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A THESIS SUBMITTED TO INSTTUT OF AGRICULTUR AND DEVELOPMENT STUDIES ST.MARRY UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF AGRUCLTURAL ECONOMICS

FACTORS AFFECTING LIVELIHOOD DIVERSIFICATION AND IMPLICATIONS ON HOUSEHOLD FOOD SECURITY IN BORANA ZONE: THE CASE OF YABELLO AND DUGDA DAWA WOREDAS

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I hereby declare that this thesis is my own work and has not been submitted for any other degree. All sources of materials used for this thesis have been duly acknowledged.

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This is to certify that this thesis entitled: **FACTORS AFFECTING LIVELIHOOD DIVERSIFICATION AND IMPLICATIONS ON HOUSEHOLD FOOD SECURITY IN BORANA ZONE: THE CASE OF YABELLO AND DUGDA DAWA WOREDAS** is an authentic work of _____ ID.No._____who carried out the research under my guidance. I certify that, to the best of my knowledge, the work reported here does not form part of any project report or thesis on the basis of which a degree or award was conferred on an earlier occasion on this or any candidate.

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ABSTRACT

As livelihood diversification is the act of pursuing more than one livelihood strategy, there are a number of factors that encourage or discourage household involvement. Households engage in diverse livelihood strategies away from purely livestock or crop production towards non-farm, off-farm and combination of these activities to broaden and generate additional income for survival and cope with growing harsh and difficult environment.

This paper analyses the factors affecting livelihood diversification strategies of pastoral and agro-pastoral households to ensure household food security in Yaballo and Dugda Dawa woredas. Multi stage sampling procedure was employed and 120 respondents were selected from four pastoral associations of Dugda Dawa and Yabello woredas of Borana zone. Descriptive statistics and multinomial logistic regression model were used to analyze the set objectives. Multinomial logistic regression result shows that out of the 16 hypothesized variables, the seven(agro-ecology, household head sex, household head education, household head marriage status, access to financial institute saving and credit, household food security status and household total income) were found to significantly influence livelihood strategies at less than 10% probability levels.

The model result indicated that the household head marriage status and household access to saving and credit influenced positively and significantly the choice of agriculture alone, while, the household total income, food security status and household head sex negatively and significantly affected the diversification of livelihood into nonfarm, off-farm and combining nonfarm and off- farm activities. Similarly, agro-ecology and education of household head had negative and significant influence on the household decision of selecting diversified livelihood strategies into agriculture + off-farm activities. Capacity building, making pastorals' and agro-pastorals' to engage in off farm and nonfarm activities, and promoting economic and social institutional support by government and NGOs are recommended to enhance positive livelihood diversification.

Key Words: Livelihood diversification, Pastoral, Agro-Pastoral, Household food security

ACRONYMS

BGP	Borana Guji Pastoral
BoARD	Bureau of Agriculture and Rural Development
BOFED	Bureau of Finance and Economics Development
BZDPPO	Borana Zone Disaster Prepends and prevention Office
CFSPE	Coalition for Food Security Program in Ethiopia
CSA	Central Statistics Authority
DA	Development Agent
DFAP	Development Food Assistance Program
DPPO	Disaster prevention and preparedness
DRMFSS	Disaster Risk Management & Food Security Sector
FAO	Food and Agricultural Organization
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus Group Discussion
HH	Household
HHH	Household Head
HRD	Humanitarian Requirements Document
JEOP	Joint Emergency Operation Program
KI	Key Informant
NGOs	Non-Governmental Organization
PAs	Pastoral Associations
PFE	Pastoralist Forum Ethiopia
PSNP	Productive Safety Net Program
SNNPR	South Nation and National People Region
SPSS	Statistical Package for Social Sciences
TLSU	Tropical Livestock Unit
WBISPP	Woody Biomass Inventory and Strategic Planning Project
WPDO	Woreda Pastoral Development Offices
YARC	Yaballo Agricultural Research Center

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

More than 65 percent of the land area in Ethiopia is covered by pastoral and agro-pastoral community (DRMFSS 2012). Ethiopian pastoralists and agro-pastoralist own a large portion of the national herd, estimated at 42 percent of the cattle, 75 percent of the goats, 25 percent of the sheep, 20 percent of the equines and all of the camels (PFE 2010). There are two debates on the viability of pastoral livelihoods in this 21st century. The first one argued that pastoralism is still a viable livelihood strategy if appropriate development initiatives linked to the markets (Little et al 2003; Moritz 2012), while the second disclose the fact that pastoral livelihoods are depressed and unviable (Little 2010) due to political marginalization (Eyasu 2008; Pavanello 2009; Elias and Abdi 2010), resource depletion, and drought (PPE et al 2010; UNOCHA 2007); lack or inadequate institutional support like market, education, health services (Getachew G et al 2004; Pavanello 2009; PFE 2002). The second argument is taken aa a cuase of food security problem in pastoral area of Ethiopia (Elias and Abdi 2010; PFE 2009; Little et al 2006; Swift 2004); and pastoralists tend to be perpetual famine relief clients (Helland 2006).

Pastoral and agro-pastoral areas in Ethiopia are the most drought prone regions facing chronic food deficiencies. Drought has been, and still is a prominent factor for food security problem in the area. Erratic rain fall and poor rain fall affect pastoralists through short fall of fodder and water. So, the impact of drought is considerable.

In Borana zone, for instance, pastoralists and agro pastoralists face cycles of drought. Some study revealed that drought has been recurring in Borana areas since 1970s. The major drought event that occurred from 1973 to 1975, 1982 to 1985, 1993/94 and 1999/2000 had brought various ecological, economic and social consequences (Fassil, 2001). The 1984-1985 droughts, for instance, contributed to depressing animal population growth by driving calf mortality rate as high as 90%. In addition, the Borana area has been politically unstable,

characterized by unrest and confrontation between competing groups (Helland, 2000). Other threats to pastoral and agro-pastoral production system are population growth, weak policy support, rangeland degradation, weakening of local institution and culture and the growing vulnerability to ecological, economic and cultural stress (Fassil, 2001).

The current government food security policies, poverty reduction and development program documents acknowledge the importance of livelihood diversification to ensure food security (Degefa, 2005). However, as the characteristic level of operation as well as constraints of these activities vary from place to place.

According to Bezabih G, E and Waktola T 2006, in Borana zone, the contribution of livestock and livestock products alone to the household's income is the highest for the rich and smallest for the poor owing to the size of livestock they hold. Yet the number of poor households is increasing due to drought. The poor in pastoral is engaging in crop production, petty trades, wage lobour, firewood and charcoal production, and incense collection. Micro level researches can, therefore, provide an input for enhancing poverty reduction, disaster risk minimization by understanding better opportunities and constraints of livelihood diversification to ensure household food security. Therefore, this study aimed in identifying factors that affect livelihood diversification, opportunities for household food security and challenges in Dugde Dawa and Yabello woredas pastoral and agro-pastoral communities of Borena Zone.

1.2. Statement of the Problem

Ethiopia undertakes relatively fewer livelihood diversification opportunities compared to other developing countries. The empirical evidence on the size and economic significance of the Ethiopian non-agriculture livelihood activity is very limited and largely suggests that there is little diversification beyond agriculture in rural areas (Loening 2008). According to this evidence, some 10 to 35% of rural households in Ethiopia are engaged in nonfarm livelihood activities; compared to 30 to 50% in other Sub Saharan Africa and 60% in South Asia. This indicates that the role of diversified livelihood activities in Ethiopia is low. It has a significant effect to improve household food security of the nation in the country. However, it has determinants that affect livelihood diversification.

Livelihood diversification is a comprehensive concept that involves access to resources and activities that households undertake in order to secure their means of subsistence, and strategies that they pursue under both normal or abnormal /crisis situations. It also should be noted that the types of activities practiced and strategies followed by a household may lead to sustainability of the livelihood (Scoones, 1998; Degefa, 2005). According to (Degefa 2005), households that lead sustainable livelihood often feel food secure throughout the year realigning crop cultivation and/or livestock rising or through running own non-farm ventures or to work with somebody else. He further explained a household is food secured when it is capable of sufficiently feed its household members from its own production or purchase from the market in return to own cash, which may be earned from the exchange of self-endowment.

Several studies had revaled that there are diverse causes for household food insecurity in pastoral and agro-pastoral including: recurrent drought, limited sources of alternative income, population pressure, limitations in technology, lack of product diversification and market integration, limited capacity in planning and implementation, environmental degradation, limited access to credit and lack of access to information are the main ones (CFSPE 2003).

Pastoral and agro-pastoral households due to prolonged drought, insufficient grazing resources and low agricultural production, are unable to produce enough to satisfy their food needs. Therefore, these households need to complement and supplement their income from different livelihood activities. However, there are limited studies that have been conducted in relation to the contribution of livelihood diversification in related to food security in Ethiopia broadly and in Borana zone particularly. Therefore, it is this real crucial knowledge gap that necessitates move to conduct this research on this particular topic to provide adequate information for the concerned bodies about factors that affect livelihoods diversification and the livelihood diversification contribution to household food security.

1.3. Research Questions

Research questions on which this research had dealt with includes:

1. What livelihood activities are typical in terms of contributing to improve household food security in the study area?

2. What are the existing livelihood options and their characteristics in Yabello and Dugda Dawa woredas?
3. What are the major household level factors that affect livelihood diversification in the study area?
4. What are the existing opportunities and challenges of livelihood activities in the study area?
5. What should be done to encourage households to engage in economically and environmentally viable diversified livelihood activities in the study area?

1.4. Objectives of the Study

1.4.1 General Objective

The general objective of the study is to assess the contribution of livelihood diversification, and to identify determinants of existing livelihood activities to improve household food security in Dugda Dawa and Yabello woradas of Borana Zone.

1.4.2. Specific Objectives

The specific objectives of the study include:

1. To assess the different livelihood activities that pastoral and agro-pastoral households are practicing in Yabello and Dugda Dawa Woredas.
2. To identify the determinant factors to livelihood diversification among pastoral and agro-pastoral households in the study area.
3. To explain the impact of livelihood diversification on household food security in the study area and
4. To recommend the ways in which viable diversified livelihoods will be encouraged.

1.5. Significance of the Study

For many pastoral and agro-pastoral households in Ethiopia 'access to adequate food at all times' still remains a dream at a distance. The explanations for these are wide and complex. But as noted in the foregoing discussions, what has become increasingly apparent is the reality that in many areas the 'traditional' pastoral and agro-pastoral livelihood systems (e.g. pastoral cattle production) is collapsing and there is precious little viable alternative coming forth.

Because of asset depletion and the lack of employment opportunities people are increasingly unable to earn their living and have become chronically dependent on various forms of food aid. As a result 'making ends meet' for many pastoral and agro-pastoral households in Ethiopia has become a tough and almost a life-long ordeal. It is a well-recognized reality that agriculture provides only a 'limited portion of their livelihood', for quite a number of rural people in Ethiopia (Yared 2001).

How do people make up the income gaps to earn their living and sustain their daily life support should therefore be the focal issue that deserves fine-grain investigation and better understanding at household level, before suggestions and recommendations are forwarded for planning and policy considerations.

The researcher strongly believes that understanding the livelihood diversification opportunities, the relative importance of the strategies to different groups, as well as the potentials and constraints associated with the different livelihoods strategies will be a contribution to potent planning, monitoring and evaluation process of local development programs and ultimately for a wider dissemination of the approach for similar programs elsewhere in other problem areas. As (Dagnew 2001) rightly presented it, detailed and dependable household and/or community studies that are disaggregated by the household economic activities (occupation) and income groups in relation to their resource endowments are very crucial for a significant interventionist policy thrust. It is also believed that this research will throw some light on the possible reasons, motivations and causes behind diversified modes of livelihoods in the pastoral and agro-pastoral area. Besides, the outcome of the research will have a contribution to the existing literature by showing the constraints, issues and realities of diversified pastoral and agro-pastoral livelihoods in Borana zone, and filling the gap in knowledge. Moreover, in light of an increasing desire towards decentralized and localized development planning and management, this research will demonstrate the importance of micro-level enquiry to properly understand how pastoral and agro-pastoral households in drought prone areas make ends meet.

Thus, this study is vital:

- In giving constructive information for the concerned body to take necessary measures to assist pastoral and agro-pastoral households to diversify their livelihoods,
- to inform the policy makers, donors, and development practitioners on areas and

strategies of improving sustainable livelihoods of the pastoral and agro-pastoral communities in Ethiopia and reducing their vulnerability to disasters;

- Informing the concerned governmental and non-governmental organizations that work on food security areas in the form of food aid to include diversification as alternative means of dealing with improving household food conditions as one area of their concern.

1.6. Scope and Limitation of the Study

Pastoral and agro-pastoral households of Borana zone have a number of coping strategies that they practice for their means of subsistence, these include among others: wild food, the first option available to the poor and the destitute, which is consumed only under crisis situation; then desperately look for alternative coping strategies such as social supports from their communities, then food aid from external sources. For such social groups, cutting of meal frequency from the current level puts them to a level of starvation and hence considered not as an option. This study focuses on livelihoods diversification and its impact in reducing household food insecurity among two kebeles of Yabello pastoral and two kebeles of Dugda Dawa agro-pastoral communities of Borana zone.

However, the study has some limitations to reach a comprehensive result that governs the livelihood diversification strategies and its implication on household food security beyond Borana zone in Ethiopia. The major limitations of the study were: time constraint that hinders the researcher to make repeated and staged field survey because of distance of the study area from the researcher; some sampled households were not cooperative , transport problem to go to remote Kebeles and financial constraint faced to sample more number of household.

1.7. Determinants of Livelihood Diversification

Some of the possible variables are age, sex, education, household income, livestock size, and rangeland holding size (enclosure), family size, and access to start-up capital, market accessibility and accessibility to technology, other resources such as mines.

Table 1: List of Independent Variables on Affecting level of participation on livelihood diversification

No.	List of Variables	Variable characteristics	Effect of variables	
			Positive	Negative
1	HHH Age	Numerical	+	-
2	HHH Sex	Dummy	+	-
3	HHH Education	Numerical	+	
4	HH Farm Income	Numerical	+	-
5	HH Livestock Size in TLSU	Numerical	+	-
6	Rangeland Holding Size (enclosure)	Numerical	+	
7	HH Family Size	Numerical	+	
8	HH Access To Credit	Dummy	+	
9	Distance Urban Area	Numerical	+	-
10	Agro-ecology	Categorical	+	-
11	Access to market	Dummy	+	
12	Access to other resources (mining)	Dummy	+	

1.8. Research Hypothesis

The study attempted to test the following hypotheses:

1. Participation of households in livelihood diversification activities has positive contribution to improve food security
2. Several biophysical and socio-economic factors affect households' participation on livelihood diversification activities.

1.9. Organization of the Paper

This study is organized in to five chapters. The first chapter is the introduction, chapter two deals with reviewing related literature, the third chapter describes the methodology of the study; chapter four describes results and discussion. Chapter eight presents conclusion and recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Theoretical Literature Review

2.1.1 The Concept of Livelihood Diversification

Peoples of the world, who inhabit in every corner of the world, have their own means of subsistence ranging from primitive to modern life styles. There are various livelihood strategies in a particular society since a single activity may not fulfill the entire needs of the society. These varied activities have different backgrounds that range from bio-physical to socio-economic constituents (Dereje Beyene, 2010).

Various scholars forwarded their views on the concepts of livelihoods and livelihood diversification. According to (Degefa 2005), a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. He stated that a livelihood is sustainable if it can cope with and recover from disaster 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 short and long terms.

A number of studies expressed livelihood diversification in a number of ways. For instance, (World Bank 2003) states "diversification as range of copying strategies, investments in livestock and non-farm income, and migration that are used to reduce fluctuations in income which also include traditional copying strategies". Similarly Ellis (1998:4) stated livelihood diversification as "a process by which rural families construct a diverse portfolio of activities and social support capabilities in order to survive and to improve their standards of living; important is also access to social support and public transfers". Livelihood diversification is "a process that involves; wage agricultural labor on others' farms, trade and service related activities that have taken place in rural areas and urban based ones requiring workers' commute" (Mohammed, 2006:18).

According to (FAO 2006), livelihoods diversification is of two types. These are as a result of increased importance of off-farm wage labor in household livelihood portfolio or through

the development of new forms of non-farm/on-site production of non-conventional marketable commodities. In both cases, diversification ranges from a temporary change of households portfolio (occasional diversification) to a deliberate attempt to optimize household capacity to take advantage of ever-changing opportunities and cope with unexpected constraints (strategic diversification).

2.1.2. Reasons for Livelihood Diversification

People diversify their livelihoods depending on the challenges they encounter and opportunities of the activities they engaged in. Various scholars stated various reasons for diversification. For example, diversification may occur as a deliberate household strategy or as an involuntary response to crisis or as to diminish and accentuate rural inequality, (Ellis 2000). Livelihood diversification may be of various reasons; that can be of economic and social in nature. According to (Anderson and Deshingkar 2004), the main reasons for livelihoods diversification are of two in nature: These are asset-based and insurance-based reasons of diversification. The asset-based diversification can be explained by the amount of diversity in a household's income portfolio reflects the amount of diversity in the assets (or factor of production) it owns or has access to. Similarly ownership of other income generating assets is also the most important reasons for livelihoods diversification. The second reason for livelihood diversification is that the insurance-based factor. This is when diversification is taken as a way of insuring against disaster shocks. This also can be explained as the amount of diversification varies across households according to their demand to a particular form of insurance, and its cost. Household diversification can arise because each individual within the household has a diverse income portfolio, or because individuals within the household are specialized in different activities. It can act as both a safety value for the poor and as a means of accumulation for the rural rich or can benefit farm investment and production or impoverish agriculture by withdrawing critical resources especially labor (Bryceson 1999). In addition, it is well known that poor households in rural areas of developing countries often rely on a diverse set of income-generating activities to meet their consumption needs. This is to provide security against diverse external shocks, coping with seasonality and generating additional income (Ellis, 1998; Anderson and Deshingkar, 2004 as cited in Ellis and Freeman, 2005:62).

2.1.3 Understanding Livelihood Diversification

Very few people collect all their income from any one source, hold all their wealth in the form of any single asset, or use their assets in just one activity which makes diversification the norm (Barrett 2001). Livelihood diversification can be seen as an attempt by individuals and households to find new ways to raise incomes and reduce risk (Hussein and Nelson, 1998).

Livelihood diversification would include both non- and off-farm activities undertaken to generate income additional to that from the main household agricultural activities. Households may diversify through the production of other agricultural and non-agricultural goods and services, sale of waged labour, or self-employment in addition to other strategies undertaken to spread risk. Income derived from agriculture livelihoods comprise both consumption-in-kind of own farm output and cash income from output sold. Off-farm income refers to wage or exchange labour on other farms-i.e. within agriculture. It also includes labour payments in kind, such as the harvest share systems and other non-wage labour. Non-farm income refers to non-agricultural income sources such as (i) non-farm rural wage employment, (ii) non-farm rural self-employment, (iii) property income (rents, etc.), (iv) urban-to-rural remittances arising from within national boundaries, and (v) international remittances arising from cross-border and overseas migration (Barrett, 2001).

From the definition by (Ellis 1997) of rural livelihood diversification, it can be implied that prompted by survival or the need to improve their standard of living, households construct a diverse portfolio of activities and social support capabilities. They can combine a number of livelihood activities like agricultural crop production, livestock production, wage work, cottage industry etc. to provide or supplement income. The mix of activities will depend on a household's ability to access different livelihood opportunities (Ellis, 1997:5; Bryceson, 2002:731).

Migration is another livelihood strategy increasingly pursued by rural households. It may be seasonal, circular, rural-urban or international mediated by capital endowment of migrants and their households (de Haan 1999). (Taylor and Wouterse, 2008: 627) suggest that "household members who migrate can facilitate investments in new activities by providing remittances can be useful in relieving rural credit constraints which may be viewed as a

livelihood diversification strategy, as they are a source of income not related to household income from agriculture. Where formal insurance services and credit markets are not existent, migration can provide income that enable households cope with adverse income shocks as well as overcoming liquidity constraints.

2.2. Empirical Literature Reviews

2.2.1. Determinants of Livelihood Diversification

2.2.1.1 Push and Pull Factors to Livelihood Diversification

Multiple motives prompt households and individuals to diversify income, assets and activities. The first set of motives are what is termed as "push factors": risk reduction, reaction to diminishing factor returns in any given use, such as family labor supply in the presence of land constraints driven by population pressure and landholdings fragmentation, reaction to crisis or liquidity constraints, high transaction cost that reduce households to self-provision in several goods and services, etc. The second set of motives to livelihoods diversification are "pull factors": realization of strategic complementarities between activities, such as crop-livestock integration or milling and hog production, specialization according to comparative advantage accorded by superior technologies, skills or endowments, etc (Bryceson and Reardon, 2001).

The pull factor of diversification can be seen from the context of the benefit that stakeholders will get being engaged in diverse livelihoods. As stated by (Thodaro and Smith 2003: 285); diversification has various advantages:

1) It can help stakeholders to use other activities in the slack season to take advantage of both idle labor and family labor;
2) Where labor is in short supply during peak planting, weeding and harvesting seasons simple labor saving devices can be used and free labor for other livelihood activities;
3) the use of better seeds, fertilizers, and simple irrigation to increase the yields of staple crops such as wheat, rice and corn can free part of the land for cash crop cultivation, that on the other hand can rise families consumption standard and help to invest in farm improvements;
4) Can minimize the impact of staple crop failure and provide a security of income

previously unavailable. Similarly the realization of strategic complementarities between diversification and specialization according to the comparative advantages is the pull-factor for livelihoods diversification.

2.2.1.2 Capitals as Determinant Factors to Diversification

There are various kinds of capitals identified by different scholars and organizations: according to (Ellis 1998) capitals are divided in to five as physical, social, natural, human and financial capitals; but adding personal capital, (IFAD 2007), divided capitals into six parts. These are: personal, social, physical, natural, Human and financial capitals. The availability and absence of these stated capitals have its own influence on the extent of livelihood diversification. With regard to natural capital, as stated by (Ellis and Freeman 2005); small landholdings in many countries limit the availability of agriculture as a livelihood strategy, forcing many households to diversify in to other livelihood options. Therefore, while dependence on agriculture is negatively correlated with income in some countries, this effect is limited by the small size of landholding in many other countries. According to the same study, full-time farming is only an option for those endowed with enough land or livestock to absorb all the adult labor in the household. Skilled non-farm employments are only available to those with education, particular skills, or the necessary financial capital to start a business.

Assets are the determinate factors for households' livelihood diversity. For example, as illustrated by (Ellis and Freeman et al., 2005) households which own lots of natural capital such as land and water diversify more in agriculture. For example, households which own some livestock but not enough to fully employ the household's labor supply, drive their income both from livestock-related activities and wage labor. According to these authors the range of activities which the household has access to, which will in turn depend on the household's asset base, including human capital (education, health, skill, etc), social capital (Networks, relationships etc), financial capital (credits, loans, etc), physical capital (infrastructure, modern agricultural inputs, market, etc) and personal capital(motivation, willingness to act, etc.).

2.2.1.3 Institutional Determinant Factors

There are institutional factors that also determine the individuals and households' livelihood diversification. These are local and international institutions (e.g. local customs, local and

national natural resource management systems) and social relations (gender, caste, kinship) as well as economic opportunities (local, national and global), wealth status (rich or poor), modern and traditional financial institutions, technology and information and communication institutions (Ellis and Freeman,2005; Barret et al.,2001).

