of the different occupations in which they are engaged) yet the better off tend to diversity in the form of non-farm business activities (trade transport, shop keeping, etc), while the poor tend to diversify in the form of casual work, especially on other farms. Diversification by the poor therefore tends to leave them still highly reliant on agriculture, while that by the better off reduces such dependence (ibid, 2004)

CHAPTER III: MATERIALS AND METHODS

3.1 Introduction

This study employed a mixed approach with an emphasis given to quantitative household survey supplemented by the qualitative research method. The quantitative research approach is applied to explore the types of non-farm employment adopted at household level and examine the major determinants of non-farm income and diversification, as well as to identify the major constraints and opportunities in adopting non-farm livelihood strategy and finally assess the implication of adopting these strategies on economic well being (wealth status) of the rural households understudy. Moreover, to capture some variables, which are non-quantifiable methodologically, qualitative methods of data analysis are used.

3.2 Site selection and description

3.2.1 Description of the study area

Tigray region is situated in the northern part of Ethiopia and covers an approximate area of 80,000 square kilometers and a total population of 4.3 million, which is growing at 2.5 percent per year. Geographically, the regional state lies roughly between 12^0 15'-14^0 57' North latitudes to 36^0 27'-39^0 59' East longitudes. The region is divided in to 7 zones, and 46 Woredas, for administrative purpose(CSA, 2009).The Afar region bounds Tigray to the East, Sudan to the west, Eritrea to the North, and Amhara to the South. Ecologically, the region belongs to the sudano-sahelian agro-climatic region of Ethiopia. Its climate is characterized by one long dry season from October to May, followed by a short rainy season from March to April and the long rainy season from June to late September. The region receives a rainfall between 550 and 650 mm annually (Aby, 2009)

Like in any other regions of the country, agriculture is the major sector of the regions economy; it is characterized by mixed (crop-livestock) farming system contributing about 45% of the Gross Domestic Product (GDP). More than 85% of the population derives its livelihoods from agriculture and related activities. Agriculture in Tigray consists of crop husbandry, livestock husbandry and mixed farming, which is the dominant type of farming

system. Rain fed subsistence is the dominant form of agricultural production. Moreover, Agriculture is characterized by extremely small holding, traditional farming and low level of literacy among the holders (CSA, 2008).

As agriculture is mainly rain feed, the category and duration of rainfall determines the growing period. The major crops of the region are sorghum, teff, baley, finger millet(Dagusa), wheat, and maize accounting for 26%, 16%, 12%, 11%, 9% and 7% of the total area cultivated respectively (BoFED, 2004). The work of Fistum and Holden (2004:16) indicated also "agricultural production in the region is highly risky not only because of the recurrent drought and adverse weather conditions but also due to deteriorating land quality owing to land degradation". The study also pointed out that access to infrastructure and institutions, such as market for inputs and outputs, road and transport, storage facilities in the region is limited

As part of the Eastern Zone of Tigray regional state, the Woreda selected for this research, Kilte Awlaelo (KAW), is one of the 46 weredas in the region, geographically it is located at about 45 km North of Mekelle (Regional capital) along the Mekelle-digrat main road. The wereda ranges from $13^0 46^'$ North Latitude and 40° 35' East Longitude with a total area of 1010.25 km2. Atsebi Wemberta in the East, Saesie-tsaedaemba in the North, Hawzen in the North West, Temben in South West and Enderta in the south bound KAW.

The Woreda comprises 17 rural *Tabia*s and 64 Kushets, it is one of the most vulnerable areas of the region where significant number of the population is suffering from food insecurity. Topographically, the altitude of Kleteawlaelo Woreda ranges from 1990-2300 meters above sea level while the temperature ranges from 17-28°C. Daily temperature becomes very high during the months of May to June, with a mean annual temperature of 22°C. The climatic situation of the woreda is characterised by cool, warm and dry weather. The spatial and temporal distribution of rainfall is low and unreliable to support the rain-fed agriculture. According to the available data, the mean annual rainfall for the area ranges from about 170-450mm. About 80 % of the Woreda receives mean annual rainfall of 310 mm, with rainy months extending from late of June to the end of August. However most of the rainfall is received during the months of July (WoARD, 2009). According to the office

of Wereda Agriculture and Rural Development, the population of the Woreda is estimated to be 123,068 in 2008 with an average population density of 105.04 per km2 and about 95.8% of the population lives in the rural areas. According to the recent Woreda population report (2007), the total number of households in the Woreda is 24,583. Out of these 12,065(49.07%) are male headed and the remaining 12,552(50.03%) are female-headed households. The age distribution of the population in the Woreda is 41.4 % under 15 years, 53.1% between 15-64 years and 5.5% were 65 and above. Based on this data the dependency ratio of the rural population in the study area is 88.3 %. With respect to land use pattern of the woreda, 20.88 percent of the total land is arable land in which major crops like teff, sorghum, and wheat and barely are grown, while 62.95 percent is unproductive. Forest and bush land covers 11.48 percent of the total area. The remaining 4.71 percent is a postural land, which is used for animal grazing.

3.2.2 Study area selection

The rational for the choice of the study area(Kitle-Awlaelo Woreda) from the woredas of Tigray national state is due to the fact that large part of the area in the Wereda has repeatedly been facing scarcity of rainfall, which resulted in recurrent drought. At the same time, the rural households in this area are identified as having and adopting well identified non–farm activities (which are observed to be studied by the researcher) where the predominant occupation of the population is farming. Moreover, the area was also given high attention by the sponsor organization, as it is one of their project areas as well as the previous quittance of the researcher with the locality. And hence the wereda is considered more appropriate to the study, which mainly aims at assessing the determinant factors influencing household non-farm income and diversification. Therefore, the occurrence of repeated drought and rural farm households' preparedness to diversify their income generating activities and adopting of various types of non-farm activities are the basis for selecting Kilte-Awlaelo Wereda for the study. See the map of the study area in Appendices II.

3.3 The Study Approach

According to Dessaleng (2004), it is becoming increasingly popular that combinations of methods are to be employed in social research; it is usual for researchers to employ mixed method design to investigate different aspects of the same phenomenon. Thus, this study employed a mixed approach with an emphasis given to quantitative household survey supplemented by the qualitative research method. The quantitative research approach is applied to identify the existing types of non-farm livelihoods adopted at household level and examine the determinant factors and motives influencing rural households participation in non farm income diversification, and finally assess the implication of adopting the non-farm livelihood strategy on the economic well being (wealth status) of the rural households understudy. In addition, to capture some variables, which are non-quantifiable (either methodologically or due to other reasons), and to understand respondents' impression to wards income diversification qualitative methods of data analysis are used.

Household survey: As part of quantitative research methods, the primary data were collected by means of household survey questionnaire which was used to interview sample respondents. In the sample survey, in-depth information regarding the social and demographic characteristics, household's ownership and access to various assets such as land, livestock, credit and other assets was collected. In addition to this, data on households access to various services like access to market, all weather road, health and educational institutions and at the same time, crop and livestock production status of the respondents were considered taking 2008/9 as year of reference. All these data were considered during the analysis to identify the determinant factors, which affect household's non-farm income and diversification and assess the link between income diversification and wealth status of the rural households.

Focus Group discussion: As part of qualitative research methods, focus group discussion was taken into account to triangulate and strengthen the data obtained from the survey questionnaire. Under this focused group discussion, issues relevant to livelihood diversification were raised for discussion. Indeed, to identify participants in the discussion groups, the respective *tabia* representative development agents, *tabia* administrators and

community members were visited. Thus, two separate group discussions were then conducted after appointments were made with the community members in the sample-selected *tabias*.

3.4 Sampling procedure and sample size

In the study area, three *tabia*s (PAs) for the individual household survey were selected based on various steps. The selection of three sample*tabia*s was done using simple random sampling technique i.e by drawing a lottery. Further more, we have also decided to cover only one village in each of the three *tabia* regardless of the number of villages in each *tabia*. Similarly the selection of the villages was using simple random sampling technique. With regard to sample household selection, proportionate sample size was taken from each village by using a simple random sampling technique. In a nutshell, the quantitative study component of sampling procedure has adopted the following steps.

Step 1.*Tabia* **Selection:** At present there are about seventeen rural *tabia*s in the selected Woreda. For the purpose of this study the researcher purposively decided to cover only three *tabia*s). To select the actual *tabia*s among seventeen *tabia*s, Woreda Agriculture and Rural Development officers were consulted to stratify the various *tabias* on the basis of agro-ecological zones to form the strata. However, all the *tabia*s are found in similar agro-ecological zone (i.e 95% weynadega). Therefore, taking into consideration their similarity, the sample *tabia*s were selected for the individual household survey, using simple random sampling techniques. Accordingly, the selected *tabia*s were *Mahbereweyni, Aynalem and Genfel*.

Step 2. Village Selection: : For reasons of time and resource limitation, the researcher again decided to cover one village from each *tabia*(PA) regardless of the number of villages in each selected *tabia*s(PA). Similarly the selection of village was also made using simple random sampling techniques i.e by drawing a lottery. The three villages (Kushets) selected are Sherafo from Mahbereweyni, Adi-worema from Aynalem, and Dengolo from Genfel *tabia*s. The two villages (*Adi-worema* and *Dengolo*) are found closer to the main town market of the Wereda as compared to Sherafo, which is situated at a far distance. This in

away, helped us to look at the effect of market distance and other infrastructures services on adopting non-farm livelihood strategy by rural farm households.

Step 3. Sample household selection: With regard to sample household selection, the number of households to be interviewed in the selected villages was determined proportionately to the total number of household dwelling in the respective village and selection of individual sample households was made using simple random sampling technique. Thus, out of the total population in the study villages, a sample of 200 households was selected for the actual survey. However, at the end of the survey, a total of 194 households were interviewed, representing the total number of households dwelling in the selected villages for the actual survey questionnaire. The 3 percent households (n=6) loss was mainly due to refusal and unavailability of household heads to respond to the survey questionnaire (Table, 3.2)

Table 3.1   Sample household distribution by t*abia*(PA) and villages

Name of the *Tabia*s	Name of the village name	Number of HHs residing in the Village	Expected number of sample HHHs	Number of HHs actually interviewed
Mahbere weyni	Sherafo	365	54	54
Aynalem	Adi-Werema	486	75	75
Genfel	Dengolo	464	71	65
Total		**1315**	**200**	**194**

Sources, own survey, 2009

Wealth ranking

The main objective of the study is to identify the existing type of non-farm livelihood diversification activities adopted   by the rural farm households and examine factors that influence households income diversification with respect to various wealth status of the household heads. Thus, understanding the social differentiation and determinants of wealth status at household level are an important aspect of livelihood studies. Major determinants of wealth and stratification of wealth groups vary from one area to another area. However, various studies identified that asset ownership such as land ownership; oxen, and other livestock holding are the most important economic resources to differentiation rural society in various wealth categories. Thus, similar to Mesfine (2005), asset ownership such as the

size of land owned (irrigable and arable), number of livestock owned (plough oxen, milking cow, modern beehive and pack animal), asset possession and activities in which households are engaged were taken as criteria to stratify the wealth groups of the sample respondents.

Table 3.2 Wealth characteristic used as criteria to stratify the wealth groups

Ownership	Very poor	Poor	Medium	Better off
Oxen	0	1	2	> 2
Milking cow	0	1	2-3	> 3
Goat and sheep	1-2	2-6	3-8	> 10
Pack animals	0	1	1-2	>3
Modern beehive	0	0	1-4	>4
Own land	Less than 0.25ha	0.25-0.75ha	>0.75ha	>0.75ha
Access to irrigation	No	No	Yes	Yes

Source: Key informants in the study area

A family is considered as very poor in the community if it exhibits the following characteristics: landless, lacks oxen and other types of livestock, lacks seed, has no supporters, has weak labour capacity and members depend on direct supplement of productive safety net program. A family is also considered as relatively poor if it exhibits own small size of land, no access to irrigation, one ox or milking cow, two to six goats and sheep, one pack animal, and members earn their living by casual labour or hired. Sellers of local drinks are also considered as poor. Further more, a family having land and oxen and who tills its own or contracted land is considered to belong to the medium wealth group. Whereas, a better off household is one who own more than a pair of oxen, three milking cows, 10 goat and sheep, three pack animals, and own more than 4 modern beehives, owns land and has access to irrigation.

Better off households are also expected to have significant savings in banks and provide to their children the means to decent education. Thus, based on the above traditionally perceived measure and criteria's, the sample households were paced to four wealth groups as¨ Better off (54 households)¨, Medium (56 households)¨, ¨ Poor (46 households)¨¨ and ¨ Very poor (38 households)¨ to form the strata. For better understanding, the wealth category of the respondents is shown in the pie chart below.

Figure 3.1 Sample Households wealth category
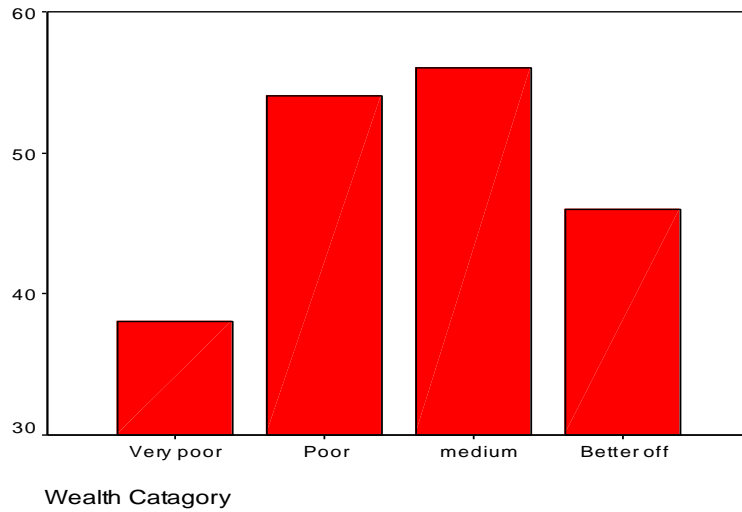
Source: Own survey,2009

3.5 Data collection methods

There are various data collection methods such as observation, questionnaire, group discussion, and so forth. For this study purpose, household survey questionnaire and focus group discussion were used to gather the information from the sample households. To administrate the household survey five enumerators were deployed (3 male and 2 females). However, prior to the actual data collection, a two day training and field exercise was given on the objectives, methods and interviewing techniques. Thus, in order to gain rural households cooperation and trust, the respondents were carefully informed about the objectives of the survey. In this regard, chairpersons of the respective sample *tabia*s were first approached and efforts were made to convince them the objective of the study. Moreover, before embarking on the actual survey, the structured questionnaire was tested at household level on 6 rural households' from the selected villages. The reasons for pre test were to ascertain the willingness, cooperation, and reaction of respondents to the nature and duration of the questionnaire. Then after, on the basis of the acquired results some modification was made for the actual survey.

