



INDIRA GANDHI NATIONAL OPEN UNIVERSITY SCHOOL OF
CONTINUING EDUCATION

CHALLENGES AND OPPORTUNITIES OF LIVELIHOOD
DIVERSIFICATION: THE CASE OF PASTORAL COMMUNITIES IN
YABELO WOREDA, BORANA ZONE, ETHIOPIA

BY

WONDWOSEN TESFAW

MAY, 2015

ADDIS ABABA, ETHIOPIA

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A Thesis Submitted to Indira Gandhi National Open University School of
Continuing Education in Partial Fulfillment of the Requirements for the Degree of
Masters of Art in Rural Development

BY

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MAY, 2015

ADDIS ABABA, ETHIOPIA

DECLARATION

I hereby declare that the Dissertation entitled CHALLENGES AND OPPORTUNITIES OF LIVELIHOOD DIVERSIFICATION: THE CASE OF PASTORAL COMMUNITIES IN YABELO WOREDA, BORANA ZONE, ETHIOPIA

Submitted by me for the partial fulfillment of the M.A. in Rural development to Indira Gandhi National Open University, (IGNOU) New Delhi is my own original work and has not been submitted earlier to IGNOU or to any other institution for the fulfillment of for the requirement for any course of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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CERTIFICATE

This is to certify that Mr. Wondwosen Tesfaw student of M.A. from Indira Gandhi National Open University, New Delhi was working under my supervision and guidance for his project work for the course MRDP-001.

His work entitled: CHALLENGES AND OPPORTUNITIES OF LIVELIHOOD DIVERSIFICATION: THE CASE OF PASTORAL COMMUNITIES IN YABELO WOREDA, BORANA ZONE, ETHIOPIA which he is submitting, his genuine and original Work.

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List of Acronyms

AFD Action For Development

BZARDO Borana Zone Agriculture and Rural Development Office

DA Development Agent

FAO Food and Agriculture Organization

FGD Focus Group Discussion

GPCDI Gayo Pastoral Community Development Initiative

GOs Governmental Organizations

NGO Non-Governmental Organizations

NRM Natural Resource Management

PRA Participatory Rural Appraisal

PTC Pastoralist Training Centers

SCI Save the Children International

SL Sustainable Livelihood Framework

TLU Tropical Livestock Unit

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Abstract

This paper analyzes the livelihood of the Borana pastoral communities of Southern Oromiya in Ethiopia. The main aim of this study is to identify and explore challenges and opportunities of livelihood diversification. The study employed mixed method of data collection and analysis (qualitative and quantitative). Focus group discussion, survey and house hold interview were carried out at community, district, and woreda levels. The study showed that livestock production become less productive due to climate change and market globalization including changing environment, decline in water sources and feed sources, poor pasture supply, weed infection of graze lands and etc. in the study area, pastoralism as way of life is curtailed by combination of factors such as population growth and settlement in remote grazing areas, existence of claims by different ethnic groups on rangelands, the impartial impact of drought, increasing settlement to get social services, and the declining number of cattle holding per household. In the pastoral communities, diversification is practiced by both wealthier households and poor households in the former the main practice is as commission agent and broker. But the poor households practice in the form of petty trade and wage laborer in the home of the richest households and the nearby local villages. However diversification of the poor is not well structured, productive and continuous. In short livestock production is yet the main sources of livelihood option for the majority of the population. A number of household socio economic characteristics influence the trends of livelihood diversification in the study area those include: age, farm input use, extension contact, market distance, and credit access and cattle size highly and significantly. Based on this reality the researcher recommends as follows; since household livelihoods are highly diverse, Policy-makers need to reflect on the most suitable ways of supporting this diversity. Only with more appropriate policies that recognize the importance of diversity. By asking/considering the question “will it be possible for more people to make positive exits from food security risk through diversity?”

1. CHAPTER ONE: INTRODUCTION

1.1 .Back ground of the Study

Pastoralists constitute approximately ten percent of the Ethiopian population (over 6 million) and occupy much of the peripheral lowlands that surrounded the central highland plateaus dominated by rain-fed small-scale agriculture (Fekadu 1998). Various studies have documented the threats to pastoral livelihoods in Ethiopia over the last few decades including drought, conflict, and inappropriate development interventions that have led to the weakening of traditional coping mechanisms in rural pastoral areas ((CRDA,2001; Beruk 2001; Hogg 1997; Helland, 1997). In response to such threats, pastoralists had to adapt the activities and assets from which they derive a living as well as their patterns of migration. Existing trends indicate that traditional livestock-based livelihood strategies (defined as pastoral livelihood strategies) alone will not be able to provide sufficient food for country's pastoral community.

It is thus evident that non-livestock based strategies need to supplement or in some cases substitute previously dominant pastoral livelihood strategies. By now, trends of pastoral livelihood diversification have been noted among the Borana and Afar where by pastoralists are combining livestock production with a variety of non-pastoral activities including agriculture, wage labour and trade (See Little et al. 2001; Grahn 2001; Getachew 1991; 2001). Trends of seasonal mobility amongst pastoralists are changing significantly characterized by increased permanent settlement in various locations. An emerging alternative for livestock destitute pastoralists has been settlement in and around urban centers in order to exploit non livestock based livelihood opportunities (defined as non-pastoral livelihood strategies) that would otherwise be unavailable in rural pastoral areas.

The unreliability of rural pastoral livelihoods as a result of recurrent drought and conflict is likely to ensure the continuing influx of pastoralists in to urban and peri-urban spaces. There is thus an urgent need to examine the livelihoods of those pastoralists in urban and peri-urban spaces who constitute some of the poorest and most vulnerable groups in Ethiopia's pastoral

areas. Thus, this paper will outline the different livelihood options and challenges facing by the pastoral community in Oromia region Yabelo Woreda.

By doing so, this research will looking for to contribute to the ongoing debates of pastoralists' livelihood strategies in Borana Woreda in particular and elsewhere Ethiopia in general.

Particularly this paper had also used to stimulate the importance of diversification in poverty reduction, agricultural development and economic growth and it argued for; a broader entry point for poverty reduction that is multi-sectorial instead of a sole focus on increasing farm incomes. It also identifies the need for a better understanding of market and non-market constraints faced by the poor in marginal areas and finally a greater gratitude had been given for the role of mobility and rural-urban links in poverty reduction and regional development in marginal areas.

The Borana region has been hit by repeated droughts and consequent loss of livestock for the last three decades, the most recent one being in the period between, 1999-2000. For example, a recent study estimates that during the years 1980-1997 alone, monetary losses due to livestock deaths in the Borana plateau exceeded US \$ 300 million (Desta 2001, 1). The study further argues that 'cattle crashes', or widespread loss of cattle, occur every 5-6 years, particularly during times of low rainfall and high stocking rates.

Consequently, the need for livelihoods diversification and assessment of challenges and opportunities of livelihood diversification is inevitable and compulsory so as to understand the pastoral livelihood options and possible alternative solutions.

1.2 Statement of the problem:

The pastoral system in Ethiopia has been experiencing vulnerability to environmental degradation and food insecurity. More specifically livelihood insecurity has been characterized the area where by the large majority of pastoralist depend on food assistance. The Vulnerability is, due to lack of livelihood diversification constrained by lack of basic infrastructure services, external shocks such as recurrent drought, flood, conflict and people's capacities to cope with the shocks, which depend on factors such as social networks, assets, and political status (Beruk, 2003).

Similar to other pastoral areas in the country, the Borana people recently experienced chronic food insecurity. In this area the economy of the people is mainly dependent on livestock production alone and their consumption requirement is mainly derived directly from livestock and their products which is a single livelihood means. This way of livelihood is also constrained by several challenges including: climate change and inappropriate policies and practices.

The shifts have been occurred over time and most pastoral household food needs are derived from purchase at market, food distribution from NGOs and supplemented by own production. This in turn implies that livestock production could not supply adequate and sufficient food for households' consumption. Thus, the income earned from livestock rising is not adequate to purchase more food.

Even though, crop production is considered as pastoralists alternative means of food self-sufficiency; it is however affected by different causalities such as; crop failure and low yield due to different climatic and environmental problems including: erratic rain fall, drought and low levels of awareness by most pastoralists. With this regard it is better to understand the existing challenges and opportunities of pastoralists' to enhance their livelihood diversification options.

The Borana community predominantly, continues to rely on livelihoods which are highly vulnerable to shocks and trends. The probability of occurrence of drought remains high and at the same time several factors are causing the weakening of efficient resource management and mechanisms for coping with shocks and stresses such as seasonal migration, and alienation of traditional rights of access to pastoral resources as well as restrictions of free movement in search of pasture and water are key threats to the persistence of Borana pastoralist (Baxter 2001, 245).

Pastoralists in the area have also greater opportunities to expand their way of life through; development of water points, adapting different technological mechanism, access to market, education, health service, road and cultivable farm lands. Even though, there are plenty of opportunities in livelihood diversification pastoralists are not using this chance effectively to diversify their livelihoods.

Thus, the goal of this study is to understand people's choices and capabilities and their potential to make choices and the results among the potential opportunities and expanding their choices in diversifying their means of livelihoods and investigate the main factors which affect their livelihood diversification practices.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study is to assess Challenges and opportunities of Livelihood Diversification and factors influencing their success, the case of Yabelo Woreda Borana Pastoral Communities of Ethiopia

1.3.2 Specific Objective:

- To identify the existing challenges and opportunities of livelihood diversification in the study area
- To investigate major factors which determine household livelihood security
- To point out farmers perception and practice on livelihood diversification

1.4. Basic Research Questions

This study answers the following basic questions

1. How do farmers perceive and practice different livelihood diversification as a means of living?
2. What are the major determinant factors which affect practice of livelihood diversification?
3. What are the challenges and good opportunities which stimulate/discourage pastoralists' involvement in house hold livelihood diversification?

1.5. Significance of the Study

Researching of challenges and opportunities of livelihood diversification in pastoralist areas is useful in designing of policies and strategies that promote resource effective livelihood diversification (Ellis, 1999).

Therefore, the findings of this study will provide valuable information to researchers, policy makers and development institutions working in the area of designing and developing effective and sustainable pastoral livelihood diversification strategies.

The research can also help to develop locally acceptable and feasible strategies to minimize the problem of livelihood insecurity based on the recommendations. Notably, the finding of this study will suggest possible mechanisms in reducing the impact of food insecurity in Ethiopian pastoralists in particular and east Africa in particular.

1.6. Scope and Limitation of the Study

This study has been conducted in Yabelo Woreda Oromia region Ethiopia. Due to time and budget limitations it has been carried out in three KAs in inclusive of all climatic zone (based on Woreda Rural Development and Agricultural office classification) livelihood diversification practices are less applicable. Food insecurity problems are very chronic due to climate change and narrow livelihood options and high population pressure exacerbates it. The study mainly was focus on household demographic determinant factors influencing livelihood diversification practices of pastoralists.

Methodologically, the information required for quantitative study had mainly collected by using questionnaires. Since “*obtaining accurate response is challenging in all types of survey, particularly in surveys of people*” (Lohr, 1999 sited in Wogayehu, 2006) the data and information obtained, and used in this study expected to have some errors. However, despite there had been some expected limitations of the study, the results of the study will be used to develop appropriate and sustainable livelihood diversification strategies to minimize the problem of food insecurity in the study area. Finally, even though this study uses wealth category of sample size selection criteria the importance of income category were not analyzed in reference to livelihood diversification strategies and practices.

2. CHAPTER TWO: LITERATURE REVIEW

2.1 Conceptual literature: Livelihoods, Wellbeing and Gender

The basic concept of livelihood is widely used in the contemporary poverty and development studies, and many definitions have been made by different authors to it. Chambers and Conway (1992) have formulated the first definition as:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation, and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway 1992, cited in Degefa, 2005:72).

Despite its widespread endorsement, a precise definition of the livelihoods approach is contentious and remains a key problem in research on livelihoods. The livelihoods approach has largely emerged out of changing conceptualizations of poverty towards a multidimensional approach beyond income poverty (Rakodi 2002, 4-6). A defining feature of the approach is that it introduces the concept of 'livelihoods' defined as "...the *capabilities, assets* (including both material and social resources) and *activities* required for a means of living" (Scoones, 1998, 5).

In line with the SL framework, a livelihood is defined here as 'the activities, the assets, and the access that jointly determine the living gained by an individual or households'. Rural livelihood diversification is then defined as 'the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living' (see also Ellis, 1998; Ellis, forthcoming).

The tendency for rural households to engage in multiple occupations is often remarked, but few attempts have been made to link this behavior in a systematic way to rural poverty reduction policies. In the past it has often been assumed that farm output growth would create plentiful non-farm income earning opportunities in the rural economy via linkage effects.

However, this assumption is no longer tenable; for many poor rural families, farming on its own is unable to provide a sufficient means of survival, and the yield gains of new technology display signs of leveling off, particularly in those regions where they were most dramatic in the past.