2.2.1.4 Vulnerability to Risk Contexts as Determinant Factors

As many scholars and organizations tried to state, contextual factors that determine livelihoods diversification include: prolonged drought, shocks, trends and seasonality. As (Ellis and Freeman 2005) stated, diversification is used by the household as a way of insuring against income shocks. If this is the case, we would expect the amount of diversification to vary across households according to their demand for their particular form of insurance for risk, and its cost. The demand for diversification for insurance will depend positively on how risk-averse the household is and on how much income volatility it is subject to, and negatively on the extent to which it has other ways of insuring against or coping with risk, access to communal credit /loan groups, crop insurance, state safety nets, or migrant remittances. On the other hand, vulnerability of the household has its own influence on the extent of livelihood diversification. It is often expressed that poor households are both more likely to be members of local credit associations or receive government benefits, and have more diversified income. There are also seasonal variations in the household's livelihood diversification. As it was stated by (Ellis and Freeman et al., 2005), income diversification may reflect the fact that households and individuals are engaged in different activities during different seasons, rather than in different activities within any one particular season. Furthermore, individual livelihood diversification is also dependent on the seasonal availability of employment and raw materials.

In addition the finding by (Bryceson 1996), on the effect of market imperfection and market liberalization enhanced the risk of Sub-Saharan household agriculturalists and forced them to take up an alternative risk aversive and labor allocative activity, known as non-agricultural income diversification. Reductions in asset stocks below key threshold levels may cause households to shift from higher return to lower return livelihood strategies (Ellis and Freeman 2005). The poor tend to be much more exposed than the rich are to asset risk and thus face a higher probability of being cast below critical thresholds due to adverse shocks (e.g.

drought, floods, erosion, war, hurricanes, and diseases).

According to (Mohammed 2006), livelihoods diversification is widespread, but there are barriers or opportunities in accessing non-farm activities in rural areas that mostly context dependent i.e. local context and national context; locally, access to credit and affordable transportation and nationally, domestic trade liberalization. He continued and stated that the growth in livelihoods diversification is not the outcome of rising agricultural incomes since it is constrained by limited access to credit and land.

2.2.2 Debate on Livelihood Diversification

There are two views on the livelihoods diversification. The first group is that opposes the idea of livelihoods diversification and the second is that support livelihoods diversification. The first group or those who opposes livelihood diversification argue that diversification of livelihoods can adversely affect an economy by declining "specialization" in production; it affects growth in agriculture, facilitates labor migration from agriculture to non-agriculture, and undermines investment in agriculture (Degefa 2008). These groups farther justify their position by advocating the linear path in agricultural growth i.e. "evolutionary mixed farming model" from traditional and background to modern agriculture (Degefa, 2005).

The second group is those who support livelihood diversification. They argue for diversified livelihoods, because it is a central mechanism for tackling rural poverty and in ensuring household food security. For instance, according to (Ellis 1998), livelihood diversification is a rural social support mechanism that enable them improve standard of living. According to these groups and (Degefa et al., 2008), livelihood diversification is the result of varieties of factors: seasonality, differential labor markets, risk strategies, coping behavior, credit, market imperfections, inter-temporal savings and investment are the main ones.

In this research attention is given to the positive view of livelihoods diversification, this is because in Ethiopia where agriculture is dependent on rain fall, it is difficult for many households to focus on agricultural activities only. In addition as population increases the probability of the newly established households to get sufficient farm and grazing land is very limited, and they often go to non-farm activities. Thus this study was focused on this positive contribution of livelihood diversification in sustaining household food supply.

2.3. Role of Livelihoods Diversification in ensuring Household Food Security

2.3.1. The Concepts of Food Security

The concept of food security deals with the most basic need of life that is food itself. Among other things, people need food for survival as well as for active and healthy life.
In mid 1970s, food security was conceived as the availability of adequate food supply at global and national levels, however, mere availability of adequate food supply at global or national levels does not guarantee for security at the household level. For instance what is available in world market or surplus food in developed countries cannot be accessed by food deficit people in sub-Saharan Africa, due to lack of adequate foreign currency to purchase food from the world market. Even at national level, adequate availability of food means there is self-sufficiency, but that condition does not necessarily imply the achievement of food security in the country (Ellis, 1992).

Emphasis on food availability was highly criticized, and ideas and understanding about food security, however, have changed considerably over the past several decades, when the idea of food entitlement was advanced by (Amartya Sen 1981). Since then a conceptual shift has taken place from food availability to food access and food security is a matter of having access to food which means acquiring food from own production or purchase in the market rather than availability of sufficient food in the region or country.

Today, in the third world where hunger and famine are rampant, food security is a topic of considerable attention. Nearly food security definition has considerably been changed over the time and recently cited to have reached more than 250 (Degefa, 2008). In this respect, the definition formulated in the first world food summit is "All people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO,1996). This definition constitutes core elements such as (i) Sufficiency of food which represents the calorie needed for an active and healthy life; (ii) Access which refers to the ability to produce, purchase, exchange or receive food as a gift (transfer); (iii) Security that refers the balance between vulnerability, risk and insurance. Vulnerability by itself has two important dimension: exposure to external

shocks, and the resultant stress and risks; and lack of means to cope with crisis without damaging loss; and (iv) the time dimension that deals with whether food insecurity can be chronic, transitory/seasonal.

2.3.2. Food Security Condition in the Agro-pastoral and Pastoral Areas of Ethiopia

According to the Humanitarian Requirements Document (HRD) released at the end of January 2014 by the Government of Ethiopia, 2.7 million people are food insecure, and they will need humanitarian assistance between January and December 2014. Households requiring assistance are concentrated in Oromia, Somali, Amhara, Tigray, and Afar Regions.

Both chronic and transitory food insecurity in Ethiopia is prevalent. Per capita food production in Ethiopia is not enough to feed the households especially vulnerable households throughout a year. As a result, approximately five million people on average in the country, predominantly rural are under food deficit every year. According to (Workneh 2006), it was estimated that domestic food production provided in the late 1980s was about 1620 calories per person per day while total availability in addition to food imports was about 1770 calories per person per day which is 16% below the minimum level (2100 Kcal per person per day, equivalent to 225 kg of grain per person per year).

Therefore, various factors are out-lined by different researchers, as the determinants of household food security in Ethiopia: Size of landholding, amount of cultivated land, number of oxen, and amount of income earned from other activities, are the determinant factors for household food security (Workneh et al, 2006). Similarly there are various reasons that drive households to be food insecure in Ethiopia: Households risk of food security and famine was greatly increased by long term secular decline in resource endowment combined with unfavorable food policy intervention and food insecurity in Ethiopia is derived from dependence on undiversified livelihood based on low input and low output rain-fed agriculture (Getachew, 1995; Devereux, 2000).

According to (FDRE 2002), food insecurity is of two type: (1) Chronic food insecurity as a result of overwhelming poverty indicated by lack of assets; (2) acute food insecurity is viewed as more of transitory phenomenon related to man-made and unusual shocks such as drought. In

further explanation, chronically food insecure populations may experience food deficits relative to need in any given year, irrespective of the impact of shocks.

Pastoral communities are currently vulnerable to food insecurity even with the slightest external shocks. In sum, degradation and shrinkage of the traditional pastoral territory, coupled with climatic change manifested by shortage of rainfall and recurrent drought, and compounded by limited policy support, has made pastoral communities in the country food insecure to the extent of threatening their livelihood and making them more dependent on relief handouts.

In the past, the households' consumption requirement is mainly derived directly from livestock and their products and, the remaining part of food is supplemented with exchange of cereal in the market (Getachew, 1995). 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. And, also the income earned from livestock raising 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. The opportunity to generate sufficient income is also very limited so that it affects the purchasing power of poor pastoralists. As a result, the majority of households become food insecure. The number of needy people become increasing from time to time. For example, available data sources indicated that in the year 2008, at zonal level about 147,400 people were needy and were accessed relief food for six months. The size of grain distributed was 147, 400 quintals. In the year 2009 the size of needy people increased up to 187,655, and about 18,765.5 quintals of grain food were distributed (BZDPPO, 2011). As a result many people live under chronic food insecurity. Attempts made by many NGOs intervention and government couldn't able to bring sustainable improvements in livelihoods and food situation of the people concerned.

2.4. The concept of Pastoralism and Agro-pastoralism

Pastoralism is a way of life, which is well suited to the arid and semi-arid parts of Africa (Fassil, 2001). From the dry land of Africa pastoral production constitutes about 66 percent of the total continent land area (FAO, 2001 cited in Abiyot 2008). In some African countries

pastoral production system represents the major economic activities and supports more than half of the total population. In sub Saharan Africa, Sudan and Somalia have the largest pastoral/agro-pastoral population followed by Ethiopia (Rass, 2006 cited in Abiyot 2008:15).

Pastoralists are those who primarily drive their living from the management of livestock (sheep, goat, cattle and camel) on rangelands. Traditional pastoral systems are of three types (Ellis and Swift, 1988).

- Sedentary: are more or less permanently settled with their animals within a defined area.
- Semi-nomadic/transhumant: move with their animals over more or less regular routes, settling for part of the year in permanent home area
- Nomadic: move with their animals and transportable homes over irregular routes, seeking pasture and water for their animals almost continuously.

Pastoralists drive 50 percent or more of household gross revenue from livestock or livestock related activities. Agro-pastoralists are people engaged in both pastoralism and agriculture and drive more than 50 percent of households' gross revenue from farming and 10-50 percent from livestock.

2.5. Conceptual and Analytical Framework

Different government agencies, international organizations and individual researchers have developed different sustainable livelihood frameworks with minor differences in the general contents, especially in the components of the livelihood capitals; to understand the diverse livelihoods and their role in responding to poverty and food security in rural communities. The notable ones include: (IFAD 2007); (Scoones 2000); (Ellis 1998) and many other organizations and researchers. According to these sources Sustainable Livelihoods Framework is a framework adopted to improve understanding of the livelihoods of poor people. It draws on the main factors that affect poor people's livelihoods and the typical relationship between these factors. The central similarities of these frameworks include their focus on: vulnerability contexts, livelihood capitals, mediating process, livelihood activities and livelihood outcomes whether sustainable or unsustainable. According to the above sources, Sustainable Livelihoods Framework has two broad components. These are (1) a framework that helps to

understand the complexities of poverty (2) a set of principles to guide action to address and overcome poverty, (Ellis 1998); (Scoones 2000); and (IFAD 2007). They also stated that SLF comprise people at the center, particularly the rural poor. For this research the combination of the contents of the above three livelihood frameworks are summarized and used. But the most dominantly focused framework in this study was the IFAD livelihoods framework. According to IFAD, for example, close to the people at the center of the framework are the resources or livelihood assets that they have access to and use. The extent of their access to these assets is strongly influenced by their vulnerability context, which takes into account trends (economic, political, and technological), shocks (epidemics, natural disasters, civil strife) and seasonality (prices, production, employment opportunities). IFAD continued and stated that access is also can influence the prevailing social, institutional and political environment, which affect the ways in which people combine and use their assets to achieve their goals i.e. sustainable livelihoods.

The sustainable livelihood framework is neither a model that aims at incorporating all the key elements of people's livelihoods, nor a universal solution; rather, it is a means of stimulating thought and analysis, and it needs to be adapted and elaborated depending on the situation. SLF has seven guiding principles, which do not prescribe solutions or dictate methods. Instead, they are flexible and adaptable to diverse local conditions. These include: (1) people centered - analyzing peoples' livelihoods and how they change over time. People participate actively throughout the project cycle; (2) Holistic - acknowledges that people adopt many strategies to secure their livelihoods, and that many actors are involved; (3) Dynamic - seeks to understand the dynamic nature of livelihoods and what influences them; (4) Build on strengths - builds on people's perceived strengths and opportunities rather than focusing on their problems and needs; (5) Promote macro-micro links - examines the influence of policies and institutions on livelihood options and highlights the need for policies to be informed by insight from the local level; (6) Encourage broad partnership - accounts on broad partnership drawing on both the public and private sectors; (7) Aim for sustainability - sustainability is important if poverty reduction is to be lasing (IFAD 2007).

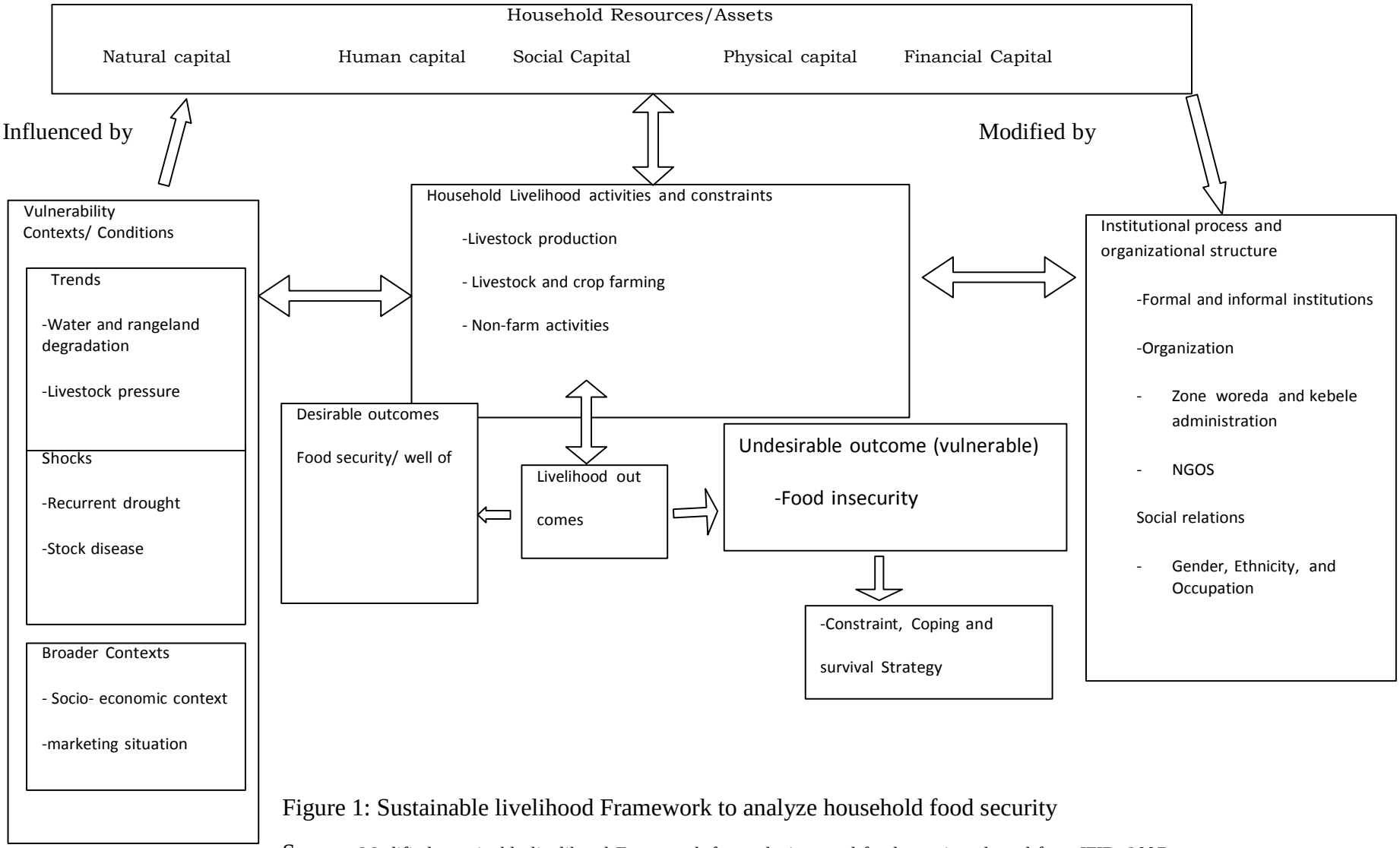

Figure 1: Sustainable livelihood Framework to analyze household food security

Source: Modified sustainable livelihood Framework for analyzing rural food security adapted from IFID, 2007.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Site Selection and Study Approaches

3.1.1. Site Selection

Among the preliminary steps to this study, site selection was the first one. There are many factors that initiated me to select Yabello and Dugda Dawa Woredas as a study area. Among other factors the following are the main ones: First, Dugda Dawa Woreda is one of the woredas in Borana Zone that have diverse agro-ecology ranging from Kolla to Weyin-Dega Climatic Zones and experience diverse rainfall and temperature conditions that enabled the peoples of the woreda to be engaged in diverse livelihoods that often combines farming with livestock keeping (agro-pastoralism). Whereas, Yabello is predominantly pastoral community which is heavily engaged in livestock raising. The diversity in the production system of the selected two woredas would provide us with better representation of the Borana zone to make recommendations that could be applicable to most if not all of the woredas in the zone.

3.1.2. Study Approaches

Regarding the study approach, both qualitative and quantitative methods have been employed. With regard to the quantitative data collection; household survey was conducted and data was collected by trained enumerators at door to door level, while the qualitative method was employed through FGD, Key-informant interview and observation to by the researcher himself to generate qualitative data.

3.2. Sampling Frame and Sample Selection

3.2.1. Sample Frame

The list of all kebeles of both woredas, with their households list, was obtained from their Woreda Pastoral Development Offices (WPDO) as a sampling frame.

3.2.2. Sample Selection

There are five stages that were employed during sample selection. These were:

Stage-1:- Since the study aimed to meet objectives at a particular site; there is no need to undertake a holistic study over a wider area. Therefore, from the beginning the scope of the study was limited to two Woredas of Borana Zone of Oromia i.e. Yabello and Dugda Dawa Woredas. This Woredas were selected purposively.

Stage-2:- Once the Woredas were selected purposively as a study area, sample PAs (Kebele administrations) were selected depending on distance from their town center. Two sample PAs were selected from each woredas depending on their proximity to market and access to urban facilities.

Table 2: Household Sample Respondents

No	Sample Woreda	Sample Kebele	Total HHs	# of Selected HH	Ratio
1	Dugda Dawa	Burka Arbicho	451	30	6.7%
		Jigessa	552	30	5.4%
2	Yabello	Cholkasa	557	30	5.4%
		Dharito	393	30	7.6%
Total			1953	120	6.1%

Stage-3:- To serve as sample respondents, using stratified proportional sampling to capture female headed household 24 percent of the total household heads sampled are female and 76 percent are male respondents, which 30 households were selected from each kebeles. Thus 120 households were participated in the household survey.

Stage-4:- For key-informant interview, from each PA: PA leader, one DA and one traditional leader, one elder, one women representative, one youth representative was selected purposively. This was done for each kebele.

Stage-5:- 6-9 FGD participants representing different wealth classes were selected from each kebele. A total of four FGD was conducted.

3.3. Data Sources and Data Collection

The data for this study was collected from both qualitative and quantitative primary and

secondary sources. Primary qualitative data was collected through FGD, key-informant interview and observation, while the primary quantitative data was obtained from structured household survey. The secondary data for the study was collected from CSA, WPDO, and YARC (Yaballo Agricultural Research Center), and from different sources like web sites, previous studies and reports.

3.3.1. Instruments Used for Data Collection

Both structured questionnaire for household survey and checklists for key-informant interviews and FGDs were used. For household survey a multiple response type questions were prepared and administered to sample households by the enumerators in the four PAs. These questions were prepared only in English and no need to translate into Afaan Oromo, because all the enumerators were above diploma educational background and native speakers of Afaan Oromo. Check lists were prepared in English because they were all planned to be dealt by the researcher and also done by the same translating the check-lists in to Afaan Oromo because the researcher is native Afaan Oromo speaker. During qualitative data collection the researcher also used note book, photo camera, and bservation to properly keep the responses and record the observed reality on the ground.

3.4. Data Analysis

The study has employed both qualitative and quantitative research methods. Thus data that was collected through both qualitative and quantitative methods, entered in to computer software by SPSS.

3.4.1. Descriptive analysis

3.4.1.1 Analytical techniques

Quantitative (econometric) and descriptive techniques were employed to analyses the data collected. Descriptive analytical tools such as the frequency distribution, percentages, mean, mode, standard deviation and standard error were used to analyses the socio – economic and demographic characteristics of the households in the study area. The livelihood activities engaged by the households were determined by ensuring that each member of the household supply information on the type of activities during the 2014/2015 farming season and income generated.

Descriptive technique including computation of mean, standard error and income share was employed in describing the contribution of various livelihood activities to the farm households in the study area.

Descriptive statistics data analysis methods used for quantitative data were one way mean, percentage, t-test, chi square test, and diversity indices. The descriptive data analysis was conducted using Statistical Package for Social Sciences (SPSS) version 20.

3.4.2. Econometric model

To identify the determinants behind rural household decision to engage in various livelihood strategies the assumption is that in a given period at the disposal of its asset endowment, a rational household head choose among different mutually exclusive livelihood strategy alternatives that offers the maximum utility.

The level of livelihood diversification was determined by computation of Herfindahl index. The income diversification index used in the study was defined as the inverse of the Herfindahl index as adopted by (Idowu, 2011) thus:

$D = I/\sum Si^2$

D = level of income diversification

Si = Share of income source i in households total income

$Si = Yi/Y, \quad Y = \sum Y$

Yi = Total income from source i

Y = total household income from all sources

Herfindahl index measures the level of income diversification which is the degree of concentration (scatteredness) of household's income into various sources. Households with most diversified income will have the largest values of D. Households with less diversified income will have the smallest values of D. Least diversified household (those depending on a single income source), D takes on its minimum value of 1. The higher the number of income source (s) and, or the more evenly distributed the income share, the higher the value of D.

Logit regression model: The factors influencing the livelihood diversification was determining using Logit Regression model. The model is stated thus:

$$L_i = \frac{P_i}{\text{Ln } 1 - P_1} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

Where P_1 = if diversified

P_0 = if not diversified

The dependent variable is livelihood diversification index

The independent variables were:

X_1 = Age (years)

X_2 = Sex (1 = male, 0 = Female)

X_3 = Education (years)

X_4 = Farm income (Naira)

X_5 = Marital status (1 = Married, 0 = Otherwise)

X_6 = Religion (1=Christian, 0= Otherwise)

CHAPTER FOUR

4. RESULT AND DISCUSSION

4.1. Description of the Study Area

In this section the study areas are briefly introduced and described. According to the current Federal Government of Ethiopia, Ethiopia is Sub-divided into nine regional states established on the basis of Ethnic-linguistic backgrounds and two city councils (Addis Ababa and Dire-Dawa). From the nine regional states, Oromia is the largest in physical area coverage, and the most populous. Oromia is sub-divided into 18 zones. From among the 18 zones, this study was focused on Borana Zone (Dereje 2010).

Astronomically Borena zone is located $3^0 26^1$ to $6^0 32^1$N latitude and $36^0 43^1$ to $40^0 46^1$E longitudes extending for about 3^0 or 331.6 kms north to south and for about 4^0 or 442.06 kms east to west vice versa. It is located in the southern part of Oromiya regional state. Borena zone shares common boundaries with Guji zone in the east, Somali regional state in south east, southern nation's nationalities and peoples of southern Ethiopia in the north and west and one international boundary with Kenya government 521kms long and the zone has on area of 63028km^2 (Oromia BOFED 2008).

The newly, reorganized from Goji zone since 2004, Borena zone comprises 13 district/woredas and one town administration namely Abaya, Arero, Bule-Horaa, Dhas, Dilo, Dire, Dugda Dawa, Gelana, Melka Soda, Miyo, Moyale, Telelle, and Yabello woredas and Yabello town.. Again the zone has 185 peasants or kebeles association and 19 urban centers including Yabello town zonal capital city (Oromia BOFED 2008).