Moreover to enrich the primary data analysis and support it by some related theoretical concepts, the secondary data sources were, obviously, found to be important in every type of

research. In line with this, we have tried to look at relevant literatures, which mainly focus on the basic concepts of livelihood diversification, factors determining rural households non-farm income and diversification. Moreover, information on the crop and livestock production pattern, general socio- economic, physical and demographic profile of the study area was obtained from obtained from previously conducted research findings, reports, relevant reviews of literature and documentary materials, some of which were gathered from Regional and Woreda bureau of agriculture and food security.

3.6 Data analysis

The purpose of every research is to generate knowledge and come up with new finding so that data collection by itself is not an end rather data analysis, interpretation and presentation are the final duties of every research under study. Thus, following the completion of the data collection, the household survey data was coded, processed and analyzed using computer software known as Statistical Package for Social Scientists (SPSS version 15). Descriptive statistics method was used to describe and analyze the characteristics of the population under study such as frequencies, percentages and mean. Cross tabulations and Chi-square test were also employed for comparison and establish statistical relationship between the most important socio-economic factors and diversification. Moreover, regression analysis (Liner regression model) was applied as a tool of analysis to assess factors determining households' non-farm income and diversification. In addition, to capture and incorporate all the non-quantifiable data and triangulate the data obtained through household survey, qualitative data analysis was also done. However, In the process of data analysis and interpretation, major attention was given to quantitative analysis although it is supported by qualitative technique

3.6.1 Econometric model specification

As part of the quantitative data analysis, an econometric model was used to identify and examine the determinant factors that influence rural households' share of non-farm income on total income and diversification. There are three types of statistical summary of measures of diversification (share of non farm income to total income, Gini coefficient, and Herfindhal index). The first and most widely used measure is the measure of diversification on share of income. Since diversification of rural income is believed to be the move from farm income to non-farm income, one can use the share of non-farm income in total income as measure of diversification. The assumption here is that with a rise in the share of non-farm income; there is a high level of diversification and hence less vulnerability to shocks, in particular weather shocks, as agriculture is the mainstay (Fredu, 2008).

For the purpose of this study, since the main objective of the study is to examine the effect of the major determinant factors that influence household non-farm income and diversification, share of non-farm income to total income is used as a measure of diversification using a simple liner regression Model. The liner regression model is modeled as a function of household level factors including natural capital (land ownership), Social capital (household's heads membership in social institutions), financial capital (access to credit), human capital (gender, age and education status of household head, skill development training and family size) and physical capital (household's access to irrigation and distance to market). Thus, the model with a dependent and its respective independent variables are specified below. These can be written as

Share of non-farm income to total income /income diversification = $f(X_h, Xn, Xs, X_y, X_p,)$

Where; Xh= Human capital

Xn = Natural capital

Xs= Social capital

Xy= Financial capital

Xp= Physical capital

Thus, $Y = \alpha + \beta Xi + U$

It is worth mentioning to note at this point that *Xi*'s are explanatory variables and *Y* is the explained variable. The β*'s* are slopes (the change in Y for every unit change in the respective explanatory variable with all other explanatory variables held constant), α is the intercept (the value of Y when all *Xi's* = 0) and U refers to unobserved variables. For better understanding variables included in the regression analysis are presented in table 3.3 below.

Table 3.3: Variables Description Used in the Regression Analyses

Explanatory Variables	Definition
HHAGE (+)	Age of the household head in years.
SEXHH (+)	Sex of respondent; male= 1, Else=0
HHEDUCT (+)	Education status of HH head 1=literate, 0= otherwise
FAMSIZE (+)	Total number of household members.
LANDOWN (-)	Households land holding Yes=1, Else=0
IRRIGATI (-)	Access to Irrigation; Yes=1, Else=0
LIVESTLU (-)	Households livestock holding measured in TLU
OXHOL (-)	Households status of oxen ownership
CREDIT (+)	Credit access of HH; Yes=1, Else=0
MARKDIST (-)	Distance to main market: 1=<5km, 2=5-10km, 3 =>10km
SOCPAR (+)	HHH membership in social institutions: Yes=1, Else=0
SKDEVTR+)	Skill development Training Yes=1, Else=0
FARMINC (-)	Total annual net farm income

Note:

- *Dependent variable- non farm income / diversification*

- *Sings (+/-), in braces indicate the expected sign of coefficients of the specified Variable to non-farm income /diversification*

CHAPTER IV: RESULTS AND DISCUSSION

A. Descriptive findings and discussions

4.1 Socio-economic characteristic of the sample households

This section highlights the demographic and social characteristic of the sample respondent households under study. Issues which have got relevance to the topic such as the age and sex composition, household heads educational status, marital status, household's family size and dependency ratio, land ownership, livestock holding, access to credit and households membership in social institutions are discussed in the following sections.

4.1.1 Demographic Characteristic of the households

Sex of household heads

The sex of the household head is one of the most important factors that determine rural households participation in non-farm employment. The sample household was composed of 71.1%(n=138) male-headed households and 28.9%(n=56) female-headed households (table 4.1). The same table provides evidence on the relationship between female headship and poverty; about (37.5%) of the sample households in the poor wealth category are female-headed households, but in the better off households only 1.8% are female headed. The indication here is that there is a negative relationship between female headship and better economic status. On the contrary, about 32.6% of the male-headed households are found in the better off wealth group, this seems unlike the female household, male-headed households have better access to economic resources and hence score better wealth status.

With regard to sex of household head and income diversification, about 81.2 and 42.8 percent of male headed and female- headed households are adopters of non-farm livelihood diversifications respectively. On the other hand, 18.8 percent of male and 57.2 percent of female-headed households are non-participants. Implying that male-headed households are more likely to participate in non-farm income generating activities as compared to the female-headed households (table, 4.4).

Table 4.1- Sex of household heads by wealth category

Sex of Household heads	Wealth category								Total	
	Very-poor (N-38)		Poor (N-54)		Medium (N-56)		Better off (N-46)		Number	%
	Number	%	Number	%	Number	%	Number	%		
Male-headed Household	18	13	33	24	42	30.4	45	32.6	138	71.1
Female-headed Household	20	35.6	21	37.5	14	25	1	1.8	56	28.9
Total	38	19.6	54	27.8	56	28.9	46	23.7	194	100

Source-Own survey, 2009

Age of household heads

The second and most important factor that influences households livelihood decision is age of the household heads. As it is observed in (table 4.2), the age of the sample respondents' ranges from 20 up to 76 with an average age of 46 years old. Indicating that both farmers with more experience in farming and non-farm employment are included in the sample. In this regard, out of the total respondents about 42.3 percent are in between 24 and 39 years of age, while 49.5 percent are between 40 and 59 years old and the rest 8.2 percent constitute those in the age of above 60. It was also observed in similar table; about 25.3 percent of relatively younger group (20-39 years age) and 16.6 percent of the aged group above 60 are classified under a better off wealth group. The indication here is that wealth status of the younger group is better than the old group (i.e. wealth status is inversely related with an increasing age group

Table 4.2 Households' age group with respect to wealth category

Variables	Wealth category								Total	
Age group	Very-poor (N-38)		Poor (N-54)		Medium (N-56)		Better off (N-46)			
	Number	%	Number	%	Number	%	Number	%	Numb	%
20-39 years of age	13	18.7	23	30.8	27	19.7	19	25.3	82	42.3
40-59 years of age	21	18.7	26	27.5	24	33	25	23.1	96	49.5
60 and Above	4	33.3	5	25	5	25	2	16.6	12	8.2
Total	38	19.6	54	27.8	56	28.9	46	23.7	194	100

Source-Own survey, 2009

Moreover, it is also observed that 90.1% of relatively younger group (20-39 years of age) and only three households from the old age group (above 60 years old) are involved in non-farm income generating activities. Implying that the probability of participation in non-farm activity by the younger group is better than the old group (i.e. participation in non-farm income diversification is inversely related with age group of the households)(table 4.4)

Family size

The other important factor that feature remarkable difference between households participation in non-farm activities is family size. The household survey result indicates that family size of the total respondents ranges from 1 to 14 and the total household members are 1093 with a mean of 5.6 persons, which is slightly higher than the average family size in the region (4.8) with standard deviation of 2.49. The majority of household members (51.1 percent) are between 16 and 64 years old (economically active age group). The proportion of the family members less than 15 years age is 48 percent, while 1.6 percent consists above 65 years of age. Thus, the ratio between the percentage of young (0-14) and the old age group (>65 years) to the economically active labor force (15-64), mathematically, dividing the economically non-active household members to the economically active persons with in the family gives the dependency ratio. Thus, the dependency ratio is found being 98.4 percent. This means almost half of the family members are dependent economically on the other half for living. This indicates there is high dependency ratio in the study area (table 4.3).

Table 4.3- Households family size by age category

Age category of family members	Mean	Standard deviation	Percent
Less than 15 years old	2.71	1.685	48
Family members 16-65 years old	2.87	1.697	50.4
Family members above 65 years old	0.09	.396	1.6
Total family size	5.7	2.497	100%

Source-Own survey, 2009

Educational status of household heads

Looking at the educational status of the sample household heads, 81.3% of the literate and 46.4% of the illiterate household heads were observed being involved in non-farm livelihood

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activities to improve their livelihood. Indicating literate household heads are more likely to involve in non-farm income generating activities as compared to the illiterate ones (table 4.4).

Table 4.4 Sample Household's characteristics with respect to diversification

Household Characteristic	Adopters		Non- adopters		Total	
	N<u>o</u>	**%**	**N<u>o</u>**	**%**	**N<u>o</u>**	**%**
Male household head	112	81.2	26	18.8	138	71.1
Female household head	24	42.8	32	57.2	56	28.9
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**
Household head age (20-40)	74	90.1	8	9.9	82	42.3
Household head age (41-59)	67	58.3	30	41.7	96	49.5
Household head (>60)	3	33.3	13	66.7	16	8.2
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**
Illiterate household heads	36	46.4	35	53.6	71	36.6
Literate household he	100	81.3	23	18.7	123	63.4
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**
1-3 family size	37	27.2	8	13.8	35	23.2
4-6 family size	43	31.6	27	46.6	60	36.1
7 and above family size	56	41.2	23	39.7	79	40.7
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**

Marital status

With respect to marital status of the sample households, the majority (68 percent) of the surveyed household is found out to be married, 20% divorced and 12% were found being widowed. In deed, to look the marital status of the households it is depicted in figure 4.1 below

Figure 4.1- *Households Marital status*
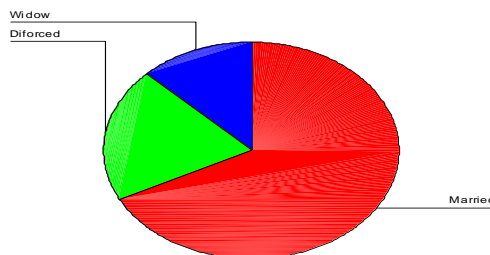
4.1.2 Household Asset Ownership

Households need to have access to assets or livelihood resources that allow them to meet their needs and improve their livelihood situation. The Sustainable Livelihood Framework (SLF) identifies five types of assets (capital) upon which livelihoods are built; increasing access to these assets makes a central contribution to poverty reduction.Thus, this section describes the livelihood resources in which the sample households depend to earn their living.

Land ownership

Like any other resources, land is an important economic resource for the sample household in the study area. Land ownership considered as important factor determining the amount of agricultural produce and hence the relative socio-economic status of the household.. Similar to most parts of the country, the unit of measurement for land in the study area is known as *'tsimdi¨* , which is approximately equal to 0.25 ha. Based on the information given in table 4.5, about 148(76.3%) households own farm land even though the plots of land possessed differ in size (ranging from 0.25 to 2.5 ha), while the remaining 46(23.7%) households surveyed do not own farm land. The mean land holding in the study sample is 0.96 ha, which is less than the average land holding in the region (1.09 ha)

Table 4.5 Distribution of land ownership

	Land owned[2]			Land cultivated[3]		
Size of land in hectare	Sherafo Percent	Adi-Worema Percent	Dengolo Number	Sherafo Number	Adi-Worema Number	Dengolo Number
Land less	16.6%	20.3%	24.2%	7.4	16.2	13.6
0.1-0.49	9.3%	13.5%	3.0%	14.8	5.4	9.1
0.50 –1.00	40.7%	41.9	33.3%	42.6	35.1	34.8
1.00-1.50	29.6%	24.3	33.3%	46.3	33.9	22.7
2+	3.7%	1.4	0	7.4	8.1	1.5
Total	54 | 100	75 | 100	65 | 100%	54 | 100%	75 | 100%	65 | 100%

Mean 0.96   Standard deviation   0.49

Source- own survey, 2009

An interesting point observed in table 4.6 below is about 91.9 and 65.5 percent of the households own   farm land less than 0.5 ha and between 0.5 and 1 ha respectively have found involved in non- farm income generating activities to supplement their meager farm income. On the other hand 49.9% and 67.7% of the sample respondents with a better land size holding between 1.01 and 2ha and above 2 ha, respectively did not participate. Consistent with the above issue, it was also explained in the FGD that the size, location and quality of land is considered as a major factor that influence households' participation in non-farm activities. Thus, land owned by a farm household has a negative relationship with the household's participation in non-farm activities implying that land less households and households with small size of land are more likely to involve in non-farm activities.

Table 4.6- Size of land owned with respect to participants and non-participants

Total land owned (in hectare)	Participants		Non –participants		Total	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Less than 0.5 hectares	57	91.9	5	8.1	62	100%
0.5 – 1.00 hectars	62	65.5	22	34.5	84	100%
1.01-2.00 hectares	24	51.1	21	49.9	45	100%
2.01+	1	33.3	2	67.7	3	100%
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**

 Source- own survey, 2009

Access to irrigation

The study area has a certain water resource potential available for small scale irrigation and irrigation is getting due attention in the area. The survey data on irrigation shows that 75(38.6 percent) of the sample households practiced irrigation to produce vegetables like tomato, onion, cabbage and carrot. The study result in table 4.7 indicates that about 98 (72.1%) of the sample households who did not have access to irrigation were involved in non-farm diversification, while the remaining 36.9 percent are non-participants. Moreover, a large percent of households (63.8 percent) with access to irrigation were non-participants.

Taking the economic well being of the sample respondents into account, it was explained in the FGD that majority of the medium and better off households are with irrigation access. In tandem with this, it was raised that those households having an access to smaller dams are considered as a lucky people since these households are able to produce up to three times per years so that these groups do not like to engage in non-farm employment. The indication here is that households with access to irrigation are less likely to participate in non-farm activities.