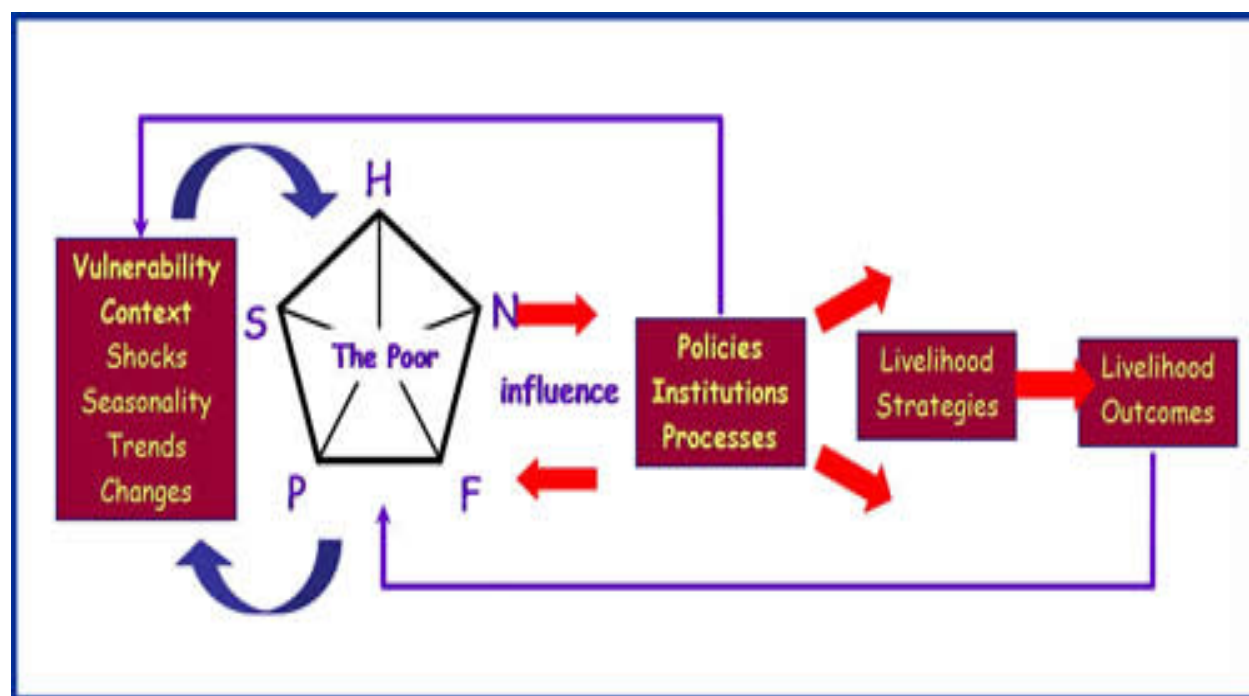


Figure 1. Sustainable Livelihood frame work. Source, adopted from Daiana Carney (1999)

Livelihoods analysis entails an examination of the assets (resources) that are available to people and how they are able to transform those assets through various livelihood strategies into sustainable livelihood outcomes such as reduced poverty and improved wellbeing (Scoones1998). Broadly defined, assets refer to ‘...capital which can be stored, accumulated, exchanged or depleted and put to work to generate a flow of income or other benefits’ (Rakodi 1999, 316). Six types of assets are commonly incorporated in livelihood analysis.

Livelihood resources/assets- households or individuals depend on a set of capitals as a base for their livelihood. The framework contains five assets categories of natural capital, human capital, physical capital, financial capital and social capital (Ellis and Eedward,2004). These are an important resource base on which the rural livelihood system built on.

Natural capital: refers to the natural resource stocks (land, water and pasture, soil, wildlife, forest etc.) from which resource flows useful to livelihoods. These natural/environmental resources have significant role in pastoral economy. For example, livestock production depends on access and availability of good pasture and water. Farmland is also useful for those who have been engaged in crop production. Forest resources, too, are the sources of income for some groups of the society, the poor and destitute.

Human capital: contains labor available to the households with skills, knowledge and health and ability to work. **Physical capital:** include the basic infrastructure such as (transport, shelter, energy, irrigation works, market, etc.) and production equipment and means which enable people to pursue their livelihoods. This constitutes both physical resources at household and community level.

Financial capital: refers to the financial resource which is available to people as savings, supply credit, remittance or pensions in order to provide them with different livelihood options.

Social capital: which refers to the horizontal and vertical social resources (networks, membership groups, relationship of trust, social claims, affiliations and access to wider institutional /association) upon which people draw in pursuit of their livelihood.

Therefore, in order to understand and assess the livelihoods and food security situations among households in the pastoral community, it is imperative to look at how each household gets access to the diverse capitals/asset resources. In other words this study tried to investigate how the pastoral households access to these resources so as to pursue their livelihood to maintain food security.

The emphasis on assets within a livelihoods perspective emanates from the argument that the ability of individuals or households to pursue particular livelihood strategies is dependent upon the assets which they can access and use (Scoones 1998, 7), where a livelihood strategy refers to the activity or combination of activities from which people derive a living. In turn, the types of livelihood strategies pursued are thought to determine the ability of individuals or households to achieve positive outcomes such as improved wellbeing and reduced vulnerability (Moser 1998; Scoones 1998).

It is however, important to note that peoples' livelihoods do not always result in positive outcomes and this is particularly so in the case of the poor who have limited access to various assets and whose livelihood strategies may result in further impoverishment and vulnerability (Rakodi 2002, 6). Furthermore, context specific institutional processes, such as market and political processes, at local, regional and national scales shape livelihood outcomes.

Drawing from the livelihoods approach, wellbeing is conceptualized in this study in terms of peoples' access to a range of assets and their use of those assets to pursue various livelihood strategies and achieve positive outcomes.

A livelihoods approach allows the examination of a plurality of dimensions of wellbeing whereby noneconomic dimensions such as social and human indicators are given equal emphasis to economic indicators. However, as Beall (2002, 73-74) has recently emphasized, livelihoods analysis should pay attention to gender and generation differences in determining individual household member's access to various assets and capability to use those assets. Since the asset status and livelihood strategies of individual household members are subject to gendered differences wellbeing too becomes gendered.

Therefore, it is understood here that peoples' access to various assets, the livelihood strategies which they pursue and consequently their wellbeing are all gendered processes and opportunities of livelihood diversification is also determined by this.

Before delving into a discussion of the assets and livelihood strategies of pastoral households in peri-urban Yabello, a brief overview of trends of pastoral development in Ethiopia are considered followed by a more focused discussion of Borana pastoralists of Yabello.

2.2. Trends of Pastoralism Development in Ethiopia

Pastoralists occupy the lowland areas of Ethiopia characterized by arid and semi-arid climates, which make these areas unsuitable for agriculture.

The arid and semi-arid regions are said to account for 60 percent of the surface area of the country (Hogg 1996). Apart from numerous smaller groups, there are three main pastoral groups namely the Somali, Borana, and Afar pastoralists living in the south-east, south, and north-east respectively (Hogg 1997).

These pastoralists derive their living mainly from livestock which serve as the ‘backbone’ of their economies, whilst contributing to the socio-cultural and political organization of those societies (Hogg 1991, 10).

Livestock support the social fabric of pastoral societies serving as a symbol of social status and item for exchange during various social functions such as marriage, birth, and initiation ceremonies thus cementing social solidarity (Farah 1996, 129). However, the last 30 years have been characterized by an increasing reliance on non-livestock-based activities including trade, agriculture and wage employment. This has mainly been a result of the declining viability of traditional livestock-based livelihood strategies.

The viability of pastoral livelihoods in Ethiopia has been compromised due to the interplay between external factors and factors internal to pastoral societies. Some external factors include expansionist interests of central governments at various points in time resulting in the loss of valuable pastoral land to state-owned and private entrepreneurial ventures (see Getachew 2001 and Gamaledin 1992). As Haile-Gebriel (2003, 6) notes, the loss of key grazing and watering points to various non-pastoral purposes is responsible for the increasing impoverishment of pastoral communities. Central governments have been critiqued for marginalizing pastoral areas in terms of integration into national economy and investments in infrastructure and services (CRDA 2001; Beruk 2001; Hogg 1997; Farah 1996).

Today, Ethiopia’s pastoral areas remain some of the most backward regions in terms of infrastructural development and basic service provision such as education and health. A series of state-led development initiatives in pastoral areas in the 1970s and 1980s were not entirely successful in redressing the imbalances between pastoral and non-pastoral areas.

Dynamics within pastoral systems themselves, which cannot be seen separate to external factors, have shaped the trajectory of pastoral development.

Increasing human and livestock populations, recurrent drought and famine, weakening of traditional resource management systems and sedentization are some of the factors which have brought about shrinkage in pastoral resources vital for the sustenance of livestock.

Conflict is also common to Ethiopia's pastoral areas both as a cause and consequence of shrinking pastoral resources, but also as a result of political interference by national governments. The vulnerability of pastoralists to market price fluctuations, particularly during times of drought and/or famine has further led to the depletion of their livestock assets.

Overall, the trajectory of pastoral development in Ethiopia over the last 30 years in Particular points to the declining ability of pastoralists to subsist mainly from livestock based activities alone, and the consequent increased significance of no livestock based activities, including but not limited to agriculture. At the same time, those who have lost most or all of their livestock assets are unable to subsist within the rural pastoral economy and must settle in spaces which offer them the maximum range of alternative livelihood opportunities, including urban and peri-urban spaces. Such trends are also evident amongst the Borana pastoralists of Southern Ethiopia.

2.3 Household Food Security

Seventy five percent of the grain consumed by the rich households in Borana pastoral community is covered from purchases and 25 percent from own farm production (Kejelaetal 2013). Similarly, about 83 percent of the grain consumption of the medium household come from purchases while only 17 percent of the grain consumption is covered from own production. This implies that the pastoral households are net grain buyers.

In terms of food security, the rich and the medium households have access to adequate food throughout a year. However, the poor households are food insecure for six months. Similarly, destitute households are food insecure for the whole year. Those food insecure households use strategies such as reduced meal frequency from three to two times a day, use wild food, and get help from rich households.

2.3.1. Food Consumption

According to recent studies by Kejela, despite the incomes generated from different sources and own food supply by the pastoral community, food insecurity and poverty is prevalent. It is only the rich, which is only 10% of the community, who can normally feed itself throughout the year. The medium group can normally feed itself for only eight months (Table 7). During the food insecure periods, they survive by involving in certain coping strategies such as reducing number of meals.

The poor and the destitute are in a dangerous position in terms of nutrition. The frequency of meal is inadequate and composition of their meal is poor. Although the culture of the society enables them to access food from their neighbors, this option can no more serve as social security since the society cannot afford supporting the increasing number of the poor in the society. There is a fear that the traditional social supports may deplete the assets of the owners. Even though money researches have been conducted to study the pastoralists livelihood status minimal has been done on livelihood diversification options and main challenges.

2.4. Evidence on Diversification Extent

Empirical evidence from a variety of different locations suggests that rural households do indeed engage in multiple activities and rely on diversified income portfolios.

In sub-Saharan Africa, a range of 30–50 per cent reliance on non-farm income sources is common; but it may attain 80–90 per cent in southern Africa. In south Asia, on average, roughly 60 per cent of rural household income is from non-farm sources (Ellis, 1999). However, this proportion varies widely between, for example, resource lacking farmers and those with access to land, or livestock for farming. In sub-Saharan Africa reliance on agriculture tends to diminish continuously as income level rises, i.e. the more diverse the income portfolio the better-off is the rural household. Elsewhere, a common pattern is for the very poor and the comparatively well off to have the most diverse livelihoods, while the middle ranges of income display less diversity.

2.5. Poverty and Income Distribution

It is widely agreed that a capability to diversify is beneficial for households at or below the poverty line. Having alternatives for income generation can make the difference between minimally viable livelihoods and destitution. However, diversification does not have an equalizing effect on rural incomes overall. Better-off families are typically able to diversify in more favorable labour markets than poor rural families. Total income and the share of income derived from non-farm sources are often positively correlated. Different income sources may have strongly differing impacts on rural inequality. For example, unequal land ownership may mean that a policy focus on crop income favors the rich above the poor; however, greater access to non-farm wage income would have the reverse effect.

The conventional wisdom for many years has been that rising output and incomes in agriculture itself are the catalyst for diverse non-farm activities in rural areas. However, in sub-Saharan Africa this has rarely been the case, since most household level diversification is not just non-farm but non-rural in character.

Nor does it work in Asia once the pace of technological change in agriculture slows and crop yields level of evidence is mixed regarding the gains and losses to agriculture of household level diversification strategies; negative effects are associated with the withdrawal of critical labour inputs from the family farm, while positive effects include the alleviation of credit constraints and a reduction in the risk of innovation. Poor migrants from remote areas are less likely to re-invest urban earnings in agriculture, while better-off migrants from nearby or high potential areas are more likely to do so. Where on-farm diversification occurs, it can generate many of the same beneficial effects on off-farm diversification.

According to Ellis (1999) as with agriculture, the effects of diversification on environmental resource management are mixed and context-specific. The growth of non-farm income sources might be expected to reduce the need for landless rural dwellers to carry out extractive practices in local environments for survival. On the other hand, for settled agriculturalists non-farm earning opportunities can result in neglect of labour-intensive conservation practices if labour availability is reduced.

Diversification contributes positively to livelihood sustainability because it reduces proneness to stress and shocks. However, sustainable rural livelihoods need not equate with the sustainability of all components of underlying ecological systems due to substitutions that occur between assets during processes of livelihood adaptation over time.

Gender is an integral and inseparable part of rural livelihoods. Men and women have different assets, access to resources, and opportunities. Women rarely own land, may have lower education due to discriminatory access as children, and their access to productive resources as well as decision-making tend to occur through the mediation of men. Women typically confront a narrower range of labour markets than men, and lower wage rates. In general, therefore, diversification is more of an option for rural men than for women.

In this sense, diversification can improve household livelihood security while at the same time trapping women in customary roles.

3. CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Description of the Study Area

Yabello Woreda is situated in Borena zone of Oromia region some 570 km south of Addis Ababa. The Woreda consists of 23 kebele Administrations (KAs). The total land area of the Woreda is estimated to be about 5909 km² of which 31 km² is cultivated, 338 km² is covered with forest, 681km² is bush and shrubs, and 4900 km² is wood land (WBISPP, 2003). The altitude of the area ranges from 1000 to 1700 meters above sea level. The mean annual temperature ranges from 19 to 24 and a prominent feature of the ecosystem is the erratic and variable nature of the rainfall, with most areas receiving between 238 mm and 896mm annually, with a high coefficient of variability ranging from 18% to 69%.

The total population of the Woreda is 91,679 (male 45487 and female 46192). The dominant ethnic group is Oromo (CSA Population Projection 2010). Livestock production is the major components of the farming system in the study area and contributes to the subsistence requirement of the population, among other, in terms of milk, and milk products and meat, particularly from small ruminants. According to the Woreda Agricultural and Rural Development Office (2010), the total population of livestock in the area is estimated to be 413,766. Among this, cattle population accounts for 56.3% followed by goat 23.9% and the remaining was 19.8%. The proportion of sheep and camel are 14.3% and 5.5% respectively.