According to population and housing census result projected total population of Borena zone for in 2000 EC is 966467 of which 881121 rural population (436446 females) while urban population was 85346 (41020 females) for detail , see the table below.

The climate of Borena zone varies from hot tropical to warm temperate. About 56% of the total climatic condition of the zone characterized by Gamoojii /kola lowland climatic condition while

about 31% and 13% of the total area of the zone characterized by sub-tropical Woina Dega and Dega agro climatic conditions respectively. Based on the koppen system of climatic classification the climate of Borena zone may classified in to the four climatic zones. **Semi - Arid climate:** - This climatic type is experienced in eastern and southwestern parts of the zone. It is estimated that it occupies the largest areas of the zone this part experiences low rainfall and high temperatures, **Tropical climate: -** The southern, north eastern and western parts of the zone experience moderate temperature, **Warm temperate climate: -** The area which experiences worm temperature condition is found in the central high lands of Borena zone extend from Dire to Gelana and Abaya districts and **Warm temperate II: -** This type of climate is found in northern tip of the zone (Oromia BOFED 2008).

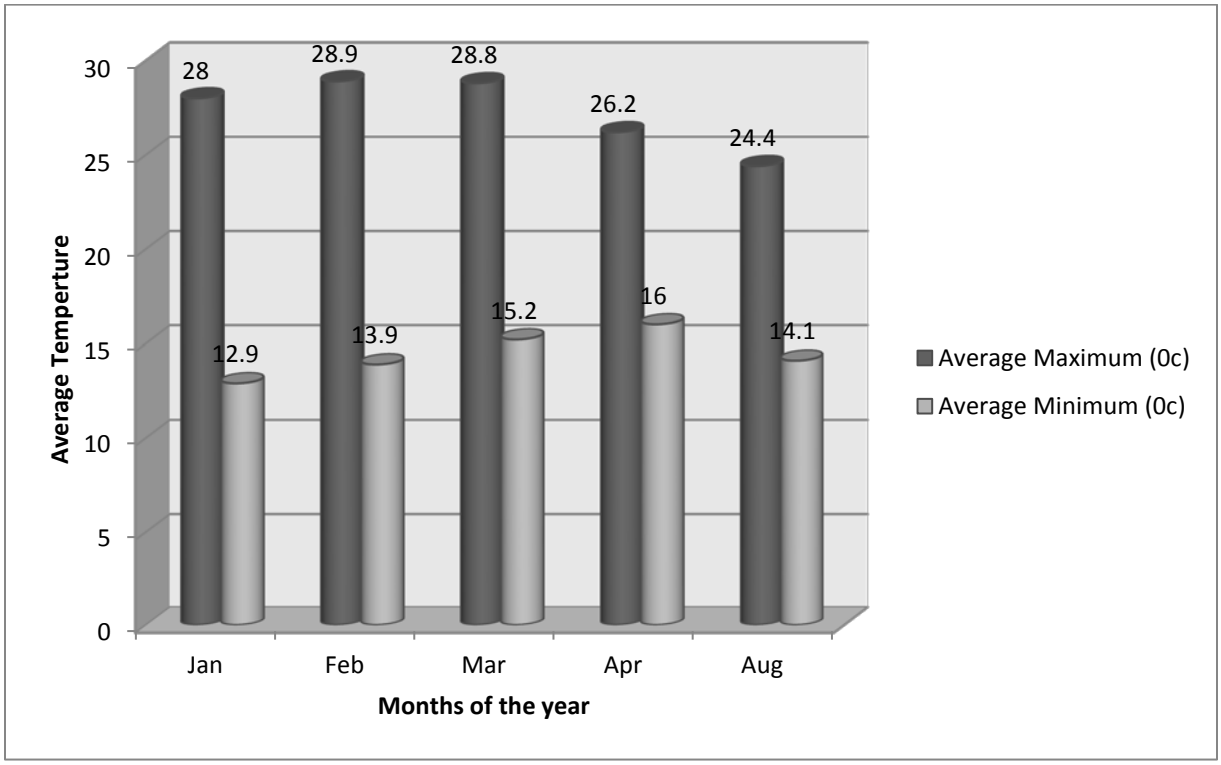

Figure 2: Average Monthly Temperature of Yabello Station from 2004-2014

Source: Raw data from National Meteorology Agency 2015

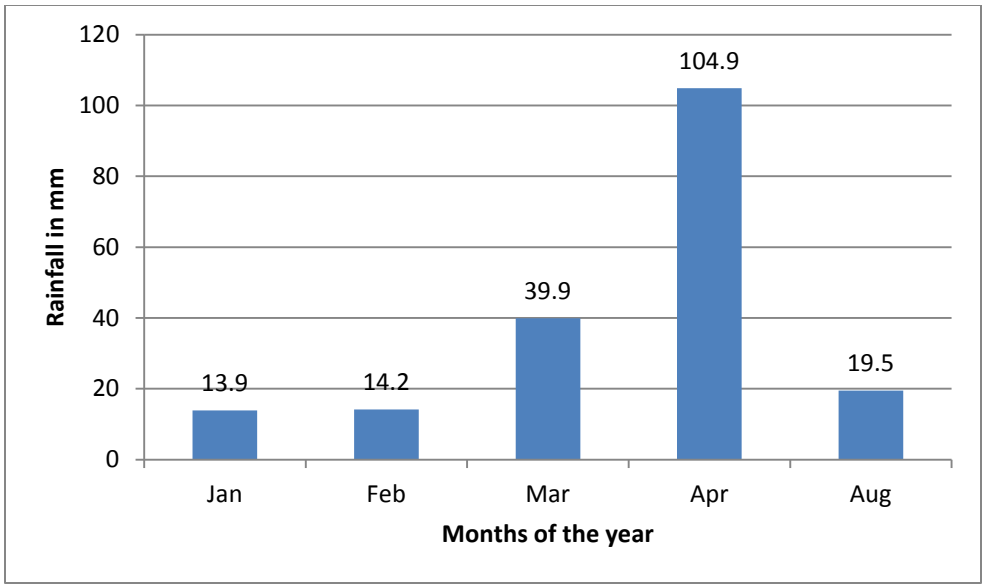

Figure 3: Average Monthly Rainfall of Yabello Station from 2004-2014

Source: Raw data from National Meteorology Agency 2015

From the above data conclusion can be drawn that the amount of rainfall in the area seems to be insufficient but the amount per year alone is not a necessary condition rather the time of fall is very important. The intensity and distribution of rainfall are the influencing factors for agricultural production. In Boroana zone, the agricultural calendar (the beginning and ending) of the rainfall is becoming irregular. This is because of climatic fluctuation in the area, which aggravated the scarcity of the rainfall and reduction in agricultural yield especially cereal crop and enforcing farmers to follow non-farm and off-farm activities side by side agricultural activities. The irregularity of the maximum rainfall period of the study area is shown below for the period of ten years from 2004 to 2014 as shown by meteorological station of National Meteorology Agency (2015).

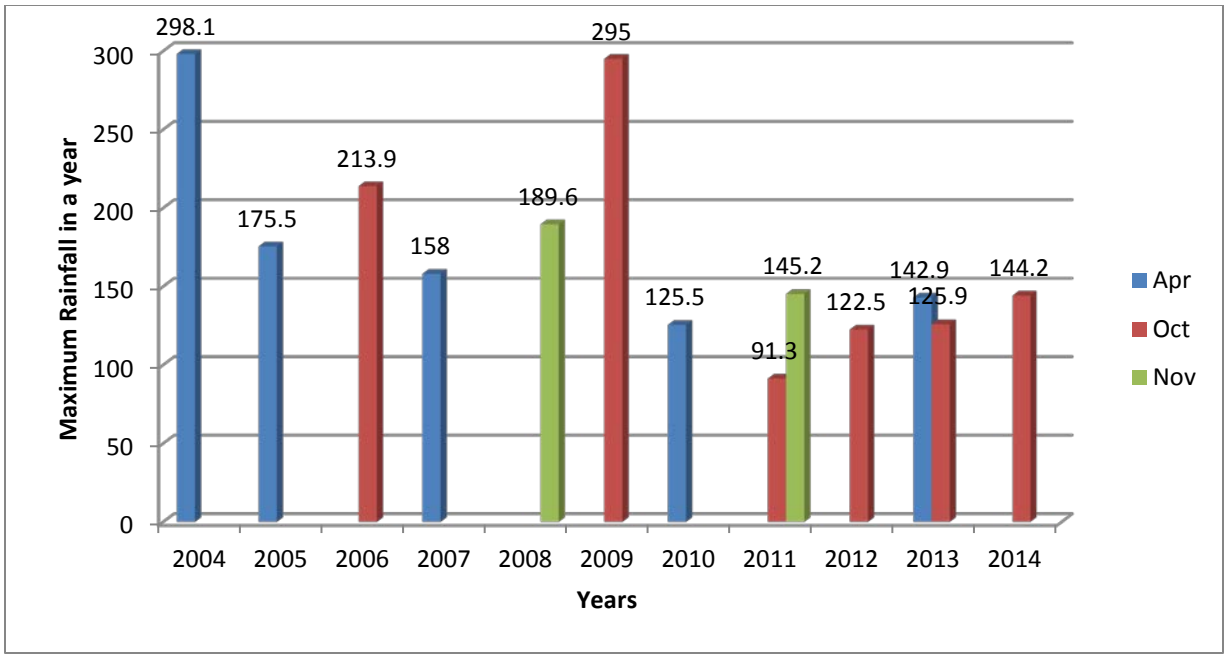

Figure 4: Maximum Rainfall in mm for 11 years in Borana Zone

Source: Raw data from National Meteorology Agency 2015

There are four main seasons in the zone. These include the long rains or *ganna* from March to May, the short rains or *hagaya* from September to November, the long dry season or *bonna hagaya* from December to February and the short dry season or *adolessa* from June to August. Livestock births and sales are the most crucial activities carried out in the year. The main in-heat period for both cattle and camel are similar, and take place following the *ganna* rains and occurring from May to July. The births will occur after twelve months (for camels) and nine months (for cattle). Though yields do vary, camels are milked throughout the year starting from the *ganna* rain. Cattle on the other hand, are milked for a continuous six months from February to July. All livestock types including camels are sold with a peak sale period lasting from May to August.

Table 3: Borana Zone Main Seasons and Production Calendar

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Legend	Ganna			Adolesa			Hagaya			Bona Hagaya		
Livestock sells												
Camel milk production												
Camel in-heat period												
Camel births												
Shoat milk production												
Shoat in-heat period												
Shoat births												
Cattle milk production												
Cattle in-heat period												
Cattle births												
Other												
Casual labor												
Livestock migration												
Food purchase												

Source: Borana –Guji Cattle Pastoral Livelihood Zone 2008

The main livestock kept in the area include camels, cattle, sheep and goats. Households consume both camel, cow and goat milk. In addition to contributing to overall food needs, livestock have a paramount importance in generating cash income for households. Camels and cattle are sold at the age of 3-5 years. Sheep and goats are sold at about 8 months of age. Cattle and shoats are slaughtered and consumed only during holidays. Oxen are not usually kept and milking cows are often replaced from within the heard. While both sexes of all age groups are responsible in looking after the livestock, adult men take up responsibility for animals when afflicted by hazards such as drought or conflict. Water is the most critical resource to the Borena-Guji pastoral community. The community accesses seasonal pools and ponds during the wet and dry seasons make use of traditional wells called *ellas.*

The main staple foods purchased by households are maize and haricot beans. The Yabelo and Mega markets are supplied from Gedeb, Garba and Jinka. The major sources of the haricot

beans are Mega, Bule Hora, Yabelo as well as other local markets. These staple foods are available for purchase at markets throughout the year.

The majority of annual food needs of all wealth groups are covered by a combination of consumption of own livestock products and staple food purchase. The rich wealth group covers 40-50% of their annual food needs through the consumption of livestock products such as camel and cattle milk. The middle wealth group receives 25-35% of their annual food requirements from consumption of milk from cattle and camels. The very poor and poor wealth groups are nearly entirely dependent on purchase of staple foods and food aid to meet food requirements. The main staple food purchased is maize, which is grown in the maize producing areas around Shashemene. The very poor and the poor wealth groups depend on food aid for nearly 10-20% of their annual food requirements. These wealth groups also receive a small portion of their annual food from gifts of milk gift given to them by the middle and the better-off wealth groups.

Another major event in the zone is livestock migration. The migration occurs during the long dry (to search for food and water) and long rainy season (to allow the local pasture regeneration). The period for livestock migration extends from January to April. The route of the livestock migration is to Northen Yabello (Surupa), Koticha (Western Yabello) and from Bule Hora and Gelana to Amaro (SNNPR), from Dire to Golbo (Kenya Border). (Oromia BOFED 2008)

The main hazards faced by households in the zone are drought, livestock diseases and conflict with neighboring areas and tribes. Drought is a function of a shortage in the required amount of rainfall as well as erratic distribution of rains. Drought affects the availability of pasture and water for the livestock, and is a hazard that occurs nearly every year. Livestock diseases such as pasteurellosis, internal and external parasites, and blackleg are the most common livestock diseases, occurring every year and affect cattle, sheep and goats. The effect of these diseases ranges in severity, resulting in some serious cases in the death of livestock. The main reason for the conflict in the area is a result of the movement in search of pasture and water for livestock. The conflict is with the neighboring areas and tribes. There is no regular pattern of conflict; rather it happens occasionally when the problem of pasture is most severe.

Coping strategies employed by households in the zone include the increased sale of livestock and migration with livestock. Households of different wealth groups will sell additional livestock in times of food shortages in order to expand cash available to purchase staple foods.

From among the 13 Woredas this study was focused on two Woredas, i.e. Yabello and Dugde Dawa Woredas. The study was conducted in four PAs in the Yaballo and Dugde Dawa woredas of the Borana Zone of the Oromia Regional State in southern Ethiopia.

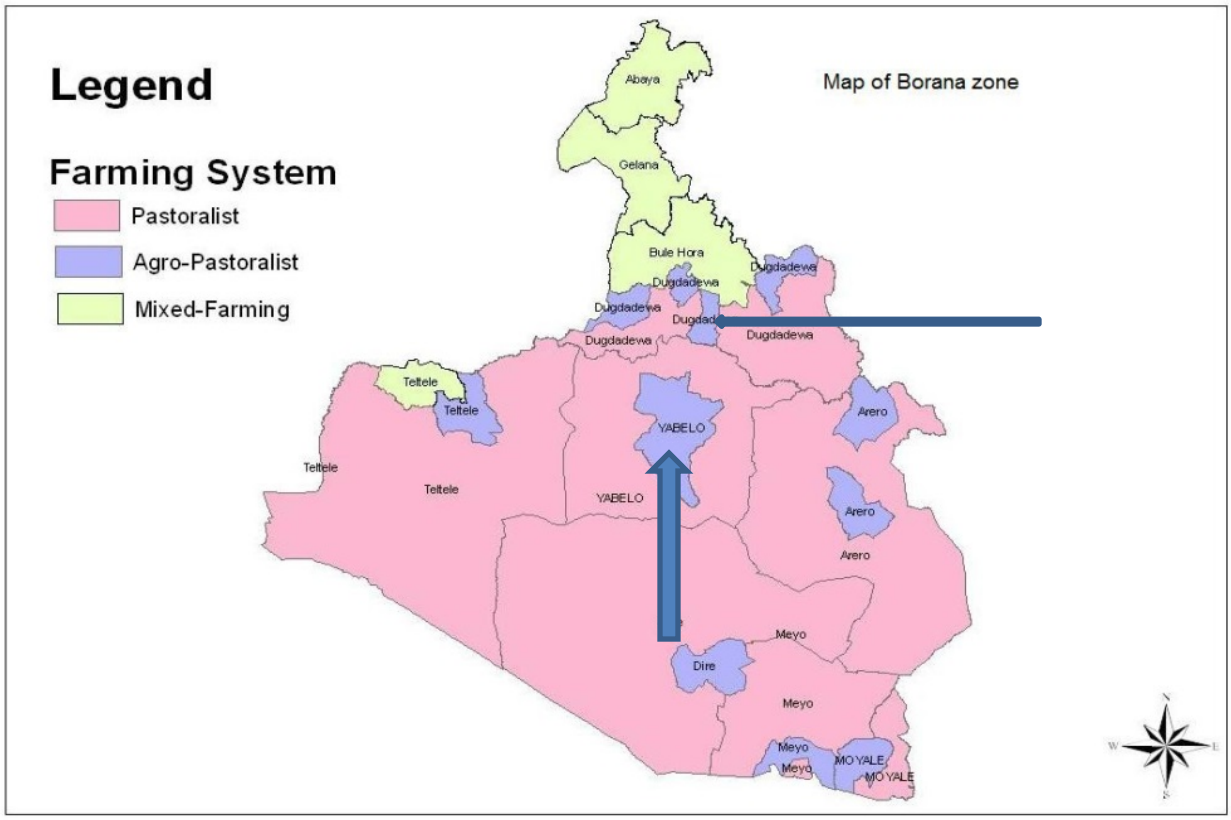

Figure 5: Map of Borana Zone by District and Farming System

Source: Summary of Baseline Household Survey Results: Borana, Ethiopia 2011

4.1.1. Location of Yabello Woreda

According to Borana zone Finance and Economic Development Office September, 2009(2002 EC), Yabelo woreda is one of the woredas of Borena zone. The woreda is located at the center of the zone. It has common boundaries with Regional State of Southern Ethiopia at northwest, Teltele woreda at the west, Arero woreda at the east, Dugda Dawa woreda at the north and Dire woredat at the south and 570 km from Addis Ababa. On the other hand, the district is sub-divided into 23 rural pastoral associations or kebeles. Meanwhile, Yabello town is the capital town of the woreda as well as the capital town of Borena zone, since 2004. Total area of the woredat is about 5,909 km^2.

The human population of the Wereda is a total of 98,730 of male 55, 151 and female 43,579 with a household number of 15,061. A substantial number of the Wereda population about 25% lives in towns out of which 90-95% lives in Yabello town. The large majority of the town dwellers are businessmen and civil servants. The population density is 14 persons /km^2, which is too high for a semiarid system. The Borana is the major ethnic group that occupies the Wereda. There are pockets of Gabra ethnic groups, which are mainly camel keepers. Pastoralism and agro pastoralism are the dominant forms of livelihood pursued by the rural people. Opportunistic cultivation is mainly practiced around towns in about 10 km radius and in valley bottoms areas where the soil moisture content stays high for longer time.

4.1.1.1. Climatic Condition of Yabello

Two agro-climatic zones characterize Yabello woreda. "Gamoji" or kola lowland climates, which accounts for about 82% of the total area of the woreda and "badda-dare" or weyina dega midland accounts for about 18%, (Action for Development, Project Proposal Development Document, 2013).

As information obtained from rural water desk, Yabello woreda depends on rainy seasons; both types of ponds can be used as source of drinking water for livestock and human beings, particularly in rural areas of the woreda. Rainy season of the district is normally characterized by two seasons as presented below with their months (durations) as well as percentage (%).

Table 4: Rainy Seasons, their duration and percentage to total annual rainfall

Rainy Seasons	Duration (Months)	%	Remark
Long (major) or " Ganna"	From March to May	70	
Short (minor) or " Hagayya"	From September to October	30	

Source: Yabelo woreda Agriculture and Rural Development Office, 2015.

4.1.1.2. Natural Vegetation, Wildlife and Soil Condition

Natural Vegetation: The natural Vegetation of an area is the reflection of the physical condition of an area basically the climatic condition. As it was discussed so far the woreda has two agro-climatic zones, and "badda-dare" or Woina Dega (mid land) and "Gamoji" or Kolla (low land). These two zones have their own distinct vegetation types except few types of vegetation that can grow at both areas based on their adaptation ability. According to data obtained from WBISPP, 2011, about 6.1% of the woreda's area is covered by forests, while about 81.1% and 12.3% of the total area of the district fall under woodland and shrub land, respectively.

Wildlife: As information from the Woreda Natural and Wildlife Conservation Office (2005 E.C), and other sources (i.e. Borena zone Atlas) confirm, Burchell's Zebra, Ostrich, Greater Kudu, Gerenuk, Warthog, Grantees Gazelle, Jack and others are endowed in the district. However, since scientific and reliable inventory has not carried out, the exact number and type of wildlife could not be well known. Concerning wildlife conservation area, there is one conservation area (55050 hectares), namely "Dida Tuyura" ranch that was established in 1972 E.C for conservation of wildlife and bird species. Currently, the area serves as a center for "Borena's especial breed of cattle conservation and fattening", in addition to wildlife conservation. However, such dual purposes are not recommended.

Soil: Different types of soils are found in the district. The major soils, which have good agricultural potentialities are luvisols found in central southern, southeastern and northern parts of the district. The 2nd major type is acidic orthic acrisols that occurred mainly on sloping terrain of northeastern Yabelo district. The utilization of these types of soils becomes good only under

natural vegetation. The third soil type is heavy clay soils (vertisols), which are common in southwestern Yabelo district. Even though it has limitation (extremely heavy and difficulty to plough, low permeability as well as restricted root penetration), it is fairly good for agricultural potentialities. Regarding their phases, soils in the district are mainly stony and soda, (Borena zone Atlas, PP.1994). Color wise, Red, Black and "Bore" are the dominant colors of the soils in district (Yabello Agricultural and Rural Development Office, 1995 E.C).

Similar to other Woredas in Borana zone, Yabello is a drought prone Wereda. It is very vulnerable to environmental shocks. Since 1991, the Woreda suffered more than three droughts that led to loss of livelihood to many households.