Table 4.7- Households access to irrigation with respect to diversification

Do you have access to irrigation?	Diversification			
	Participants		**Non- participants**	
Yes	36	27.9%	40	63.8%
No	98	72.1%		36.2%

Source- own survey, 2009

Livestock holding

In one or another way livestock represents the most important livelihood resources as livestock can serve as a source of draft power, a means to accumulate capital, and sources of food. Moreover, Ownership of livestock provides a good proxy for wealth (indicator of wealth status). In line with this, ownership of livestock is taken as a prime factor for stratifying households into different wealth groups in the study area. Thus, this section discusses the pattern of livestock ownership, and the status of the different social and economic groups in terms of access to this important livelihood resource. As it is observed in table 4.8, 119(80.9%) of the sample households own livestock as an integral part of their crop production while the remaining 75 (19.1 %) households do not own livestock. Out of the total households who do not own livestock, the majority (66.8%) were involved in non-farm income diversification. However, among the households who own livestock, a large number of them (83.8%) were also involved in non-farm-employment. The indication here is both households who do not own livestock and who own participate in non-farm activities. The possible reason for households who own livestock to participate could be livestock might be used as a collateraial to borrow and invest in non-farm activities.

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Table 4.8 Livestock holding condition with respect to participation

Do you own livestock?	Participants		Non-Participants		Total	
	Number	**%**	**Number**	**%**	**Number**	**%**
Yes	101	83.8	18	16.2	119	80.9
No	43	66.8	32	33.2	75	19.1
Total	**144**	**100**	**50**	**100**	**194**	**100**

Source- Own survey, 2009

Oxen Ownership

On the bases of the information obtained in the survey, about 33.5%(n=65) of the sample households own two or more oxen, about 36.6% (n=72) own only one oxen and 39.4% (n=57) own no oxen. In line with this, the majority 45(33.5 percent) and 52 (38.2 percent) households who participated in non farm income diversification do not own ox and own one oxen respectively. On the other hand, about 44.8 % (n=26) of households who own a pair of oxen did not participate (table 4.9). The indication here is that households who own less number of oxen relatively were involved in non-farm income generating activities to sustain their living. Thus, as it was hypothesized ownership of oxen is negatively correlated with non-farm livelihood diversification. Moreover, among the various wealth groups, about 136(70.1 percent) of the sample households got access to draught power in the last agricultural season. This could be explained by the existence of own animal, gift, hired for cash, used in return for labor, and other arrangements. As it was explained in the focus group discussion, the majority of households in the poor wealth group own an ox fulfills their plowing requirement by pairing up oxen with another household (locally called Lifinti).

Table 4.9 Oxen ownership with respect to diversification

Oxen ownership	Participants		Non-Participants		Total	
	Number	**%**	**Number**	**%**	**Number**	**%**
No ox	45	33.1	12	20.7	57	29.4
One ox	52	38.2	20	34.5	72	37.1
Pair of oxen and more	39	28.7	26	44.8	65	33.5
Total	**144**	**100**	**50**	**100**	**194**	**100**

Source- Own survey, 2009

4.1.3 Households Access to various services

There are literatures stating that households who have access to various services have a better capacity to involve in non-farm livelihood diversification as compared to household with out accesses. In line with this, regardless of its quality, the sample farmers have access to, bus stop, health station, school, weather road, farmers training center, demonstration site, at *Tabia* centers. However, formal credit sources (micro-finance institution and banks) and co-operative shops, vet clinics, are available at the woreda towns, which is around 25,10,and 5 kilometers away from the sample villages of Sherafo, Adi-Werema and Dengolo respectively

Access to credit services

The interest of the researcher in this study is, to look on the significant influence of credit services on household's non-farm income and diversification. This section therefore focuses on the credit supplies service. In fact formal rural credit service in Ethiopia is generally underdeveloped and mainly focusing on supplying agricultural inputs delivery. Many households in the study area reported to have received cash credit and in-kind credit services from different sources for different purpose. Out of the total sample households 120(61.9 percent) households had access to cash and in-kind credit services in the year 2008/9 while the reaming 74(38.1 percent) had not access to credit services (table 4.10).

It can be observed from table 4.10 that about 89.9 percent of the sample households who had access to credit service were involved in non-farm employment. Similarly, about 50 percent of households with out access to credit service are observed being involving in non-farm livelihood diversification activities as well. The implications here is households with access to credit service are more likely to participate in non-farm income generating activities as compared to households with out access to credit services. Thus, like the assumption stated above, this study provides evidence that access to credit and saving services have significant influence on household's non-farm income and diversification. With respect to credit sources, Dedebit Credit and Saving Institution (DECSI) is the only formal micro-finance institution and is the largest credit service provider for the majority of the farm community for livestock fattening, for trading (Cereals, animal, local drinks, fruits, vegetables) and to

buy agricultural inputs. In line with this, government support projects like REST, World Vision Ethiopia, and Catholic Church are the major NGOs that deliver credit service to the farm community implemented through services cooperatives

Table 4.10 Households Access to Credit with respect to diversification

Households access to credit	Participants		Non- participants		Total	
	N**o**	%	N**o**	%	N**o**	%
Households with access to credit	107	89.9	13	11.1	120	100
Households with out credit access	37	50	37	50	74	100
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**

   Source: own survey, 2009

As it is depicted in table 4.11, the surveyed household heads were also observed to have access to credit from informal sources such as relatives and friends, local lenders, and local social institutions. In line with this, the surveyed households were asked to indicate their sources of credit in the last 12 months. Accordingly about 59.1 percent of the household heads reported that DECSI was their main source of credit. Relatives and friends were also indicated as source of credit by about 10 percent of the sample households who took loan last year. Similarly, as it is shown in table 4.11, about 13.3 and 5.2 percent of the sample household had taken a loan from NGOs and government supply credit. Moneylenders were also observed as a credit source for 3.3 percent of the sample household in the past 12 months. In tandem with this, rural households seem to have a limited formal micro finance institutions (DECSI.) moreover the interest rate charged is felt to be very high for the rural poor households as well.

Table. 4.11. Households source of credit

Credit source	Frequency	Percent
Family, friend, neighbors	12	10
Money lender	4	3.3
Social institutions(Eidir, Equib,)	11	9.1
Dedebit Saving and credit institutions	71	59.1
NGOs through cooperative	6	5.2
Government supplied credit	16	13.3

Source- Own survey, 2009

Households take loans for different purpose. As indicted in table 4.12 below, about 26.7 percent of the sample households have used the money as starting capital for petty trading activities. Some 10.8 percent of the sample households were also found borrowed money for personal consumption (food, schooling equipments etc). Similar percentage, which is 1.7 percent of the sample household were borrowed to buy handcraft equipments and to full fill other social obligations (to pay debt, taxes and fees). To this end the sample household's need for credit and purpose of credit was observed to be different.

Table 4.12 purpose of loan by borrowers

Loan purpose	Frequency	Percent
For consumption	13	10.8
For manufacturing purpose	8	6.7
To start trading	32	26.7
To buy agricultural input	63	52.5
To buy hand craft equipment	2	1.7
To pay debt, taxes and fees	2	1.7
Total	120	100%

Source-own survey, 2009

4.1.4 Households Access to social support institutions (social capital)

The concept of social capital is wide and complex. Many literature, identify different forms of social capital that include the social support networks, participation and access to local institutions, the relationship of trust among households, communities, and some sort of resource exchange arrangements between households and communities. Thus, to examine the role of social capital on households' non-farm income and diversification, a variable membership was included in both descriptive and econometric analysis. In relation to this, the survey indicated that out of the total sample respondents, 142(73.2%) households are members of rural association (Ekub, Edir, farmers association, women and cooperatives associations) while the remaining 52(26.8%) were non-members of any rural association. With this regard, out of the total household who are members of a given rural association,

128(90.1.percent) of the households were involved in non-farm diversification activities. On the other hand, 69.2 percent among the households who were not members of the local institutions did not participate in non-farm income generating activities. On can simply understand from the above discussion, those households who are members of a given association seems to have a better access to market information, and other social supports that enable easily adjust themselves ahead of time to protect the food shortage by engaging in non-farm income generating activities. Such a social network may also play an important role in obtaining credit service and information support during participating seasons. Implying that a social network (capital) plays a pivotal role on households' decision to participate in various non-farm income generating activities. Thus, household member in rural association is found positively associated with adopting non-farm income diversification in the study area

Table.4.13-HHs Membership in social associations with respect to diversification

Households membership in social institutions	Participants		Non- participants		Total	
	No	**%**	**No**	**%**	**No**	**%**
Households member of social institutions	128	90.1	14	**9.9**	142	100
Households non member of in social institutions	16	30.8	36	69.2	52	100
Total	**144**	**74.2**	**50**	**25.8**	**194**	**100**

Source: own survey, 2009

4.2.Assessment on rural non-farm livelihood diversification

The occurrences of recurrent drought has become a common and frequent phenomenon in areas like Kilte-Awlaelo Woreda, where agricultural production being insufficient to meet the needs of farming households. Thus, in response to the recurrent drought a large number of rural households residing in the study area are adopting various mechanisms to reduce the negative consequences of drought. In this regard, the non-farm livelihood diversification activities seems the most appropriate means of income generating activities as an alternative poverty reduction strategy by utilizing their own indigenous knowledge and with the access to resources they have. Hence, the subsequent parts of this chapter focus on assessing the non-farm economy, types of non-farm livelihood, employment status of rural households, pattern of income diversification at households level in the study are discussed below.

4.2.1 Households rate of participation in non-farm income diversification

From the total 194 surveyed households, 144 (74.2 percent) household heads have reported that they pursue non-farm activities to improve their income (figure 4.4). It can be seen from table 4.14 below that 38(27.9percent), 54(39.7 percent) and 44(32.4 percent) of the sample households who adopted non-farm income activities were from Sherafo, Adi-worema and Dengolo respectively.

Figure 4.2 *Percentage of participants and non-participants of non-farm employment*
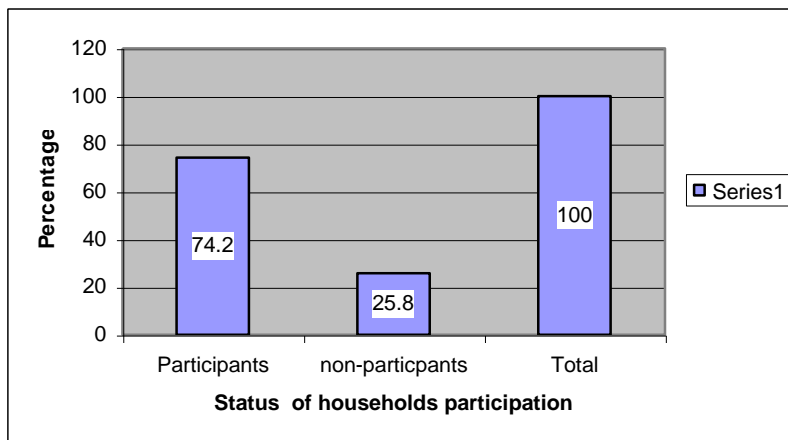
Moreover, the simplest measure of degree of diversification is the average numbers of income sources that the rural households have. Accordingly it is observed in table 4.14, 88 households (25 in Sherafo, 39 in Adoi-Worema, and 24 in Dengolo) were engaged in only one non-farm activity, while 54 households (13 in Sherafo, 18 in Adi-worema, and 23 in Dengolo) were engaged in two activities. Only two people living in Dengolo were reported to have been engaged in three activities. From this result one can infer that non-farm diversification is more pronounced in Adi-worema than Dengolo and Sherafo though the former kushet lacks infrastructure services and is situated at far distance from the Woreda town relatively.

Table 4.14 Households statuses of participation in non-farm activities

Name of Kushets	Total participants	Households participation in non farm activity		
		One activity	Two activities	Three activities
Sherafo	38	25	13	
Adi-worema	56	39	18	
Dongolo	50	24	23	2
Total	144	88	54	2

Source: Own survey, 2009

With respect to wealth category and diversification, it can be witnessed from (table 4.15) that 35.3 % of the poor and 17.6 % of the better off households participated in non-farm income generating activities. On the other hand 37.9 % of the better off and 13.8 %of the very poor were non-participants. The percentage share of participation in non-farm activity from the poor and medium wealth categories were greater than the better off groups (table, 4.15). Consistence with the discussion in the literature part, the extent of diversification among economically poor household is greater than the better off ones. One can, therefore, simply understand that participation in non-farm livelihood diversification is inversely related with the wealth status of the households

Table 4.15- Adopters and non-adopters of diversification with respect wealth category.

Household Category	Wealth category							
	Very poor		Poor		Medium		Better off	
	Number	%	Number	%	Number	%	Number	%
Adopters	30	22.1	48	35.3	34	25	24	17.6
Non Adopters	8	13.8	6	10.3	22	37.9	22	37.9
Total	**38**	**19.6**	**54**	**27.8**	**56**	**28.9**	**46**	**23.7**

Phi= .320,   Approx. Sig. = .000

Cramer's V= .320,   Approx. Sig. = .000

Number of valid observations= 194

Sources: own survey,2009

4.2.2 Types of non-farm employment and sample households

Table 4.16 indicates that out of the total households who adopted non-farm diversification activities to improve their livelihood, 43(29.5 percent) were engaged on non farm self employment or own business, 58(41. percent) in non farm wage employment, while the remaining 43(29.5 percent) had participated in both non farm self employment and wage employment activities. The indication here is, though not all households enjoy equal access to various resources and non-farm job opportunities, the majority of the households were involved in various non-farm activities in the study area.

Table 4.16 Type of non-farm employment adopted (multiple answers are possible)

Types of non farm employment	Number	Percent
Non-farm self employment	43	29.5
Wage employment	58	41
Both non-farm self and wage employment	43	29.5
Total	144	100%

Sources: own survey,2009

Moreover, one can witness based on the observed data in table 4.17 that about 4.7 and 39.5 percent of the very poor and better off households have adopted non-farm self-employment (own business) though the type of activity varies. On the other hand, 32 % of the very poor and 57.5 % of the better of households were engaged in wage employment. This implies unlike the non-farm self-employment, wage employment is inversely related with the wealth status of the rural households. However, the better off households are not totally engaged in activities that are normally regarded or perceived as low status employment (sale of fuel wood, daily labour). This implyies that the percentage of household heads involved in non-farm self-employment increases successively with an increase in wealth status (i.e. non-farm self-employment is positively related with the wealth status of the households). The reason seems the better off households have better access to economic resources (credit services and previous saving) as compared to the destitute households with less access to resources.