In general, the Woreda is designated as famine prone and though they try to cultivate crop production currently, frequent crop failure is their common problem usually them to serious food shortage. Drought induced food insecurity has been a common recurrent phenomena exacerbating the vulnerability of resource poor rural households in the area to be food insecure.

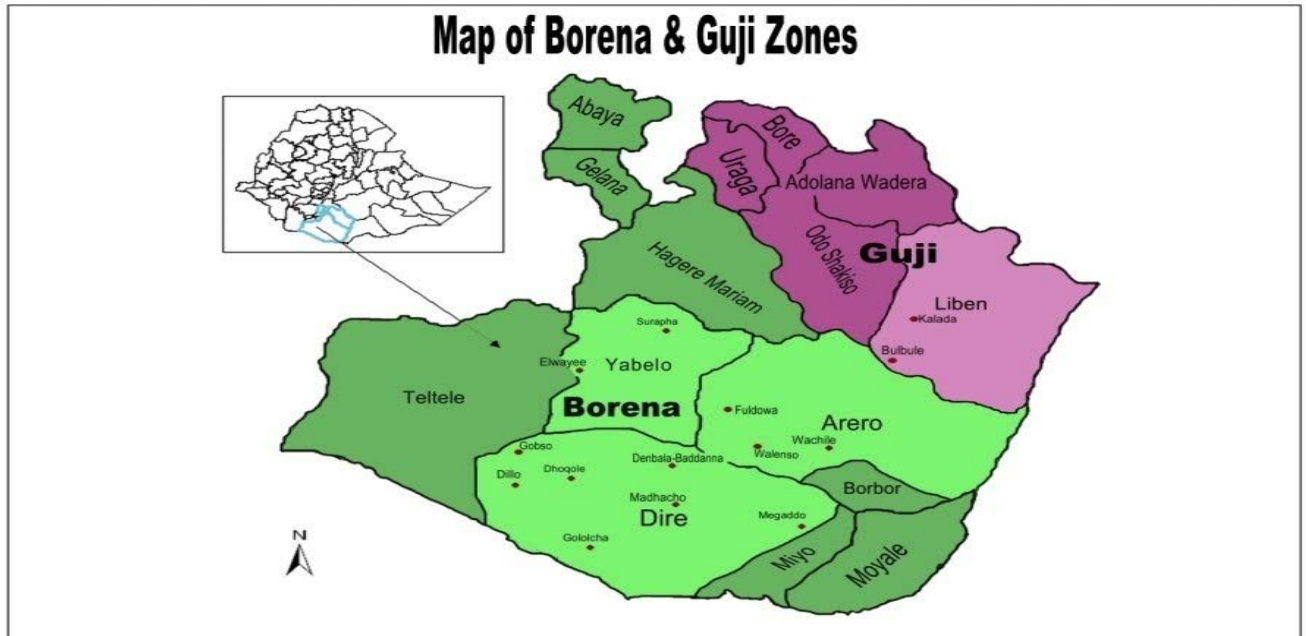


Figure 2: the Topographical map of Borena and Guji Zone. Source, own field designing in 2015

3.2. Sampling Technique and Sample Size

This study had employed multi-stage sampling technique in which both purposive and random sampling techniques were applied. At the first stage, out of 13 Woredas of Borana zone, Yabello Woreda was selected purposively based on the diversity of livelihood options is more available in the Woreda. In this area a number of stockholders are working to improve the wellbeing's of the people but the lives of people is not yet improved and going well as expected to be due to this and others I am motivated to know the reason behind their food insecurity. For this, I do have long experience in the area. Therefore, Yabelo Woreda is my research target area.

In the second stage, out of the total of 23 kebele administrations of the Woreda three kebeles were purposively selected based on their, livelihood diversification practices. The three kebeles are Hadi-Alle, Har-Weyuu and Dhirto. In the third stage, the households in the areas were selected based on their livelihood diversification performance and their level of proximity to the local town Yabelo. Then, 4% of the total populations of the three kebeles 110 (one hundred ten) sample households, 37 (thirty seven households) from each category were selected by using random probability sampling technique for quantitative survey.

3.3. Data Source and Types of Data Collected

Quantitative and qualitative data had collected from primary and secondary sources. Primary data collected from 110 sample households drawn from total of 2600 households residing in Harweyu, Hadi-Alle and Dhirto kebele administrations. The data collected included information on: household characteristics (education, age, family size, sex, livestock size, credit access, market distance, participation in cooperative, number of extension contact etc...), household assets, household income source, grazing land use, household food security indicators, house hold income opportunities and households livelihood strategies, challenges and shocks.

Secondary data relevant to the research work had also collect from the Kebela administrations office and Woreda offices of Pastoral and Rural Development. The information includes the detailed data with regard to agricultural and other development activities of the area.

To generate information at household level, household level surveys has been also undertaken using structured interview schedule. Prior to conducting the interview, pre-test of the interview schedule were undertaken with 15 key informants in the study area and accordingly revision had made for tools of data collection. Enumerators were recruited based on their proficiency in communicating using Afan Oromo language, educational background (BA dgree), and prior exposure to similar work. Training has been given to enumerators on the content of the survey and procedures to be followed in the process of conducting the survey.

Target groups (pastoralists) were given similar questioners and interviews so as to determine livelihood security status of the sample households and challenges occurring in their usual livelihoods.

Focused group discussions were also carried out with the participant members of sample households in order to generate information on overall livelihood security process and livelihood diversification efforts. In addition, interview have been also held at household level using 30 sample individuals “ten household heads” from each kebele by selecting purposively based on their knowledge on the livelihood port flow of the area, their willingness to participate, and their acceptability by the community (Like Geda leaders and elder peoples) e.t.c.

3.4 Methods of Data collection

3.4.1 Qualitative Data

The research employed a combination of qualitative and participatory methods of data collection, including informal and formal interviews, semi-structured interviews, key informant interviews, observations, focus group discussions, and participatory problem identification. The use of a combination of different techniques facilitated data triangulation and validation. Data collection at the local level was supported by a set of interview guides, the structures of which varied depending on the context.

Sources of data included a range of community members such as men, women, youth, elders, development agents and agricultural professionals. Relevant secondary sources and written information were also gathered from agriculture offices in kebeles and woredas. The study also involved a systematic review and analysis of pertinent literature. Questioner surveys were also prepared to collect quantitative information from 110 sample household heads in the three purposively selected Kebeles.

3.5. Methods of Data Analysis

The data generated had been coded and entered into SPSS 20 version software and converted to STATA 11 software for further statistical analysis. A descriptive statistics data analysis and multi nominal econometric model was used. Particularly, for quantitative data cross tabulation, mean, percentage, and diversity indices is used. The descriptive data analysis is conducted using Statistical Package for Social Sciences (SPSS) like mean, frequency distribution, and percentage used to examine and understand the socioeconomic situations of the sample respondents.

The quantitative data has been also analyzed by using paraphrasing, summarizing topic coding and triangulation with other authors view. Particularly explanation of major ideas from the study areas context has been better used.

3.5.1 Econometric Model Data Analysis Techniques

To identify the determinants behind rural household decision to engage in various livelihood diversification strategies the assumption is that in a given rational household head choose among the given determinants of livelihood diversification strategy alternatives that offers the maximum utility. Following Greene (2003), suppose for the i^{th} respondent faced with j choices, we specify the utility choice j as: here the dependent variable is the household's livelihood strategies which are commonly known as: off farm income, farm income and non-farm income.

**Table 1: Dependent variable; Variables definition and unit of measurement
Livelihood strategies if the choice of the HH lies in**

Y=0, AG Agriculture alone

Y=1, AG+OFF Agriculture and off farm combination

Y=2, AG+NF Agriculture and nonfarm combination

Y=3, AG+OFF+NF Agriculture, off farm and non-farm

Independent variables

AGE Age of Household Head in years (expected to affect the diversification positively)

SEX Sex of Household Head (1= Female, 0= Male) (males expected to have better options)

EDUCAT Education level of Household Head in years (education will raise creativity skill)

FAMILY Family Size of the household members in number (high family size expected to have money opportunities)

LAND Land size owned by the Household in Hectares (expected to increase diversification)

LIVESTOK Livestock hold by the household in tropical livestock unit (TLU)

INPUT Farm input use by the Household (0= No, 1= Yes)

EXTENS Frequency of extension contact a farmer has with extension agent in a year

COOPER Participation of the household in cooperatives (0=No, 1= Yes)

LEADER Leadership participation of the Household Head (0=No, 1=Yes)

CREDIT Credit use by the household (0= No, 1= Yes)

MKTDIS Distance of the nearest market from dwelling in kilometer

REMITA Economic support to the household (0= No, 1= Yes)

DEPRATIO Dependency ratio of the household

Here the variable relationship can be explained as follows $U_{ij} = Z_{ij}\beta + \epsilon_{ij}$ (1)

If the respondent makes choice j in particular, then we assume that U_{ij} is the maximum among the j utilities. So the statistical model is derived by the probability that choice j is made, which is:

$$\text{Prob}(U_{ij} > U_{ik}) \text{ for all other } K \neq j \text{ (2)}$$

Where, U_{ij} is the utility to the i^{th} respondent from livelihood strategy j U_{ik} the utility to the i^{th} respondent from livelihood strategy k

If the household maximizes its utility defined over income realizations, then the household's choice is simply an optimal allocation of its asset endowment to choose livelihood that maximizes its utility (Brown *et al.*, 2006). Thus, the i^{th} household's decision can, therefore, be modeled as maximizing the expected utility by choosing the j^{th} livelihood strategy among J discrete livelihood strategies, i.e.(3)

In general, for an outcome variable with J categories, let the j^{th} livelihood strategy that the i^{th} household chooses to maximize its utility could take the value 1 if the i^{th} household choose j^{th} livelihood strategy and 0 otherwise. The probability that a household with characteristics x chooses livelihood strategy j , P_{ij} is modeled as: $J=0, 1, 2, \dots, J-1$ (4)

With the requirement that for any I Where: P_{ij} = probability representing the i^{th} respondent's chance of falling into category j X = Predictors of response probabilities Covariate effects specific to j^{th} response category with the first category as the reference.

Appropriate normalization that removes an indeterminacy in the model is to assume that (this arise because probabilities sum to 1, so only J parameter vectors are needed to determine the $J + 1$ probabilities), (Greene, 2003) so that, implying that the generalized equation (4) above is equivalent to for $j = 0, 1, 2, \dots, J-1$ and (5)

Where: y = A polychromous outcome variable with categories coded from $0 \dots J$. *Note:* The probability of P_{ij} is derived from the constraint that the J probabilities sum to 1. That is, . Similar to **multi nominal logit model** it implies that we can compute J log-odds ratios which are specified as; (6)

4. CHAPTER FOUR: RESULTS AND DISCUSSIONS

The study presented in this thesis discussed data gathered by both qualitative and quantitative methods (mixed methods) from different sources. Accordingly, data on household socio-economic characteristics and other relevant variables related to physical and institutional factors, which affect farmers' decision choice on livelihood diversification practices were identified and analyzed by using mixed methods of data analysis including qualitative and quantitative methods. The data were collected by using qualitative sources like in depth household interview, observation, focus group discussion, participatory methods of data collection using well designed flexible checklists. The quantitative data had collected by using well-structured questioners from 110 sample households. The Analyses of quantitative data were made using frequencies, mean, ranges, and standard deviations. In addition, multi nominal econometric model has been also used to identify by how much potential variables of individuals influence their choices of livelihood options.

The qualitative data were also discussed through interpretation and conceptual generalization of farmers perception on livelihood diversification issues (causes consequences of low level of livelihood diversification), the main challenges, opportunities and suggested, remedial solutions for better livelihood options in the pastoralist area has been analyzed qualitatively by using topic coding and conceptual generalization systems. In this, the concepts and issues collected about livelihood diversification issue were coded by topic and concepts to be discussed.

4.1. Households Socio-economic Characteristics

According to (Abera, 2003, Mesfin, 2006, Bamlaku, 2011, Kidane, 2008Adugna, 2007) the most commonly practiced household Socio-economic characteristics that are frequently influencing farmers' decision choice among different livelihood options (of farm, on farm and nonfarm activities) are: age, sex, dependency ratio, educational level of household head, access to credit , cattle size, extension contact market distance and others. So the most universal human variable which has significant correlation with farmers' choice of livelihood option in this research (Age) is discussed as follows.

4.1.1 Age Structure

Age structure of farmers plays a pivotal role in household decision choice on use of different types of livelihood options. The mean age of the total sample households was found to be 42.7 with standard deviation of 13.7 ranging from 22 to 87 years (Table 2). In the household interview schedule, elder farmers were asked about livelihood diversification problems and their mitigation measures they practiced.

Accordingly, respondent replied that lack of good market; feed and medical access influences their cattle population productivity. Elder also reported that due to their weak physical performance and capital and labor intensive nature of different livelihood options the likelihood of their participation in it is lower as compared to the young generation. It is also believed that aged farmers are expected to have good experience about livestock production problems and their mitigating practices by using their indigenous knowledge techniques. So their participation level on nonfarm and off farm activity is less visible. Thus, the interview indicated that age of farmers can affect farmers' decisions choice of different livelihood practices significantly (Own interview, 2015).