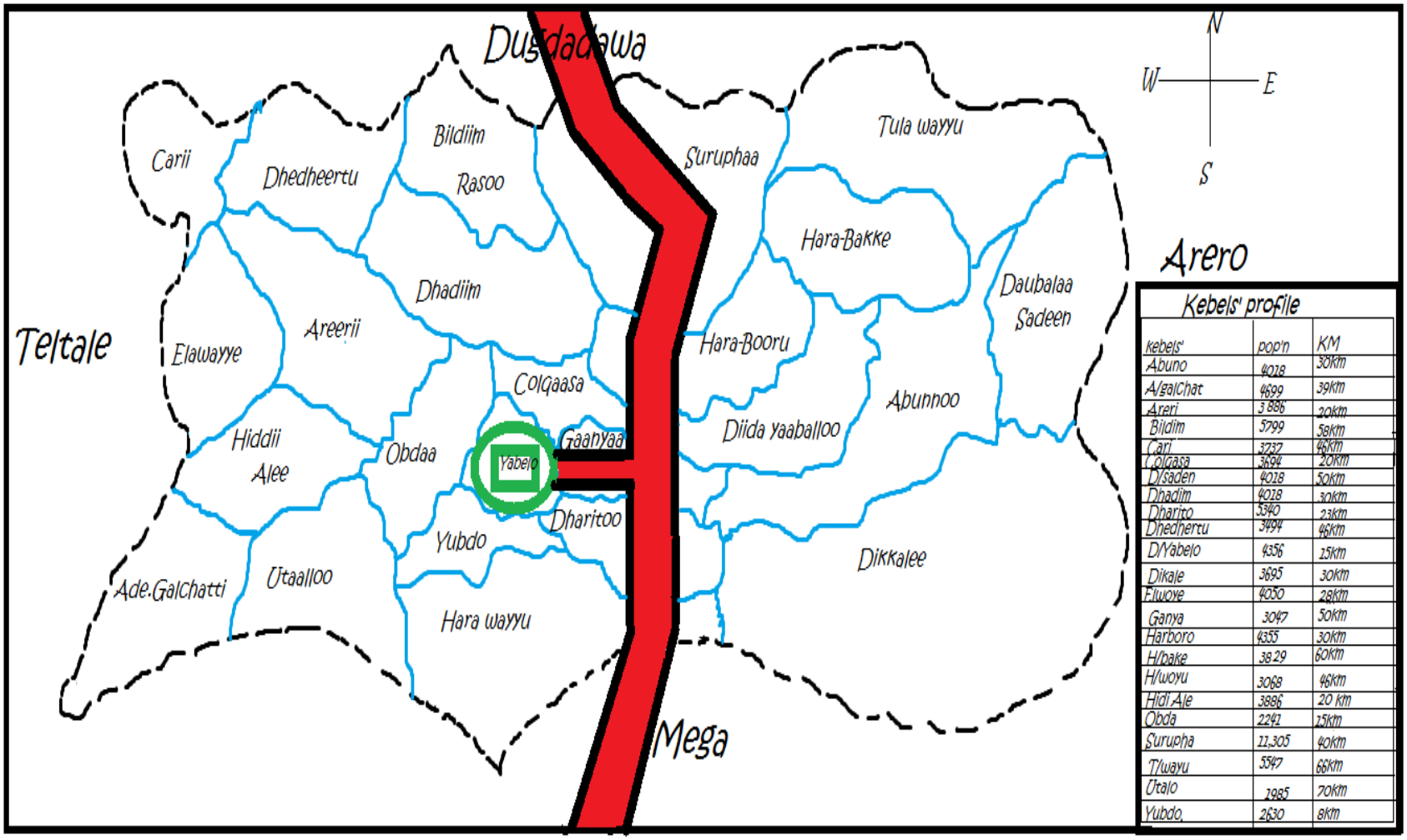

Figure 6: Yabello Woreda Map

Source: Yabello Woreda DPPO 2014

4.1.2. Location of Dugda Dawa Woreda

Dugde Dawa is one of the new established Weredas in the Borana Zone of the Regional State of Oromia. Fincawa is the capital town of the woreda, it is located 500 km south of Addis Ababa and 70 km from Yabello, the capital town of Borena zone with on area coverage of 165,634 hectare it is the smallest Wereda in the zone. There are 15 PAs in the Wereda. Most of these kebeles were organized recently, there had been some restructuring done by the Cooperative Promotion Office of oromia, with technical support by VOCA, on the size and composition of the associations with the aim of increasing their efficiency to provide services to the residents of the Wereda. Some of the PAs in the Wereda border Kenya and people often cross the border to access grazing and other social services (R WASSH program, January 2008).

The Geomorphology of the woreda is characterized by ups and downs. The highest elevation of the woreda is 1750 meter. Whereas it's minimum elevation is estimated to be 1100 mater. (**Source**: pastoralist development office of the woreda, 2001).

The human population of the Wereda is 112,262 (56,351 male and 55,921 female) with a household number of 22,452. Only 2% of the population lives in urban areas. The population density (about 9 persons / km^2) is too high for arid and semiarid systems. The Borana is the major ethnic group that occupies the Wereda. There are pockets of Gabra and Somali ethnic groups, which are spread thinly over the most arid part of the Wereda. In most cases people's livelihood is a reflection of the agro ecology in which they live, and the natural and man-made resources available at their disposal. Accordingly, pastoralism and agro pastoralism are the dominant forms of production systems people depend for their livings in the Wereda. Opportunistic cultivation is mainly practiced around towns and in valley bottoms where the soil moisture content stays high for longer time.

4.1.2.1. Climatic Condition of Dugda Dawa

The woreda falls under "Gamoji" or kola lowland climates, which accounts for about (98%) and "badda-dare" or weyina dega midland accounts for about (2%) agro-climatic condition. This implies that the woreda is climatically low land.(**source**: pastoralist development office of the woreda, 2011)

The mean Maximum and minimum temperatures are 27^{o}c and 17 ^{o}c respectively. Most part of the kebeles are arid.**(source**: projects on water supply, small scale irrigation, and soil and water conservation, December 2010)

4.1.2.2. Natural Vegetation and Soil Condition of Dugda Dawa

Natural Vegetation: The major types of natural vegetation that are grown in the woreda are high forest (4000) hectares wood land (3500 hectares) and shrub & bush land (26,091) hectares.

Soil Condition: There are many types of soils that have different characteristics with one another. From many types of soil, the woreda has two dominantly occurring soil types, namely, sand and clay soil. (**Source:** Pastoralist development office of the district, 2011)

An arid and semi-arid environment characterizes the agro ecology of the Wereda. It has a bimodal rainfall pattern in which the main rainfall is received in April-June and the other in September-November. The Wereda is endowed with savanna type vegetation suitable mainly for cattle. In the more arid part there are highly nutritious browse species to support camels and goats.

Figure 7: Dugda Dawa Woreda Map

Source: Save the Children Dugde Dawa Office 2014

The woreda located 500 km away from the capital city. It has 13 rural and 2 town kebeles. The woreda characterized by 20% pure pastoralist and 80% semi pastoralist. PSNP operates in eight PA s. Livestock rearing is the predominate economic activity.

The altitude rang varies from 1,100-1450 meter above sea level. The rain fall pattern is bi- modal with average of 300-600mm annual rain falls. The long rain sessions extend from March to May receiving 60-70% of the rain fall. Whereas the short rain session extend from September to November. However both rainy sessions characterized by erratic, unpredictable and unreliable resulting livestock mortality, crop failure and subsequent food and water shortage.

4.2. Economic Characteristics of the Woredas

4.2.1. Livestock Production

Both Woredas are characterized economically by involvement in livelihood activities such as livestock rising and crop production and other off-farm and non-farm activities.

In Borana zone animal production is the first ranking activity and the next is crop production. Since the households are predominantly smallholders and unable to use modern mechanized equipment, the use of animal power for production and transportation is the blood vessel of the pastoralist. According to Yabello Woreda Agricultural and Rural Development Office report (2009), animals are not only the means of production for these communities; they are also the main sources of food and income.

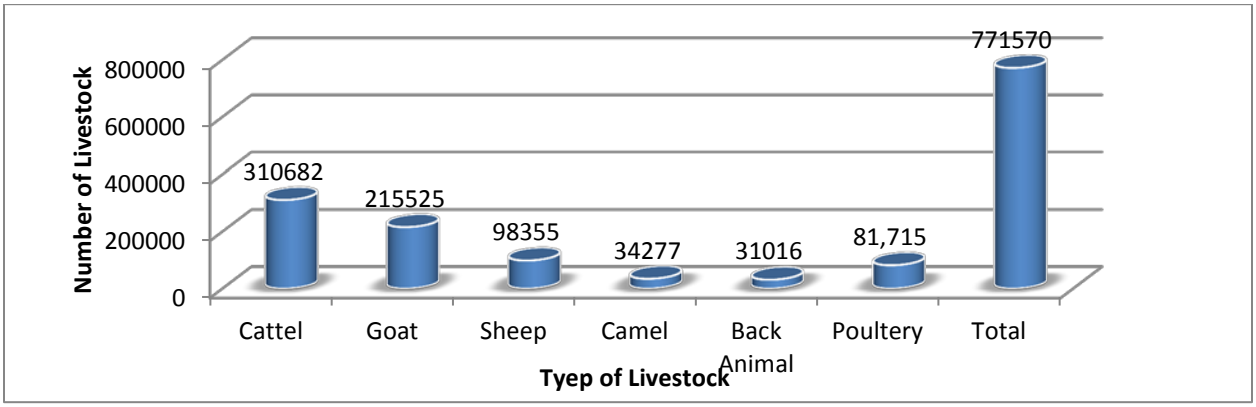

Figure 8: Livestock Population of Yabello Woreda

Source: DPPO of Yabello Woreda 2015

Dugda Dawa woreda is one of its economy is based on rearing livestock. The livelihood of the people is mostly depending up on pastoralist. The popular (known) livestock's reared in the woreda are cattle, sheep, goats, camels and so on. (source: Dugda Dawa pastoralist development office,2001). There are many factors that hampered the livestock's not to be reared in large quantity in these woredas. The major factors observed in the district are: Drought, Livestock diseases, Shortage of water for livestock's and the degradation of natural resources (pasture degradation) and in adequacy of markers and extension services. **(Source:** PSNP DFAP annual program survey report 2015).

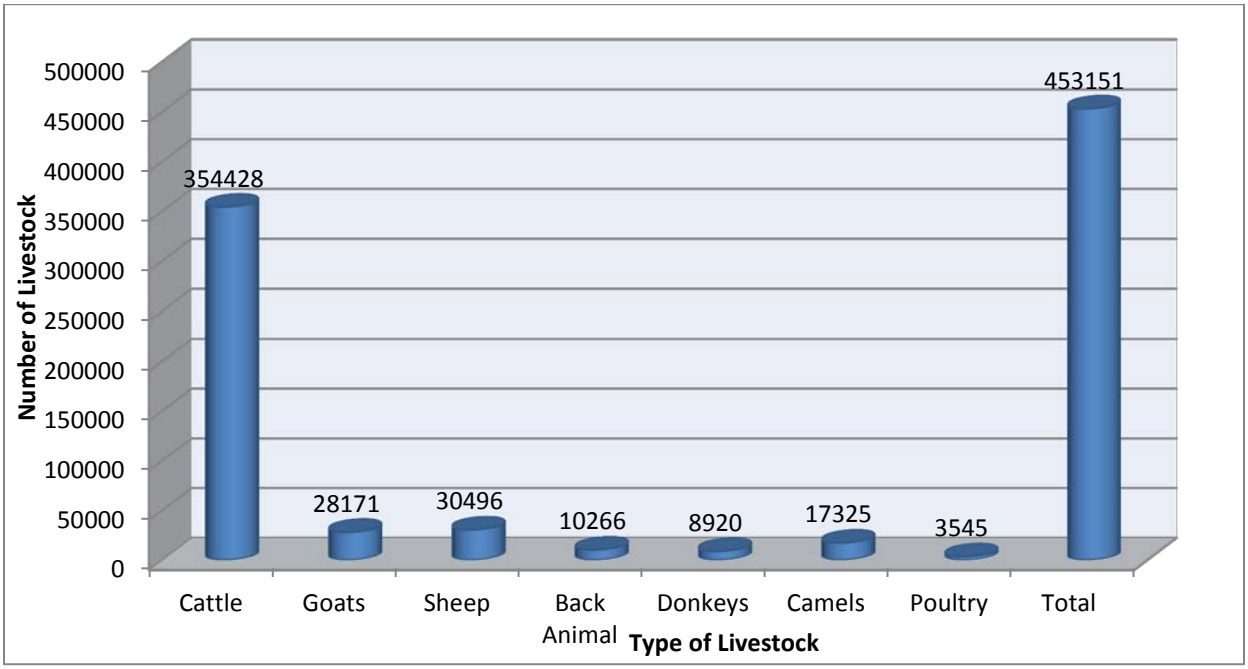

Figure **9: Livestock Population of Dugda Dawa Woreda**

Source: DPPO of Dugda Dawa Woreda 2015

Livestock Feed: In these woredas, the feeds of livestock are almost rangeland grasses and shrubs. However, there are area closures, which are reserved for livestock for dry season both pastoralists and Agro-pastoralists PAs where farming activities are carried out in addition to rangeland grasses & shrubs, crop residue after harvesting is used as feed of livestock.

Livestock Diseases: Since 1991 E.C, major livestock diseases that repeatedly attack livestock and type of livestock attacked are summarized in the table below.

Table 5: Types of Livestock Disease and Livestock commonly attacked

No	Type of livestock diseases	Livestock commonly attacked
1	CBPP, CCPP, Trypanosomiasis	Cattle, camel
2	Camel pox, Black Leg, Anthrax, External and Internal parasites	Different livestock

Source Borana Zone Pastoral development Office 2014

In the district, there are indigenous (local) species of poultry. However, efforts have been made to introduce improved species (breeds) of poultry in the district.

4.2.2. Crop Production

Production of Cereal Crops and Pulses: - Cereal Crop production in these woredas are dependent largely on rainfall. But there are varieties of crops that are grown in the woredas depending on the agro-climatic zones. Consequently the main cereal crops grown in the Woina Dega agro-climatic zone are Maize, Beans, Teff, Sorghum, etc. And the main crops grown in the Kolla area are Maize, Sorghum, Teff, and other varieties of crops.

Even though agricultural calendar varies from crop to crop, under normal weather condition, for long rainy season (Ganna) and short rainy season (Hagayya) are summarized in the following table.

Table 6: Agricultural Activities Calendar for long and short rainy seasons

No	Activities	Period (Months for long-rainy season	Period (Month) for short rainy season
1	Land preparation	February	July-August
2	Planting (sowing)	March	September
3	Weeding	April-May	Oct.-Nov.
4	Harvesting	June-July	December

Source: Yabello District Agriculture and Rural Development Office, 2001 E.C

On Dugde Dawa, Crops are also produced in the district. Crop production activities take place

twice a year within the woreda, Meher and Belg. But its unity is different from season to season. The number of crops produced during Meher season is larger (522,288 Quintal) in quantity than produced in Belg season. (101,158 Quintal) season. **(Source:-**pastoralist development office of the woreda, 2001)

4.2.3. Non-Farm and Off-Farm Activities

While livestock and crop production are the first and the second ranking economic activities of Both Yabello and Dugde Dawa woredas; non-agricultural activities are also playing an integral role in the livelihoods of the community particularly for poor and medium wealth group of the community. Non-farm and off-farm activities are the most important supplementary activities in the rural households. They serve as a source of income that can help to keep the regular activities on the track while there is shock by rising the funding that would help to purchase inputs that agricultural sector needs. On the other hand, they play a significant role in supporting poor and medium households to scratch their livelihoods through these activities.

The most important non-farm activities that the peoples of the area engaged in include petty trading, transfer, causal labor, and so on. On the other hand, there is also off-farm activities which often poor households engaged in, these activities are wage labor on other's farm, crafting during spare time and so on. Therefore, it can be concluded that the non- farm and off-farm activities are the crucial activities to raise household income and reduce household vulnerability to food shortage.

4.3. Demographic and Socio-Economic Characteristics of the Respondents

4.3.1. Sex, Age and Marital Characteristics of Sample Households

In this section attempt has been made to discuss about the demographic and socio-economic characteristics of the sample respondents. The main characteristics focused here are sex, age, marital status, education, wealth status and head of the sample households.

Table 7: Sex, Age and Marital Status of Sample HHs

No	HH characteristics		Sampled Woredas								Total	
			Dugda Dawa				Yabello					
			Sampled Kebeles									
			Arbico		Jigessa		Cholkasa		Dhareto			
			N	%	N	%	N	%	N	%	N	%
1	Sex	Male	23	77%	22	73%	24	80%	22	73%	91	76%
		Female	7	23%	8	27%	6	20%	8	27%	29	24%
	Total		30	100%	30	100%	30	100%	30	100%	120	100%
2	Age of Household head	18-35 year	8	27%	6	20%	13	43%	12	40%	39	33%
		36-45 year	20	67%	24	80%	14	47%	13	43%	71	59%
		46-60 year	2	7%	0	0%	2	7%	4	13%	8	7%
		more than 60 year	0	0%	0	0%	1	3%	1	3%	2	2%
	Total		30	100%	30	100%	30	100%	30	100%	120	100%
3	Household head marriage status	Single	0	0%	0	0%	4	13%	1	3%	5	4%
		Married	23	77%	23	77%	21	70%	21	70%	88	73%
		Divorced	4	13%	3	10%	3	10%	4	13%	14	12%
		Widowed	3	10%	4	13%	2	7%	4	13%	13	11%
	Total		30	100%	30	100%	30	100%	30	100%	120	100%

Source: Household Survey; 2015

As shown in table 5.1 above, the recent household survey at both woredas by the author found out that, 24 percent of the total household heads surveyed are female and 76 percent are male. On the age proportion of the sample households in the woreda, the result of the survey shows that, age group of sampled household that range from 18 years to 35 years account 33 percent, age group from 36 years to 45 years account 59 percent, age group from 46 years to 60 years account only 7 percent and age group more than 60 years account only 2 percent.

Therefore, from these findings it is possible to conclude that, both woredas have large proportion which accounts about 92 percent of economically active population that can engage in varieties of activities according to their necessities and opportunities. But according to

response from key informants, both woredas were reported as food insecure for the last two decades and the main reasons for food insecurity was not driven by labor scarcity rather by bio-physical and socio-economic factors that have greater influence on the local household activities.

As the household survey indicates, from the total sample households 73 percent are married and 4 percent of them are single (unmarried). On the other hand, due to various reasons, like death and many other socio-cultural reasons, 12 percent of the respondents are widowed and 11 percent of them are divorced. As stated above 73 percent of the respondents are married, this need and scarcity of resource enforces the young households to find an alternative means of life other than the main livelihood (livestock and farm). Therefore, livelihood diversification is growing in importance in the study area the above stated reasons in that population number is becoming above the supporting ability of the household resources.

4.3.2. Education, Wealth and Food Security Status of Sample Households

According to table.10 below, regarding the educational status of the sample respondents, from the total household respondents 80 percent are illiterate, 12 percent can read or write, 3 percent are attend grade 1-4 schools, 3 percent are attend grade 5-8 school, and those have attended high schools grade 9-12 and certificate/diploma are only 1 percent. When wealth status is concerned, the result of the household survey has shown that 52 percent of the respondents are poor households, 32 percent of respondent households are medium wealth status and only 17 percent are the rich households.

Table 8: Education, Wealth and Food Security Status of Sample HHs

No	HH characteristics		Sampled Woredas								Total	
			Dugda Dawa						Yabello			
			Sampled Kebeles									
			Arbico		Jigessa		Cholkasa		Dhareto			
			N	%	N	%	N	%	N	%	N	%
1	Education	illiterate	24	80%	24	80%	22	73%	26	87%	96	80%
		read/write	4	13%	3	10%	5	17%	2	7%	14	12%
		grade 1-4	1	3%	1	3%	1	3%	1	3%	4	3%
		grade 5-8	1	3%	2	7%	1	3%	0	0%	4	3%
		grade 9-12	0	0%	0	0%	1	3%	0	0%	1	1%
		diploma/certificate	0	0%	0	0%	0	0%	1	3%	1	1%
		Total	30	100%	30	100 %	30	100%	30	100 %	120	100%
2	wealth status	Rich	5	17%	6	20%	6	20%	3	10%	20	17%
		Poor	14	47%	14	47%	18	60%	16	53%	62	52%
		Medium	11	37%	10	33%	6	20%	11	37%	38	32%
		Total	30	100%	30	100 %	30	100%	30	100 %	120	100%
3	Food security status	Secured	0	0%	9	30%	3	10%	2	7%	14	12%
		Insecure	30	100%	21	70%	27	90%	28	93%	106	88%
		Total	30	100%	30	100 %	30	100%	30	100 %	120	100%

Source: Household Survey; 2015

As indicated in table 10 above, the result of household survey has shown that 88 percent of the respondents reported that their households are food insecure and the rest 12 percent of them stated that their HH are food secured from their own livestock selling.

Box 1: Key-informant interview on food security at Dhareto

I am Guyo Galgalo; I have one hectare of land, two oxen and two cows, and five shoats. I harvested this harvest year about five quintals of grain of which two quintals are Maize, one quintal is Teff and two quintals are "Alkuka". These are not enough to feed seven members of my family throughout the year. I am working daily labor and my wife has the skill of pottery. We both do this while we have free time and during the late afternoons while we come back to home from forest with cattle. The reason we do this is that it can help us to buy other home materials/utensils, food items like salt, sugar, spices, cloths and other social obligations like bussa gonofa. Thus though our land is too small and we cannot produce enough for our household consumption, our engagement in other activities help us not to sell livestock to buy other things we need by supplying extra incomes that can help us to buy things we need from the market. These on the other hand help my family to be food secure throughout the year.

Source: KI survey; 2015

Regarding the wealth status of the sample households, the greater proportion of them are found to be poor, which account for about 52 percent of the total households involved in the survey. The next dominant wealth groups in the survey are those households with medium wealth status that account for 32 percent of the sample households. On the other hand, very small number of the sample households is considered as rich, which accounts only 17 percent of the total households surveyed (see table 10 above). Generally, from the above data it is possible to conclude that in the study area there are large numbers of working age group which can help to conclude that the problem of labor is not a serious problem. On the case of education even though large proportion of the households are still illiterate the expansion of education is encouraging and the proportion of married households is higher and the vast majority of the households in the study area are poor but food insecurity which is a serious problem in the study area.

4.4. Household Livelihood Resources Possession in the Study Area

In this study resources are labeled as capitals. Capitals are of different types, and categorized into different categories these are: Human capital, Social Capital, Natural Capital, Financial Capital and Physical Capital. IFAD classify capital into more than that, by adding other capitals, for

instance, includes: Personal capital to those capitals mentioned above. This study uses the IFAD'S categories to explain the availability and the ownership of the livelihood resources in the study area.

4.4.1. Personal Capital

Regarding the personal related issues in the society under study, the researcher focuses on two attributes adopted from IFAD (2007); that is, personal motivation and willingness in the engagement, action, and reaction, with other related socio-economic and bio-physical factors. This is because personal related factors are decisive in the activities and livelihoods of the people.

Therefore, the personal dimension of the survey resulted in the following findings. On the motivation side of the personal attribute, the result of the FGD at Jigessa shows that great deal of the people of the study area, have high motivation to be engaged in diverse livelihood activities. This is because of continuous drought occurrence, the area potential like pastoral area and water points decreasing from time to time and rain fall is decreasing for example, this year rain fall amount and length is very short than the last year. Thus diversifying livelihood is not alternative but it should be a must to survey in our life.

Table 9: Personal Capital

Characteristics		Sampled Woreda									
		Dugda Dawa				Yabello				Total	
		Respondent Kebele									
		Arbico		Jigessa		Cholkasa		Dhareto			
		N	%	N	%	N	%	N	%	N	%
Willingness to act and response	High Motivation	25	83%	24	80%	29	97%	30	100%	108	90%
	Low Motivation	5	17%	6	20%	1	3%	0	0%	12	10%
Total		30	100%	30	100%	30	100%	30	100%	120	100%
Motivation To diversify	High Motivation	28	93%	28	93%	29	97%	27	90%	112	93%
	Low Motivation	2	7%	2	7%	1	3%	3	10%	8	7%
Total		30	100%	30	100%	30	100%	30	100%	120	100%

Source: Household Survey; 2015

The result of the survey revealed that 93 percent of the total sample households in the study areas have high motivation to engage in various livelihoods and improve their wellbeing. On the other hand, from the total sample households who are discouraged by financial accessibility, bio-physical and socio-economic factors, and lost motivation to participate in diverse livelihoods, and hence become vulnerable and most often depend on single or two livelihood activities. In relative this to the survey result shows that 7 percent of the sample households have low motivation. With regard to acting in response to changes 90 percent of the sample households have high motivation and expressed their willingness, whereas the rest 10 percent of them reported unwillingness or low motivation to act and respond.