Generally households from the poor wealth stratum seem to have been engaged in wage employment as daily laborer and participated in food for work programs. This could be explained by the fact that many households in this group are struggling to survive and maintain their position not to slide down to a further state of impoverishment and some may strive for a better livelihood out come (asset accumulation). Moreover, a variation was observed among different wealth groups in terms of the number of non-farm activities adopted, which depends on the resource base. Furthermore, out of the total sample households 20.9%, and 9.3% from the better-off, and very poor wealth groups respectively were engaged in both non farm self and wage employment (table 4.17).

In a similar fashion, it was also explained in the FGD household members who involve in non-farm self-employment are relatively from the wealthier status. In most cases the poor households are expected to involve in wage employment. It was also forwarded that involving in non-farm self-employment is relatively easy for the better off as compared to the poor households. This is mainly associated with the initial investment requirement.

Table 4.17- Type of non-farm activity with respect to household characteristics

Sample household's characteristics	Non farm self employment		Wage employment		self and wage employment	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Male headed household	37	86%	34	68%	29	72.5%
Female headed household	6	14%	6	14%	14	37.5%
Total	**43**	**100%**	**40**	**100%**	**43**	**100%**
Literate household	29	67.4	38	76	24	55.8
Illiterate household	14	32.6	12	34	9	44.2
Total	**43**	**100%**	**40**	**100%**	**43**	**100%**
Very poor household	2	4.7	16	32	4	9.3
Poor household	9	20.9	23	57.5	14	32.6
Medium household	15	34.9	11	22	16	37.2
Better –off household	17	39.5			9	20.9
Total	**43**	**100%**	**40**	**100%**	**43**	**100%**

Source- Own survey, 2009

With respect to sex category of the sample respondents, out of the total households who participate in non–farm self-employment, about 86 percent of them were male-headed households while the remaining 14 percent were female-headed households. Similarly, a large percentage of households (68 percent), who participate in wage employment were male headed and 32 percents were female-headed households. The reason seems the male-headed households have a better access to various resources and labor capacity that enables them to participate in both self and wage employment as compared to female households with a limited labour capacity.

Taking educational status of the sample respondents into account in the above table 4.17 that out of the total households engaged in non-farm self employment the majority (67.4%) are literate household heads were found out involved in non-farm self-employment while the illiterate and the remaining (32.6 %) are illiterate. The indication here is that the literate households have a higher chance of diversifying their income sources that enables them to smoothen their livelihood. This may be due to the reason that the literate groups acquire better skill and have better entrepreneurial ability's as compared to the illiterate ones.

4.2.2.1 Non-farm self employment

This being the case, the study witnessed that self employment non farm activities like selling of hand crafts including pottery, weaving and spinning, cobblestone processing, trading in livestock/grains, embroidery, petty trading, sales of fire wood, stone and sand quarrying are the prominent job options for the rural households in the study area which help them widen their income sources, the intention being improving their livelihood status. List of non-farm self-employment activities adopted in the study area is given in table 4.18 below.

Handcrafts including pottery

Handicrafts including pottery work in the area include blacksmith, pottery, and tannery etc. However, except pottery making and blacksmith, traditional craft activity does not exist in all study villages. The numbers of households engaged in these activities are quite small. This might be due to the over all low level of demand for the products and services. In terms of the existing types of non-farm employment adopted and the number of households involved, table 4.18 indicates that there are 13 households who derive their income from

selling hand craft including pottery making, ten of them are female-headed   households; who produce different type of products like 'Mogog',"Jebena" and the like, which they mostly sale it to merchants in Wukro and Mekelle towns. The availability of clay soil suitable for making pottery products seems to have made possible this type of activity to be practiced in only two study villages (Sherafo and Adi-worema). Moreover, three black smith households who provide services to the inhabitants by making sharpening various farm tools including knives etc are found in the study villages. With respect to pottery making and wealth category, it can be observed in (table 4.18) that out of the surveyed household who adopted non- farm self-employment 7(29.2 %) are very poor, 3(7.%) Poor, and 3(7.2 %) from the medium categories were involved in selling of handcraft including pottery but none of the better off households were involved in the above mentioned type of non-farm self employment activities. Despite its current small contribution, there seems a possibility that handicraft can be   an important source of income to a large number of people in the study area.

Stone and sand quarrying including cobblestone processing

Stone and sand quarrying including cobblestone processing are the most significant non-farm activities in all the study villages. A total of 25.8 percent (n= 50) household heads from the sample-surveyed households were engaged in quarrying sand and stone including coble stone processing. The study areas are observed as a potential area for sand and sand quarrying; such resources have high demand for construction use in the region. Moreover, coble stone processing is the most widely and recently adopted non-farm employment in the study areas. A few years a go only private entrepreneur were engaged and issued license by the Woreda Water and Energy Office for a designated area to exploit the resources and paying tax to the government. However, since the past few years such practice was stopped following the policy decision made by the regional government, allowing only the landless and unemployed dwellers bordering the river and communal land to exploit the resources.

All landless or unemployed members of the respective village dwellers who apply to access the resources are eligible under the condition that they organize themselves under cooperatives. However, non- cooperativezed landless dwellers are not allowed to exploit the resource but are free to work as daily laborers, though they cannot enjoy the benefits gained

from sale of sand and stones. As it was explained in the FGD involving in sand or stone mining needs certification from the woreda administration as a legal requirements. The condition for membership needs certification by the village administrators where the applicant resides that the person has no other means of income.

Taking the economic well being of the sample households the better off groups participate more in stone and sand quarrying than the poor households. Indeed it is difficult for the poorer household to engage in such activities, as these activities need start up capital. This seems the reason, this type of non-farm activity is found crucially important for those households residing in villages better endowed with natural resource and with a better transport access to the nearby towns of Wukro and Mekelle, where there is relatively high public and private investment in construction, which resulted in greater demand for construction materials including sand and stone. About 12(29.3 percent) and 5(14.7 percent) of the surveyed household from the medium and better off wealth category were found involved in cobblestone processing respectively, which is a recently initiated non farm activity in the study area.

Trading

Engagement in various types of trading activities is an important supplementary occupation for few rural households in the study areas. Though there are many types trading activities, rural households in the study villages were observed mainly engaged in petty trading, and livestock and grain trading activities. Among these trading activities, households were observed involving in livestock trading activities. Households buy livestock such as cow, ox, goats and sheep from the local market within their Woreda and neighbor Woredas (Hawzen, Atsbi and Tsigerada) for sale in Wukro and Mekell towns. Livestock traders therefore play an important middlemen role in the local market of the study villages. Households from Dengolo Kushet also participate in grain trading business. Seven households were involved in grain trading. They buy grains from local farmers and sale to consumers at Wukro. There are also eight small shops owned by the medium and better off groups in the study villages which buy and supply various consumer items such as sugar, coffee, cigarette and soft drinks from Mekelle and Wukro and sale in their respective localities or villages.

In general, though trading seems quite an attractive engagement to diversify household income, the numbers of the households involved in this activity are few. As key informants explained it in the FGD the main reasons for the low level of households' engagement in trading activities are lack of start up capital and absence of market integration. Moreover, the percentage of the better off households involved in the petty trading and trading in livestock/ grains activities constituted 14.7 percent and 23.5 percent respectively. For the poor households, petty trading and trading in livestock and grains covers merely none, implying that non- farm self-employment businesses are positively related with wealth status of the households. Furthermore, none of the surveyed households under the category of the four-wealth status were involved in renting out pack animals.

Weaving and spinning

The other most important type of non-farm self employment activity was weaving and spinning which was adopted as non-farm activity by 20.8 percent of the very poor and 15.8 percent of the poor household. On the other hand, about 7.3 and 5.9 percent of the medium and better off households were engaged in weaving and spinning respectively. The above statistical data indicates that weaving and spinning is negatively related with wealth status witnessing that the majority of the poor households are involved in the above mentioned type of activities as a cause or consequence of wealth status in the study areas.

Sale of local drinks

In the above table (4.18) it is indicated that sale of local drink is another non-farm self-employment. It mainly practiced by the economically disadvantaged female-headed households indicating that this type of business is found to be gender specific practiced predominantly by female-headed households. This type of business has been considered as lower standard form of business meant for subsistence adopted by the grass root level the society. This seems, five households from the surveyed sample households in the study area were partially or totally earn their living from sales of local drinks business. Out of the five household heads who sale local drink, two are widowed and one divorced, the reason seems they are pushed to participate to such activities when their livelihood situation

deteriorates following the death of their spouse or get divorce. In addition, female headed households and households from the poor and medium wealth category are involved in sales of grass or wood. Like sales of local drinks, none of the better off groups is involved in such activities.

In general it was observed from the quantitative survey and FGD held in all study villages that almost those households who involved in self –employment non-farm activities are relatively wealthier groups. This supports the general evidence that there are entry barriers mainly in the form of fanatical constraints to the relatively lower self-employment non-farm activities.

Table 4.18 Types non-farm of self-employment activities (Multiple answers are possible)

Types of non-farm self activities	Wealth Category							
	Very poor		Poor		Medium		Better off	
	Number	%	Number	%	Number	%	Number	%
Hand craft (pottery)	7	29.2	3	7.9	3	7.3	-	-
Weaving and spinning	5	20.8	6	15.8	3	7.3	2	5.9
Cobblestone processing	2	8.3	4	10.5	12	29.3	5	14.7
Trading (livestock & grain)	-	-	1	2.6	6	14.6	8	23.5
Renting out animals	-	-	-	-	2	4.9	4	11.8
Embroidery	3	12.5	-	-	-	-	-	-
Petty trading	-	-	-	-	3	7.3	5	14.7
Sales of grass or fodder	2	8.3	5	13.2	3	7.3	0	0
Sales of wood or charcoal	2	8.3	4	10.5	3	7.3	0	0
Stone Quarrying	-	-	5	13.2	2	4.9	6	17.6
Sales of sand	2	8.3	7	18.4	3	7.3	4	11.7
Sales of local drinks	1	4.2	3	7.9	1	2.4	-	-

Source- Own survey-2009

4.2.2.2 Non-farm wage Employment

The study result revealed that wage employment in the study area mainly refers to daily labor as temporary or casual employment opportunities on constructions works, quarries and farms (plowing), masonry/carpenter, servant, and involving in food for work programs etc with the intention being protecting themselves from the impact of food shortage. Taking wealth status of households into account, it can be observed (table 4.19) that wage employment has been considered as one among the important non-farm activities in which about 32 % and 57.2 % of the very poor and poor households were engaged in as a copying strategies to compensate the harvest failures and land constraint, but none of the better of household members were found involved as daily labourer.

The indication here is that mobilizing internal resources (mainly family labor) and involving in wage employment is an important alternative income source for the poor rural households in the study area under review. Further more, table 4.19 indicates that 56.5 percent of the sample households surveyed were engaged in food for work programs. The percentage of better off households involved in both daily laborer and food for work program constituted only 28.6 percent while the percentage of the poor and very poor household involved in both daily labour and food for work were 45.5 % and 33.3% respectively. Moreover, the surveyed households who were engaged in wage employment were asked to indicate the nature of the employment. About 47.7 percent of the sample households responded that they were engaged in non-farm activity as casual daily labourer. Only 10.3 percent of the households were permanently employed as laborers. In this regard, foods for work, and river sand mining activities are reported to be mostly seasonal employment by their nature(table 4.20).

Table 4.20- Type of wage employment with respect to wealth categories

Types of non-farm wage employment	Wealth Category							
	Very poor		Poor		Medium		Better off	
	Number	%	Number	%	Number	%	Number	%
Daily labour only	2	9.1	8	24.2	4	12.5		-
Food for work only	10	45.5	14	42.2	16	50	13	56.5
Both daily labour and FFW	10	45.5	11	33.3	12	37.5	10	43.5
Total	**22**	**100**	**33**	**100**	**32**	**100**	**23**	**100**

Source- Own survey, 2009

4.2.2.3 Food aid and Food for work

It is also observed in the survey, due to the harvest failure   in the year 2008/9, large proportion of the households were beneficiaries of the relief operation in the woreda and have been receiving food aid for over seven months, However, the mode of food aid delivery for the rural households differ on the bases of their resources. Households who are labor-poor (the elderly, female-headed households and the disabled) were entitled directly to free food aid. On the other hand, those who are able-bodied were required to participate in the public work scheme, food for work program.

The food for work program was designed to build public assets through various environmental rehabilitation and conservation activities, and road constructions and water development activities for irrigation purposes. In this regard, it was further explained in the FGD that all the sample households in the poor wealth categories are beneficiaries of emergency relief assistance, whereas about 70.3 percent of the poor and 40.3 percent of the better off households have been involved in food for work schemes. It is thus clear that food aid and food for work has been a significant source of food during the year 2008/9, particularly for poor and female-headed households in the study area, which is consistent with the targeted of the program. In deed, this program has aimed to help households diversify their income sources and assist the grass root part of the society.

4.2.2.4 Migration

Labour migration is not a common phenomenon in the study areas, The survey revealed that a large number (98%) of the surveyed sample household heads have reported that none of their family members have been away in search of employment else where. However, 3% of the sample household members have migrated somewhere in search of employment in the past 12 months. It is important to note at this point that migration of household members in search of job in the nearby urban areas was not adopted as copying strategy.

4.2.3 Sources of start up capital for diversification

Table 4.20 indicates that about 36.6 percent of households in all villages have reported that micro finance (DESCI) was their primary source of credit to start or expand the non-farm activities in which they are engaged. According to the key informants in the FGD, however, the interest rate they are suppose to pay (charged) is very high. DECSI is the only micro finance, which provides credit service in the Woreda. This seems the reason that hinder the rural households from participating in non-farm self employment as it needs initial start up capital. An important point here is that farm households need to have alternative micro finance institutions to overcome their problem.

Crop and livestock sale have been reported as source of start up capital for 9.7 and 15.8 percent of households who participate in self-employment (own business). Similarly, about 7.3 percent of the sample households reported they have used cooperative associations as source of credit to start or expand their non-farm income generating activities. Further more, about 17.1 percent of the households have reported their families or friends were their source of credit that enable them to engage in non farm self employment activities Money lenders, were also a source of credit for about 10.9 percent of the sample households to start their own business. Only two households have used their own capital to involve in non-farm activities. Implying that households are not in a position to invest their own capital.