Table 2: Age Structures of Households

	N	Minimum	Maximum	Mean	Std. Deviation
Age of respondents	110	22	87	42.70	13.659
Valid N (list wise)	110				

Source own survey (2015)

4.1.2 The study area and their livelihood diversification strategies

Table 3: Name of kebele * Major livelihood strategies adopted by the respondent Cross tabulation

Name of Sample Kebeles	Descriptions	Major livelihood strategies adopted by the respondent				Total (%)
		Agriculture only(pastoralist)	Agriculture (Pastoralist) and off farm	Agriculture (pastoralist)and non-farm	Agriculture(pastoralist), off farm and non-farm	
Har-weyuu	Count	11(29.7%)	7(18.9%)	14(37.8%)	5(13.5%)	37(100%)
Dharito	Count	14(37.8%)	14(37.8%)	6(16.2%)	3(8.1%)	37(100%)
Hadi-alle	Count	9(25%)	11(30.6)	6(16.7)	10(27.8%)	36(100%)
Total	Count	34(30.9)	32(29.1%)	26(23.6%)	18(16.4%)	110(100%)

Each subscript letter denotes a subset of major livelihood strategies adopted by the respondent categories whose column proportions do not differ significantly from each other at .05 levels. The cross tabulation table above depicts that majority of the respondents which is around 69% of the total sample households diversifies their livelihood strategies beyond the agricultural activities. In Hadi –Alle Kebele majorities of the respondents are practicing nonfarm and of farm activities which are 27(75%) people out of 36respondents. This is mainly due to its proximity to market areas and the Woredas' capital Yabelo town. It inferable fact that people who are in urban areas have more options to engage in different livelihood diversification strategies like petty trade and daily laborer wage.

4.2 Qualitative Result Discussion and Interpretation

Qualitative research methods are now gaining popularity outside the traditional academic social sciences, particularly in public health and international development research. Whereas quantitative research methods once dominated these fields, researchers have now begun drawing from a more diverse repertoire of methodologies as they tackle international development problems.

The great contribution of qualitative research is the culturally specific and contextually rich data it produces. Such data are proving critical insights in the designing of comprehensive solutions to public problems in developing countries, as scientists, medical doctors, pharmaceutical companies, and humanitarian organizations have come to recognize that biomedical solutions are only partial remedies. Rather, the success of any intervention – that is, whether it actually reaches the people it is intended to help – rests also on how well it addresses socio behavioral factors such as cultural norms, ethnic identities, gender norms, stigma, and socioeconomic status. Success measured on this basis has a bearing, in turn, on the cost-effectiveness, efficiency, and efficacy of interventions, concerns not insignificant in the eyes of project managers and funding agencies.

So the aim of using qualitative and participatory approaches is to understand and identify challenges and opportunities of livelihood diversification in Borana pastoralist areas particularly in Yabelo Woreda Oromia Region Ethiopia.

According to (AU, 2007) report pastoralism makes a significant contribution to gross domestic product (GDP) in many East African countries (around ten per cent in Kenya); it provides the majority of meat consumed in those countries; and provides a livelihood for tens of millions of people who live there. Pastoralists are the custodians of dry land environments, providing services through good rangeland management including biodiversity conservation, and wildlife tourism.

Despite providing such value, pastoralist areas in East African countries tend to have the highest incidence of poverty and the least access to basic services compared with other areas. In the pastoralist areas in northern Uganda, 64 per cent of the population lives below the poverty line, compared with 38 per cent nationally. So in this section the main issues to be discussed about pastoralists' livelihood diversification issues are: opportunities, challenges, perceptions and possible remedial actions for their own problems.

4.2.1 Challenges of Pastoralists

Pastoralists face a number of challenges that hinder their way of life and stifle their ability to adapt to changes in their external environment. Taken together, these challenges account for the poverty and lack of essential services like health, road, education and water facilities. According to farmers' classification and literature support in the study area, those challenges can be grouped into four main categories: climate change, political and economic marginalization, inappropriate development policies, and increasing resource competition.

4.2.1.1 Climate Change

Pastoralist communities across East Africa are starting to learn to live with the reality of climate change, adapting its impacts as it comes (Oxfam, August, 2008) in the next 10–15 years this will mean a continuation of current trends including successive poor rains, an increase in drought-related shocks, and more unpredictable and sometimes heavy rainfall events. Beyond this period the Intergovernmental Panel on Climate Change's climate models report on May, 2012 indicating that East Africa showing an increase in temperature of up to 2–4°C by the 2080s, with more intense rain predicted to fall in the short rains 2 times (October–December) over much of Kenya, Uganda, and northern Tanzania as soon as the 2020s, and becoming more pronounced in the following decades.

It is assumed that pastoralists could benefit from access of more rainfall. The result is visible more in dry-season pasture and longer access to wet-season pastures. It could also result in less frequent drought, which mean more time for people to rebuild their assets between lean times. However, there are also significant and negative consequences including loss of livestock through heat stress, and loss of land to agricultural encroachment.

As the rate of rainfall pattern raises the productivity potential of arid areas, decreasing alarmingly high flooding occurrence and the spread of human and livestock diseases that thrive during the wet season. This reality is common in Borana pastoralist communities in which on household may loss his total livestock within one season. These interns can affect their diversification activities by lowering their access to resources used for diversification. So it is an indicator that climate change is the serious problem both at national and local level.

4.2.1.2 Political and Economic Marginalization

For decades pastoralists have been side-lined in decision-making processes in East Africa (Oxfam, 2008). The result in this study is also showing persistent under-investment in pastoralist communities across the region. For example, there are lack of public investment like clinics and other community services. Particularly, household interview report indicating consequent increase in vulnerability of the pastoralist community rises due to lack of government support in programs and projects. For example they do not have market access at nearest place due to this they are not getting appropriate values for their production.

Pastoralist communities are marginalized on the basis of their geographical remoteness, their ethnicity and their livelihood, which is still seen by many governments across the eastern African region as an outmoded way of life that needs replacing with ‘modern’ livelihood systems (Adugna, 2008). With this regard, pastoralists are often not aware of their rights and have no experience of accountability to government. Low level of interaction between the people and the government limits the information flow and consecutive access to diversification options. This is because of lack of information and technology that can be generated by the government.

In addition farmers are unable to defend their traditional land rights and request the improved provision of basic services. Services such as health and education are not adequately provided nor adapted to the population of the dry lands of pastoralists. Furthermore, there is a severe lack of either public or private investment in infrastructure and economic development in Borana pastoralists combined with poor access to markets in which they can travel up to 120 kilometers to sell their cattle and exchange commodities.

The net effect is one of increasing insecurity. There is little work available in the town of pastoralists to provide an alternative or supplementary income and food insecurity has increased significantly. Most communities of Borana pastoralists are now dependent on relief of food distribution since the 1980s and Borana pastoralists are among this group.

4.2.1.3 Inappropriate Intervention Policies

For most of the twentieth century, rangeland management in Africa followed a model imported from the temperate grasslands and stable conditions of North America (Gemetesael 2006). The FGD result also indicating most pastoralists are lacking their mobility and grazing resources because of sedenterization policy. This implies that that development focused on a push towards settling communities, with bore-hole drilling (encouraging communities to cluster around water sources), and the assignment of fixed grazing lands to pastoralist communities, denying pastoralists their traditional land rights.

This approach is less effective in Africa's harsh and hugely variable dry lands. Because, it exacerbating overgrazing and land degradation and less productivity of lands. For example, in the study area the government sedenterization policy exacerbates degradation problems. It is spatial distribution of livestock rather than their number that must be managed to avoid overgrazing in arid lands, thus highlighting the critical importance of mobility in dry land resource management has to be recognized to keep the pastoralism persistent and/ or designing appropriate and sustainable techniques of pastoral production process.

In Borana Ethiopia, this kind of development approach has led to a reduction in wet season grazing land, leading to fewer areas of fresh pasture following the rains, while the areas grazed in the dry season get no chance to recover.

Today the dry or wet season grazing areas no longer exist due to the proliferation of settlements. As a result of this constrained mobility, pastoralists report an increase in stock density, a reduction in palatable grass and bushes results in decline of milk production for all species.

4.2.1.4 Increasing Resource Competition

Over the past few decades greater pressure has been put on pastoralist grazing lands and water resources, as populations have increased and grazing land has been taken for cultivation of conservation areas, and statues. In Borana pastoralists, the graze land used is majorly communally owned and it is highly vulnerable to degradation. Communal ownership of resources means that the resource is used in the first come first served base.

Due to this, conservation practice is minimal which is mainly manifested by lack of appropriate tenure arrangement/ private ownership. Currently in the study area the population density of people is increasing but the existing pasture land is invaded by weeds and the land is changing for crop cultivation in most parts of Ethiopian low lands particularly in Yabelo woreda. However, there is frequent crop failure due to lack of rain fall and in appropriate input use.

Pastoral livestock have been squeezed onto lands that are too small to be sustainable for pastoral production as pastoralists rely on freedom of movement to be able to manage the rangelands effectively. Key resource areas, for example dry-season grazing lands, are a target for agricultural use because of their productive potential. Once pastoralists lose these key resource areas, their whole strategy for dealing with drought is compromised. Even though, the livestock population is not growing at the same rate as the human population; livestock numbers in East Africa have remained fairly constant rate over recent years because of disease epidemics and starvation associated with floods and recurrent drought (Woreda Agricultural office, 2010).

Resource competition significantly increases the risk of conflict between different groups of land users. This risk is greatest during times of stress, for example drought or floods, when available resources are even more restricted. Increasingly, many pastoralists can no longer rely on livestock alone to provide them with a livelihood, yet other income-earning opportunities remain limited, as the growing number of the thousands of destitute ex-pastoralists shows.

Generally, resource scarcity like water and pasture are not limiting pastoralism practices alone but it narrows down other diversification options of livelihood. For example, peoples involvement in agro processing and value chain activities influenced due to lack of sufficient production.

The case study in the study area called “Har-Weyuu” indicating water is the most scarce resources in pastoralist community, as their life is highly depend on livestock production, water is the determinant factor for the livelihood of the pastoralist, water is highly scarce in the area, searching water for their animals and human consumption is the major duty of the community, unavailability of water in the nearest place force them to travel long distance and weak animals exposed to more challenging situation as a result of this. There are two types of water sources in those areas; one is water from the pond, during rainy seasons; they usual collect water from the ponds and stream water during dry season. As water is scarce in the area the possibility of getting pasture for the animals is very challenging and also other option for livelihood diversifications like animal fattening and hay making for animals feeding during dry period is not possible. The most critical time is January through mid of March. During, this period people start moving to search water to the neighboring places which are relatively good.

Mostly the chronic water shortage time in the community is starting from January to mid-March. In this time an intervention is required from government and other stack holders. For example, government practicing to collect feed from high land areas and disseminate to most affected areas.

4.2.2. Opportunities of Livelihood Diversification

Emerging global trends are leading to both threats and opportunities for Ethiopian pastoralists in general and Borana pastoralists in particular (AU, 2007). Some of these trends are long-term and predictable, whereas others are unpredictable and manifest as shock. As identified in most literature and from participatory problem diagnosis the main trends which influence pastoralists livelihood strategies include but not limited: globalization of markets and trends in the international and private sector standards governing trade in livestock products; decentralization and localization; improved communication technologies; food price increases and financial crises; increasing urbanization; international migration and remittances; new and emerging diseases and climate change.

4.2.2.1 Globalization and Markets Trends

Globalization of markets and trade has been accompanied by increasingly stringent international standards for food quality and safety, and disease control (FAO, 2011). For Eastern Africa as a whole, these trends are often viewed as problematic and barriers to access international meat markets. For example, in Borana pastoralists' livestock production is mainly depending on increasing number of heads and their production system is not modernized and market focused. So, even though the place is well known by its cattle spacious, the community is not benefiting as such due to lack of market access.

For example, "The respondents of the three sample kebele have serious problem in line with market access, particularly those from a distance of 40 to 45 KM forced to travel two to three days to reach to the market this affects the physical condition of the animals. On the other hand, as they travel longer distance the animals become physically unfit brokers/traders also observe the condition and forced them to sell under lower price. As the result of this, the brokers manipulate the market and take the lion share of the market and owners get the smallest share and have little say with their property due to lower prices."

So that an appropriate and need based intervention is needed for pastoralists of the area in order to benefit them the existing potential market competitiveness and quality.

In the case of accessing markets, Ethiopian pastoralist would need to compete with well-established, large-scale and potentially adept meat exporters' countries such as Argentina and Brazil. Another important consideration is that despite rising international standards, livestock and meat exports from Ethiopia is increasing. Particularly Borana pastoralist is at the border of the country suitable for exporting. As well, as the information collected from FGDs and the econometric output reveals that in adequate market at proximate place influences their production system and reduces their opportunities to diversify livelihood system.

These trends indicate that standards on food safety and disease control tend to be outweighed by issues of demand and price, with trade proceeding on the basis of bilateral arrangements between countries (AU, 2007). If so, there are still considerable opportunities for African pastoral producers to export livestock or meat, both to the Middle East and other regions. Similarly, urbanization within Borana communities particularly of affords opportunities for greater domestic and regional trade opportunities and job creation in wage and petty trading.

4.2.2.2. Decentralization and Localization

The process of decentralization and localization that are going on in many parts of Africa are important developments with multifaceted implications for pastoral development (AU, 2007). Among other issues, they are meant to bring the issues of development closer to the people. For example, in the study area there is a general decentralized administration system of called **Geda system** this enhances the people's participation in deciding their issues by themselves. For example, in the study area the issue of land administration is decentralized as follows.

In Borana pastoralist Hdi-alle Kebele Land is divided into rangeland, cropland, forestland and water resource areas. Rangeland belongs to the clan, and is allotted to members of the community through decisions by the elders, known as the Jarsa Reera. While most grazing land is open to all, the Jars a Reera fences off an area to be reserved for the dry season, and access to this land, called the "kalo", is controlled though the elders.

The process for acquiring farming land was similarly simple. Individuals would approach the kebele officials and the Abba Olla, or village leader, and be allotted a plot of land. This land could be passed from father to son, but once abandoned (as the land is fragile and cannot sustain multiple rotations of crops) the land would return to the community. Sadly, due to increased demand, this process is slower and less reliable today. The increase in farmland threatens rangeland, as does the prospect of private ownership. And while owning livestock is a more secure livelihood, it is becoming too expensive for a large portion of the community who need to supplement their income with crops. During the group discussion with Community member researcher identify the following factors as a cause of poor productivity of the rangelands: Declining traditional management system, increased livestock population and Climatic Factors including soil erosion.