4.4.2. Human Capital

Human capital is a condition of an individual related to such attributes as health, education, nutrition, capability and so on. Human capital comprises of skills, knowledge, and ability to labor and good health which are crucial to pursue the different livelihood strategies. In this study focus has given to such human capitals as health, labor capacity, education and household food conditions. In this view the household survey in the study area has found out such characteristics of education, health and labor capacity of the sample households.

Table 10: Human Capital

Characteristics		Sampled Woreda									
		Dugda Dawa				Yabello				Total	
		Respondant Kebele									
		Arbico		Jigessa		Cholkasa		Dhareto			
		N	%	N	%	N	%	N	%	N	%
Health	healthy	27	90%	28	93%	26	87%	28	93%	109	91%
	sick	3	10%	2	7%	4	13%	2	8%	11	9%
Total		30	100%	30	100%	30	100%	30	100%	120	100%
Labor capacity	Active	25	83%	28	93%	26	93%	24	80%	103	87%
	Inactive	5	17%	2	7%	2	7%	6	20%	15	13%
Total		30	100%	30	100%	28	100%	30	100%	118	100%

Source: PSNP annual program Survey, 2015

The survey result on the health status of the sample households show that 91 percent of the

respondents are at their good health condition compared with 9 percent who are not at good health condition. With the emphasis on the educational characteristics of the community the survey results of the sample households as shown in (Table 10), only 12 percent of the respondents can read and write while significant number (80 percent) of the households are illiterate households, but the proportion of the respondents who have attended up to junior classes or up to high schools are very small. Human related conditions that can influence the activities of the individual is not only limited to the health and education, rather it may stretch its dimension to nutritional condition and labor capacity of an individual and the household in general.

4.4.3. Financial Capital

According to world development report (2008: 143); financial services are delivered to rural populations by organizations that exist along a continuum from informal to formal, formal financial institutions are licensed and supervised by a central authority. They include public and private commercial banks; State owned agricultural or rural development banks; savings and loan cooperatives; micro finance banks; and special purpose leasing, housing, and consumer finance companies. Informal providers of financial services include rotating savings and credit associations, money lenders, pawn-shops, businesses that provides financing to their customers, and friends and relatives. In between stands financial governmental organizations, NGOs, self- help groups, small financial cooperatives, and credit unions.

Table 11: Financial Capital

Participation		Sampled Woreda									
		Dugda Dawa				Yabello				Total	
		Respondent Kebele									
		Arbico		Jigessa		Cholkasa		Dhareto			
		N	%	N	%	N	%	N	%	N	%
Informal financial institute	Iqub	6	20%	8	27%	5	17%	3	10%	22	18%
	Ider	9	30%	7	23%	0	0%	3	10%	19	16%
	Busa gonofa	3	10%	7	23%	16	53%	13	43%	39	33%
Total		18	60%	22	73%	21	70%	19	63%	80	67%
Formal financial institute	saving and credit	4	13%	4	13%	3	10%	4	13%	15	13%
	cooperative	3	10%	3	10%	3	10%	3	10%	12	10%
Total		7	23%	7	23%	6	20%	7	23%	27	23%

Source: Household Survey, 2015

The household survey at the study areas revealed that the following sources of finance are available for rural households. These sources of finance for these rural households are of two streams; the first one is the formal financial services that include two broad streams (credit and savings) in which only 13 percent of the total sample households are participating. And the second formal sources of financial institution is cooperatives in which different women and men come together and borrow money from financial intuitions and buy animals like sheep, goat, etc and raise or fatten and make profit from them, and beneficiaries from this kind of financial services accounts for 10 percent of the respondents. There are many constraints that the respondents to household survey and other data collection methods informed regarding formal financial sources.

The other source of finance for the rural households at the study areas is the informal sources. These informal sources have their own local name; such as 'Iquib' which accounts 18 percent of the total sample households, followed by 'Idir', which serve as a social insurance during stress and death of the family members. But only 16 percent of the sample respondents were gave answer to this financial source participation. The third popular informal source of finance is 'Busa Gonofa" to which 33 percent of the respondents show their involvement.

4.4.4. Social Capital

Human-being is a social animal, no one can fulfill his or her needs standing alone, and therefore, interaction is a mandatory of social capital. According to Degefa (2005) Social capital refers to social resources involving networks, social claims, social relations, affiliations, and associations upon which people draw in pursuit of livelihoods. He added kinship or neighborhoods form the most important component of social capital. Similarly, different researchers expressed social capital as resources including social networks, membership of groups, relationship of trust, and access to wider resources of the society upon which people construct their livelihoods (Ann Gordon and Cathrine Carig, 2001).

Table 12: Social Support Sample HH Engaged

Characteristics		Sampled Woreda									
		Dugda Dawa				Yabello					
		Respondent Kebele									
		Arbico		Jigessa		Cholkasa		Dhareto		Total	
		N	%	N	%	N	%	N	%	N	%
Social Support Activities	Busa Gonofa	7	23%	14	47%	25	83%	30	100%	76	63%
	Daboo	22	73%	15	50%	14	47%	12	40%	63	53%
	Humna	1	3%	2	7%	3	10%	3	10%	7	6%
	Gargarsa	0	0%	19	63%	10	33%	18	60%	47	39%
	Gumataa	2	7%	2	7%	5	17%	23	77%	32	27%
	Qabo	9	30%	2	7%	3	10%	3	10%	17	14%

Source: Household Survey, 2015

The social capital that the community most often practices is stated below. 'Busa Gonofa', which is an activity practiced by neighborhoods to support each other or work together in rotational basis, to cooperate and make an activity faster. 63 percent of the total respondents of the study area are responded as they are participating in this activity. 'Dabo,' is another form of social support activity in which one household asks the other neighborhoods or relatives from distant areas to help him/her in a particular work for a day or part of a day; this is stated by 53 percent of the total sample households. 'Humna,' is a least social support

activity in which a household with no oxen go to an others' farm that have extra oxen and work for him on his labor and take oxen for his power to plough his own land one day. This is responded only by 6 percent of the total sample households. 'Gargarsa' is also a type of social support practicing in the area to support old age, female head households and children lost their family in physical works than cash or kind support. This type of social support is responded by 39 percent of sampled household. 'Gumata', is also a kind of social support activity in which a household asks for additional support when the power he/she has in any forms are below the dealing ability of that household, This is responded by 27 percent of the total respondents (see table 14).

4.4.5. Natural Capital

Natural capital is a capital that exists in the environment naturally. It includes: land, water, vegetation, clean air, Minerals and others. The way to get access and ownership of these natural resources are the most determinant factor in the livelihoods of the people.

4.4.5.1. Land

The result of household survey has shown that, 86.7 percent of them have replied that they have access to land. But, the source of land they access to is of different in its origin. Those who have access to their own land are about 70 percent of the respondents; on the other hand, those who have got land through inherited and gift from relatives account for 14 and 10 percent of the total sample respondents' access to land respectively. And also the decision on land utilization is different from household to household, about 52 percent of the respondent access to land decision on land done by father with mother consultation, while 29 and 16 percent of the respondent access to land replied that the decision on land utilization is done only by father and mother respectively (see table 15 below).

Table 13: Sampled HH Status of Access to Land

Characteristics		Sampled Woreda									
		Dugda Dawa				Yabello				Total	
		Sampled Kebele									
		Arbico		Jigessa		Cholkasa		Dhareto			
		N	%	N	%	N	%	N	%	N	%
Access to Farm land		27	90%	28	93%	27	90%	22	73%	104	86.7%
How access to farm land	Own land	23	79%	16	57%	21	78%	14	64%	74	70%
	Share cropping	0	0%	0	0%	1	4%	0	0%	1	1%
	Gift from relatives	1	3%	4	14%	4	15%	2	9%	11	10%
	Inheritance	5	17%	8	29%	1	4%	1	5%	15	14%
	Free access to some ones land	0	0%	0	0%	0	0%	4	18%	4	4%
	Other Specific	0	0%	0	0%	0	0%	1	5%	1	1%
Total		**29**	**100%**	**28**	**100%**	**27**	**100%**	**22**	**100%**	**106**	**100%**
Decision on land	Father	9	31%	7	25%	9	33%	6	27%	31	29%
	Mother	1	3%	8	29%	2	7%	6	27%	17	16%
	Father with mother consultation	18	62%	13	46%	14	52%	10	45%	55	52%
	Big brother with mother consultation	1	3%	0	0%	0	0%	0	0%	1	1%
	All family members together	0	0%	0	0%	1	4%	0	0%	1	1%
	Other specify	0	0%	0	0%	1	4%	0	0%	1	1%
		29	**100%**	**28**	**100%**	**27**	**100%**	**22**	**100%**	**106**	**100%**

Source: Household Survey 2015

Although it is stated that 86.7 percent of the sample households have access to land, it does not

mean that there is no problem on farm land size from time to time; there is evidence from the household survey that shows 64.2 percent of respondents said that trend of household farm land size is decreasing for the last decade, while 31.7 percent of respondents replied there is no change on the households land size. The notable farm land size decreasing in these Woredas include population growth to which 71.4 percent of the sample households responded, they also informed that the main reason for land size decrease is land redistribution to others which 15.6 percent of sampled household responded.

Table 14: Trend of HH land Size for the last a Decade

Characteristics	**Sampled Woreda**								Total	
	Dugda Dawa				Yabello					
	Respondent Kebele									
	Arbico		Jigessa		Cholkassa		Dhareto			
	N	%	N	%	N	%	N	%	N	%
Increasing	0	0%	0	0%	3	10%	2	6.6%	5	4.1%
Decreasing	25	83.3%	20	66.7%	15	50%	17	56.7%	77	64.2%
No change	5	16.7%	10	33.3%	12	40%	11	36.7%	38	31.7%
Total	30	100%	30	100%	30	100%	30	100%	120	100%
Reason for land size decreasing										
land redistribution	5	20%	2	10%	3	20%	2	11.8%	12	15.6%
population growth	19	76%	15	75%	11	73.3%	10	58.8%	55	71.4%
Other	1	4%	3	15%	1	6.7%	5	29.4%	10	13%
Total	25	100%	20	100%	15	100%	17	100%	77	100%

Source: Household Survey 2015

4.4.5.2. Water

The major sources of water for home consumption in the study area are public tap, open public well, hand dug well, borehole, open pond/lack, rain water harvesting and birka/Cictereain during dry and wet season, however there water availability is different from dry season to wet season

thus open pond/lack and hand hug well are the major home consumption water sources during dry and wet season which is 24.6 percent and 66.7 percent respectively by the sample households' survey result. According to FGDs discussion and KI interviews, majority of these water sources are constructed by different development actors like government and NGOs involving in the area.

Table 15: Water Sources for HH Consumption during Dry and Wet Periods

Respondents Woreda	Count / Proportion	Water sources during dry period								Total
		public tap	open public well	hand dug well	borehole	river/stream	Open pond/lake	rain water harvesting	birka/Cictereain	
Dugda Dawa	Count	8	18	10	17	8	19	8	17	105
	% of woreda	13%	30%	17%	28%	13%	32%	13%	28%	
	% of Total	8%	17%	10%	16%	8%	18%	8%	16%	100%
Yabelo	Count	16	10	14	6	18	10	11	15	100
	% of woreda	27%	17%	23%	10%	30%	17%	18%	25%	
	% of Total	16%	10%	14%	6%	18%	10%	11%	15%	100%
	Total	24	28	24	23	26	29	19	32	205
	% of Total	20.0%	23.3%	20.0%	19.2%	21.7%	24.2%	15.8%	26.7%	
Respondents Woreda	Count	Water sources during wet period								Total
Dugda Dawa	Count	24	27	40	14	22	57	38	17	239
	% of woreda	40%	45%	67%	23%	37%	95%	63%	28%	
	% of Total	10%	11%	17%	6%	9%	24%	16%	7%	100%
Yabelo	Count	19	36	40	35	29	14	31	40	244
	% of woreda	32%	60%	67%	58%	48%	23%	52%	67%	
	% of Total	8%	15%	16%	14%	12%	6%	13%	16%	100%
	Total	43	63	80	49	51	71	69	57	483
	% of Total	35.8%	52.5%	66.7%	40.8%	42.5%	59.2%	57.5%	47.5%	

Source: Data from PSNP/DFAP annual household Survey, 2015

However, according to FGD and KI conducted in both woredas, the major problem of the community is lack of water for household consumption and for their livestock production. The household survey result shows that community has own copping strategies during water shortage. According to PSNP/DFAP annual program household survey, 50.6 percent of respondents copping strategies during water shortage is traveling long distance to fetch water, 35.7 percent of respondent said that giving priority of water for food cooking and 7.8 percent and 5.8 percent said they are giving priority for children and minimizing daily consumption respectively.

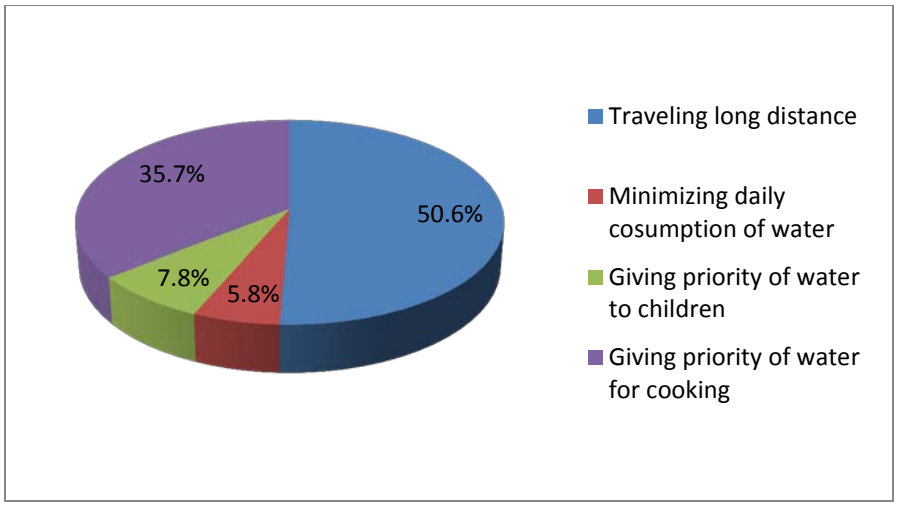

Figure 10: Copying Strategies for Human Consumption during Water Shortage

Source: Data from PSNP/DFAP annual household Survey, 2015

According to sampled household survey result, the major sources of water for livestock in the study area are hand dug well, open pond/lack and river water. However water availability in these sources are different from dry season to wet season thus river water located at long distance is the major livestock water sources during dry and open pond/lack is wet season water source which is 41.9 percent and 88.8 percent respectively.

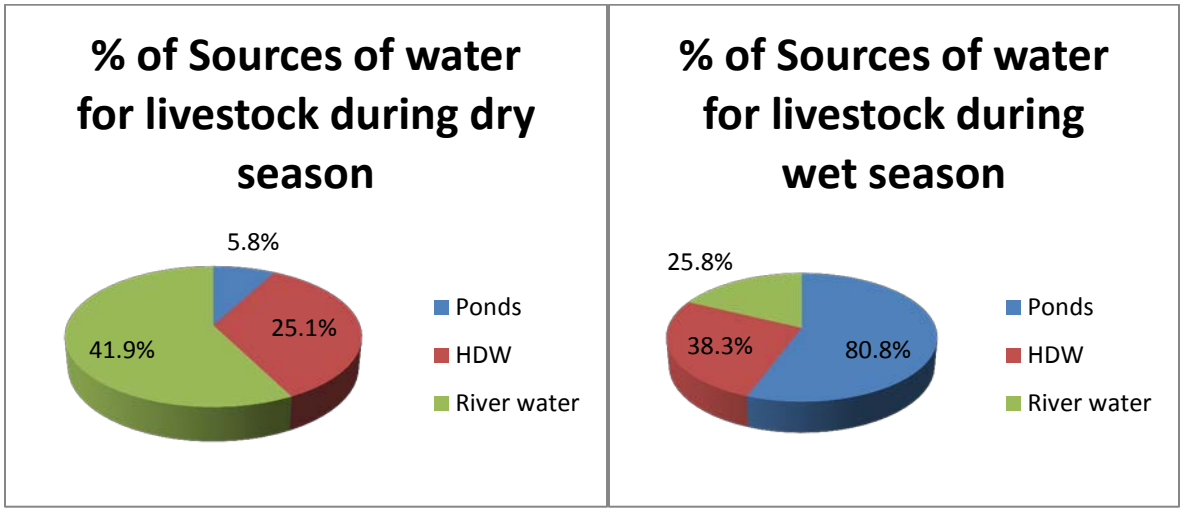

Figure 11: Sources of Water for Livestock during dry and wet Seasons

Source: Data from PSNP/DFAP annual household Survey, 2015

4.4.5.3. Vegetation

According to google Wikipedia definition, vegetation is assemblages of plant species and the ground cover they provide. It is a general term, without specific reference to particular taxa, life forms, structure, spatial extent, or any other specific botanical or geographic characteristics. It is broader than the term *flora* which refers to species composition. Perhaps the closest synonym is plant community, but *vegetation* can, and often does, refer to a wider range of spatial scales than that term does, including scales as large as the global. Primeval redwood forests, coastal mangrove stands, sphagnum bogs, desert soil crusts, roadside weed patches, wheat fields, cultivated gardens and lawns; all are encompassed by the term *vegetation*.

The *vegetation type* is defined by characteristic dominant species, or a common aspect of the assemblage, such as an elevation range or environmental commonality. According to one DA (development agents) KI interview, natural vegetation in their respective woredas varies with the agro-ecological zonation in the type and extent of natural vegetation. Vegetation such as Bushies, grasses, small trees are commonly grown at kolla (low land) areas which is the high coverage of sampled kebeles.

According to household survey result, 46 percent of respondents confirmed that there is accessibility of communal forest that can be used for household different propose, when we see the very important natural vegetation, grazing land product (grasses) for the pastoral and agro pastoral community livelihood of livestock, the survey result shows that 78 percent of respondents confirm that the accessibility of communal grazing land in the study areas.

Table 16: Access to Communal Forest and Grazing Land

Characteristics		Sampled Woreda								Total	
		Dugda Dawa				Yabello					
		Respondent Kebele									
		Arbico		Jigessa		Cholkassa		Dhareto			
		N	%	N	%	N	%	N	%	N	%
Access of Communally used forest	Yes	6	20%	13	43%	12	40%	24	80%	55	46%
	No	24	80%	17	57%	18	60%	6	20%	65	54%
Total		30	100%	30	100%	30	100%	30	100%	120	100%
Access of Communally used grazing land	Yes	14	47%	25	83%	24	80%	30	100%	93	78%
	No	16	53%	5	17%	6	20%	0	0%	27	23%
Total		30	100%	30	100%	30	100%	30	100%	120	100%

Source: Household Survey, 2015

4.4.5.4. Livestock

Livestock are the sources of draught power, milk and meat, manure and hides, and they have very important socio-cultural value in the study areas. One FGD was held at Cholkassa kebele with regard to livestock, the participants forwarded the following: at their community livestock raising is the most important activity, and according to their social institutions, household who have less than ten livestock (particularly cattle or shots) taken as a very poor household needs support from others and such household be supported from others (relatives, friends, or from the better-off) through a system called "Bussa Gonofa". Poultry is also the widespread activity in the community, but only to satisfy the immediate small cash needs of the family. According to this focus group discussion (FGD), though livestock raising is the main dominant activity in the area, there are a widespread animal diseases in the area.

The result of the household survey shows 93.3 percent of respondents own livestock and the proportion of respondents owned type of livestock are from Cattle: Cow (89.2 percent), Heifer (60.8 percent), Ox (52.5 percent) and Bull (12.5 percent), from Shoats: Goat (88.3

percent) and Sheep (58.3 percent), from Pack animals (Donkey 47.5 percent and Camel 18.3 percent), and hen (60.8 percent). Regarding the constrains to the livestock in the study area the majority of the sample households (95 percent) reported that lack of pasture are the main challenges to the livestock and the next challenge is the lack of water, which reported by(92.5 percent) of the sample households. The third proportion of the sample households (65 percent) also replied that lack of veterinary service is another challenge for livestock production in the study area.

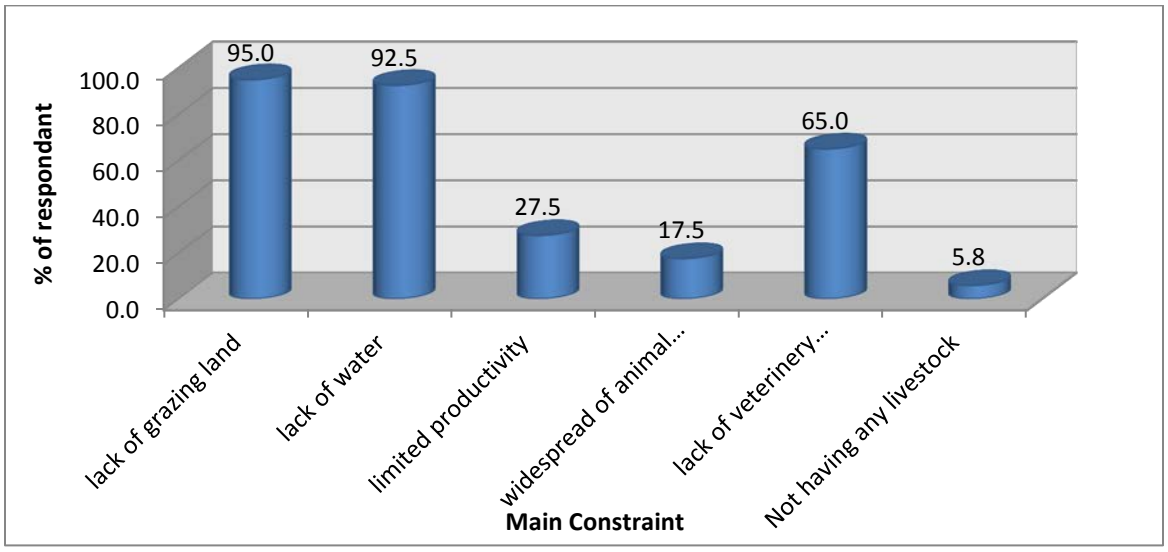

Figure 12: The Main Constraints to Livestock Production

Source: Household Survey 2015

According to household survey result, 80.8 percent of respondents replied that household livestock holding status is decreasing for the last decayed. According to the respondents due to selling to buy food for household consumption (72.5 percent), death because of disease (28.3), selling to send children to school (20 percent), stolen and taken during conflicts (15 percent) and selling for other purpose (11.7 percent).

4.4.6. Physical Capital

According to google Wikipedia definition, in economics, physical capital refers to a factor of production (or input into the process of production), such as machinery, buildings, or computers. In economic theory, physical capital is one of the three primary factors of production, also known as inputs production function. The others are natural resources (including land), and labor the stock of competences embodied in the labor force. "Physical" is used to distinguish

physical capital from human capital (a result of investment in the human agent)) and financial capital. "Physical capital" refers to fixed capital, any kind of real physical asset that is not used up in the production of a product is distinguished from circulating capital.

Physical capital includes hard infrastructure (e.g. roads, telecommunications, power, and water supply) as well as production equipment and buildings that are most likely individually owned (Ann Gordon and Cathrine Craig, 2001). Infrastructure is the most important physical capital for household livelihood sustainability. It includes roads, market, agricultural inputs, distance from town and public services.

Data from the household survey at the study area revealed that in average 30.8 percent of the sample households are half day walk away from the nearby town and 24.2 percent of the sample households are 4 hour far from towns. Those households who are 3 hours away from the town account 15.0 percent of the sample households. 11.7 percent of the sample households are 2 hours away from the town.