Table 4.20 Households source of start up capital for income diversification

Source of start up capital	Frequency	Percent
Own source	2	2.4
Crop sales	8	9.7
Livestock sales	13	15.8
Micro finance	30	36.6
Cooperative associations	6	7.3
Families or friends	14	17.1
Money lender	9	10.9
Total	82	100

Source: Own survey,2009

4.2.4 Motives for non-farm livelihood diversification

Multiple motives prompt households and individuals to diversify their income generating activities. In tandem with this, the surveyed households in the study area were asked to identify the major motives that promote them to involve in non-farm income generating activities As it is clearly discussed in the literature review part of this study, the surveyed households also diversify their income sources for two motives i.e. the pull factor and push factors. In line with this, the majorities of the poor households who diversify their income sources in to non-farm activities were motivated by the push factor, i.e., forced by harvest failure, to pay additional bills and luck of agricultural lands etc.

As it is observed in table 4.21, a large number of the total surveyed households (66 percent), are found out involving in the non farm income generating activities forced by the above mentioned push factors and others. In this regard, the majority of the surveyed households reported that small size of land holding and lack of access to agricultural land are their primary factor that forced them to participate in various non-farm income generating activities, the intension being protecting them selves from difficulties. In this regard, 27.7%, 35% and 36.8% from Sherafo, Adi-worma and Dengolo respectively have reported that lack of access to agricultural land, small size of landholding and others are the major factors that forced them to diversify their income sources. Even though both the landless and households who own land had adopted non farm income diversification, it is important to note that all the landless households were observed to depend more on non-farm income generating activities for their subsistence. Table 4.21 also indicates that about 5.1 percent of the poor and 2.6 percent from the medium wealth category were forced to diversify their income generating activities to pay additional bill.

On the other hand, the majority of the better-off households in the study were engaged in non-farm income generating activities because of the pull factors i.e. attracted by the profitability of the activities. Thus, profitability of a product or a service is identified by 37.9 percent of the sample household as a motivating factor to participate in non-farm income generating activities. Households are also observed to diversify to non-farm

activities to supplement their agricultural income, agricultural income being not sufficient to meet their family needs. This implies that not only the poor but also the better off households diversify their income sources. This supports the general evidence that both the poor and wealthier households engage in non-farm diversification though the type of non-farm activities in which they are engaged and the motive types differ.

Table 4.21 Motive for non-farm diversification   with respect to wealth category

Motive type	Wealth Category							
	Very poor		Poor		Medium		Better off	
	N0	%	N0	%	N0	%	N0	%
Profitability	4	14.3	8	20.5	19	50	13	41.9
Lack of agricultural land	13	46.4	9	23.1	4	10.5	6	19.4
As a means to pay additional bills	0	0	2	5.1	1	2.6	0	0
Small size of land holding	4	14.3	4	10.2	1	2.6	1	3.2
To compensate harvest failure	6	21.4	15	38.5	13	34.2	8	25.8
As a means of additional income	1	3.6	1	2.6	0	0	3	9.7
Total	**28**	**100**	**39**	**100**	**38**	**100**	**31**	**100**

Source- Own survey, 2009

4.2.3. Percentage Share of non-farm income on total income

We divided the income sources in the study area in to two sources as farm income and non-farm income. As most households do not restrict themselves to a limited activity and to have a clear understanding on the dominant income sources, we further disaggregated the former income source as crop and livestock and livestock incomes and the later as non-farm self employment and non-farm wage employment plus other incomes. Non-farm self employment includes sand and stone quarrying including cobblestone processing, pottery making, weaving and spinning, livestock and grain trading, sales of wood and charcoal. Daily labor against payment, food for work and the reaming non-farm income sources like remittance are considered as non-farm wage employment. Similar classification was made by Fredu et al (2008) who studied diversification income inequality and social capital in Northern Ethiopia

Thus, we tried to analyze the sample household's share of income with respect to the various sources i.e by dividing each households income source to their respective total income. Accordingly, the study result in table 4.25 reveals that those households who derive more than 50 percent of their income from non-farm employment are reported to be 36.1 percent (n=70). Further more, the sample households found earning more than 90 percent of their income from non-farm source are 11.3 percent (n=22). On the other hand, those who earn more than 50 percent of there income from farm (crop and livestock) are found being 63.9 percent (n=24). Moreover, households who derive more than 90 percent of their income from farming are 33.5 percent (n=65). In line with this, 12.4 percent (n=24) household heads from the sample survey earns more than 50 percent of their income from non–farm self employment, where as the number of households who earn more than 90 percent of their income from this source are about 19(9.8 percent) of the sample households (table 4.22). In general the above statistics indicates that a large number of households in the study are adopting various no-farm income diversification activities, the intention being improving their households livelihood.

Table 4.22 Percentage distribution of income sources

Sources of income in %	Self emplo. Income	Wage employ. Income	Total non farm income	Crop Income	Livestock income	Total farm income	Other income
None	109	80	52	21	66	14	177
0.1-10%	10	18	14	3	90	8	8
10.1-20%	14	23	9	10	29	10	3
20.1-30%	13	20	17	10	9	9	2
30.1-40%	11	19	17	20	-	17	1
40.1-50%	13	15	15	13	-	12	-
50.1-60%	5	7	12	20	-	18	-
60.1-70%	5	5	18	18	-	17	-
70.1-80%	6	1	10	14	-	14	2
80.1-90%	2	2	8	23	-	10	1
90.1-100%	6	4	22	42	-	65	-
Total	**194**	**194**	**194**	**194**	**194**	**194**	**194**

Source: own survey, 2009

On average, for all households of the sample, crop production is the primary source of income for about 65 percent of the sample households followed by non-farm self employment which is applied by 15percent of the households. The share of livestock and livestock products in the total income is found to be 6 percent on average, which is less than wage employment income (13 percent). In sum total farm income, on average represents 71 percent of total income for all households, and the total non-farm income contributes for 29 percent of the total income on average. The contribution of other income (remittance) is found only 1 percent. The above statistical data indicates that household's share of farm income to the total income (crop income, livestock and livestock's income) takes a large part as compared to households share of non-farm income to total income.

Figure 4,3 Share of income sources in total income
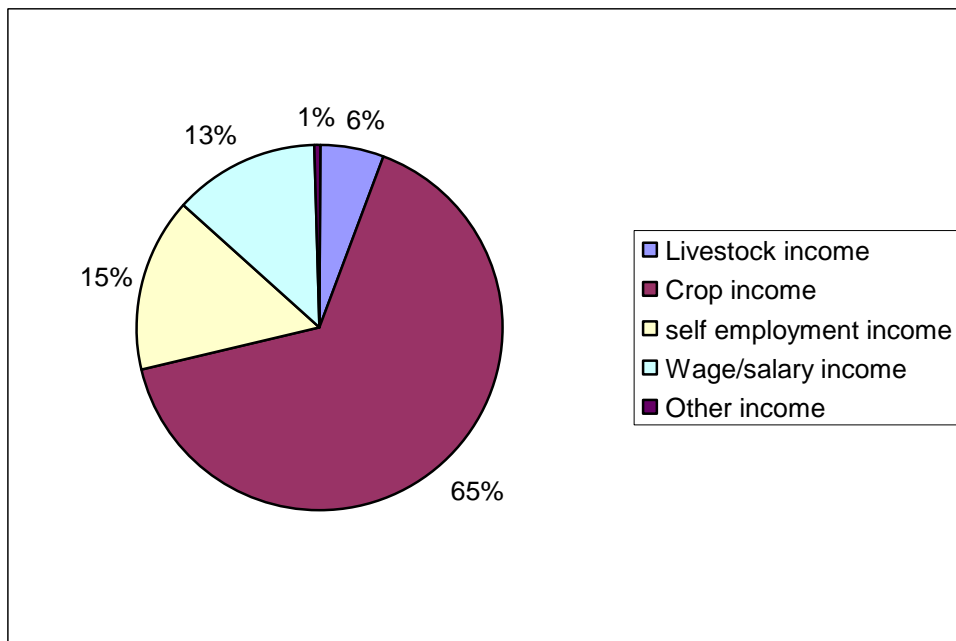
Source: **Own survey, 2009**

B. ESTIMATED ECONOMETRIC RESULTS AND DISCUSSION

4.3 Determinants of Livelihood Diversification

Rural households decision to involve in non-farm income diversification is determined by various factors operating at different levels. However, in this study the analysis examines only the micro level factors (households assets) that influence household's non-farm income and diversification .To this end, the variables described in table 3.3 (sex, age, educational status, family size, and household heads membership in social institutions, land- owned, irrigation access, access to credit, distance from the main market, skill development training, and total net farm income) of the sample respondents were considered as explanatory variables to estimate the linear regression model, the dependent variable being the share of non farm income on total income.

4.3.1 Estimation results and discussion

We invest much effort on the data mining process so as to confirm the reliability of the model and data**.** We check whether serious problem of multicollinearity is associated among the potential explanatory variables. For this end, we test for its existence and the result indicates that the correlation is less than 0.8 and VIF is also accounted less than 10. There fore, there is no severe problem of multicollinearity between variable except between age and age square, which is expected   highly to appear. Owning to the nature of our data i.e., cross sectional problem of heteroscedasticity, which means that as the explanatory variable vary, the variance of the error term also diverges. Test was done using Breusch-Pagan test heteroscedasticity and rejected at 5% level of significance. Hence OLS estimators become biased and inconsistent. To over come the problem we adopt robust estimation system.

We also check the presence of endogienty, which deals with detecting the existence of a certain sort of relationship between the explanatory variable and the error term. Thus, an attempt was made to test the relationship using Housman test of endogienty, however the result shown no serious problem of endogienty is exist in our data. Normality test for the error term was also believed as one of the testing parameter for the model. Accordingly, using non-parametric Kerner density function, normality test was undertaken and no

significant difference is observed between kerner density estimate and the normal distribution. In general, the over all fitness of the model is also reflected by the goodness of fit. Further more, the F statistic 53.95, which tests the over all fitness of the model, in other words, the null hypothesis that all regression coefficients are different from zero and significant at 5 % level of significance. It implies that the independent variables have significant effect on the dependent Variable.

Table 4.23 Determinants of rural non-farm livelihood diversification

Explanatory Variable	Coefficient	Standard error	t-statistic	Significance level for t- statistics
Age of household head	.002	.006	0.35	0.686
Square of age of HH head	-.000	.000	-1.22	0.132
Male household head	.116***	.0410	2.84	0.005
Family size	.024***	.006	4.09	0.000
Literate household head	.033	.042	0.78	0.439
Land owned	-.105***	.034	-3.15	0.002
Livestock owned in TLU	-.018***	.005	-3.65	0.000
Number of oxen owned	-.048**	019	-2.58	0.011
HH access to credit	.139***	.036	3.88	0.000
Skill devt. Training	.052	034	1.52	0.130
HH access to irrigation	-.058*	.031	1.88	0.061
Membership in soci.. Ass	.008	.032	0.26	0.794
Farm Income	-.000***	2.24	-6.64	0.000
Distance to Market	.000	.015	0.05	0.962
Cons	.429***	.144	2.98	0.001

Dependent variable is share of non-farm income to total income

N = 194

. *** Significant at 1%; ** significant at 5%; and * significant at 10%

Source: own survey, 2009

Table 4.23 above shows the result of the linear regression model. The table indicates that out of the 14 variables included, 8 variables (HH family size, Age of household head, land owned, access to irrigation, access to credit, Livestock holding measured in TLU, number of oxen owned, and total farm income) are statistically significant at 1%, 5% and 10% level. This means the variables have significant influence on household's non-farm income and diversification. Moreover, five variables (age, educational status, membership in social association and skill development training) the signs of the coefficients have resulted to have association with the dependent variable although not significant at 10% and less. However. In the case of one variable (distance to market) the coefficient of has entered with a positive sing contrary to the prior expectation.

Age of the household head

Many studies acknowledge that human beings' decision capacity varies with age indicating that age is one among the most important factors determining households' participation in various livelihood matters. To this end, a variable age is considered in this study to analyze its effect on household non-farm income and status of diversification. Results indicate that age and age square are positively and negatively correlated with the households' participation in non-farm livelihood diversification, though it is not significant. This implies that, the age of the household has no influence on households' decision to diversify to non-farm activities or not. The possible reason could be the majority of the sample household heads were in similar age group as a matter of chance. The other possible explanation might lie on the nature of the non-farm activities undertaken in the study areas for instance non-farm wage employment like food for work and daily labour against cash payment could be undertaken by some households in all age groups. These seem the reason for age of households not to have influence on non-farm income and diversification in the study area.

Sex of the household head

The sex of the household head is a dummy variable, which is a proxy for gender-based differentiation of participation in rural non-farm employment. To this end, sex of household heads (1=Male head and 0=Female headed) in the study village was taken as one of the explanatory variable to look at its correlation with household's non-farm income and diversification. As it is hypothesized sex of the household (male-headed household) has

entered with a positive sing in the model, which is statistically significant at 5% level. This is to mean that male-headed households are more diversified (i.e., participate in non-farm livelihood diversification and earn more income from non-farm sources) than their female-headed counterparts. This could be due to the fact that traditionally, male households have better access to various resources (natural and financial,) as compared to female headed households who were culturally considered disadvantaged having minimal access to resources.

Educational status of household heads

Education is commonly taken as proxy for human capital and management skills. Higher education has been mostly associated with higher probability of households' decision in undertaking various livelihood strategies. So it is natural to expect that educational status of households to relate positively with income diversification. To test this hypothesis in the study area, educational level of household head was included in the liner regression model. To this end, educational status of the household head (1= Literate and 0=Illiterate) in the study site was considered as one of the explanatory variable to look at its effect on households' non-farm income and diversification. In this case the variable literate household head has entered with a positive sign, though, not statistically significant. The indication of the above result is that educational status has no influence on households' non-farm income and diversification in the study area. The possible reasons could be non-farm activities like sand and stone quarrying, livestock trading   and other activities undertaken by the sample household in the study area may not need or require special skill as they can easily be handled by ordinary persons.

It is believed that the majority of households engaged in non-farm activities in the study area are illiterate households, households with a basic literacy and elementary school complete. Households with a better education tend to seek government jobs or migrate to urban areas in search of better opportunities. Thus, there is little opportunity to motivate well-educated ones to stay at their village and adopt non-farm livelihood strategies. Moreover, the other possible explanation could be education is a long term investment, which might not have an immediate effect on income diversification as households send their family members for future income

Family size

As one among the most important demographic variables, family size is believed to have a positive influence on non-farm income and diversification. The variable has entered with a positive coefficient and is statistically significant at 1% level. The positive relationship indicates that the a household's income from non-farm income sources increases as the numbers of family members increase. This could be due to the fact that agricultural income may not fully support the living of a large family size and whence such families are forced to subsist their living by earning additional income from non-farm sources as labour-rich households feel less constraint to send their members to non-farm activity

Membership in social associations

Membership in social institution is the most important variable that the researcher was interested in. An attempt was made to see if membership in any type of rural association or institution affects households' non-farm income and diversification. It is assumed that household heads involvement in a number of local institutions enable the household to have a better access to direct or indicate assistance to involve in non-farm income generating activities. That is, households who are members of a given association may have a higher chance to get information regarding the nature and importance of non-farm income so that they can easily adjust themselves to engage on to compensate a harvest failure in agriculture. Thus, to examine the effect of social capital on a household's non-farm income and diversification, membership in social association (Yes=1, Else=0) was included in the econometric analysis as one explanatory variable.