The communities usually manage their pasture land in two ways; fencing the area and free from any contact during rainy season so as to enhance the rehabilitation whereas during dry season they start to use the pasture for lactating and weak animals which cannot move to distance place for pasture

The decentralization and localization system of administration can brought desirable livelihood outcomes when they are matched with the corresponding assets and resources.

Capacity issues need to be addressed if the process of political decentralization is to bring sustainable change and development. For example, in Borana pastoralist people are not well educated and their involvement in policy making practices is very limited.

4.2.2.3 Improved Communication Technologies

Although many advances in communication technologies they are not yet to reach to pastoral areas, there is little doubt that the expansion of mobile phone networks and mobile phone ownership is highly beneficial for pastoralists. Pastoralists are becoming better informed about local and international political events, are better able to access market information, and can communicate more rapidly and easier with relatives and traders, including internationally. For example wealthier pastoralists in Borana practicing commissioning activities by using technologies like commission agency and used for extinction services to call community animal health service experts in order to keep their animal safe. The growing systems around remittances and migrations are also assisted by mobile phone communication. Increasingly, the private sector is exploring options for delivery financial services, including banking, via mobile phones, with systems already in place in some countries.

Generally, if there will be greater advancement in pastoral production system, pastoralists can be benefited from mobile and other communication technologies for further livelihood opportunities via marketing practices. As discussion with pastoralists indicating commission agent practice in marketing (selling and buying of cattle) is the best means of livelihood which most high income pastoralist are practicing.

4.2.2.4 Urbanization

Urbanization is associated with both problems and opportunities for pastoralists of Borana in particular and Ethiopia in general. Urban centers pull people, especially young people, away from pastoral areas thereby, reducing the number of people available in the pastoral force in some cases. Unfortunately, the low levels of education and illiteracy in pastoral areas means that urban migrants are more likely to find employment in low paying jobs which requiring few skills and placing people at higher risk of exploitation.

Hence, for people from pastoral backgrounds who do find works at urban centers, remittances back to their families are become less important source of income.

For those people remaining in pastoralism, especially relatively wealthy pastoralists with larger herds, the growth of cities and towns provides economic opportunities for diversification. Such growth is usually associated with an expanding middle-income population, and as incomes increase, so does the demand for livestock products such as meat and milk. Assuming that basic infrastructure such as road and mobile phone networks are in place, pastoralists can benefit from increasing demand for their products. For example the pastoralists of in Hadi-Alle district of Yabelo woreda the pastoralists are benefiting by selling their goats and milk in the nearest cafes' and Hotels of Yabelo town.

The rising export of livestock from Somalia, Sudan and Ethiopia is partly driven by growing markets in the Gulf States, related to the expansion of cities and middle-income populations in these countries (AU, 2007).

4.2.2.5 Development and emergency Interventions

The Borana region has been hit by repeated droughts and consequent loss of livestock for the last three decades. In response to the recurrent drought and the prevalent emergency situation in the zone, a number of International and local non –governmental organizations have been working in various development and emergency interventions, to mentions some of them; Save the children Internationals (SCI), SOS Shale, CARE Ethiopia, World Vision, Goal Ethiopia, Action For Development (AFD), and Gayo Pastoral Community Development Initiative (GPCDI) are some them. Even though, there are money innervations by different stockholders, yet there is no sufficient integration of the resources and practices.

This is a big implication for the local government to take the leading role to address the need of the poor to diversify their livelihood by using the existing opportunities generating from various interventions of NGOs and GOs.

In addition, the existing government structures at different level for the agriculture sector can be consider as an opportunity for the community down there, for instance the assigning of development Agents(DAs) for different sectors like animal health and production expert, crop production expert and natural resource and management (NRM) expert. There are also Pastorals Training Centers (PTC) constructed at kebele level for the purpose of conducting demonstration and skill training for the pastoralists. But, the functionality of the systems needs further checking and serious follow up so as to achieve the target objectives.

4.3 Poverty and Pastoralists livelihood Security

4.3.1 Local Definitions and Characterizations

One approach of poverty study is to ask people of the study communities how they define poverty (Broch-Due and Anderson, 1999). Kristjanson et al. (2005) found that subjects identify livestock as a critical asset that can help households progress out of poverty, particularly when it helps diversify income, and that livestock loss can cause households to fall in to poverty. Devereux (2006) invoked a similar strategy among Somali pastoralists in eastern Ethiopia. Similarly, the Borana herders described poverty, not solely due to loss of animals, but rather as a result of not having managed livestock so as to establish social relations that provide a support network for their livelihood survival.

These exercises often evoke conceptualizations of poverty that go far beyond low income or lack of assets, especially by drawing in concerns about power and vulnerability. These concerns motivate political movements to organize for both effective representations of pastoralists to central governments as well as collective action at local level.

Generally, One need have to interview herders about their own definitions of poverty and well-being to learn that those who maintain pastoral livelihoods, participate in local institutions and rituals, and keep up their social obligations are typically not considered poor, even if they suffer food insecurity during droughts or have ‘below average’ incomes and expenditures or poor access to social services. Of the various conventional views of poverty, residents ’in the study area own conceptualization seems to come closest to an asset-based perspective livelihood diversification that is focused on livestock production.

Generally, farmers' perception on livelihood diversifications in Borana in general and Yabelo in particular, seems livestock production is the major livelihood and In the study area the discussion conducted with the selected group of beneficiaries revealed that they have the understanding of diversification as a coping strategies instead of means of increasing options and diversification of incomes for their livelihood security. Most importantly, those poor and destitute households have engaged in various income generating activities so as to protect their families from food shortage and since they do not have any option. This implies even though, diversification is practicing it is not well structured and sustainable rather it is for the sack of survival and filling their immediate gaps.

4.4 Econometric out put

4.4.1. Econometrics results of multinomial Logit Model

This section deals with factors, which determine farmers' decision choice on diversifying their livelihood options. To identify these factors multi nominal econometric model were used. This part of the study was analyzed by using households as unit of analysis.

The maximum likelihood method of estimation was employed to estimate the parameter estimates of the multinomial logit model and statistically significant variables were identified. In order to measure factors relative importance on the farmers' choice on livelihood diversification options; STATA version 11 soft was used to generate the parameter estimates. The results of the maximum likelihood estimates are presented in the Tables (4)

The likelihood ratio test statistics used to test the overall significance of the model (Green, 2000). The value of Pearson chi-square indicated the goodness of fit for model fitting information. The overall likelihood test ratio statistics indicated by the chi-square statistics is highly significant (**sign.= 0.00001**) suggesting strong explanatory power of the model. Parameter estimates of multinomial logit model provide only the directional effect of independent variables on dependent variables but estimate neither represent actual magnitude of change nor probabilities (Chilot, 2007). However, the marginal effects (relative risk ratio) measure the expected change in probability of a particular choice being made with respect to a unit change in an independent variable (Green, 2000).

Table4: Determinants of farmers’ decision choice on different livelihood diversification strategies (Marginal Effects) RRR (Significance level at 99% 95% and 90% confidence of interval using Agricultural practice alone as base case)

explanatory variable	AG + OFF FARM	AG + NON FARM	AG + OFF FARM + NON FARM
AGE (continuous)	.94(.08)*	.93 (0.03)**	.98(.63)
Farm input use 1= yes	0.27 (0.087)*	0.25 (0.07)*	0.12(0.036)**
Extension contact date	1.5(.035)**	1.5(.032)**	1.34(.20)
Access to remittance (1=yes)	1.8(.5)	6.8(0.019)***	1.5(.7)
Cattle size (head count)	1.08(.15)	1.06(.2)	1.22(.003)***
Market distance in km(continuous)	.94(.10)	.98(.62)	.88(.007)***
Credit access (1= yes)	.58(.49)	.42(.25)	.18(.09)*

SOURCE: My own survey, 2015

Note: *, **, *** implies Significant level at $p < 0.1$, $p < 0.05$ and $P < 0.01$ level of significance, respectively and category “0” or farmers livelihood practice with only agriculture as base case.

The maximum likelihood method was used to estimate the coefficient of the explanatory variables. The result indicates that among ‘13’ hypothesized explanatory variables three(3) four(4) and four(4) variables were found to significantly affecting the farmers choice of different livelihood diversification strategies (agriculture and off farm, agriculture and nonfarm and the combination of all) respectively.

Results of economic analysis shows that age of farmers, number of extension contact date and utilization of farm inputs (new breads, improved feeds, animal tablets, seed, fertilizer and etc...) were determining farmers’ decision choice on **agriculture and off farm combination livelihood diversification** strategies. Some may be highly significant in affecting the use of a particular livelihood practice and the other may be less significant.

Therefore, multinomial logit analysis results indicate use of each type of livelihood diversification strategy is affected by different factors at different levels of significance even by the same factor (table 4.).

4.4.2 Interpretation of econometric model results

4.4.2.1 Sex of household head

Gender affects diversification options, including the choice of income-generating activities (both farm and non-farm) due to culturally defined roles, social mobility limitations and differential ownership or access to assets (Galabet al, 2002). In this study, as expected sex of household head is found to positive even though it is less significant. The likelihoods' of using a combination of strategies both agriculture and off farm activity is highly adopted by male headed households. Thus, keeping other factors constant, the likelihood of MHHs choice on agriculture and off farm combination livelihood strategies rise by 1.7 units as we shift from female headed household to MHH. The opposite is true for the Female counterparts. This result is in agreement with previous studies conducted by Adugna (2005) and Berhanu (2007). Not only this in my interview and focus group discussion result, males have higher opportunities to engage in different off farm livelihood diversification strategies like wage laborer and some commission works in the market.

4.4.2.2 Age of Household Head

As expected, this variable was found significant ($p < 0.1$ and $p < 0.5$) to negatively influence farmers decision to diversify agriculture and off farm combination and to agriculture and nonfarm combination activities respectively. This implies that farmers' participation level in non-farm and off farm activities is decreasing by .94 and .93 units within a year increasing on age of individual farmers. The possible reason is that farmers, whose age is relatively younger, leaving other factors constant, could be pushed to engage more in non-farm activities than agriculture alone.

This is because, younger farm households cannot get enough land to support their livelihood compared to the older farm households.

As well, the interview indicating older farmers' reaction on technological adoption and their interaction with new ideas is minimal due to cultural and social realities i.e particularly farmers who practice livestock production has social recognition and supported by their culture. Hence, their practice is more likely become relaying on agricultural activities (livestock production) alone. This result is congruent with previous studies by Barrett *et al*, (2001); Destaw, (2003), Rao *et al.*, (2004); Adugna, (2005); Mulat *et al.*, (2006), Berhanu (2007), and Khan (2007).

4.4.2.3. Educational Level of Household Head

Educational attainment proves one of the most important determinants of nonfarm earnings, especially in more remunerative salaried and skilled employment in rural Africa (Barrett *et al*, 2001). Education is critical since the better-paid local jobs require formal schooling, usually the completion of secondary school or beyond. In the study area, since most of the farmer pastoralist and agro pastoralists there is no much people who have formal and informal education due to this education level is not showing significant correlation. However, the direction of relationship showing positive which imply rise in education level of individuals can develop their commitment and understanding on livelihood diversification issues. This result is in line with the findings of Galabet *al*, (2002), Berhanu (2007) and Khan (2007), but in contradiction with the findings of Barrett *et al.*, (2001); Destaw (2003).

4.4.2.4 Livestock Holding

In line with prior expectation, livestock holding in (cattle size in number of heads) is positively influencing household's choice of AG+OFF+NF livelihood strategy at 99% probability level. This means the probability of farmers practice on diversifying their livelihood towards nonfarm and off farm activity is increasing since it widens their opportunity to create other assets by exchanging and selling of their live stocks.

In contradiction as Adugna (2007), report on this issue indicating farmer with lower livestock holding would be obliged to diversify livelihoods into off and non-farm in order to meet needs. In his study the likelihood of diversifying livelihoods into off and nonfarm activities decrease by 1.9 % for households with more livestock number in TLU.

But in this study, the reverse is true because, livelihood diversification activity is capital intensive and requires assets and resources which can be mobilized to create and develop other livelihood options. The result is in line with the findings of Tesfaye (2003), Berhanu (2007) and Khan (2007).

4.4.2.5 Land size owned

It is hypothesized, that the area of land owned by the household has a significant and good correlation with the likelihood of choosing off farm and nonfarm activities especially in high land agro pastoral areas. But, most of this research target groups have communal graze land holdings and only few of them who come from the resettlement programs had small owned plots of lands. Due to this, the logit outcome doesn't show high significant relationship but the coefficient of relationship is positive. This implies, some farmers who practice crop production have no sufficient production from their plot due to climatic factors causing crop failure. So that, they usually preferring to practice nonfarm and off farm activities to secure their household income.

The results of other study in the highlands like (Adugna, 2007 and others) suggest that rural households with more land tend to follow agricultural extensification rather than diversifying from agriculture since they draw incentives of land productivity. This implies the chance of choosing agriculture in the context of having large land size decreases the probability of diversifying to off farm and nonfarm activities or the probability of diversifying livelihoods decreases by increasing land size. It also implies that those households in the highlands who expect secured agricultural income stay on farm and lower off-farm intensity.

Lanjouw and Lanjouw (1995) also found out that landholdings per capita are positively correlated with participation in low productivity occupations and the reverse is true in drought prone low land areas like Borena zone Yabelo and the result is in line with that of Berhanu (2007), Mulat *et al.*, (2006) and Khan (2007). The implication is that farmers just switch away from off-farm activities when the farm activity is promising in the high lands and the reverse and this supports the contextual argument as opposed to the uniform argument is so much important in using this variable for livelihood diversification character. And generally, Farmers consider off-farm activities as a last resort income source if crop production fails especially in low lands.

4.4.2.6 Frequency of extension contact

This variable has a positive and significant correlation at .04 and .03 significant level for off farm and nonfarm activities respectively. The likelihood of choosing agriculture plus off farm and agriculture plus nonfarm livelihood strategy is increasing as the number of extension contact date increase instead of sustaining on agricultural practices alone.