Table 17: Sampled HH Distance from Near Town

Hour		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	lhr	11	9.2	9.2	9.2
	2hr	14	11.7	11.7	20.8
	3hr	18	15.0	15.0	35.8
	4hr	29	24.2	24.2	60.0
	5hr	9	7.5	7.5	67.5
	half day	37	30.8	30.8	98.3
	full day	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

Source: Household Survey 2015

According to household sampled survey 85.8 percent of respondent replied that electricity is the major infrastructural service problem that household facing. The next is transport service which responded by 78.3 percent of the respondents, communication (telephone and mobile) is also household infrastructure problem which responded by 68.3 percent of respondents.

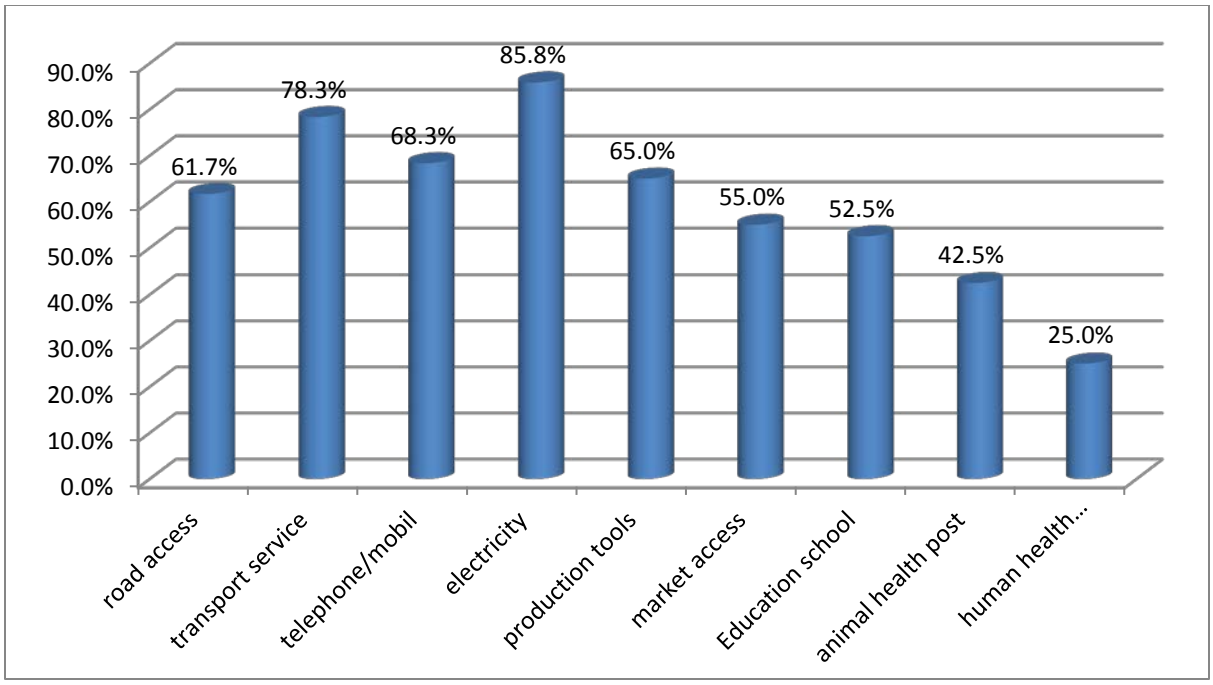

Figure 13: Proportion of HHs facing Infrastructural Service Problem

Source: Household Survey 2015

4.5. The Major Livelihood Activities in the Study Area

A person's **livelihood** refers to their "means of securing the basic necessities -food, water, shelter and clothing- of life". Livelihood is defined as a set of activities, involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire the above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly (Degefa 2008).

The livelihood strategies and activities of poor people are often complex and diverse. For rural people, agriculture and other **natural resource-based** activities may play an important role, but rural households also **diversify** into other activities, some of which are linked to agriculture and the natural resources sector, others which are not. Strategies may include subsistence production or production for the market, participation in **labor markets** or laboring in the home.

Agriculture is the cultivation of animals, plants, fungi, and other life forms for food, fiber, and

biofuel, medicinal and other products used to sustain and enhance human life. Agriculture is the major activities include farming and animal husbanding. Studies have distinguished three livelihood strategies that the rural community is engaged in as their source of means of subsistence. These include: agricultural intensification, livelihoods diversification and migration Carney (1998).

Non-farm activity takes place outside the agricultural sector, and includes the following activities: handicraft, petty trade, transport, small industry, services, and assorted non-farm activities (collection of fuel wood, collection of water for payment, production and sale of charcoal, the collection and sale of timber, stones, etc.). In some contexts rural non-farm activities are also important sources of local economic growth (e.g. tourism, mining, timber processing, etc).

Off-farm income refers to the portion of farm household income obtained off the farm, including non-farm wages and salaries, pensions, and interest income earned by farm families. On average for all farms in the United States, off-farm income accounts for over 90% of farm operator household income.

According to the result of the household survey shown in Fig: 11, there are Agriculture, non-farm, off- farm and combining of activities in the study area. Non -farm activities such as FFW, wage, charcoal and firewood sell are some of the major source of household income contributing the largest share to the poor and destitute households in studied communities. Off farm activities such as rental house in the town, livestock trading, traditional heling, mining are some major of off-farm activities taken place in the study areas Accordingly, the average proportion of each activities are as follows: agricultural activities particularly livestock raising and small scale farming in the study Woredas take the lion share of activities, it is reported by 42.5 percent of the total sample respondents as their main livelihood and household income source, followed by agriculture and off-farm activities which is supported by 34.2 percent of the total sample households. The third dominant activity was agriculture and non-farm activity which was taken up by 17.5 percent of the total households. Therefore, agriculture (animal raising and farming), non-farm, off-farm and combination of activities are the dominant activities in the study woredas.

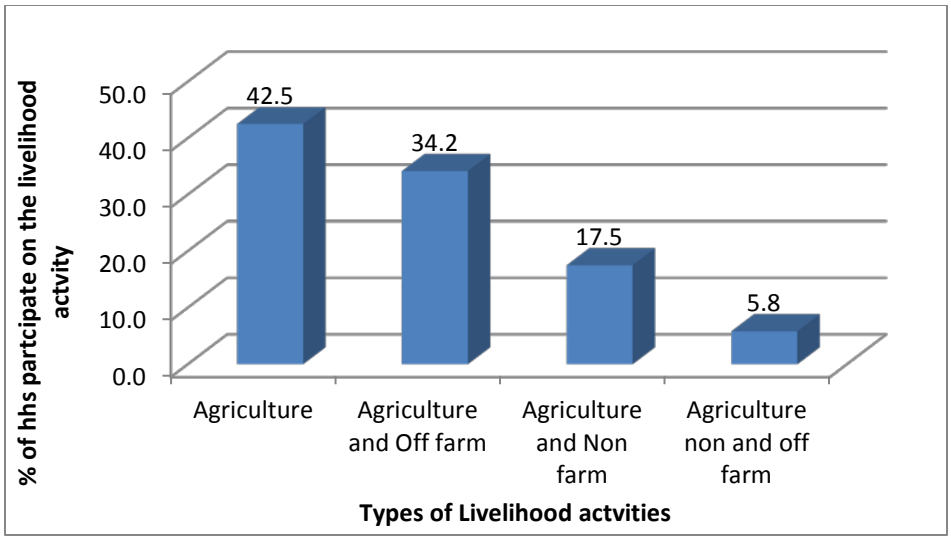

Figure 14: Sampled Household Livelihood Activities

Source; Computed from HH survey, 2015

4.5.1. Seasonal Variations in Labor Involvement in Diverse Livelihoods in the Study Area

In section 4.5, the survey found out that there are four main dominant livelihood strategies in the study Woredas. These are agricultural (Livestock and crop farm), off-farm, non-farm and combination of all. This section concerns the seasonal differences in the extent of labor involvement in the above specified livelihood strategies. In the study area, according to the Woredas' agriculture and rural development office, there are four distinct seasons. These four seasons are "Ganna" from March – May, "Adolesa" from June – August, "Hagaya" from September – November and "Bona Hagaya" from December – February, have their distinct climatic and agronomic characteristics. Depending on the opportunities of each season households engage in different activities in the Woredas.

Table 18: Type and Time of Income Activities of HH members Participation

Type of hh member	Type of income activities	Time of income activities HH member participation			Total
		Throughout the Year	Ganna	Bona Hagaya	
Mother	Animal husbandry	76	2	0	78
	Crop cultivation	6	25	0	31
	Petty trade	0	1	0	1
	Causal labor	2	4	4	10
Total		84	32	4	120
%		70%	26.7%	3.3%	100%
Father	Animal husbandry	57	8	3	68
	Crop cultivation	0	22	0	22
	Sale of fire wood	0	0	1	1
	Hunting and gathering	0	2	0	2
	Charcoal selling	1	0	0	1
	Mining	8	2	0	10
	Livestock trade	3	2	5	10
	Petty trade	1	0	0	1
	Causal labor	5	0	0	5
Total		75	36	9	120
%		62.5%	30%	7.5%	100.0%
sons/daughter	Permanent employment	84			84
%		70%			

Source: Household Survey 2015

As shown in table 20 above, there is variation in type of household members and activities involvement in diverse livelihoods in these distinct seasons in study areas. The numbers of participants in animal husbandry, crop farm and causal labor activities are higher throughout the year, accounting for 70 percent for mothers from household member 62.5 percent for father of sample households. Animal husbandry is the main income activities for both father and mother from household members that accounts 56.7 percent and 65 percent for fathers and mother respectively while 70 percent of sons and daughters are involving in permanent income activities from household member throughout the year. The amount of labor involved in non-farm and off-farm activities is from father and son/daughters during "Agaya bonna" when 10 percent of the households involve. On the other hand comparatively smaller number of farm households involve in non-farm activities during "Ganna" because the great majority of the households

56.7 percent as stated above involved in animal husbandry and farm activities according to the above evidence.

4.5.2. Age, Sex and Wealth Differentials in the Involvement in Livelihood Strategies

Age Differentials: - The house hold survey of the study areas revealed that, there is age difference in the involvement in different household income sources. There are three age groups identified based on their involvement in diverse livelihoods, these are children (age between 7-18 years), youth (age between18-35) and adult groups above 35 years. Of the sample households responded, majority of them agreed that the youth are more engaged in diverse livelihoods as compared to children and the adult groups. The multi response analysis result further shows that 47.5 percent of the sample households reported that the youth are the first participating in various livelihood strategies for household income sources, the second adult group which responded by 32.5 percent of respondent and third children group which responded by 20 percent of the sample households. But the involvements of age differential among household income sources are different from source to sources. For example, children are more involving on composed of all income sources which is responded by 42.9 percent of sampled households while youth age group more involved on agriculture plus off-farm and agriculture plus non-farm activities which responded again by 42.9 percent of sampled households (see table 21 below).

Thus according to the above findings the youth involve more in diverse livelihood activities as compared to the children and the adult age groups. According to informants the reason why the youth age groups are more engaged in diverse livelihood is that their ability to participate in any activity they want, the wider opportunity they have to be involved, and their ability to move to distant areas from their residence. These enable them to participate in diverse livelihoods as compared to children and the old age. But the children involvement in agricultural plus off-farm activities in the study area shows that the community seeing children as source of income for household this it needs awareness creation work on child labour abuse activities by concerned bodies.

Table 19: Age, Sex and Wealth differentials in the Involvement of livelihood Strategies

Characteristics			Household Income Source				Total Respondent
			Agriculture	Agriculture and Off farm	Agriculture and Non-farm	Agriculture non and off farm	
Age of household head	Children	Count	7	10	4	3	24
		% within Income Source	13.2%	28.6%	19.1%	42.9%	
		% of Total Respondent	5.8%	8.3%	3.3%	2.5%	20.0%
	Youth	Count	29	15	9	4	57
		% within Income Source	54.7%	42.9%	42.9%	36.4%	
		% of Total Respondent	24.2%	12.5%	7.5%	3.3%	47.5%
	Adult	Count	17	10	8	4	39
		% within Income Source	32.1%	28.6%	38.1%	36.4%	
		% of Total Respondent	14.2%	8.3%	6.7%	3.3%	32.5%
Total		Count	53	35	21	11	120
		% of Total Respondent	42.5%	34.2%	17.5%	5.8%	100.0%
Household head sex	Male	Count	39	32	15	5	91
		% within Household Income Source	76.5%	78.1%	71.4%	71.4%	
		% of Total	32.5%	26.7%	12.5%	4.2%	75.8%
	Female	Count	12	9	6	2	29
		% within Household Income Source	23.5%	21.9%	28.6%	28.6%	24.2%
		% of Total	10.0%	7.5%	5.0%	1.7%	24.2%
Total		Count	51	41	21	7	120
		% of Total	42.5%	34.2%	17.5%	5.8%	100.0%
Household wealth status	Rich	Count	15	1	4	0	20
		% within Income Source	29.4%	2.4%	19.1%	0.0%	
		% of Total	12.5%	0.8%	3.3%	0.0%	16.7%
	Poor	Count	23	24	11	4	62
		% within Income Source	45.1%	58.5%	52.4%	57.1%	
		% of Total	19.2%	20.0%	9.2%	3.3%	51.7%
	Medium	Count	13	16	6	3	38
		% within Income Source	25.5%	39.0.5%	28.6%	42.9%	31.7%
		% of Total	10.8%	13.3%	5.0%	2.5%	31.7%
Total		Count	51	41	21	7	120
		% of Total	42.5%	34.2%	17.5%	5.8%	100.0%

Source: Household survey 2015

Sex Differentials in Involvement: - As shown in table 21 above, there are sex differentials in participation in diverse household income sources **due to culturally defined roles, social mobility limitations and differential ownership of working capital and access to assets.** Thus 75.8 percent of the sample households felt that males are involved more in diverse livelihoods as compared to their females counterparts, whereas only 24.2 percent of the

sample households perceived females participation in diversification of household income. The KI informants further reported that males most often engage in animal husbanding, farming or more off-farm and non-farm activities boarder trading, animal trading, causal labor and mining due to can go away from house and travel more distance, while females engage more in animal husbandry or in one of livelihood strategies such as petty trade, fattening of small animals, poultry and so on. Therefore, males play important role in stabilizing the household income by generating extra-income in addition to the main sources of household income like livestock and farming and play a greatest role in household food security. And the same for sex differential among different income sources which shows that above 71 percent of respondents agreed that male participation is greater than female participation in household income diversification (see table 21 above).

Wealth Differentials in Involvement: - The household Survey shows variations in diversification among the different wealth groups in the study areas. The result of the survey shows that poor, medium and rich households have unequal status, ability, motivation and reason for engagement in diverse livelihood strategies. Out of the total sample households participated in the survey, 51.7 percent of them responded that the poor diversify greater than the rich being driven by need of risk minimization, to overcome household income need to feed household due to insufficiency of household major food source (livestock production and farming). While only 16.7 percent of the sample households replied that the rich would involve in diverse livelihoods because they need to widen the opportunity of increasing their wealth and keep their status, While 31.7 percent of the sample households responded medium wealth group are engaged in diverse livelihoods who either for risk minimization or wealth accumulation. Therefore, conclusion can be drawn from the above evidence that poor households tend to diversify more often than the better-off for the reason of insurance when there is shortage of the household asset.

4.5.3. Household Income Expenditure and Saving

According to the household survey, there are five streams of household income expenditure in the study area. The first and the main household income expenditure is to buy household food consumption by which 28.6 percent of the sampled household respond; the second is human

health expense which 27.1 percent of the sampled household responded; the third way of household income expenditure is children education expense, by which 21.0 percent of the sampled household reported. The fourth household income expenditure is animal health expense that is accounts for 20.0 percent of the sampled household expended. The remaining income has been saved through traditional saving mechanisms, for instance through Iqub, and saving and credit association in the village, this account for 3.3 percent of the total sampled household. According to the respondents, there is no one who has saved his or her money in the modern financial institutions Banks. This is because, most of the respondents are pastoralist that they believe in presence of livestock than money which can be saved in the modern banks, rather they most often can produce the amount that they use for subsistence and little saving through traditional saving institutions expenditure.

According to the general outcome of the survey on income expenditure, the larger proportion of the household income expenditure goes to the purchase of the household food items, from which we can also see that household income is the composite of different sources, not only from livestock raising and farming activities and household income expenditure is not only to the purchase of food items rather on the other household necessities too, this cumulative expenditure of household income on the basic materials needed at home collectively can sustain the household food needs by reducing the possibility of the household to sell livestock to purchase the other non-food items and it also sustain household food security.

Therefore, involvement in diverse livelihood activities and strategies can help widen the opportunity of the households to lead a healthy life, free of threat and vulnerability, and to strengthen self- reliance and be food secure (See fig. 6.3).

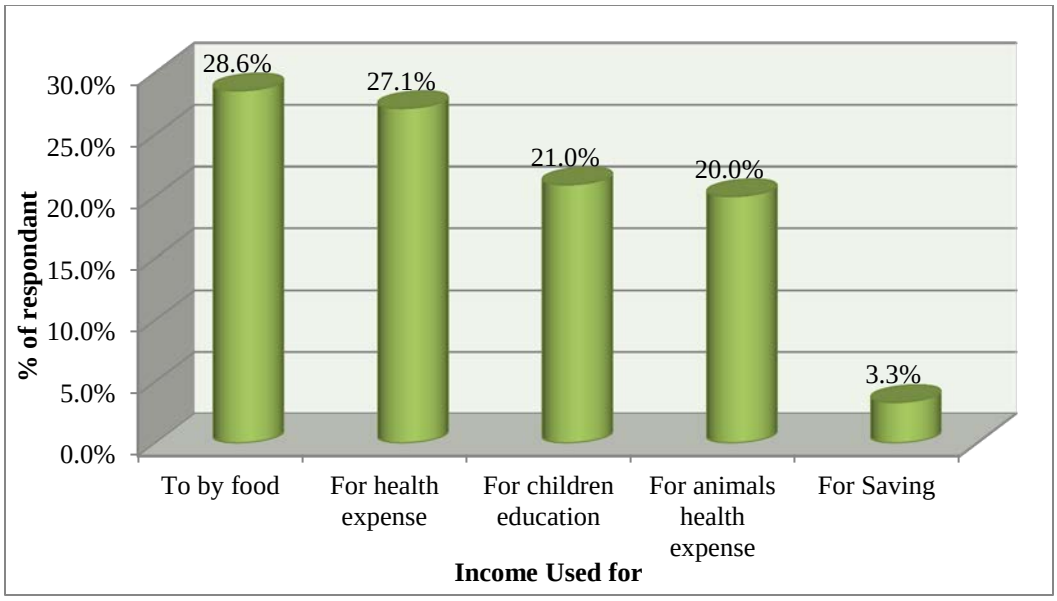

Figure 15: Household Income Expenditure

Source: Computed Household Survey 2015

4.6. Factors of Livelihoods Diversification

According to Eldis google definition, livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals. They include productive activities, investment strategies and reproductive choices. Livelihoods approaches try to understand the strategies pursued and the factors behind people's decisions; to reinforce the positive aspects of these strategies and mitigation against constraints.

The choice of strategies is a dynamic process in which people combine activities to meet their changing needs. For example, in farming households, activities are not necessarily confined to agriculture but often include non-farm activities in order to diversify income and meet household needs.

A major influence on people's choice of livelihood strategies is their access to assets and the policies, institutions and processes that affect their ability to use these assets to achieve positive livelihood outcomes.

Livelihood Strategies are diverse at every level. As has been reviewed from Brown *et al.*, (2006), several different methods of characterizing household livelihood strategies can be found in the literature. Most commonly, economists group households by shares of income earned in different sectors of the rural economy activities. Similarly, this study considered income shares of each livelihood activity as a means to conceptualize livelihood strategies.

From the household survey income source analysis, if we compare income share by the broad livelihood activities, the share of agriculture (animal raising and crop farming) accounts for about 42.5 percent, agriculture and off-farm for 34.2 percent, agriculture and non-farm accounts 17.5 percent and agriculture non and off-farm accounts for 2.5 percent in decreasing order. Further observation of the data revealed that, agriculture and off-farm activities (animal raising, crop farming, wage, land rent, and environmental gathering) are survival mechanisms pursued mainly by the poor and medium groups but not viewed as an opportunity that households engage in as a choice. Non-farm activities, such as rural craft is also mainly choice of the poor than the counterparts. Thus, off- farming activities seem more of a coping mechanism for the rural households than a way to accumulate wealth and reduce poverty. The poor tend to concentrate on off-farm activities with low entry constraints (gathering, such as charcoal making and fire wood collection and wage). This result leads to the understanding of the challenges which prevent the poor and medium group from engaging in livestock production and more remunerative non-farm activities.

4.6.1. Econometric Analysis of Determinants of Livelihoods Diversification

Multinomial Logistic Regression Model was used to identify determinants of livelihood strategies. The model was selected based on the justification illustrated earlier. Therefore, in this section, procedures followed to select independent variables (continuous and dummy) and results of logistic regression analysis conducted to identify determinants of livelihood strategy choice by households is presented.