Although statistically insignificant, membership in social association has entered with positive sign. The positive coefficient in the model indicates that membership in local institutions is positively correlated with non-farm income diversification. The possible reason for the insignificance could be the limited capacity of rural institutions (Edir, Equib and Mahber) in providing long-term loans to the members that enable rural households to invest in non-farm activities since they are established as a means of saving rather than borrowing.

Land ownership

As a component of natural resource, land is one among the major factors of production, which affects the agricultural production in particular and households' livelihood in general. In line with this, many studies including the work of Nigisti (2007) conducted in Northern Ethiopia (Tigray) confirm that access to and size of land owned by rural households is found to be the prominent factor influencing a household's livelihood decision. To show the effect of land on livelihood diversification, land ownership (1= owners and 0= non owners) is one of the variables considered in the model. Consistent with the hypothesis, results indicate that land owned is negatively correlated with non-farm income and diversification and the effect is statistically significant at 1% level. This means that households who own relatively large plots of land are less likely to participate in non-farm income generating activities than households who own none.

The possible explanation lies households with a better land size could have a possibility of getting more farm income, and hence minimal or no push factor to diversify. The other possible reason lies on time constraints since households who own land may be de-motivated to involve in non-farm activities, this might be due to the fact that households who own a land may spent their ample time to intensify their farm rather than participating in non farm activities. Rural households could have also a limited labour supply to send their family members to engage in non-farm activities.

Access to irrigation

It is believed in many literatures that access to irrigation affects rural households' agricultural productivity even in times of drought. Thus, the variable access to irrigation was considered in the econometric model as a determinant factor for household non-farm income and diversification. As expected, access to irrigation has entered with a negative coefficient and is statistically significant at 10% level. This means that households with an access to irrigation are less likely to involve in non-farm income generating activities than households with out irrigation access. The possible explanation could be the income issue, as households with access to irritation able to produce up to three times per year including the slack season and get better income they might be de-motivated to participate in non-farm income generating activities. The other possible reason lies on shortage of labour supply, specially

if the non-farm activities are undertaken during the slack season farming is attractive and feasible for households with access to irrigation rather than engaging in non farm activities as their family members are occupied in agriculture even during the slack season.

Oxen Holding

There is a symbolic relationship between farm production and ox ownership in agricultural community as oxen are sources of draught power to cultivate various crops. Thus, to examine the influence of oxen ownership on rural households participation in non-farm income generating activities, the number of oxen owned by the sample households has considered in the regression analysis. Consistence with the hypothesis given above, number of oxen ownership has entered with negative sign and is statistically significant at 10% level, implying that households who own large number of oxen are less likely to involve in non-farm income generating activities. The explanation may lie in the fact that possession of more oxen encourages farm work than non-farm employment i.e the better off households with more than two oxen were less reliant on non farm employment than those with one or no oxen). This confirms that households in the better off wealth category are least interested in pursuing non-farm diversification. This finding is supported by the findings of Nigisty (2007).

Other Livestock holding in TLU

Livestock holding refers to the total number of livestock holding of the rural households measured in Tropical livestock Unit (TLU[3]). Livestock production constitutes a very important component of agricultural economy; its contribution goes beyond direct food production including multipurpose uses such as skins, fiber, fertilizer and fuel as well as capital accumulation. Other things remain constant; the econometric result shows that livestock holding is negatively correlated with non-farm income and diversification, which is statistically significant at 1% level. This could be due to the fact that at times of difficulties, households that possess more livestock can dispose off their animals to smooth consumption, and hence not forced to undertake non-farm activities. Moreover, livestock could also be used as collateral to obtain credit to overcome financial constraints to purchase food and non-food items at times of difficulties rather than investing in non-farm income generating activities.

Access to credit services

Credit and saving services are important sources of investment, which enable households to start non-farm business easily or pay for transaction costs for those having non-farm self-employment establishments. In the absence of a well developed rural credit markets, households can overcome financial constraints and able to participate in non-farm income generating activities if the households have access to credit and saving services. Thus, the interest of the researcher in this study is to over look on the significance influence of access to credit on household's non-farm income and diversification. Consistent with the expectation, access to credit service is positively related with non-farm income and diversification and the effect is statistically significant at 1 %. This means that households with access to credit are more likely to involve in non-farm income diversification than households with out or having limited access to credit services. This could be due to the fact that many non-farms self-employment activities require start up capital. The other possible explanation is that those households who had participated in credit scheme may become capable of engaging in various non-farm activities.

Distance to market

Households participation in the non-farm economy depends on market access simply because people must be able to sell their processed products and services. Distance to the market is first measured in minutes in one trip from each sample household's residence to the main market (woreda town) and is converted into kilometer. Thus, nearness to market is believed to encourage households to engage in non-farm activities as shorter distances reduce transport costs and improve access to potential demand. As a result distance to the main market is one among the determinant factors that influence household's non-farm income and diversification in the analysis. However, unlike the expectation, distance to market has entered with a positive sign in the model. The possible reasons might lie in the fact that most non-farm activities may not rely on distance to market rather depend more on availability of natural resources and its local demand, for instance the study shows that non farm activities like stone and sand quarrying including cobblestone processing are more pronounced in villages rich in the natural resources regardless of the distance from the main market.

Skill development (Entrepreneurial skill)

Skill development, whether the households have got some training to develop their entrepreneurial skills, is also considered in the analysis. It is expected that entrepreneurial skills will have positive relationship with non-farm income diversification, as some of non-farm self-employment activities require special skills. Although statistically insignificant, skill development training has entered with a positive sign.

Total farm income

The choice of households in adopting non-farm activity as an alternative livelihood strategy depends on the income earned from farming. If households earn sufficient income from farming, they may not be forced to engage in non-farm activities to subsist their living. To show this effect, we consider total farm income as a determinant factor in our analysis. It is expected to have an inverse correlation with non-farm income diversification. Consistent with the expectation, total farm income has entered with a negative sign in the model implying that the relationship between the total farm income and non-farm income diversification is negative. Thus, households with relatively less total farm income are more likely to engage in non-farm income generating activities. This confirms the fact that diversification into non-farm activities in the area is mainly due to push factors.

4.4 Constraints and opportunities in adopting non-farm livelihood strategy

Given the fact that rural non-farm activities are heterogeneous by their very nature, the constraints also have varying characteristics. It is worth emphasizing from the outset that major differences exist between the constraints for self-employment (engagement in own business) and wage- employment. Differences in the nature of the engagement are at the bottom of their differentiation. Self-employment calls for long –term engagement where the responsibility and decision making rest with the entrepreneur, while wage-employment is usually temporary with no responsibility for business decisions that require mobilizing household assets. Thus, the main focus of this study emphasizes on identifying the major constraints in diversifying to non-farm self-employment. With this regard, during the survey, household heads were asked to indicate the major constraint that prevent any of their

household member to engage in various non-farm income generating activities by choosing among the pre coded answers in the questionnaire.

On the basis of the information gathered from the survey questionnaire, various constraints like start up capital, poor labour supply, limited market, lack of infrastructure facilities, lack of entrepreneurial skill, lack of tools and land tenure arrangement have been identified as major constraints that hinder and/or facilitate households' participation in non-farm livelihood diversification in the study area. The result is shown on table 5.2 below. About 40(20.4 percent) households reported that they have no any constraints for participation in non-farm generating activities. However, insufficient start up capital is the most reported obstacle to participate in non-farm activities, fifty-five out of the 194 respondents, i.e 28.4 percent responded that insufficient start up capital is their primary constraints. This confirms the general expectation that inadequate access to capital is a major constraint on diversification despite the fact that a high percentage of respondents took loan from micro finance institution and other credit sources. The reason seems the amount of credit allowed to farm households from the locally operating micro finance institution is not sufficient to invest in high return non-farm activities. Moreover, credit obtained from the informal credit market may not serves as source of long term loan since they are established as a means of saving rather than borrowing.

Local infrastructure is the second important constrained identified by the sample respondents; i.e.18 (9.3 percent) responded poor infrastructure is their main constraint. Lack of appropriate skill is the third among the factors identified by 17 (8.7 percent) household heads as constraining non-farm self-employment development. It is not difficult to realize lack of entrepreneurial ability poses a barrier to enter to high return non-farm activities, as some of the activities like handcrafts, weaving, carpentry and black smith by their nature require special skills. Thus, access to short term training could be one way of mitigating entrepreneurial skill deficiency. Nearly the same percentage 16(8.2 percent) and 15(7.7 percent) reported shortage of lobour and lack of equipment respectively are their primarily constraints. About 7(3.6 percent) of the study household heads have indicated that fear of loss of land is a primary disincentive to rural non-farm diversification, this seems the land holding certification has not totally allayed the apprehensive and skepticism of farmers

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around this crucial issues though the number of respondents are small. Having shortage of time to participate in income diversification, and unavailability of the activity in the area were considered as primary constraints by similar percentage 8(4.1 percent). Limited market demand for the product was a constraint for 9(4.6 percent) of the sample households.

The above perception of constraints that possibly hinder rural household from participating in non-farm activities generally in conformity with the perception of the participants in the focus group discussion. Lack of access to credit, limited market demand and lack of appropriate entrepreneurial skills were the major constraints identified during the focus group discussion. With regard to opportunities for non farm income diversification, wage employment opportunities are relatively better than non-farm self employment especially in two of the study villages(Dengolo &Adi-worema) situated near to the Woreda town. This could be due to expansion of construction of both private and government buildings and the existence of two private factories in the area. In addition, opportunities for cooperatives engagement in non-farm self-employment (sand and stone quarrying including coble stone processing) are also available for land-less and unemployed inhabitants in all study villages.

Table 4.24 Major constraints for non-farm livelihood diversification

Constraint type	Frequency	Percent
No constraints	40	20.6
Insufficient Start up capital	55	28.4
Lack of local infrastructure	18	9.3
Not available in the area	8	4.1
Limited market demanded	9	4.6
Labor poor	16	8.2
Do not have time	8	4.1
Lack of appropriate skill	17	8.7
Do not have tools/equipments	15	7.7
Land tenure arrangement	7	3.6
Total	**194**	**100**

Source, own survey, 2009

4.5 The implication of adopting non-farm diversification by rural Households

The final and most important objective of all the previous descriptive and econometric analysis is to look at whether participation in non-farm livelihood diversification activities has an influence in improving the livelihood of rural farm household or not. Diversification of income source has been put forward as one of the strategies households employ to minimize households income variability and to ensure a minimum level of income (Alderman and Paxson, 1992 cited in Fredu, 2008). Thus, expanding rural non-farm livelihood strategy is believed to have at least two main advantages, one if rural households got a chance to participate in the non-farm employment, rural-urban migration could be reduced that is to mean that farmers may stay in their villages. This is in line with the government's policy of making rural households productive in their place of origin. The second advantage is that non-farm income diversification provides rural households with additional income to support their farm income so as to smooth the shortfall in consumption. To this end, the livelihood situation of the surveyed households with respect to participants and non- participants of non-farm diversification are discussed below.

With this regard, household heads were asked in both the survey questionnaire and the focus group discussion whether the income obtained from non-farm activities helps improve their livelihood. The majority of the sample households (55.5%) who adopted non-farm livelihood as an alternative livelihood strategy said that the income obtained from non-farm has improved their livelihoods and are able to accumulate some assets and send their children to school. About 43.3% households have said that their involvement in non-farm livelihood activities didn't bring about any change in their livelihood. In fact, two households have said that their welfare level has declined.

Thus, the implication of the above statistical data confirms that adoption of various types of non-farm livelihood activities such as non farm-self employment, wage employment and other activities are basic livelihood strategies which do not only result to compensate the harvest failure (impact of drought) but also contribute a great deal in sustaining rural households livelihood and even in improving their standard of living. Moreover, in areas of arid and semi arid in which erratic and unreliable rain fall is a frequent phenomenon, rural

farm households involved in non-farm income generating activities are expected to improve the well being of their households. Therefore, one can easily understand that rural development policies should not only be geared towards improving agricultural production but also strengthening and widening rural non farm livelihood diversification as an alternative strategy to resolve the challenges of food insecurity by promoting rural households to involve in non-farm activities to support their agricultural production. In addition, efforts should be made to develop the saving behavior of the rural households as the non-farm self-employment opportunities required start up capital.

Table 4.25 Households livelihood transition

Sample Households Category	Livelihood transition							
	Declining		Remain the same		Improved		Total	
	Number	%	Number	%	Number	%	Number	%
Participants in livelihood diversification	2	1.3	62	43.2	80	55.5	144	100
Non- participants in livelihood diversification	10	20	28	56	12	24	50	100
Total	**12**	**6.2**	**90**	**46.4**	**92**	**47.4**	**194**	100

Source: Own survey, 2009

CHAPTER V: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Farm households in arid and semi-arid areas repeatedly experience rainfall related shocks that result failure in agricultural production. As a result, to support their farm income by various sources of income, rural households have long been adopting various types of non-farm livelihood activities, which are applied voluntarily (attracted by profit) and involuntarily (as copying strategies). These studies tried to examine the major determinant factors affecting household's non-farm income and diversification, and investigate the linkage between social and demographic factors and non-farm livelihood strategies. In this regard, the study addressed four major issues; investigating the existing types of non–farm activities adopted, identifying and exploring factors determining households non farm income diversification, identifying key constraints and opportunities, and finally assessing the implication of applying various non-farm income generating activities on rural households livelihood status as an alternative livelihood strategy.

In the study area, rural households have diversified income sources. However, farm income (crop income) plays a dominant role as income source followed by non-farm income and livestock income, as the households in the study area are predominantly a farming community. Consistence with the work of Fikru(2008) who studied rural non farm livelihood diversification in Oromia region, the non- farm activities adopted in the study area are an important source of income for a large number of households in general and for young landless households in particular. In this regard, the household survey in the study reveals that a significant number of the respondents (74.2%) are involved in non-farm income diversification activities as an alternative livelihood strategy to supplement their farm income or improve their livelihood status. Out of the total households engaged in non-farm activities, nearly 30 percent and 35 percent of the households were engaged in non-farm self-employment and non-farm wage employment activities and the remaining 31 percent were involved in both non-farm self and wage employment. The pattern of diversification is similar for all study villages. Much of the non-farm activities in the study

area include, natural resource extraction (sand and stone mining) including cobblestone processing, livestock and grain trading, pottery, casual/daily labour, sale of firewood, and sale of local drinks. The mean annual income of the sample household is 1034.6 birr. Besides, the mean annual crop and livestock incomes are 6803.30 and 586.87 respectively. Household who are engaged in non farm self-employment and wage and salary employment activities have derived a mean income of   3592.89 and 2241.38 birr respectively.