That means, keeping other factors constant; a unit increase in extension contact date implies that the likelihood of participation in agriculture plus off farm and agriculture plus nonfarm activates increases by 1.4 and 1.5 units respectively. The objectives of extension is to change farmers outlook towards their difficulties which assists them adapt better solution to their livelihoods (Samuel, 2001). Thus, the information obtained and the knowledge and skill gained from extension organization may influence farmers' skill and decision making on seeking diversification.

The frequent extension contact received will increase the tendency of household to participate in off farm and nonfarm activities. This may be also explained by the factors that the message/contents that farmer gain from extension agents help them to initiate to use risk aversion strategies that seek diversification of income within and out agriculture.

4.4.2.7 Credit use

Contrary to expectation, credit use is found to have a significant ($p < 0.1$) negative impact on the likelihood of choosing diversified livelihood strategy which combines agriculture, off farm and nonfarm activities. This implies that, the likelihood of participating in diversified livelihood strategy by the household drops by 18 % for a household using credit. This negative impact may be attributed to the fact that credit use allows farmers to follow agricultural intensification by accessing farm inputs which in turn improves productivity.

This implies that the formal and informal credit facilities that avail for rural farmers are a very important asset in rural livelihoods not only to finance agricultural inputs activities, but also to protect loss of crucial livelihood assets such as cattle due to seasonal food shortage, illness or death (Tesfaye, 2003). The result of the study, therefore, strongly suggest that farmers' access and use of credit would play important role in promoting agricultural development rather than diversification.

The result is also in agreement with that of Holden *et al.*, (2004); Brown *et al.*, (2006), Berhanu (2007), and Khan (2007). This implies that the incentive for accessing credit accelerates agricultural production.

4.4.2.8 Receiving Remittance

Remittance refers to money sent from inside and outside the country. As expected, the multinomial logit model identified this variable as it had positive contribution to the diversification of livelihood strategies towards agriculture and nonfarm combination at significance of <5% probability level. This means that, the likelihood of a household receiving remittance increase choice of diversification into nonfarm activities by 6.8 %. The result is in consistent with the findings of Bezemer and Lerman, (2002) and Brown *et al.*, (2006). Although remittances constitute only a small part of total household income on average, they appear important for keeping rural households diversifying activities.

4.4.3 Market Distance

As hypostasized the market access in terms of distance in km from the residence area had negative correlation with the use of using all livelihood options. This implies the probability of individuals to diversify beyond the agriculture is likely to be reduced as the distance increase. This is due to the fact that individuals who live near the market area had higher probability to engage other livelihood option beyond agriculture including; wage laborer and petty trade.

In this research market distance has negative and highly significant correlation with that of using AGRICULTUR + OF FARM+ NON FARM at 99% confidence interval. This implies a single kilometer increase in market distance is reducing the farmers' choice of all combinations of livelihood strategy by 0.88 units. This research is also in line with that of Adugna (2007) and Tesfaye (2003) findings.

5. CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Conclusions

Severe restrictions on the traditional mobile pastoral production system resulting from inappropriate policies results in an increased number of pastoralists unable to cope with and recover from drought and other shocks. In this setting, pastoralists increasingly face poverty and hardship, especially given the lack of alternative livelihood options. Emergency relief on its own will not reduce pastoral vulnerability. A different approach is needed to build capacity for drought preparedness in pastoral areas, which focuses on wealth and opportunity creation by investing in and promoting the development of pastoral areas.

Pastoral livelihood vulnerability can be reduced through policy and practice change intended to reduce risks within the pastoral system while expanding options for economic mobility. To secure livelihoods and restore resilience, drought management, relief and humanitarian assistance must be combined with interventions aimed at enhancing opportunities for economic production and integrating pastoral economies into national economies. Appropriate policies for pastoral areas must incorporate the need to address the unique challenges of these regions with the provision of resources and incentives for upward economic mobility for individual pastoralists.

Based on the present study it is possible to conclude that the constraints of the rural households in choosing livelihood strategies that will lead them achieve food security goal should not be put aside. Accordingly, the result of econometric model indicating that the status of farm input use like improved feed and breads is significantly and positively correlated with all kinds(agriculture and off farm, agriculture and on farm and combination of all) of livelihood strategies. Particularly age, number of extension contact date, and access to remittance income influencing farmers' choice of agriculture and nonfarm (off farm plus nonfarm) combination livelihood strategies. Generally, total livestock holding, credit access and market distance affecting farmers' choice of overall combination of livelihoods strategies.

There is controversial view on expansion of cropland. The rich who have large herd size wishes to have larger rangeland size to feed the livestock.

On the other hand, the poor who in most cases lost their animals due to drought would like to increase their income portfolio by expanding cropland.

5.2 Recommendations

- I. Build pastoralist organizations' capacity on advocacy, research and communication so as to understand their needs priorities and opportunities by their own experts and develop their own early warning system.
- II. Improve institutional governance of pastoralist organizations and other structures for effective representation and participation in their own affairs.
- III. Establish effective networks among pastoralist organizations and groups and with other communities' and groups so as to expand their livelihood diversification options.
- IV. Develop and present a business case for pastoralism to advocate for the need to increase investment in pastoral areas which widen their opportunities to get market attachment both at national and local level.
- V. Provision of public facilities such as construction of roads and infrastructure in the pastoral areas for easy transportation and operation can solve some of the problems of pastoral risks such as lack of market for cattle, and information sharing problems. School, health and water supply issues are growing concerns, which could be used as means of encouraging more sedentized mode of life. Yet, the pastoral settings are different and similar policies of providing these services as it is the case in the highly populated highland areas cannot be applied and there for an intervention which recognizes pastoralists needs, resources and interest is more important.
- VI. Small scale enterprises that can be performed by women that include milk processing, grain mill operation, trade of livestock, cattle fattening, handicrafts, and petty trade require technical and financial support therefore provision of training and credit service is highly important to enhance more opportunities of livelihood diversification.

Multinomial logistic regression

Number of obs = 110
 LR chi2(39) = 94.81
 Prob > chi2 = 0.0000
 Pseudo R2 = 0.3171

Log likelihood = -102.10988

majorlives~a	RRR	Std. Err.	z	P> z	[95% Conf. Interval]	
0	(base outcome)					
1						
sex	1.752016	1.408398	0.70	0.485	.3624769 8.468291	
age	.9432932	.0313138	-1.76	0.079	.8838731 1.006708	
educlevel	80.99769	23088.51	0.02	0.988	1.9e-241 3.5e+244	
fami size	.7033731	.1832616	-1.35	0.177	.4220928 1.172097	
landhol size	1.299623	1.04054	0.33	0.743	.2705858 6.242085	
cattl size	1.08669	.0625066	1.45	0.148	.9708327 1.216373	
farminput	.2736046	.2070755	-1.71	0.087	.0620723 1.206003	
extncont	1.482687	.2772218	2.11	0.035	1.027775 2.138951	
cooppartici	1.098581	.8598179	0.12	0.904	.2369349 5.093723	
creditacces	.58821	.4553364	-0.69	0.493	.1290069 2.681958	
markdis	.9466723	.0322075	-1.61	0.107	.8856054 1.01195	
remi ncom	1.801888	1.604038	0.66	0.508	.3147674 10.31492	
depratio	.382548	.2413512	-1.52	0.128	.1110859 1.317385	
2						
sex	2.875473	2.216636	1.37	0.171	.6346552 13.02809	
age	.9337288	.0293952	-2.18	0.029	.8778568 .9931568	
educlevel	73.33252	20903.54	0.02	0.988	1.7e-241 3.2e+244	
fami size	.6955537	.1790352	-1.41	0.158	.419983 1.151939	
landhol size	1.214207	1.025013	0.23	0.818	.2321256 6.351298	
cattl size	1.069388	.058823	1.22	0.223	.9600947 1.191123	
farminput	.2549305	.1953492	-1.78	0.074	.0567753 1.14468	
extncont	1.510241	.290753	2.14	0.032	1.035553 2.202522	
cooppartici	1.336013	.9618108	0.40	0.687	.3258526 5.477725	
creditacces	.4262542	.3168954	-1.15	0.251	.0992772 1.830155	
markdis	.9834827	.0329512	-0.50	0.619	.9209743 1.050234	
remi ncom	6.842051	5.597052	2.35	0.019	1.376803 34.00172	
depratio	.5499711	.3485014	-0.94	0.345	.158839 1.904244	
3						
sex	2.062591	2.107878	0.71	0.479	.2783058 15.28636	
age	.9831391	.0354799	-0.47	0.638	.9160022 1.055197	
educlevel	92.66568	26414.49	0.02	0.987	2.1e-241 4.0e+244	
fami size	.6087349	.1959071	-1.54	0.123	.3239581 1.143846	
landhol size	3.313312	3.198218	1.24	0.215	.4996072 21.97333	
cattl size	1.227497	.0857275	2.93	0.003	1.070467 1.407563	
farminput	.1257545	.1246372	-2.09	0.036	.0180254 .8773282	
extncont	1.345809	.3134293	1.28	0.202	.8525987 2.124331	
cooppartici	.2411595	.2443711	-1.40	0.160	.0330953 1.757283	
creditacces	.189599	.1876003	-1.68	0.093	.0272651 1.318453	
markdis	.8812789	.0412326	-2.70	0.007	.8040591 .9659146	
remi ncom	1.52486	1.674573	0.38	0.701	.177197 13.12211	
depratio	.410922	.348662	-1.05	0.295	.0778979 2.167668	

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Chairman of the African and Asian Academician, George-August University, Germany (1990-1994)

Coordinator in the scaling up of modern Agricultural Technology in Afar Regional State (2003-2006)

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Partner for the implementation of Afar Livestock Recovery Project of FAO Funded by Norwegian Development Fund (2003- 2006)

Resource Person of Farm Africa Projects in Afar Regional State (1999-2006)

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INDIRA GANDHI NATIONAL OPEN UNIVERSITY SCHOOL OF
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A Thesis Submitted to Indira Gandhi National Open University SCHOOLS OF
CONTINUING EDUCATION in Partial Fulfillment of the Requirements for the
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1. CHAPTER ONE: INTRODUCTION

1.1 .Back ground of the Study

Pastoralists constitute approximately ten percent of the Ethiopian population (over 6 million) and occupy much of the peripheral lowlands that surround the central highland plateaus dominated by rain-fed small-scale agriculture (Fekadu 1990). Numerous studies have documented the threats to pastoral livelihoods in Ethiopia over the last few decades including drought, conflict, and inappropriate development interventions that have led to the weakening of traditional coping mechanisms in rural pastoral areas ((CRDA,2001; Beruk 2001; Hogg 1997; Helland, 1997). In response to such threats, pastoralists have had to adapt the activities and assets from which they derive a living as well as their patterns of migration. Existing trends indicate that traditional livestock-based livelihood strategies (defined as pastoral livelihood strategies) alone will not be able to provide sufficient food for country's pastoral community.

It is thus evident that non-livestock based strategies need to supplement or in some cases substitute previously dominant pastoral livelihood strategies. by now, trends of pastoral livelihood diversification have been noted among the Borana and Afar where by pastoralists are combining livestock production with a variety of non-pastoral activities including agriculture, wage labour and trade (See Little et al. 2001; Grahn 2001; Getachew 1991; 2001).Trends of seasonal mobility amongst pastoralists are changing significantly characterized by increased permanent settlement in various locations. An emerging alternative for livestock destitute pastoralists has been settlement in and around urban centers in order to exploit non-livestock based livelihood opportunities (defined as non-pastoral livelihood strategies) that would otherwise be unavailable in rural pastoral areas.

The unreliability of rural pastoral livelihoods as a result of recurring drought and conflict is likely to ensure the continuing influx of pastoralists in to urban and peri-urban spaces. There is thus an urgent need to examine the livelihoods of those pastoralists in urban and peri-urban spaces who constitute some of the poorest and most vulnerable groups in Ethiopia's pastoral areas. Thus, this paper will outline the different livelihood options and challenges facing by the pastoral community in Oromiya region Yabelo woreda. By doing so, this research will look for to contribute to the ongoing debates of pastoralists' livelihood strategies in Borana Woreda in particular and elsewhere Ethiopia in general.

Particularly this paper will also use to stimulate the importance of diversification in poverty reduction, agricultural development and economic growth and it will argue for; a broader entry point for poverty reduction that is multi-sectorial instead of a sole focus on increasing farm incomes. It will also identify the need for a better understanding of market and non-market constraints faced by the poor in marginal areas and finally a greater gratitude will be given for the role of mobility and rural-urban links in poverty reduction and regional development in marginal areas. The Borana region has been hit by repeated droughts and consequent loss of livestock for the last three decades, the most recent one being in the period between, 1999-2000. For example, a recent study estimates that during the years 1980-1997 alone, monetary losses due to livestock deaths in the Borana plateau exceeded US \$ 300 million (Desta 2001, 1). The study further argues that ‘cattle crashes’, or widespread loss of cattle, occur every 5-6 years, particularly during times of low rainfall and high stocking rates. Consequently, the need for livelihoods diversification and assessment of challenges and opportunities of livelihood diversification is inevitable and compulsory.

1.2 Statement of the problem

The pastoral system in Ethiopia has been experiencing vulnerability to environmental degradation and food insecurity. More specifically chronic food insecurity has been characterized the area where by the large majority of pastoralist depend on food assistance. Vulnerability to food insecurity is, therefore, due to lack of livelihood diversification constrained by lack of basic infrastructure services, external shocks such as recurrent drought, flood, conflict and people’s capacities to cope with the shocks, which depend on factors such as social networks, assets, and political status (Beruk, 2003).

Similar to other pastoral areas in the country, the Borana people recently experienced chronic food insecurity. In this area the economy of the people is mainly dependent on livestock production alone. In the past, the households’ consumption requirement is mainly derived directly from livestock and their products and only depending on a single livelihood means.

However, shifts have been occurred over time and most pastoral household food needs are derived from purchase at market supplemented by own production. This implies that livestock production could not supply adequate/ sufficient food for households’ consumption.