Table 20: Definitions of Model Variables

Dependent variable	Variables definition and unit of measurement
Livelihood strategies	if the choice of the HH lies in
Y=1, AG	Agriculture alone
Y=2, AG+OFF	Agriculture and off farm combination
Y=3, AG+NF	Agriculture and non-farm combination
Y=4, AG+OFF+NF	Agriculture, off farm and non-farm
Independent variables	
Agrecolo	Agro-ecology
HHHsex	Household head sex
Totfsize	Total family size
AgeHHH	Age of household head in a year
HHmarriage	Household head marriage status
EduHHH	Education of household head level
Totlandsize	Total land size
TLSTinTLU	Total number of own livestock in TLU
HHTOTINC	Household Total Income in a year
HHISource	Household Income Source
Finanscerdit	Financial institute HH belongs to saving and credit
HHFtown	HH far from town in hour
HDPDLH	Having desire to pursue diversified livelihood
HHFsecurity	HH food secured

Table 21: Summary of Multinomial Logistic Regression Analysis (Econometric Model)

Household Income Source	Variables	Parameter Estimates						95% Confidence Interval for Exp(B)	
		B	Std. Error	Wald	df	Sig.	Exp(B)	Lower Bound	Upper Bound
Agriculture	Intercept	5792.084	742.683	60.822	1	0.00			
	Agrecolo	.801	3.553	.051	1	0.82	2.229	0.002	2355.110
	HHHsex	-5.983	136.665	.002	1	0.97**	.003	1.181	779.113
	Totfsize	.778	1.582	.242	1	0.62	2.176	0.098	48.356
	AgeHHH	.207	.216	.922	1	0.34	1.230	0.806	1.878
	HHmarriage	9.291	136.602	.005	1	0.95**	10838.897	0.000	2.044
	EduHHH	-.678	1.483	.209	1	0.65	.507	0.028	9.290
	Totlandsize	2.703	2.723	.985	1	0.32	14.922	0.072	3101.944
	TLSTinTLU	-.035	.043	.644	1	0.42	.966	0.888	1.051
	Finanscerdit	.004	.424	.000	1	0.99***	0.990	0.436	2.296
	HHFtown	1.384	.903	2.351	1	0.13	3.990	0.680	23.401
	HHFsecurity	-5.742	84.106	.005	1	0.95**	.003	0.000	1.250
	HHFsecurity	-1.333	3.109	.184	1	0.67	.264	0.001	116.870
	[HHTOTINC=1]	5.339	45.920	.014	1	0.91*	208.287	0.000	2.545
	[HHTOTINC=2]	-.081	6.417	.000	1	0.99***	.923	0.000	267572.952
	[HHTOTINC=3]	11.234	44.809	.063	1	0.80	75652.754	0.000	1.049
Agriculture and Off farm	Intercept	5916.681	736.516	64.535	1	.00			
	Agrecolo	.225	3.541	.004	1	0.95**	1.253	0.001	1294.612
	HHHsex	-7.111	136.664	.003	1	0.96**	.001	0.000	1.739
	Totfsize	.607	1.580	.148	1	0.70	1.835	0.083	40.626
	AgeHHH	.164	.215	.581	1	0.45	1.178	0.773	1.797
	HHmarriage	9.788	136.602	.005	1	0.94*	17814.476	0.000	3.360
	EduHHH	-.117	1.429	.007	1	0.93*	.890	0.054	14.652
	HHwealth	-3.931	4.002	.965	1	0.33	.020	0.000	49.995
	Totlandsize	2.017	2.722	.549	1	0.46	7.517	0.036	1558.564
	TLSTinTLU	-.015	.005	9.674	1	0.00	.985	0.976	0.995

	Typffinanscerdit	-1.257	1.034	1.477	1	0.22	.285	0.037	2.160
	HHFsecurity	-3.460	84.103	.002	1	0.97**	.031	0.000	1.219
	DDPHHFsecurity	.112	3.051	.001	1	0.97**	1.118	0.003	441.947
	[HHTOTINC=1]	5.432	45.905	.014	1	0.91*	228.701	0.000	2.715
	[HHTOTINC=2]	-.813	6.309	.017	1	0.90*	.444	0.000	104079.255
	[HHTOTINC=3]	12.487	44.786	.078	1	0.78	264886.160	0.000	3.507
Agriculture and Non-farm	Intercept	5182.476	249.672	430.859	1	0.00			
	Agrecolo	.656	3.576	.034	1	0.85	1.926	0.002	2131.485
	HHHsex	-5.380	136.667	.002	1	0.97**	.005	0.000	9.874
	Totfsize	.930	1.584	.345	1	0.56	2.535	0.114	56.468
	AgeHHH	.146	.217	.453	1	0.50	1.157	0.757	1.769
	HHmarriage	9.135	136.603	.004	1	0.95**	9269.815	0.490	1.755
	EduHHH	.593	1.437	.171	1	0.68	1.810	0.108	30.240
	HHwealth	-4.487	4.020	1.246	1	0.26	.011	0.000	29.709
	Totlandsize	2.902	2.724	1.135	1	0.29	18.215	0.087	3794.730
	TLSTinTLU	-.011	.005	5.217	1	0.02	.990	0.981	0.999
	Typffinanscerdit	.009	.423	.000	1	0.99***	1.010	0.440	2.315
	HHFtown	1.139	.919	1.536	1	0.22	3.123	0.516	18.921
	HHFsecurity	-6.224	84.108	.005	1	0.94*	.002	0.000	7.756
	DDPHHFsecurity	.828	3.137	.070	1	0.79	2.288	0.005	1069.977
	[HHTOTINC=1]	6.982	45.927	.023	1	0.88	1076.631	0.000	1.334
	[HHTOTINC=2]	.180	6.445	.001	1	0.99***	1.198	0.000	366910.501
	[HHTOTINC=3]	9.698	44.814	.047	1	0.83	16285.450	0.000	2.279

a. The reference category is: Agriculture non and off farm.

***, **,* Significant at <1%, 5% and 10% probability level respectively

Source: own household survey, 2015

4.6.2. Interpretation of Econometric Model Results

Agro-ecology (Agrecolo): As expected**,** this variable has a positive and significant (P<0.05) correlation with the likelihood of choosing agriculture and off farm livelihood strategy. This means the tendency that the household diversify livelihoods into agriculture plus off farm increases as we go from low lands to midland. Hence, the probability of diversifying into

agriculture plus off farm increases by 22.5 percent for midland households by keeping other things constant. This might be due to differences in the quality and productivity of land, the amount and distribution of rainfall and population densities that influence between lowlands and midlands. For instance, climatically the latter is wormer than the former.

Household head sex (HHsex): Sex was hypothesized to affect rural household livelihood diversification strategy since men and women have differentiated social roles in the community. Gender affects diversification strategies, including the livelihood activities (Agriculture, non-farm and off-farm) due to culturally defined roles, social mobility limitations and differential ownership of access to assets (Galab 2002). In the study, as expected sex of household head is found to negatively and significantly (< 0.05) influences diversification of livelihood activities. This result implies that by the virtue of being male-headed household is more likely gravitated to participate in agriculture (farm and livestock production) activities than female-headed households do. Thus, keeping the influence of other factors constant; the likelihood of female headed household choice of agriculture livelihood strategy decreases by 59.3 %.

Household head marriage status (HHmarrige): Household head marriage status influenced the decision of household livelihood diversification participation. According to the model analysis, the household, marriage status positively affect the participation on agriculture, off-farm and non-farm livelihood activities significantly (<5%). Keeping other factors constant; married household increases by 92.9 percent engaging on agriculture alone. Also 97.8 percent and 91.4 percent for agriculture and off-farm and agriculture and non-farm livelihood activities for married households respectively. This is because of married households have additional human resource that can be participated on different livelihood activities and there is pushing factors of family responsible to diversify livelihood activities.

Educational of household head (EduHHH): Educational attainment proves one of the most important determinants of non-farm 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. Contrary to prior hypothesis, this variable has a negative and significant ($p<0.01$) influence on the decision of the household head participation in livelihood diversification. In other words, participation in off-farm and non-farm activities and low levels of education among sample HH

heads were found to be positively associated, suggesting that household heads with more years of education may have realized the low return and decided to work on agriculture. The possible explanation is that the average education achieved (which is below primary level) in by the sample households is not sufficient to be formally employed and educated farmers do not find skill demanding livelihood option in the study area. The result shows that likelihood of illiterate household head participation on agriculture and off-farm activities decreasing by 11.7 percent which is in line with the findings of (Adugna 2007), (Galab *et al*, 2002), (Berhanu 2007) and (Khan 2007), but in contradiction with the findings of (Barrett *et al*., 2001); (Destaw 2003).

Financial institute HH belongs to saving and credit (Finanscerdit): As expected, access to saving and credit use is found to have a significant ($p<0.01$) positive impact on the likelihood of livelihood diversification strategy which includes dependent variables agriculture alone and agriculture and off-farm activities. The odds ratio of for agriculture plus non-farm indicates that keeping the influence of other factors constant, the decision to participate in agriculture increased by about 9 percent. This implies that the formal and informal credit facilities that avail for rural households 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). This implies that the incentive for accessing credit accelerates livelihood diversification strategies. According to household survey descriptive analysis, 46.7 percent of sampled household reported that factors hinder to participate in livelihood diversification is lack of initial capital, while 35.8 percent respond that lack of credit access.

Household food security Status (HHFsecurity): food secured household may not accept livelihood diversification as coping mechanism for household insurance. Thus econometric model analysis also showed that household being food secured is found to have a significant ($p<0.05$) negative impact on the likelihood of livelihood diversification. This show that household livelihood diversification directly related with household food security status. If the household is not food secured, it leads to accept livelihood diversification. Keeping the influence of other factors constant, household food secured has decreases involvement of agriculture, non-farm and off-farm activities participation by 57.4 percent, 34.6 percent and 62.2 percent respectively.

Household Total Income (HHTOTINC): As expected on hypothesis, household income has significant ($p<0.01$ and $p<0.1$) and positive correlation with household livelihood diversification choosing agriculture and non-farm and agriculture and off-farm activities respectively. The results of this econometric model analysis suggest that households have more income tend to follow only agricultural (animal raising and crop farm) rather than diversifying from agriculture since they draw incentives of their livestock productivity. This implies the chances of choosing agriculture in the context of having income from their regular activities increase the probability of diversifying to off-farm and non-farm activities by 81.3 percent and 18.0 percent respectively. This supports the view that off-farm and on-farm activities compete over the limited household resources. It also implies that those households who expect secured agricultural income stay on agriculture and lower off-farm intensity. The implication is that farmers just switch away from off-farm activities when the agricultural activity is promising; and hence, this supports the necessity argument as opposed to the choice argument. Households consider off-farm activities as a last resort income source if livestock production fails.

4.6.3. Push and Pull Factors of Livelihoods Diversification

The household survey identified two opposing factors that facilitate the engagement of rural households in diverse livelihoods in study areas. These factors are push and pull factors. According the survey the pull factors to diversify livelihoods are the work opportunities, technological accessibility, infrastructural availability and credit availability, in which households can engage to produce extra income. The data from the household survey shows that 30.8 percent of the sample households responded as they pulled by work opportunity like livestock trading, on boarder petty trading and etc. to livelihood diversification. Diversification because of credit access opportunity the other activities can generate is also the other pull factor; this was replied by 18.3 percent of the sample households. The next important pull factors that the infrastructural access that other activities can compensate the inability of one dominant activity of the household to fulfill the need they want from the main dominant activity; this idea is supported by 15.8 percent of sample households. The other factor was make households engage in diverse livelihoods is technological accessibility to which 10.0 percent of the sample households respond.

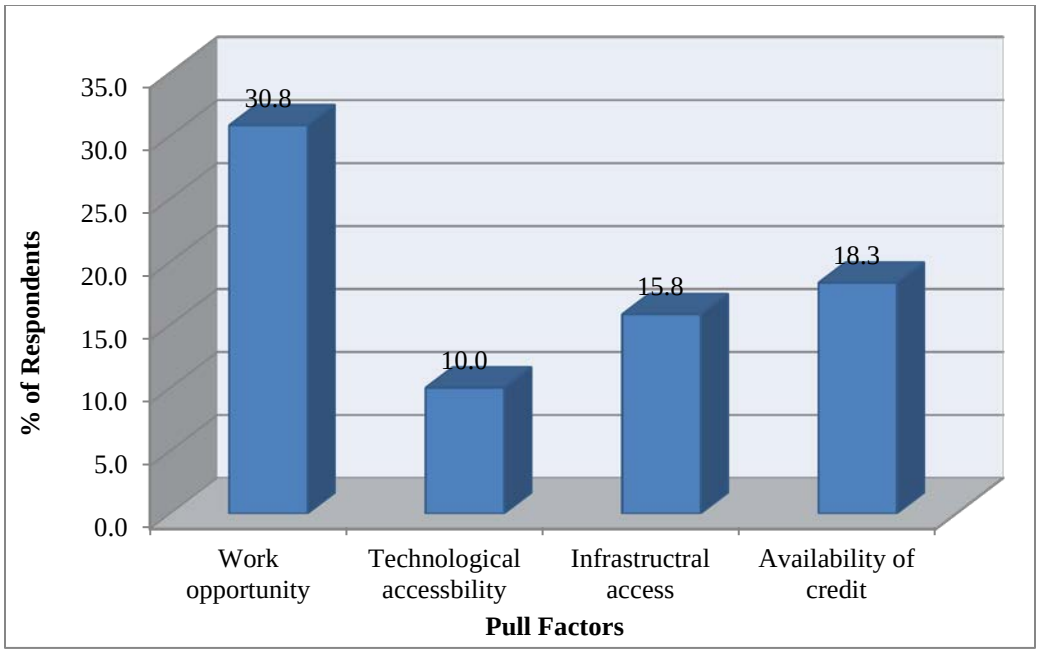

Figure 16: Household Pull Factors to Diversify Livelihood

Source: Computed from household survey 2015

The second factors that force households to diversify their livelihoods are the push-factors. These include: food shortage i.e. when a household is facing food shortage, they most probably forced to engage in diverse livelihood to earn extra-income that will help their household food consumption. This idea is supported by 80.8 percent of the sample households involved in household survey. The second push factors that enforce the households to diversify their livelihoods is weather fluctuation this means when the rain is not rained at regular time, there is water and pastor shortage for their livestock then the community will face problem, thus households engage in other activity that they expect it can assist them to survive. This factor is supported by 70.6 percent of the sample households. The third push factor was prolonged drought and yield reduction. According to the response from 65.0 percent of sample households, they diversify as their household faces prolonged drought and yield reduction. Therefore, push and pull factors are two opposing but reinforcing factors that force households to diversify either to reduce vulnerability to harmful outcomes or to harness the opportunity other activities would bring to the household.

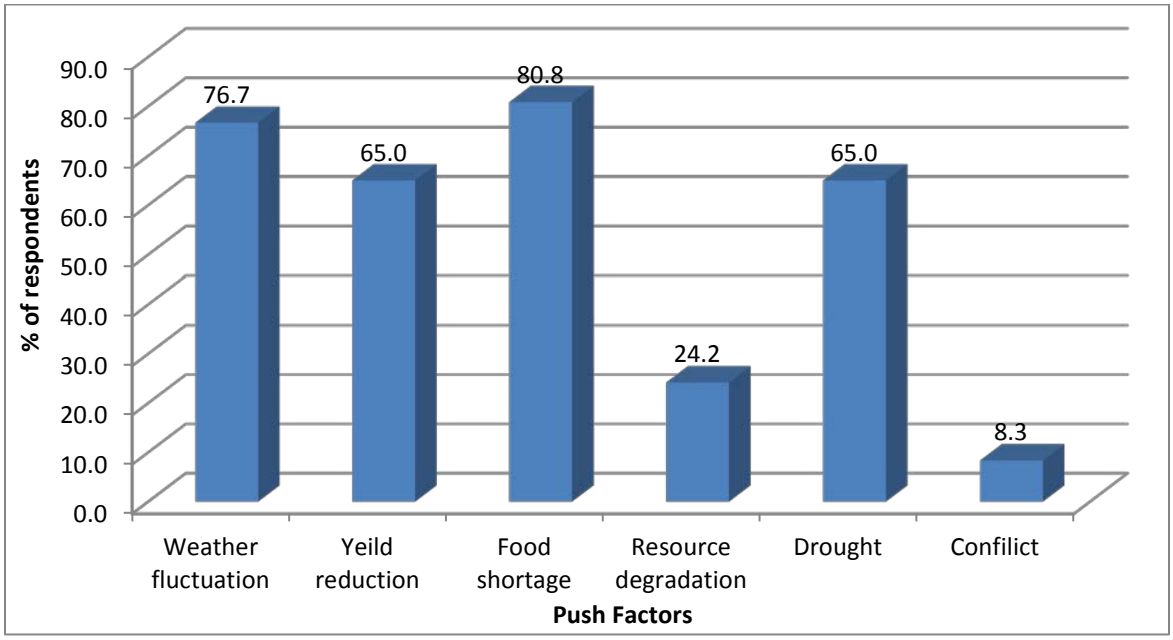

Figure 17: Household Push Factors to Diversify Livelihood

Source: Computed from household survey 2015

4.7. The Role of Livelihoods Diversification in Household Food Security

According to the (WB 2008) even-though there are still views that think rural households rely on many activities and income sources, besides agriculture they participate in agricultural labor markets, in self-employment or wage employment, rural non-farm economy, and they might receive transfers from household members who have migrated to the nearby town or abroad.

As it is explained in the introduction part, this study was designed to assess the role of livelihood diversification in reducing household food security problem. Livelihood diversification involves the engagement of an individual or the family in more than one activity depending on the opportunity that activity will intended to bring to the household and to the individual. An individual or a household follows diverse livelihoods depending on various factors. The most important reasons that make the households to diversify their household activities are of many sources which include: vulnerability of the household to shocks, trends, and seasonality, food insecurity of the household, resource scarcity or availability and the access and ownership of these resources and many other factors. On the opportunity case, households diversify livelihoods depending on the opportunities

they expect form that activity. Among the opportunities that encourage some households to diversify their livelihoods include: High motivation to participate in income source diversification, willingness to act to change and other opportunities like market availability and reliability, infrastructure availability, resource availability, and policies are to which 78. 2 percent, 84.2 percent and 23.8 percent of the sample households have given response respectively. But market imperfection, limited infrastructure, inadequate resources and discouraging rural policies are the main challenges to livelihood diversification for some groups in the study area.

There are various livelihood activities that the peoples of the study Woredas are pursuing. In broader sense the dominant livelihoods include; Agriculture particularly livestock production and crop-farm, non-farm ventures, off- farm activities and its combination. These activities have their own role in household food security in many circumstances. As it was tried to explain in the previous chapters the cumulative effect of these diverse livelihoods helped the households to contribute a lot to their household food security. The income proportion each livelihood activities contributed to the household was quite different in which agricultural income is the dominant income source to the household and the other activities such as non-farm, off-farm and its combination activities are the other dominant sources of household income.

This research has found out that household average income proportion from different livelihood activities per household per year these include: livestock and crop production (42.5 percent), Agriculture and off-farm (34.2 percent), agriculture and non-farm (17.5 percent) and combination of all these (5.8 percent) activities. As many researchers and development organizations stated in Sub Saharan Africa the household income is more of from diverse livelihood portfolios. Thus it is possible to see from the above data that households' income of the study area is from diverse livelihood portfolios. These helped them to reduce their household vulnerability to seasonality and strength their overall household food security. This implies, following more than one livelihood activity is important that it enhances the households' self-reliance in food and non-food household requirements.

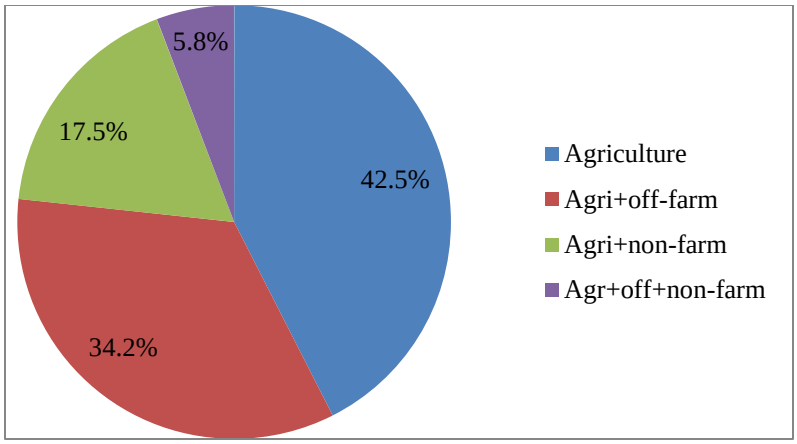

Figure 18: Household Income Proportion from different activities

Source: Computed from household survey 2015

Therefore, livelihood diversification helps the pastoral and agro-pastoral community in reducing vulnerability and food secure by minimizing the probability of the households to sell their livestock which is the main livelihood of them to purchase food grains for home consumption. Thus the role of livelihoods diversification in responding to the household food security is very high in the study area.

According to household survey result on the degree of livelihood diversification portfolio to household food security, 74.2 percent agreed that it has a great role, 23.3 percent reported that it has a medium role but only 2.5 percent of sampled household replied that it has limited role.

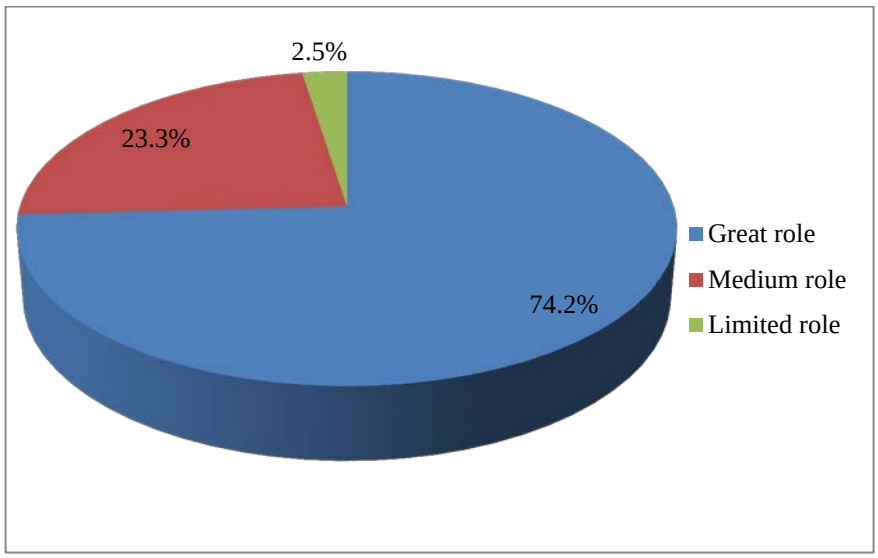

Figure 19: Degree of Diversification of HH food Security

Source: Computed from hh survey 2015

CHAPTER EIVE

5. CONCLUSION AND RECOMMENDATIONS

5. 1. Conclusion

This study attempted to assess factors affecting livelihood diversification and it role as a strategy to overcome food security problem of household in the study areas, particular case of Dugda Dawa and Yabello Woredas of Borana Zone of Oromia National Regional State. As the main approach to the study, both qualitative and quantitative research methods were employed. With regard to the target group selection, four Kebeles were selected purposively based on their proximity to woreda town and 120 households were randomly selected by keeping 30 percent proportion of female headed household in the study from the four kebele's to generate quantitative data. On the other hand, qualitative data was generated through qualitative data collection methods (FGD, KI and observation).

This research basically focused as its central assessment on sustainable livelihood frame work and household livelihood activities such as agriculture, non-farm, off-farm and contribution of activities to household income generation in insuring household food security and also the advantage of following diverse livelihood portfolios for pastoral and agro-pastoral households to attain their household food security.

As livelihood diversification is the act of pursuing more than one livelihood strategy, there are a number of factors that encourage or discourage household involvement. From the finding of the research, it is clear that the agricultural particularly livestock production sector alone cannot be trusted upon as the core activity for pastoral households as a means of improving livelihood, achieving household food security in the study area. Livelihood diversification is gaining/playing prominent role in rural households‟ income and food security. Even though, regarding the rural economy in Ethiopia, policy makers give almost full attention to agricultural sector. Nevertheless, there is a growing evidence that rural sector is much more than just farming. The result of this study indicated that low resources endowments or low income source was main characteristics of livelihood diversification as strategies and this insufficient resource

could not enable them to generate sufficient livelihood outcome. To overcome the situation, majority of poor households depend on other livelihood options rather than livestock production alone. Results of the study conclude that different livelihood diversification strategies are influenced by different factors. The econometric, multinomial regression model result indicated that out of the 16 hypothesized variables in the model, 7 were found to be significantly influenced household's adoption of alternative livelihood strategies at less than 10% probability levels. These variables include agro-ecology, sex of household head, age of household head, education of household head, total land size, total family size, livestock ownership, household total income, source of credit, far from town, desire to diversification and household food security status. Accordingly, the multinomial regression model result indicated that the household head sex, household food security status and household total income influenced negatively and significantly at less than 5 percent to choice only agriculture particularly livestock production and agriculture + off-farm livelihood activities, while household marriage status and financial institute hh belongs to saving and credit status positively and significantly at less than 5 percent affected the diversification of livelihood and only participate on agriculture and agriculture + off-farm activities. The variables household marriage status, saving and credit access to household and total household income had positively and significantly influenced the household choices of agriculture + nonfarm + off-farm activities, While, household head sex and household food security status had negative and significant influence on the household decision of selecting diversified livelihood strategies into agriculture + off-farm + non-farm activities.

Diversifying livelihood portfolios were also found to be very important for pastoral and agro-pastoral households to serve as additional source of income and complementing the income earned from agriculture (livestock raising and crop production) and serve as a great contributor to household food security limiting their probability of selling of livestock and cover the extra household expenses.