We have also analyzed the level of diversification for different wealth groups. The degree of diversification among the wealthy group is low but these households are mainly involved on non-farm self-employment (own business) such as natural resource extraction (sand and stone mining) including cobblestone processing, livestock and grain trading. On the other hand, the extent of diversification is high among the low and medium wealth categories and most of these households are involved on non-farm wage employment activities (Pottery making, casual/daily labour, sale of firewood). However, the type of diversification undertaken by poor households is more to subsist their living rather than serving as a springboard for more asset accumulation. This   confirms the fact that diversification into non-farm activities in the area is mainly due to push factors.

The second most important issue that this study tried to address is identifying the major factors determining (affecting) household's non-farm income and diversification. The research results from the descriptive statistics and econometric analysis indicated that family size, credit access and sex of the household head have positive and significant influence on non-farm income and diversification in the study area. Livestock holding, farm income, land holding, access to irrigation, and number of oxen ownership of the household heads are negatively associated with non farm income and diversification at a significant level. However, in the case of one variable unlike the expectation, the analysis has shown that distance to market has entered with a positive sign in the model.

The third issue addressed in this study is identifying key constraints and opportunities that facilitate or hinder households' participation in non-farm activities. Consistence with Degefa's(2005) finding, lack of sufficient start up capital is identified as a major constraint

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to undertake non farm self-employment activities followed by poor infrastructure facilities, lack of appropriate entrepreneur skill and poor labor supply. We also analyzed the opportunities for non-farm income diversification, wage employment opportunities are relatively better than non-farm self employment especially in Dengolo &Adi-worema villages situated near to the Woreda town with the expansion of building construction and the existence of two private factories in the area. In addition, opportunities for cooperatives engagement in non-farm self-employment are also available for land-less and unemployed inhabitants in all study villages.

The final objective of this thesis was assessing the relative implication of adopting non-farm livelihood diversification on the rural household livelihood status. In conformity with the empirical findings of many studies, this study indicates that the higher a household's degree of diversification, the better the household is in terms of its living standard. Thus, adoption of various types of non-farm livelihood strategies, such as non-farm self-employment, wage employment and others, are basic instruments, which do not only result in mitigating the impact of drought but also contribute much for rural households to sustain their livelihood and even improve their standard of living.

The thesis has employed cross sectional survey, however, such data do not permit analysis of the dynamics and pattern of diversification. Thus, examining the pattern of income diversification need time series or panel data, which was the fundamental limitation of this study. The other limitation is unavailability of baseline data. Such data would reflect the condition of the farm households' agricultural production, non farm income and asset ownership which would have been helpful to compare more comprehensively and evaluate the relative effect of income diversification on rural households' standard living.

5.2 Recommendations

This study, in the course of the literature review and the actual research and analysis, has identified a number of recommendations on how to promote rural non-farm income diversification as poverty reduction strategy with particular reference to drought prone areas.

- Increasing employment opportunities in the agricultural sector is becoming difficult due to the fragmented land holding and the erratic nature of rainfall in the study area. Poverty is pushing rural households to search alternative livelihood strategies, particularly non-farm employment. Any effort to achieve food security should enhance both farm and non-farm activities. In fact both the agricultural development strategy and PASDEP have explicitly recognized the importance of non-farm income diversification for rural households. However, the policy intension should be translated to policy actions by mainstreaming the non-farm sector. Rural policies should aim at integrating farm and non-farm activities. Moreover, conventional sector based approach should be broadened through adoption and implementation of local economic development strategies that include both farm and non-farm activities. Therefore, the local government must strengthen both social and physical infrastructure because as evidenced in the study, literate households and households with access to various services are highly involved in non-farm activities.

- Insufficient start up capital and inappropriate entrepreneurial skill were identified among the major constrains that restrain rural households to enter in to non-farm income generating activities especially to enter to those activities that require start up capital. Thus, efforts should be intensified to provide farm household better access to credit at affordable interest rate by having alternative credit source. There is thus a need to facilitate the intensification of financial institutions that operate on the basis of saving and loans organized according to conventional banking criteria by learning from the lessen of micro finance. Moreover, awareness creation about business opportunities and business support services through short-term trainings is advisable.

- In the study area, female-headed households are observed to be less likely to participate in non-farm livelihood diversification activities as compared to male-headed households. There seems a failure to recognize the role of women in economic development; however, any effort to achieve rural development couldn't bring about any change with out women's participation, as the role of women in accelerating rural transformation is vital. Therefore, any effort to achieve rural development should enhance women's empowerment economically, which in a way strengthens the capacity of women's involvement in diversified non-farm income generating activities.

- As it is observed in the study area, participation in non-farm activity requires group-based cooperative to mobilize their knowledge, capital, and experience and derive the benefit gained from the activity   jointly. Therefore, strengthening and promoting awareness creation about how rural households organize themselves and participate in various non-farm income generating activities helps to reduce rural unemployment.

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ANNEXES

Annex I. Regression Results

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                                          Number of obs =      194
                                          F( 14,   179) =    53.95
                                          Prob > F      =   0.0000
                                          R-squared     =   0.7689
                                          Root MSE      =   .17163

------------------------------------------------------------------------------
             |               Robust
    dofdiver |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   .0022321   .0055161     0.40   0.686    -.0086529     .013117
        age2 |  -.0000869   .0000574    -1.52   0.132    -.0002001    .0000263
   familysize |   .0237562   .0057065     4.16   0.000     .0124956    .0350169
  ownlivestock |  -.0183975   .0053372    -3.45   0.001    -.0289295   -.0078654
        oxen |  -.0477893   .0181135    -2.64   0.009    -.0835328   -.0120459
  neardismarkt |    .000711   .0155354     0.05   0.964    -.0299451    .0313672
  totfarmincom |  -.0000149   2.34e-06    -6.35   0.000    -.0000195   -.0000103
   irrigation |  -.0584502   .0288056    -2.03   0.044    -.1152925   -.0016079
   Litratehhh |   .0329135   .0453293     0.73   0.469     -.056535    .122362
    creditaccs |   .1387818   .0384734     3.61   0.000      .062862    .2147017
  memebersocia |   .0085976   .0379986     0.23   0.821    -.0663853    .0835805
  skilltrain~g |   .0519325   .0341221     1.52   0.130    -.0154008    .1192658
      malehhh |    .116858   .0448748     2.60   0.010     .0283063    .2054097
    landowned |  -.1056267   .0389588    -2.71   0.007    -.1825044    -.028749
       _cons |   .4291239   .1305322     3.29   0.001      .171544    .6867037
------------------------------------------------------------------------------
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Annex II. Map of the study area

84
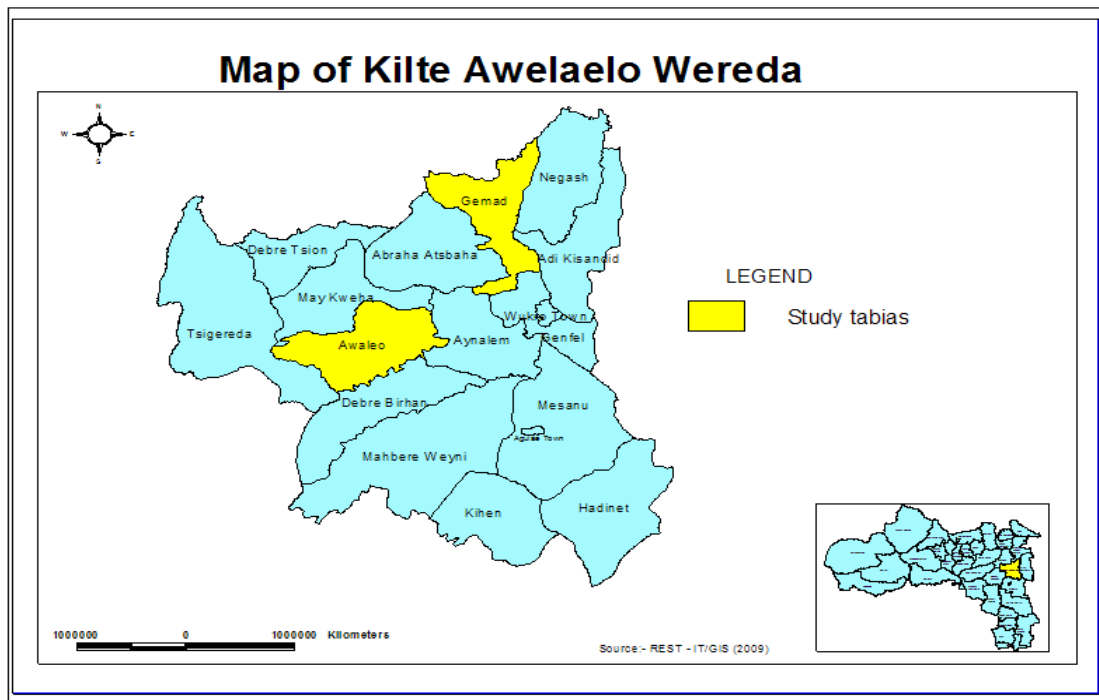
ANNEX III: HOUSEHOLDS SURVEY QUESTIONNAIRE

PART I. HOUSEHOLD PROFILE

1	2	3	4	5	6	7	8	9
Id (1 for the head)	Name of household members	Relationship to H/H head (01)	Sex (02)	Age in years (03)	Marital status (04)	Education level reached (05)	Religion (06)	Labor capacity (07)
1								
2								
3								
4								
5								
6								
7								
8								
9								

Note

Codes for 01:   1=Head   2=Spouse,   3= son,   4= Daughter   5=relative,   6=adoptive,   7=non relative

Codes for 02:   1=M,   2=F

Codes for 04 :   1=single,   2= married ,   3=divorced,   4= Widowed

Codes for 05   : 1=Illiterate, 2=Religious /literate, 3=elementary (1-4), 4=junior elem. (5-8), 5=High school (9-10)   6=Preparatory

Codes for 06 : 1=Christian,   2=Muslim,   3=Others

Codes for 07 : 1=Child too young, 2=Schooling, 3=Working child,   4= adult (able to work), 5= permanently disabled

10.   **Please list the age category of your family members.**

Age category	Sex		Total
	Male	Female	
Children less than 15 years			
Adult 15-35			
36-64			
65 and above			

PART II: HOUSEHOLD ASSET OWNERSHIP

a. Land holding and access to farming land

A.1 did you cultivate any land during 2001 directly belong to the household?

　　　　Yes=1   No=2   **(if No skip to B   )**

If yes,

A2.1 Plot no	A2.2 Plot size in Tsimad	A2.3 Ownership 1=Own land 2=Rented in land 3=Share cropped in land	A2.4 Plot type according to local classification 1=Fertile soil type 2=Moderate 3=Infertile /poor 4=Others specify	A2.5 Land use 1=cereal crops 2=pulls 3=Fruits and Veg 4=Eculaptios 5=Fallow 6=Gras growing	A2.6 fertile input you use? 1=Organic fertilizer 2=Chemical fertilizer 3=Household refuse 4=Crop rotation 5=Do not use
1					
2					
3					
4					
5					
6					
7					

A.7. Did you have an access to irrigation in 2001?   1=Yes   2=No   **(If no skip to B)**

If yes,

A.7.1 Type of crop& veg. Cereals	A.7.2 Plot size in Tsimad	A.7.3 How many times Did you produce?	A.7.4 How much do you harvest in 2001? Units in 1=KG 2=Quintal 3=Abyet			
			Quantity	Unit	Selling price	Total
1.						
2.						
3						
Vegetables						
1.						
2.						
3.						
FRUITS						
1						
2						

B. LIVE STOCK HOLDING AND ACCESS

B.1. Do you own livestock during 2001?   1. Yes 2. No (**if no skip to C**)

If yes, specify the number of farm and non-farm animals you own presently?

Livestock type	No	Current sales price
Calf		
Oxen		
Bull		
Cow		
Sheep		
Goat		
Horse		
Donkey		
Mule		
Beehives		
Chicken		

B.2   What was your net income from selling livestock and livestock products in
       2001?_____

C. ACCESS TO DRAFT POWER (Oxen)

C.1. Did you have access to draft power to plough your land ? 1= Yes   2= No **(if no skip toD)**

C.2. If you to C.1, what was the source of draught power?

       1=own animal   2=Gift

       3=Hired for cash   4=used in return for labor   5=used turn by turn (lifnti)

D. ACCESS TO CREDIT AND SAVING

D.1. Does any member of your household belong to a credit group or scheme in the past 12
    months? Yes=1   No=2   **if No, skip to D.5**

D.2   If yes what type of credit?   1. In cash   2. In kind   3. Both in cash & kind

D.3   **specify the source**

       1. Family, friends, neighbors   2. Money lender

       3. Social institutions (like; iddir, equb, etc)   4. DECSI (Dedebit)

       5. Other NGO-   6. Gov't supplied credit

D.4. **Purpose of loan**

1 = for consumption (Food, clothes, education equipments, Health, TV, Radio, Tape.)

2= for manufacturing purpose (buying equipment for wood/metal work)

3=to start Trading (Cereals, Animal and animal products, local drinks, fruits and veg.)

4=to buy Agricultural inputs (Oxen, Dairy cow, Donkey, Seeds, Fertilizers, poultry)

5=to buy hand craft equipments (embroidery, Weaving, pottery)

6=. To pay debt, taxes and fees   7=others (specify) _____

D.5 what do you think of the rate of interest you were charged?

       1= Very high 2= High   3= All right   4) =Low   5= Very low

D.6. If your answer for question D.1 is No, state the reasons why?

       1= I didn't need any credit   2=I have my own enough capital

       3= credit service is not available   4= high interest rate of repayment

D.7. Did you save any amount of money during the past 12 months? 1=Yes   2=No

D.8. If yes to D.6, how much did you saved? = Amount in cash   _____in kind_____

E. ACCESS TO THE MAIN MARKET

E.1. Did your kushet has access to the main market? 1=Yes 2=No

E.2. If yes, what is the nearest distance to the main market from your residence? _____

    1=Les than 30 Minutes   2=30-1hrs   3= 1-2 hrs   4= more than 2hrs

E.3. Where do you sell your products or services? _____ (Multiple answers possible)

1=Local assembler 2= Taking to the nearest main market   3. =Through service cooperatives

E.4. what means of transport do you use to transport your produce to the market?