Thus, the income earned from livestock rising is not adequate to purchase more food. Crop farming that pastoralists consider as alternative means to food self-sufficiency left them with crop failure or low yield due to different climatic and environmental and problems like: erratic rain fall, drought and low levels of awareness by most pastoralists.

Predominantly, the Borana continue to rely on livelihoods which are highly vulnerable to shocks and trends. The probability of occurrence of drought remains high and at the same time several factors are causing the weakening of traditional resource management institutions and mechanisms for coping with resource scarcity such as seasonal migration, privatization and alienation of traditional rights of access to pastoral resources as well as restrictions of free movement in search of pasture and water are key threats to the continuation of Borana pastoralist (Baxter 2001, 245).

However they have also greater opportunities to expand their way of life including; development of water points, technological improvement, access to market, education, health service, road and cultivable farm lands. Even though there are plenty of opportunities in livelihood diversification pastoralists are not using this chance effectively to diversify their livelihoods.

Thus, the goal of this study is understand people's choices and capabilities and their potential to make choices and the results among the potential opportunities and expanding their choices in diversifying their means of livelihoods and investigate the main factors which affect their livelihood diversification practices.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study is to assess Challenges and opportunities of Livelihood Diversification, the case of Yabelo Woreda Borana Pastoral Communities of Ethiopia

1.3.2 Specific Objective:

- To identify the existing challenges and opportunities of livelihood diversification in the study area
- To investigate major factors which determine household livelihood security
- To point out farmers perception on livelihood diversification

1.4. Basic research questions

Up on completion of this study the following questions will be addressed

1. How do farmers perceive the livelihood diversification and food insecurity?
2. What are the major determinant factors which affect livelihood diversification?
3. What are the good opportunities which stimulate pastoralists' involvement in household livelihood diversification?

1.5. Significance of the study

Researching of challenges and opportunities of livelihood diversification in pastoralist areas is useful in designing of policies and strategies that promote resource effective livelihood diversification (Ellis, 1999). Therefore, the findings of this study will provide valuable information to researchers, policy makers and development institutions working in the area of designing and developing effective and sustainable pastoral livelihood diversification strategies.

The research can also help to develop locally acceptable and feasible strategies to minimize the problem of livelihood insecurity based on the recommendations. Notably, the finding of this study will suggest possible mechanisms in reducing the impact of food insecurity in Ethiopian pastoralists in particular and east Africa in particular.

2. CHAPTER TWO: LITERATURE REVIEW

2.1. Conceptual literature: Livelihoods, Wellbeing and Gender

Despite its widespread endorsement, a precise definition of the livelihoods approach is contentious and remains a key problem in research on livelihoods. The livelihoods approach has largely emerged out of changing conceptualizations of poverty towards a multidimensional approach beyond income poverty (Rakodi 2002, 4-6). A defining feature of the approach is that it introduces the concept of 'livelihoods' defined as "...the *capabilities, assets* (including both material and social resources) and *activities* required for a means of living" (Scoones, 1998, 5).

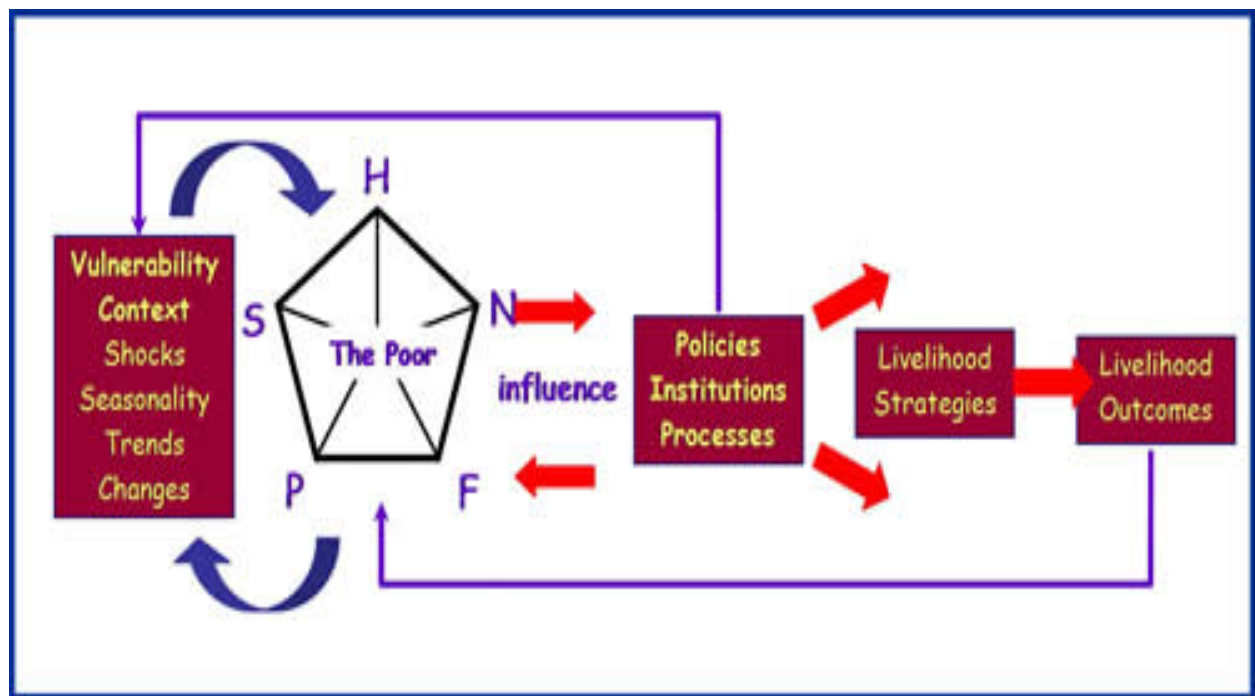


Figure 3. Sustainable Livelihood frame work. Source, adopted from Daiana Carney (1999)

Livelihoods analysis entails an examination of the assets (resources) that are available to people and how they are able to transform those assets through various livelihood strategies into sustainable livelihood outcomes such as reduced poverty and improved wellbeing (Scoones1998). Broadly defined, assets refer to '...capital which can be stored, accumulated, exchanged or depleted and put to work to generate a flow of income or other benefits' (Rakodi 1999, 316). Six types of assets are commonly incorporated in livelihoods analysis namely natural, human, social, physical, financial and political assets².

The emphasis on assets within a livelihoods perspective emanates from the argument that the ability of individuals or households to pursue particular livelihood strategies is dependent upon the assets which they can access and use (Scoones 1998, 7), where a livelihood strategy refers to the activity or combination of activities from which people derive a living. In turn, the types of livelihood strategies pursued are thought to determine the ability of individuals or households to achieve positive outcomes such as improved wellbeing and reduced vulnerability (Moser 1998; Scoones 1998). It is however, important to note that peoples' livelihoods do not always result in positive outcomes and this is particularly so in the case of the poor who have limited access to various assets and whose livelihood strategies may result in further impoverishment and vulnerability (Rakodi 2002, 6). Furthermore, context specific institutional processes, such as market and political processes, at local, regional and national scales shape livelihood outcomes.

Drawing from the livelihoods approach, wellbeing is conceptualized in this study in terms of peoples' access to a range of assets and their use of those assets to pursue various livelihood strategies and achieve positive outcomes. A livelihoods approach allows the examination of a plurality of dimensions of wellbeing whereby noneconomic dimensions such as social and human indicators are given equal emphasis to economic indicators. However, as Beall (2002, 73-74) has recently emphasized, livelihoods analysis should pay attention to gender and generation differences in determining individual household member's access to various assets and capability to use those assets. Since the asset status and livelihood strategies of individual household members are subject to gendered differences wellbeing too becomes gendered. Therefore, it is understood here that peoples' access to various assets, the livelihood strategies which they pursue and consequently their wellbeing are all gendered processes.

Before delving into a discussion of the assets and livelihood strategies of pastoral households in peri-urban Yabello, a brief overview of trends of pastoral development in Ethiopia are considered followed by a more focused discussion of Borana pastoralism and Yabello.

2.1. Trends of Pastoral Development in Ethiopia

Pastoralists occupy the lowland areas of Ethiopia characterized by arid and semi-arid climates, which make these areas unsuitable for agriculture. The arid and semi-arid regions are said to account for 60 percent of the surface area of the country (Hogg 1996). Apart from numerous smaller groups, there are three main pastoral groups namely the Somali, Borana, and Afar pastoralists living in the south-east, south, and north-east respectively (Hogg 1997). These pastoralists derive their living mainly from livestock which serve as the 'backbone' of their economies, whilst contributing to the socio cultural and political organization of those societies (Hogg 1991, 10). Livestock support the social fabric of pastoral societies serving as a symbol of social status and item for exchange during various social functions such as marriage, birth, and initiation ceremonies thus cementing social solidarity (Farah 1996, 129). However, the last 30 years have been characterized by an increasing reliance on non livestock-based activities including trade, agriculture and wage employment. This has mainly been a result of the declining viability of traditional livestock- based livelihood strategies.

The viability of pastoral livelihoods in Ethiopia has been compromised due to the interplay between external factors and factors internal to pastoral societies. Some external factors include expansionist interests of central governments at various points in time resulting in the loss of valuable pastoral land to state-owned and private entrepreneurial ventures (see Getachew 2001 and Gamaledin 1992). As Haile-Gebriel (2003, 6) notes, the loss of key grazing and watering points to various non-pastoral purposes is responsible for the increasing impoverishment of pastoral communities. Central governments have been critiqued for marginalizing pastoral areas in terms of integration into national economy and investments in infrastructure and services (CRDA 2001; Beruk 2001; Hogg 1997; Farah 1996).

Today, Ethiopia's pastoral areas remain some of the most backward regions in terms of infrastructural development and basic service provision such as education and health. A series of state-led development initiatives in pastoral areas in the 1970s and 1980s were not entirely successful in redressing the imbalances between pastoral and non-pastoral areas. Dynamics within pastoral systems themselves, which cannot be seen separate to external factors, have shaped the trajectory of pastoral development.

Increasing human and livestock populations, recurrent drought and famine, weakening of traditional resource management systems and sedenterization are some of the factors which have brought about shrinkage in pastoral resources vital for the sustenance of livestock. Conflict is also common to Ethiopia's pastoral areas both as a cause and consequence of shrinking pastoral resources, but also as a result of political interference by national governments. The vulnerability of pastoralists to market price fluctuations, particularly during times of drought and/or famine has further led to the depletion of their livestock assets.

Overall, the trajectory of pastoral development in Ethiopia over the last 30 years in Particular points to the declining ability of pastoralists to subsist mainly from livestock based activities alone, and the consequent increased significance of no livestock based activities, including but not limited to agriculture. At the same time, those who have lost most or all of their livestock assets are unable to subsist within the rural pastoral economy and must settle in spaces which offer them the maximum range of alternative livelihood opportunities, including urban and peri-urban spaces. Such trends are also evident amongst the Borana pastoralists of Southern Ethiopia.

3. CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Description of the Study Area

Yabello Woreda is situated in Borena zone of Oromia region some 570 km south of Addis Ababa. The Woreda consists of 23 kebele Administrations (KAs). The total land area of the Woreda is estimated to be about 5909 km² of which 31 km² is cultivated, 338 km² is covered with forest, 681km² is bush and shrubs, and 4900km² is wood land (WBISPP, 2003). The altitude of the area ranges from 1000 to 1700 meters above sea level. The mean annual temperature ranges from 19 to 24 and a prominent feature of the ecosystem is the erratic and variable nature of the rainfall, with most areas receiving between 238 mm and 896mm annually, with a high coefficient of variability ranging from 18% to 69%.

The total population of the Woreda is 91,679 (male 45487 and female 46192). The dominant ethnic group is Oromo (CSA Population Projection 2010).

Livestock production is the major components of the farming system in the study area and contributes to the subsistence requirement of the population, among other, in terms of milk, and milk products and meat, particularly from small ruminants. According to the Woreda Agricultural and Rural Development Office (2010), the total population of livestock in the area is estimated to be 413,766. Among this, cattle population accounts for 56.3% followed by goat 23.9% and the remaining was 19.8%. The proportion of sheep and camel are 14.3% and 5.5% respectively.

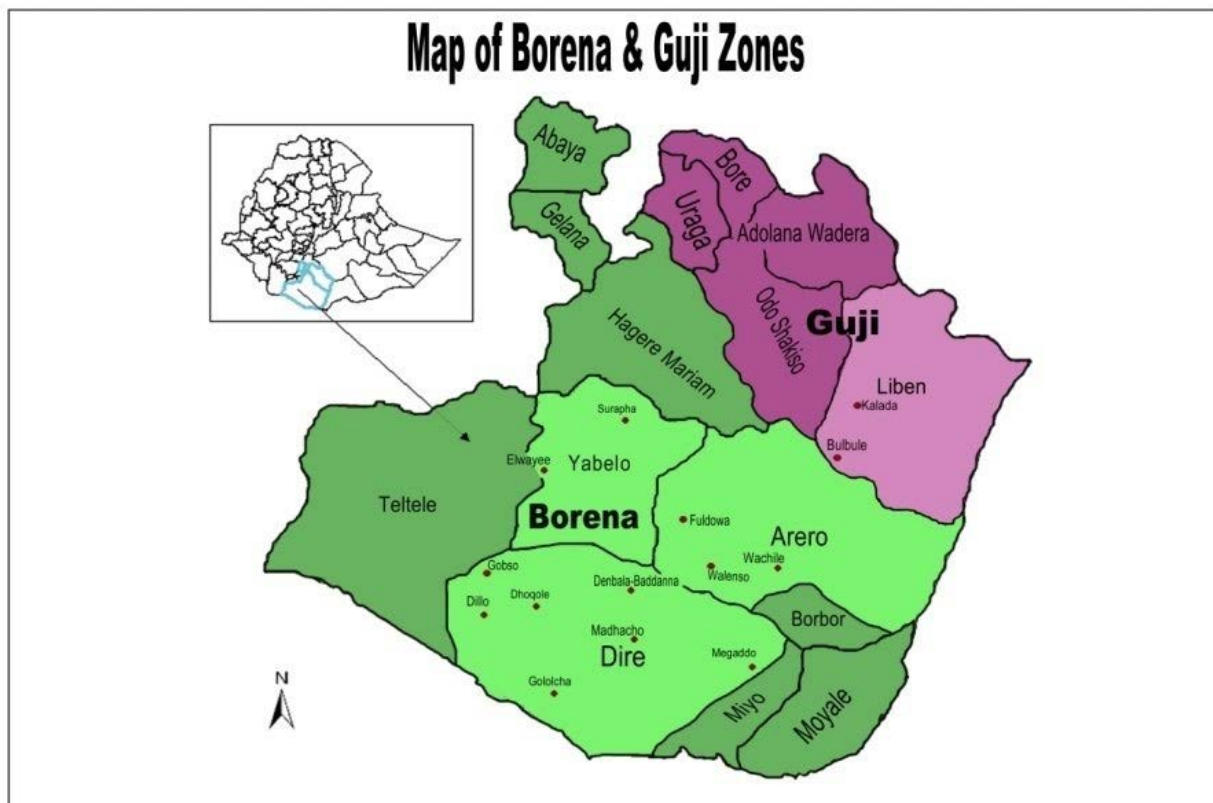


Figure 4: the Topographical map of Borena and Guji Zone. Source, own field designing in 2015
 In general, the Woreda is designated as famine prone and frequent crop failure is a common problem usually leading to food shortage. Drought induced food insecurity has been a common recurrent phenomena exacerbating the vulnerability of resource poor rural households in the area to be food insecure.

3.2. Sampling Technique and Sample Size

This study will employ multi-stage sampling technique in which both purposive and random sampling techniques will be applied. At the first stage, out of 13 Woredas of Borana zone, Yabello Woreda is selected purposively based on the diversity of livelihood options is more available in the Woreda. In this area a number of stockholders are working to improve the wellbeing's of the people but the lives of people is not yet improved and going well as expected to be due to this and others I am motivated to know the reason behind their food insecurity. For this, I do have long experience in the area. Therefore, Yabelo Woreda is my research target area.

In the second stage, out of the total of 23 kebele administrations of the Woreda three kebeles are purposively selected based on their, livelihood diversification practices. The three kebeles are Hadi-Alle, Har-Weyuu and Dhirto. In the third stage, the households in the areas will be selected based on their livelihood diversification performance and their level of proximity to the local town Yabelo. Then, 4% of the total populations of the three kebels 110 (one hundred ten) sample households, 37 (thirty seven households) from each category will be selected by using random probability sampling technique for quantitative survey.

3.3. Data source and method of data collection

Quantitative and qualitative data will be collected from primary and secondary sources. Primary data will be collected from 110 sample households drawn from total of 2600 households residing in Har-weyu, Hadi-Alle and Dhirto kebele administrations. The data collected include information on: household characteristics (education, age, family size, sex,), household assets, household income, livestock holdings, grazing land size, household food security indicators, house hold income opportunities and households livelihood strategies, challenges and shocks.

Secondary data relevant to the research work will also collect from the Kebele administrations office and Woreda offices of Pastoral and Rural Development. The information includes the detailed data with regard to agricultural and other development activities of the area.

To generate information at household level, household level surveys will also undertake using structured interview schedule. Prior to conducting the interview, pre-test of the interview schedule will undertake with 15 key informants in the study area and accordingly revision will be made for tools of data collection. Five enumerators will recruited based on their proficiency in communicating using Afan Oromo language, educational background, and prior exposure to similar work. Training will be given to enumerators on the content of the survey and procedures to be followed in the process of conducting the survey.

The target group will be given similar questioners and interviews so as to determine food security status of the sample households and challenges occurring in their usual livelihoods.

Focused group discussions will also carried out with the participant members of sample households in order to generate information on overall livelihood security process and livelihood diversification efforts. In addition, interview will also held at household level using 30 sample individuals ten for each kebele by selecting purposively based on their knowledge on the livelihood port flow of the area, their willingness to participate, and their acceptability by the community (Like Geda leaders and elder peoples)

3.4 Methods of data analysis

The data generated will be coded and entered into SPSS 20 version software and converted to STATA 11 software for further statistical analysis. Descriptive statistics data analysis methods will used. Particularly, for quantitative data one way ANOVA, mean, percentage, t-test, chi square test, and diversity indices. The descriptive data analysis will conduct using Statistical Package for Social Sciences (SPSS) like mean, standard deviation, frequency distribution, and percentage will used to examine and understand the socioeconomic situations of the sample respondents through comparing pure pastoralists and agricultural pastoralists.

The t-test and chi-square will also employ to compare the two groups (pure pastoralists and agricultural pastoralists) on certain variables.

3.4.1 Econometric model Data analysis techniques

To identify the determinants behind rural household decision to engage in various livelihood diversification strategies the assumption is that in a given rational household head choose among the given determinants of livelihood diversification strategy alternatives that offers the maximum utility. Following Greene (2003), suppose for the i^{th} respondent faced with j choices, we specify the utility choice j as: here the dependent variable is the household's livelihood strategies which are commonly known as: off farm income, farm income and non-farm income.

Dependent variable	Variables definition and unit of measurement
Livelihood strategies	if the choice of the HH lies in
Y=0, AG	Agriculture alone
Y=1, AG+OFF	Agriculture and off farm combination
Y=2, AG+NF	Agriculture and nonfarm combination
Y=3, AG+OFF+NF	Agriculture, off farm and non farm

Independent variables

AGE	Age of Household Head in years
SEX	Sex of Household Head (1= Female, 0= Male)
EDUCAT	Education level of Household Head in years
FAMILY	Family Size of the household members in number
AGROECO	Ecology of the household (0= midland, 1= high land)
LAND	Land size owned by the Household in Hectares
LIVESTOK	Livestock hold by the household in tropical livestock unit (TLU)

INPUT	Farm input use by the Household (0= No, 1= Yes)
EXTENS	Frequency of extension contact a farmer has with extension agent in a year
COOPER	Participation of the household in cooperatives (0=No, 1= Yes)
LEADER	Leadership participation of the Household Head (0=No, 1=Yes)
CREDIT	Credit use by the household (0= No, 1= Yes)
MKTDIS	Distance of the nearest market from dwelling in kilometer
REMITA	Economic support to the household (0= No, 1= Yes)
DEPRATIO	Dependency ratio of the household

Here the variable relationship can be explained as follows

$$U_{ij} = Z_{ij} \beta + \varepsilon_{ij} \dots\dots\dots (1)$$

If the respondent makes choice j in particular, then we assume that U_{ij} is the maximum among the j utilities. So the statistical model is derived by the probability that choice j is made, which is:

$$\text{Prob} (U_{ij} > U_{ik}) \text{ for all other } K \neq j \dots\dots\dots (2)$$

Where, U_{ij} is the utility to the i^{th} respondent from livelihood strategy j

U_{ik} the utility to the i^{th} respondent from livelihood strategy k

If the household maximizes its utility defined over income realizations, then the household's choice is simply an optimal allocation of its asset endowment to choose livelihood that maximizes its utility (Brown *et al.*, 2006). Thus, the i^{th} household's decision can, therefore, be modeled as maximizing the expected utility by choosing the j^{th} livelihood strategy among J discrete livelihood strategies, i.e.,

$$\max_j = E(U_{ij}) = f_j(x_i) + \varepsilon_{ij}; j = 0 \dots J \dots\dots\dots (3)$$

In general, for an outcome variable with J categories, let the j^{th} livelihood strategy that the i^{th} household chooses to maximize its utility could take the value 1 if the i^{th} household choose j^{th} livelihood strategy and 0 otherwise.

The probability that a household with characteristics x chooses livelihood strategy j , P_{ij} is modeled as:

$$P_{ij} = \frac{\exp(X_i' \beta_j)}{\sum_{j=0}^J \exp(X_i' \beta_j)}, \quad J=0 \dots 3 \dots \dots \dots (4)$$

With the requirement that $\sum_{j=0}^J P_{ij} = 1$ for any i

Where: P_{ij} = probability representing the i^{th} respondent's chance of falling into category j

X = Predictors of response probabilities

β_j = Covariate effects specific to j^{th} response category with the first category as the reference.

Appropriate normalization that removes an indeterminacy in the model is to assume that $\beta_1 = 0$ (this arise because probabilities sum to 1, so only J parameter vectors are needed to determine the $J + 1$ probabilities), (Greene, 2003) so that $\exp(X_i \beta_1) = 1$, implying that the generalized equation (4) above is equivalent to

$$\Pr(y_i = j / X_i) = P_{ij} = \frac{\exp(X_i \beta_j)}{1 + \sum_{j=1}^J \exp(X_i \beta_j)}, \quad \text{for } j = 0, 2 \dots J \text{ and}$$

$$\Pr(y_i = 1 / X_i) = P_{i1} = \frac{1}{1 + \sum_{j=1}^J \exp(X_i \beta_j)}, \quad \dots \dots \dots (5)$$

Where: y = A polychromous outcome variable with categories coded from $0 \dots J$.

Note: The probability of P_{i1} is derived from the constraint that the J probabilities sum to 1. That is, $p_{i1} = 1 - \sum p_{ij}$. Similar to **binary logit model** it implies that we can compute J log-odds ratios which are specified as;

$$\ln \left[\frac{p_{ij}}{p_{i1}} \right] = x_i (\beta_j - \beta_1) = x_i \beta_j, \text{ if } J = 0 \dots \dots \dots (6)$$

4. Work Plan

The study will be conducted between January and February 2015.

Table 1: Tentative schedule for the study

No	Activities	December 2014	January 2015	February 2015	March 2015	April 2015	May 2015
1	Developing data collection tools	X					
	Training for data collectors		X				
2	Pretesting the questioners		X				
3	Data collection	X	X		X	X	
4	Data analysis and Interpretation					X	X
5	Thesis writing and development	X	X	X	X	X	X
6	Thesis sub-mission						X

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Appendix 1: Household survey questionnaire

Dear respondent this questionnaire is designed to generate data to study challenges and opportunities of Livelihood Diversification, the case of Yabelo Woreda Borana Pastoral Communities of Ethiopia. *So I kindly request you to provide me genuine information with good willingness. Thank you in advance for your cooperation!*

A) Household information

Farmer's name _____

1. Name of Keble administration _____
2. Sex of household head ____ (1= Female, 0= Male)
3. Age of household head _____ years
4. Education level of Household Head in years of schooling _____
5. Family Size of the household members in number _____ -
6. Ecology of the household (0= low land, 1= otherwise) _____
7. Land size owned by the Household in Hectares _____
8. Livestock holding by the household in tropical livestock unit (TLU) _____
9. Do you use farm input? (0= No, 1= Yes) _____
10. How many times do you contact extension agents per year? _____
11. Do you participate in cooperatives (0=No, 1= Yes) _____
12. Do you participate in leading the household? (0=No, 1=Yes) _____
13. Do you have access to credit? (0= No, 1= Yes) _____
14. How long is the market from your destination in kilometers? _____
15. Do you have remittance income? (0= No, 1= Yes)
16. How much is the productive and nonproductive household members in your home?
_____ & _____

17. What types of major livelihood strategies you practice in your house?

- A. Agriculture alone (0)_____ B. agriculture and off farm combination(1)_____
- C. Agriculture and nonfarm combination (2)_____ D. Agriculture, off farm and nonfarm (3)_____

Appendix 2: Focus Group Discussion checklists

A. Land ownership and use right

1. Do you have your own pasture land? 1. Yes, 2. No
2. How do you manage your land for sustainable use?
3. How do you use your communal graze land efficiently?
4. What is the challenge and opportunity in effective use of your communal or private land?
5. What are the good features for diversifying your livelihood means regarding to land use right?

B. Water availability and management

6. Where do you get water for your house hold use and cattle's?
7. How far is the water point from your homestead?
8. Which time is the most chronic shortage of water? Why?
9. What measures you talk when there is chronic water shortage?
10. How many times you move from your homestead to search water and pasture?
11. What are the good opportunities in supporting your livelihood diversification in terms water development?

C. Market access and use

1. Do you have market access in your local area?
2. If yes how far it is from your homestead?
3. Do you sell your cattle at good price in that market? yes, no
4. Who are the major buyers of your livestock?
5. What kinds of animal products do you produce and sale to local market?
6. How do you increase the quality of those byproducts?
7. Do you use selected animal breads? If yes, why do you use? If no why not you use?
8. Do you have local livestock producers' association? If yes,
9. What kinds of tasks you do in the association?

10. Did you get support from stock holders to enhance your association stronger? If yes, what kinds of support and how?
11. If yes how? If no why?
12. What are the main marketing challenges influencing your livelihood security?
13. What are the constraints of selling your cattle's at reasonable price?
14. What do you recommend to get effective marketing advantage in your local area?

15. Do you accept the government taxation system in cattle marketing? Yes No If yes what the taxation system looks like? If no why?
16. Do you get subsidies from the government and Ngos? If yes what kinds ...

D. Technology and livelihood option

1. What kinds of technologies do you use in widening your means of income?
2. Do you have mobile? Yes, no
3. Do you think mobile is important in diversifying your livelihood? If yes how? If no why?
4. If yes what kinds of information you get by using your mobile?
5. What other technologies are available in your livelihood means?
6. What is the role of technology in controlling Trans boundary disease of your cattle?

E. Pastoralists perception on livelihood diversification

1. What does livelihood diversification mean to you?
2. What is your main means of livelihood?
3. What are the main livelihood activities you are engaged on? Put them based on their Contribution for household income
4. Do you practice off farm and nonfarm activities beyond cattle rising?
5. If yes how can it be possible to expand the opportunities of diversification?
6. Do you think that sedenterization policy is important for livelihood diversification?
7. What are the advantages of diversifying your livelihood means in your home?
8. What are the disadvantages of livelihood diversification in your household?
9. What do you recommend for sustainable livelihood diversification?
10. What cultural constraints influence you to diversify your livelihoods?
11. What are the general constraints that hinder your competitiveness in the market