      1= Trucks 2= Animal power   3=manpower

E.5. When do you sell most part of your produce? _____ Months

E.6. why did you sell your harvest?

    1= to settle debts   2= to meet family requirements   3= Social obligations 4=to pay tax

E.7. Did you get any market information?   1=yes 2=No

E.8. If yes to E.7, what are the most important sources of market information in your village? 1=Radio 2=Gov't agent 3=Cooperative associations4=Relatives, friends, neighbors

F.   ACCESS TO VARIOUS SERVICES

F.1. Did your kushet has an access to the institutions and infrastructures? 1=Yes   2=No

      If yes, give details

No	F.1.1 Access to the nearest Services	F.1.2 Walking distance (for a single trip	
		Minutes where 1=Less than 60 minutes 2=1-2 hrs 3=>2hrs	**Mode of transportation Where** 1=Vehicles 2=Animals 3=on foot
2	Cooperative shops		
3	Bus station		
4	Health station		
5	School		
6	Vet clinic		
7	All weather road		

F.2   Has your household received any type of extension service from the government / NGOs? 1. Yes   2. No

F.3   If yes to F.2 what type of services did you get?._____

H. ACCESS TO SOCIAL INSTITUTIONS

H.1. During 2001, were you a member of any social organization or institution in your

locality? Yes=   1   No=   2   **(if no go to H.5)**

H.2. what were the types of groups you belonged to? Give details in the following table

H.2.1		H.2.2	H.2.3
Type of social institution	**Tick** (✓)	your manner of participation 1= if decision maker(leader 2=member	How many members were there in your group?
Edir			
Religions/spiritual groups(tsebel, equib)			
Cooperatives			
Women's association			
Youth association			
Anti HIV/ADIS			

H.3. How long have you belonged to the group?

   1=Less than 1 year   2=More than 1 year and less than 5 years   3=More than 5 year

H.4. what kind of support/benefit did your household receive from the social institution?

   1= providing work to support in time of difficulties

   2= various services (health, training, credit, saving, information.)

   3= Spiritual, social and self esteem

    4=Providing shelter and food 5=providing agricultural inputs and technology

    6=Never Provide services

H.5. If you don't participate in any social institution why not?

        1= Too expensive   2= I do not need it

        3= I do not have time   4=Does not exits in our village

        5= others (specify)__

I: TOTAL FARM INCOME

I.1. Can you tell us your average annual income from crop and livestock and livestock products in the year 2001?

Agricultural products	2	
	Quantity harvested in(in kg)	
	Amount in KG	Value in (Birr)
Cereals		
• Maize		
• Finger millet		
• Barley		
• Teff		
• Sorghum		
• Hanfets		
• Wheat		
Vegetables		
• Cabbage		
• Tomato		
• Potato		
• Onion		
• Pepper		
Fruits		
• Orange		
• Banana		
• Guava		
Pulses		
• Field peas		
• Chick peas		
• Lentil		
• Enquaya		
• Bean		
Livestock & livestock products		
• Milk /yogurt, cheese		
• Beef meat		
• Mutto/goat meet		
• Chicken		
• Eggs		
Beverage in liters		
• Suwa(Tela		
• Teji(Mese0		
• Haney		
Spices (kemem)		
• Jinjible		
• Perper(Gue)		
• Garlic		
Total		

I.2. what do you feel about your household's status of annual income from your farm?

   1= It is more than enough   2= Good enough

   3=Smaller than required   4=It is declining from time to time

I.3   How many times do you feed your family members per day?
        1= Once   2=Twice   3=Three times
I.4. during which months are food shortages sever? Choose according to their severity

        1= Sep –December ☐   2= January –April ☐   3= May- August ☐
I.5. In your opinion what are   the major causes for food insecurity in your household?

Rout cause of food insecurity	(✓)	RANK
Irregular rain fall (drought) Water scarcity(drought)		
Land shortage		
Soil erosion		
Less access to inputs		
Pest and diseases		

PART III: HOUSEHOLD NON-FARM DIVERSIFICATION AND INCOME

3.1. In the past 12 months, have you ever engaged in any non-farm activities?

        1=yes   2=No (**if no go to part IV**)

3.2. If yes to 56, in what types of activities were your household members engaged?

Activities	How many members of the household involved in such activities?		
	Male	Female	Total
1. Non farm self employment			
2. Non farm wage/salary employment			
3.Both			

3.3. Specify the types non farm self employment activities and income earned during 2001?

3.3.1 Types of Activities	3.3.2 Net income earned by the household monthly?	3.3.3 Total net income earned annually
Selling of Hand craft including pottery		
Weaving/ spinning		
Milling		
Coble stone processing		
Trading in livestock		
Trading in grain and pulses		
Renting out animals(Oxen,)		
Embroidery		
Petty trade		
Sale of grass or fodder		
Sale of stone		
Sales of sand		
Sale of beverages		

3.4. What was your source of start up capital to establish non-farm business activities?

     1=Crop sales   2=Livestock sales   3=Micro finance

     4=Cooperatives   5=Families or friends   6=Money lenders

3.5. Did your households involved in non farm wage employments against payment in cash or Kind?   Yes=1   No=2,

3.6 If yes, specify the type of employment and income earned during 2001

3.6.1		3.6.2				3.6.3	3.6.4
Type of Employment	✓	**seasons**				Type of work	Total amount earned in birr (if in-kind convert in to cash
		Kiremti	**kawai**	**Hagay**	**Tsidia**	1=Casual or seasonal 2=regular wage work	
Daily labor							
Food for Work							
Animal Slaughter							
Carpentry							
Coble stone processing							
Driver							
Guard							
House made (servant)							

3.7.How is the manner of your household members' participation in d/t livelihood Strategies?

1. Members are occupied full time in agriculture,

2. Members are occupied part-time in agriculture and part-time in non-farm activities;

3. Members are occupied full-time in non-farm activities.

3.8. Did any of your households member received any other income as a remittance gift or other transfer in the year 2001?   Yes=1   No=2

3.9. If yes, specify in the table below   **(SOCIAL PAYMENTS AND REMITTANCE)**

3.9.1	3.9.2	3.9.3	3.9.4
Types of receipt	**person who send the transfer** 1=Non residence HH member 2=Relative 3=Friends 4=Gov't org 5=NGO	Amount Received in birr (if in kind convert in to cash)	**For what purpose is the income used?** 1=To purchase food **2=Livestock purchase** 3=to purchase consumable and cloths 4=To purchase Inputs **7= for debt settlements** 5=School and medical costs 6=for payment of tax and contributions
Remittance			
Gift			
Inheritance			
Pension			

3.10. During 2001, did any one from your household migrate for a search of job?

Yes=1   No=2

3.11   If yes, fill the table (**status of household migration**)

3.11.a		3.11.b		3.11c	3.11d	3.11e	3.11f
Sex	**No**	When did they migrate mostly? **Kermit** ✓	**Hagay** ✓	Main Occupat 1= daily laborer 2=House made 3=Driver 4=sheep keeper 5=Govt./ emplo	<u>No</u> of months away	Where did he/she left 1 = Rural Within Woreda 2 = Urban Within Woreda 3 = Rural within Zone 4 = Urban within Zone 5 = Rural within region 6 = Urban within region 7 =urban out of the region 8= out of Ethiopia	How much money did he brought
Male							
Female							

(*Period from 1ˢᵗ September to pagumen 5 2001 EC)*

3.12. Have you ever received any training that helps you to undertake non-farm activities?

1=Yes   2=No

3.13. If your answer is yes to 3.12, who gave you the training?

1=Micro and small enterprise promotion agency   2=REST   3=NGO

4= Bureau of agriculture   5.Others

3.14. Do you think that participating in non-farm activities has increased your status of

living?1=Yes very much   2=Yes but not that much   3=No change

PART IV: MOTIVES AND CONSTRAINTS OF NON-FARM DIVERSIFICATION

4.1MOTIVES FOR STARTING NON-FARM ACTIVITIES

4.1.1 Why did you choose to participate in non farm activities?

1= It is highly profitable (pull factor)

2=to compensate income shortfalls from main activities (Farming)(push factor)

4.1.2. Who initiated you to participate in non farm activities?

1= my self alone

2=with my family

3= with a friend/partner

4=with cooperative associations

4.1.3. What important motives promote you /your household members/ to participate (start)

in non -farm   activities so as to diversify beyond farming?

Give details

Motive type	Tick	Rank according to their importance
2.Pull factor		
▪ Market / technological opportunities(it is highly profitable)		
3.Push Factor		
▪ Lack of access to agricultural land		
▪ To pay additional / unexpected bills		
▪ Small size of land holding		
▪ To reduce risks (harvest failures, drought,)		

4.1.4 What was the main reason that you had not participate in non farm activities so far?

    1=I hate participating in non-farm activities

    2=I have seen many people who participate in non farm activities do not happy

    3=I have enough agricultural production)

    4=I have no information about the importance of non farm activities

    5=I need but lack of capital   6=Lack of labor market

4.1.5. In the coming few years, what would you like to do most?

   1= Doing farming only   2=Participating in non farm activities only

   3= Doing both farming and non farming activities   4= Others_____

\4.2 CONSTRAINTS (problems encountered)

4.2.1. Are there any income-earning non farm activities, in which any member(s) of your

   household would like to do , but cannot? 1= YES   2= No

4.2.2. If t **yes**, what prevents the household from starting or   expanding these activities?

    1= not available in the area
    2= not enough customers/market
    3= women's work/men's work
    4= poor labour supply
    5= don't have time
    6= in appropriate skills or knowledge
    7= lack of access to credit)
    8= Lack of tools/equipment
    9= Lack of local infrastructure
    10= Land tenure arrangement
    11= No constraints

PARTY V: FOOD CONSUMPTION AND EXPENDITURE

We would like to ask you about all the food that was bought for consumption and/or was consumed from your own stock for one month. Please do not include food bought for resale, even after processing.

5.1 How much did you spent for food consumption during nehase 2001?

5.1.1 Food type Consumed	5.1.2 Quantity consumed from own harvest (in kg)		5.1.3 Quantity consumed from purchase		5.1.4 Consumed from gift or food aid /ffw		5.1.5 Total food consumed	
	Amount /KG/	Value (Birr)	Amount /KG/	Value (Birr)	Amount /KG/	Value (Birr)	Amount /KG/	Value (Birr
Cereals								
Vegetables								
Fruits								
Pulses								
Livestock products								
Beverage								
Spices (kemem)								

PART VI: NON-FOOD EXPENDITURE

6.1. Would you tell us the household's non-food expenditure for the year 2001?

Item	Total expenditure	Amount paid by the Household members	Amount paid by non-Household members
Clothes and shoes			
Home Furniture			
Building material for house			
Social occasions***			
Contribution to *EDIR*			
Donation to church/Mosque			
Taxes			
Health expenses(for Animal +Human)			
School fees			
Farm inputs			
Farm oxen			
HH energy consumption Fir wood , Fuel (kuraz per week)			
Transportation			
Miscellaneous			
Others(Specify)_____			

***(Wedding ,Kiristina, Funeral ceremonies, Engagement, Teskar, baptism/kirstina ,Mahber ,Wefera,enebete)

PART VII. ASSET OWNERSHIP

7.1What are the estimated current market value of the following assets under your possession, give details in the following table.

82.1	82.2		
Property Type	**Estimated current price**		
	quantity	Unit price	Total
House			
Store for agricultural produce			
Agricultural equipment			
Hoe			
Mahresha			
Sickle			
Axe			
Newit			
Aruet			
Tie ridge/ zemenawi mahrsha)			
Beehives traditional			
Beehives Modern			
Tridle pump/stina			
Generator			
Drip irrigation			
Wheel barrow			
Otehrs			
Non agricultural equipment			
Carpenter equipment			
Black smith equipment			
Weaving equipment			
Shovel			
Crowbar			
Hammer			
Others			
Household goods			
Bed			
Tables & chairs			
Radio/tape recorder			
Sanduk, Kumsaten			
Watchs			
Mobile phone			
Butha Gas			
Tisti			
Bermil			
Fanues			
Other kitchen equipment			
Transporting materials			
Bisclate			
Gari			
Others(Specify)_____			

CHECKLISTS FOR FOCUS GROUP DISCUSSION

The purpose of the focus group discussion is to obtain more qualitative data, which can triangulate the information obtained from the personal interview. Moreover, clarification of issues will be undertaken.

I. VILLAGE PROFILE

1. How far is the nearest physical infrastructure from your village? (all weather motor road, Seasonal motor road, Health post, Clinic, Primary school, Woreda head quarters, Veterinary clinic etc)

2. When people from your village want to sell or buy a commodity, livestock, where do they usually go? How far are these markets?

3. What are the most important sources of information in your village?

4. What most important social institution are found in your village?

5. When people from this village want to find employment (daily labour or longer term work)
   ➢ Where do they go?
   ➢ When is this work available?
   ➢ How much do people usually earn (per day per week per month etc)?

6. Which kinds of non-farm livelihood diversification are more adopted in your village?

7. Which type non-farm activities needs start up capital?

8. What criteria do you use to categorize households in to rich, medium, poor and very poor in your village?

II. FOCUS GROUP DISCUSSION

Step 1.

1. What activities did you perform for survival?

2 Ask each group member, do you believe you will be food secure and self-sufficient if you do farming alone?"

3. Ask each group member, what is the role of non-farm income and diversification in their livelihood?

4.   Ask each group member, what initial conditions promote them to engage in non-farm activities   what he or she doing now?

5.   Discuss among the whole group, which type of non-farm activities (Self employment, wage employment, remittance,) is more preferred and why?

6.   Which type of non-farm activities are practiced by the poor, the Medium, the better off, and gender issue(Female and male Headed Households)

Step 2.

7. Ask each group member; what are the major factors determine for he/her to participate in non-farm activities?

8. Identify and discuss, changes, trends, new activities a related to non-farm diversification.

9. What is the role of social capital in participating to non-farm diversifications?

10. What kind of mechanisms do you use to interact with your families, neighbor, friends, local institutions and others?

Step 3.

11. In your opinion how do you describe the existing linkage b/n farm and non-farm activities?

12. Identify and Discuss among whole group, what major constraints and opportunities exist that hinder or facilitate rural household participation in non-farm diversification.

Step 4

13. Ask each group member, what he or she hopes to diversify his or her income from non-farm activities in the coming five years from now (in the future)?

14. Identify and discuss the relative importance and implication of adopting non-farm livelihood activities.