5.2. Recommendations

Livelihood diversification in the study area which includes (agriculture, non-farm, off-farm and its combination) activities and contributing a lot in the households' food security however it has challenges and opportunities that should be focused by national government,

policy makers, local administrators, researchers, development agents and NGOs in order to fully enable this style of activities contribute to household food security. Thus based on the above facts the following recommendations have made:

- The agro-ecological influence on diversifying livelihood strategies has great implication for government to design context specific intervention and technologies, which can improve the livelihood of pastoral and agro-pastoral households.
- The negative and significant influence of the variable sex of household head livelihood strategies choice considers government and NGO's in the area to design necessary strategies to create awareness among the community to participate women equally with man in all development activities.
- The important roles of household head education and training in diversification of livelihood strategies suggests to give due attention in promoting pastoralist's and agro-pastoralist's education through strengthening and establishing both formal and informal type of education, developing and improving utilization of pastoral's training centers, expanding technical and vocational training institutions by government and development actors in the study area.
- The significant and positive effect of marriage status on adoption of livelihood diversification activities calls policies instruments to build capacity of rural pastorals households in the area of non-farm and off-farm activities in order to enhance their skill to exploit the opportunity sustainably by all household members.
- The strong positive association of source of credit use with the diversification of livelihood strategies from agriculture into non-farm and off- farm activities there is high need of rural micro finance cooperative institutions coupled with availing appropriate credit services for pastoral communities.
- The significant and strong positive association of total annual household income on livelihood diversification strategies of the household calls for policy measures to pave the way in order to solve financial problems through developing and strengthening financial institution, creating credit access and promoting better income generating options in the pastoral and agro-pastoral community.
- The negative and significant influence of household food security status on adoption of livelihood strategies enforced household to diversify their income, thus government

and every development actors in the study area should give due attention livelihood diversification to ensure household sustainable food security besides providing food aid to the pastoral and agro-pastoral community. Government of Ethiopia should take in to consideration the growth and development of livelihood diversification in policy documents similar to the attention given to other agricultural activities.

- Natural resources particularly pasture and water loss through degradation and drought is very high in the study area. But minimizing the rate of pastor and water loss can enhance the livestock productivity of the main livelihood activity of pastoral and agro-pastoral community and make livelihood sustainable. Hence, the woreda level government bodies and the development agents (NGOs) should work hard and hand in hand with the communities to reverse the high resource lose through degradation.
- As it is stated above income from different livelihoods is contributing a lot in households' food security, but the knowledge gap in this sector is significant in the study area. Therefore, researchers should focus on this area and further explore the structural complementarities between diverse activities in raising household income and securing household food supply.

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ANNEXES

Appendix I Household Questionnaire

Part I. General Information of the HHs

Region: Oromia Zone: Borana Woreda Dugde Dawa/Yabello KA _____ Code _____

Agro – ecology Dega☐ Woina dega☐ Kola☐

Household number _____, Name of the household head _____

Name of Interviewer _____, Date of interview _____

Household type 1. Male headed 2. Female headed

Supervised/ checked by _____, Status: ok _____problem _____

Comment (if any) _____

Part II.A. Information on household demographic characteristics

No	Name	sex	age	Relationship	marriage	Educ.	religion	ethnicity
	Codes			A	B	C	D	E
1								
2								
3								
4								
5								

NB. For columns labeled by A – E select from the following and put the numbers on the space.

	A	B	C	D	E
1	husband	1. Single	1. illiterate	1. Christian	1. Borana
2	wife	2. married	2. read/write	2. Muslim	2. Guji
3	son	3. divorced	3. grade 1-4	3.Waqefata religion	3. Gabra
4	daughter	4 widowed	4. grade 5-8		4. Burjii
5	grand child		5. grade 9-12		5. Other Specific _____
6	brother		6. diploma/certificate		
7	Sister				
8	not related				
9	others				

B. Household Profile

2.1. What is the type of your household? 1) Monogamous 2) Polygamous

2.2. If polygamous, how many wives? _____

2.3. Is your household female-headed or male-headed? 1) Female-headed, 2) Male-headed

2.4. Is your household formed recently or long ago? 1) Recently (less than five years)

2) Long ago (more than five years

2.5. Housing condition: 1) Strew roofed 2)Corrugated iron roofed

3) Stone walled and corrugated 4) Corrugated and soil floor 5) others specify_____

2.6. Household wealth status: 1) Rich 2) Poor 3) Medium

Part III. Household Resource Ownership

A. Land and other resources

3.1. Do you have access to farm land? 1. Yes 2. No

3.2. If 'yes' how do you get access of it? 1) Own land 2) Through share cropping

3) Gift from relatives 4) through inheritance 5) Rented from other 6) Free access to some ones land 7) others specify_____

3.3. Who decided on farm land in your household? 1) Father 2) Mother 3) Father with mother consultation 4) Big brother in the family 5) Big brother with mother consultation 6) All family member together 7) others specify _____\

3.4. What is the trend of your household land holding size since the last a decade?

1) Increasing 2) Decreasing 3) No change 4) Others specify _____

3.5. If decreasing, what do you think the reason?

1) Land redistribution 2) Population growth 3) Others (specify) ----------

3.6. Is there any forest on which you use communally? 1. Yes 2. No

3.7. If 'yes' what do you benefit from it? 1) Grazing 2) Fire wood for sale 3) Construction material 4) Fire wood for home consumption 5) Fruits and wild food collection 6) Others specify _____

3.8. Is there any grazing land on which you use commonly? 1. Yes 2. No

3.9. If 'yes' what do you benefit from it? 1) Grazing own livestock 2) Rent to other 3) selling the pasture by cut and carry 4) others specify _____

3.10. What constraint do you have regarding grazing land holding?

1. Grazing Land scarcity 2. Remoteness 3. Land lessens 4. Less productivity of grazing land 5. Others specify _____

3.11. What is the productivity of your land for the last 10 years?

1) Increased 2) Decreased 3) Unchanged

3.18. If it was "decreased", what do you think is the reason?

No	Reason for decrease	Yes	No	Rank for yes reason
1	erosion	1	2	
2	frost	1	2	
3	drought	1	2	
4	crop pest	1	2	
5	deforestation	1	2	
6	poor farming system	1	2	
7	Land sharing	1	2	

3.12. Did you use fertilizer to improve the productivity of your land? 1. Yes 2. No

3.13. If 'yes' where did you get it? 1) through purchasing 2) by borrowing from the government 3) by changing part the land for fertilizer 4) Others specify_____

3.14. If 'no' how did you fertilize your land holding? 1) Using animal manure 2) Crop rotation 3) Fallowing 4) others specify_____

3.15. Types of crops you have grown last year specify the amount of the income you have earned from. (From September 2013 to August 2014)

crops	Total harvest	home consumed	sold	Net income
Maze				
Noug				
Teff				
Barley				
Wheat				

Sorghum				
Pepper				
Fruits				
Vegetables				
Spices				
Cash crops (coffee)				
Beans				
Sugar ken				
Sweet potato				
others				
Total				

3.16. When you compare this income with last ten years, is there any change? 1. Yes 2. No

3.17. If yes, was increased or decreased 1. Increased 2. Decreased

B. Livestock Resources

3.18. Do you have livestock? 1) Yes 2) No

3.19. If "yes" please can you tell me the number of livestock you currently own, number of Livestock you bought/ sold recently and income obtained/lost and the purpose?

No	type of livestock	Yes	No	# owned	# sold	# bought	net income obtained from (birr)	use of income obtained from
1	ox	1	2					
2	cow	1	2					
3	bull	1	2					
4	heifer	1	2					
5	goat	1	2					
6	sheep	1	2					
7	calf	1	2					
8	poultry	1	2					
9	donkey	1	2					
10	horse	1	2					
11	mule	1	2					
12	camel	1	2					
13	not owned	1	2					
	Total							

NB. For column nine of the above question, specify your answer from the

following alternatives by writing the letters of the alternatives.

1) for buying food items 2) for paying taxes 3) for paying children's school fee 4) for buying agricultural inputs 5) for medical expense 6) others

3.27. If your answer is "No" for question. No 3. 25, how do you get animals and animal product for the following purposes?

No	Item	Source
1	Ploughing land	
2	milk and milk product	
3	egg	
4	meat	
5	transport	

3.20. If you have livestock, what are the main constraints you face against your livestock production for the last ten years?

1) Lack of grazing land 2) lack of water 3) Limited productivity 4) Widespread animal diseases 5) Lack of veterinary services 6) Others specify _____

3.21. How do you see your livestock holding status from last ten years to date?

1. Increasing 2. Decreasing 3. No any change 4. I have no idea

5. Others specify _____

3.22. If your response to question above is decreasing, what are the possible causes?

1. Death due to recurrent drought 2. Death due to disease out breaks 3. Conflict

4. High off take or selling of livestock to buy hose hold food consumption

5. Sell of livestock to deposit money in bank 6. Sell livestock to build house in town

7. Sell livestock to send children to school

8. Others specify_____

3.23. From possible causes of decreasing your family livestock holding status mentioned above on Q # 3.22 rank the major causes of your own reason

1._____

2._____

3._____

4._____

C. Transfer

Informal transfer

3.24. In the last 12 months, has your household received any of the following type of assistance from any person except government?

Type of assistance received	yes	No
Loan in cash	1	2
cash	1	2
Remittances	1	2
Loan in grain	1	2
food	1	2
Loan in seed	1	2
Gift of food	1	2
Giftof seed	1	2
Free labor	1	2
Oxen or plough	1	2
Pack animals	1	2
chicken	1	2
Others specify_____	1	2

Formal Transfer

3.25. In the last 12 months, has your household received assistance from government or humanitarian organizations (NGO)?

Types of assistance received	Yes	No	Source	
			1.Gov't	2. NGO
Food for work	1	2	1	2
Cash for work	1	2	1	2
Credit/loan	1	2	1	2
chicken	1	2	1	2
Livestock specify _____	1	2	1	2
Free fertilizer	1	2	1	2
Free food	1	2	1	2
Free cash	1	2	1	2
Others specify_____	1	2	1	2

Part IV. Household Activities

4.1. What are the main activities your household engaged in?

Activities	Yes	No	Activities	Yes	No
Crop cultivation	1	2	Petty trading	1	2

Animal raising	1	2	hand craft	1	2
Poultry	1	2	Charcoal selling	1	2
animal fattening	1	2	Beekeeping	1	2
Animal trading	1	2	Causal Labor	1	2
Irrigation	1	2	Permanent labor	1	2
Vegetable gardening	1	2	Others_____	1	2

4.2. What are the main sources of income for your household?

Source of income	Yes	No	Estimate income	Source of income	Yes	No	Estimate income
Animal husbandry	1	2		Sale of fire wood and	1	2	
Crop cultivation	1	2		hand craft	1	2	
Livestock trade	1	2		Charcoal selling	1	2	
Beekeeping	1	2		Free relief aid	1	2	
Rental house in town	1	2		Food for work	1	2	
Petty trade	1	2		Remittance /Pension allowance	1	2	
Permanent employment	1	2		Income from traditional healing service	1	2	
Causal labor	1	2		Credit	1	2	
Sale of blacksmith items	1	2		Mining	1	2	
Hunting and gathering	1	2		Others_____	1	2	

4.3. For what purpose did you use the income earned from the above activities?

Expense	Yes	No	Expense	Yes	No
To buy food	1	2	For animal health expense	1	2
For health expenses	1	2	For other business startup	1	2
For children education	1	2	Other Specify_____	1	2

4.4. If your have problem to participate in any or some of the above activities, what are the factors that hinder you to do so?

Reasons	Yes	No	Reasons	Yes	No
Lack of interest (willing)	1	2	Traditional beliefs	1	2
Lack of ability	1	2	Backward attitudes	1	2
Lack of knowledge	1	2	Lack of access to market	1	2

Health problem	1	2	Lack of initial startup	1	2
Age problem	1	2	Lack of access to credit	1	2
Cultural norms	1	2	Others (specify) ___	1	2

4.5. If you are participating in income earning activities stated under Q.4.2., please specify which member of your HH performs what kind of work?

No	HH. member A	Activity B	time of activity					
			year round	Gana	Bona	Bira	Arfasa	part time
1								
2								
3								
4								
5								
6								
7								
8								

A: 1. Mother 2. Father 3. Sons 4. Daughters 5. Relatives 6. Younger members 7. Older members 8. Others (specify) _____

B: 1. Animal husbandry 2. Crop cultivation 3. Livestock trade 4. Beekeeping 5. Rental house in town 6. Petty trade 7. Permanent employment 8. Causal labor 9. Sale of blacksmith items 10. Sale of fire wood and 11. Hunting and gathering 12. hand craft 13. Charcoal selling 14. Free relief aid 15. Food for work 16. Remittance /Pension allowance 17. Income from traditional healing service 18. Credit 19. Mining 20. Other Specific _____

4.6. From among your household members who most often engage in diversified activities to maximize your HH income? 1. Mother 2. Father 3. Sons 4. Daughters 5. Relatives 6. Younger members 7. Older members 8. Others (specify) _____

4.7. In your community which HHs are most often engage in various activities?

1) Poor households 2) Medium income households 3) High income households

4.8. What are the reasons? Specify _____

4.9 Explain the reasons _____

4.10. Which of the following conditions most influence you to diversify livelihoods?

Influncial Reasons	Yes	No	Influncial Reasons	Yes	No
Weather fluctuation	1	2	Infrastructural access problem	1	2

Yield reduction	1	2	Drought	1	2
Food shortage	1	2	Death of family member	1	2
Work opportunity	1	2	Conflict	1	2
Resource degradation	1	2	Availability of credit	1	2
Technological deficit	1	2	Others (specify) ___	1	2

4.11. What personal factors have you observed from your HH to diversify livelihoods? Specify your reason_____

Personal factors attract to participate	Yes	No	Personal factors influenced no to participate	Yes	No
High motivation	1	2	Low motivation	1	2
Willingness to act	1	2	Unwillingness to respond	1	2
Willingness to respond to changes	1	2	Unwillingness to respond to changes	1	2
Willingness to participate	1	2	Unwillingness to	1	2
Others (specify) ___	1	2	Others (specify) ___	1	2

4.12. Of the factors, which do you think is more influential at your HH?

1. _____
2. _____
3. _____

4.13. Are there financial institutions in your locality? 1. Yes 2. No

4.14. If yes what are these? 1) Formal 2) Informal 3) Both

4.15. If your answer above is informal to which your HH belong?

Informal Financial institution	Yes	No	Informal Financial institution	Yes	No
Iqub	1	2	Idir	1	2
Borrowing from relatives	1	2	Busa Gonofa	1	2
For children education	1	2	Other Specify_____	1	2

4.16. If your answer above is formal to which your HH belong?

Formal Financial institution	Yes	No	Formal Financial institution	Yes	No
Commercial bank	1	2	Insurance	1	2
Saving and credit	1	2			
Cooperatives bank	1	2	Other Specify_____	1	2

4.17. Have you borrowed money from such institutions for the last 3 years?

1. Yes 2. No

4.18. For what purpose do you use the money you borrowed from the above institution?

Purpose	Yes	No	Purpose	Yes	No
To buy food items	1	2	To pay tax	1	2
To buy agricultural nputs	1	2	To buy animals		
To buy cloth	1	2	Other Specify_____	1	2

4.19. What are the social support activities your HH engaged in?

Social Support	Yes	No	Social Support	Yes	No
Busa Gonofa	1	2	Humna	1	2
Dabo	1	2	Gargarsa	1	2
Qote Qotana	1	2	Gumata	1	2
Willingness to participate	1	2	Qabo participate	1	2
Galgalo	1	2	Others (specify) ___	1	2

4.20. What are the constraints/challenges you face from your social group while Participating in diverse livelihoods? Why?

constraints/challenges	Yes	No	constraints/challenges	Yes	No
Discouraging you verbally	1	2	Refusal to contribute for 'Busa Gonofa'	1	2
Not to give you 'Gargarsa'	1	2	Not to come to your 'Dabo'	1	2
Other Specify_____	1	2			

4.21. How far is your residence from the nearby town?

1) 1hr 2) 2 hr 3) 3hr 4) 4hr 5) 5hr 6.) Half day 7) full day

4.22. What infrastructural service problem your household is facing?

Infrastructure service	Yes	No	Infrastructure service	Yes	No
Road access	1	2	Market access	1	2
Transport service	1	2	Modern agricultural inputs	1	2
Telephone communication (Mobile)	1	2	Animal health post	1	2
Electricity	1	2	Human health post	1	2
Production tools	1	2	Others (specify) ___	1	2

4.23. What problem did your household face due to limited infrastructure?

Problem of Infrastructure service (health, education, water, market etc..)	Yes	No
Unable to sell production on time	1	2
Unable to buy food for household consumption	1	2
Unable to go to public services on time	1	2
Reduced motivation to work	1	2
Forced to work on single livelihood	1	2
Others (specify) _____	1	2

4.24. Do you have some desires to pursue diversified livelihoods? 1. Yes 2. No

4.25. If yes, what is the importance of diversifying livelihood: 1) Increased income 2) self-sufficient 3) Reduced hunger 4) others specify _____

4.26. Can you specify the wellbeing difference between those households that follow diverse livelihoods and those who do not? 1. Yes 2. No

4.27. If your answer is 'yes' how can you specify? Circle the numbers

Those who diversify	Yes	No	Those who didn't diversify	Yes	No

1.Have high income	1	2	1. have low income	1	2
2.can purchase food during shortage	1	2	2. easily affected by hunger	1	2
3.can easily pay social obligations	1	2	3. cannot purchase food	1	2
4. can purchase agricultural inputs	1	2	4. cannot pay social obligations easily	1	2

Part V. Livelihoods diversification and household food security

5.1. Is your household food secured? 1. Yes 2. No

5.2. If your answer for question 5.1. is No, what do you think is the root cause for your household food insecurity?

root cause	Yes	No	root cause	Yes	No
Crop failure	1	2	Land scarcity	1	2
livestock production failure	1	2	Lack of diversified livelihoods	1	2
Draught	1	2	Other Specify_____	1	2

5.3. If your household is food insecure, Have you received any aid? If 'yes' in what way?

1) direct food distribution 2) productive safety net 3) cash to buy food 4) cash to buy Oxen

5) other specify _____

5.4. What was your household survival strategy while you face food shortage?

Strategy	Yes	No	Strategy	Yes	No
Ate less food	1	2	Sell livestock	1	2
Reduce no_ of meal	1	2	Sell household assets	1	2
Collect wild food	1	2	Selling fire wood	1	2
Receive help from relatives	1	2	Selling charcoal	1	2
Migration and remittance	1	2	School withdrawal of students	1	2
Borrowing grain/cash	1	2	Child labor selling	1	2
Increasing food expediture2	1	2	Sending children to relatives home1	1	2
Rent land for food	1	2	Others specify_____		

5.5. If your answer for question 5.1 is yes, what is the factor most contribute to it? Why?

1. Enough crop harvest 2.diversified portfolios 3.enough land holding

4. Enough livestock own 5. Others specify _____

5.6. Please would you give us the role of diverse portfolios to your house hold food security?

1. Great role 2.Medium role 3.Limited role 4.No role

Thank you!

Appendix II Checklist for interview with DA

I. Background

1. What is the location and the topography of your woreda?
   _____
   _____
2. How many is the population of your PA? _____
3. What is the land holding situation of your woreda?
   _____
   _____
4. What are the contextual factors that affect your community livelihoods?
   _____
   _____
   _____
5. Is there a variation in the physical conditions (RF, weather, climate, soil) in your woreda?
   _____
   _____
   _____
6. What the social organization (local, traditional) seams in your locality?
   _____
   _____
   _____
7. Is there infrastructural facility in your woreda?
   _____
   _____
   _____
8. What environmental services are you access to?
   _____
   _____
   _____
9. How social relations responding to your community livelihoods?
   _____
   _____
   _____
10. How government and non-governmental actors working in your community livelihood strategies?
    _____
    _____

_____

II. Activities/livelihoods

1. What activities are your community engaged in?
   _____
   _____
   _
2. What dominant and supplementary activities do they have?
   _____
   _____
3. What assets your locality access to?
   _____
   _____
4. What is your community aspiration towards diversified livelihoods?
   _____
   _____
5. What opportunities have they get to diversify your activities?
   _____
   _____
   _____
6. Is there an influential factor in their livelihoods?
   _____
   _____
   _____
7. How institutions (traditional, formal, informal) affecting your community livelihoods?
   _____
   _____
8. What is the motivation of people to engage in different activities?
   _____
   _____
9. What different activities (form, non-form, off – farm) does your family pursue?
   _____
   _____
10. Do these activities have role to income generation?
    _____
    _____
11. Who, when, why they diversity?
    _____
    _____
    _____

III. Food security

1. What is the status of food security in your community household?
   _____
   _____

2. For what months is your community food secure?
   _____
   _____
3. Why food shortages exist in your community?
   _____
   _____
4. What do you suggest on food security of households?
   _____
   _____

Thank you!

Appendix. III Checklist for key informant (client leaders and elderly)

I. Background

1. For how long did you live here? _____
2. What it seems life over time?
   _____
   _____
3. Is there environmental change?
   _____
   _____
4. Is there social change?
   _____
   _____
5. Is there physical change?
   _____
   _____
6. Is there change of activities?
   _____
   _____
7. Is there cultural change?
   _____
   _____
8. What are the cultural, institutional, and traditional attributes of your community?
   _____
   _____
9. What resource endowment is there in your community?
   _____
   _____

II. Livelihood

1. What activities and when, who engage in community?
   _____
   _____
   _____

2. What contributions farm, non-farm, and off-farm activities are there in your community/woreda? What is the yield over time in your locality?

   _____
   _____
   _____
   _____

3. What are the crops produced in your locality?

   _____
   _____

4. What animal production do you have?

   _____
   _____
   _____

5. What are the challenges to farm and or livestock production in your locality?

   _____
   _____
   _____

6. Is there non –agricultural production need?

   _____
   _____

7. What are the motives and role of livelihoods diversification in your community?

   _____
   _____
   _____

III. Food security

1. What is the Status of household food security?

   _____

2. Is there change on availability over time?

   _____
   _____

3. What is the duration of your HH food security in a year?

   _____
   _____

4. What causes for food insecurity in your locality?

   _____
   _____

5. Is there diversification (need and contribution) in your community/woreda?

   _____

6. What is the relationship between food and livelihoods diversification in your locality?

   _____
   _____

Thank you!

Appendix IV. Conversion factor used to estimate Tropical Livestock unit, VIF and Household wealth status

Livestock Type	Tropical livestock Unit (TLU)
Calf	0.2
Heifer	0.75
Cows/Oxen	1.00
Horse/Mule	1.10
Donkey	0.7
Donkey (Young)	0.35
Sheep/Goat	0.13
Sheep/Goat (young)	0.06
Camel	1.25
Chickens	0.013

Source: Storck et al, (1991) cited in Mulu, (2008).

Variable Inflation Factor (VIF) for the continuous explanatory variables

	Tolerance	VIF
Age of HHH	0.711	1.41
Ox ownership	0.494	2.024
Family size	0.651	1.536
Land-size	0.892	1.121
Livestock in TLU	0.429	2.33
Coffee & chat income	0.064	15.625
Agri-income	0.064	1.5.625

Contingency Coefficient (CC) for dummy variables of multinomial Regression

Variables	Sex of HHH	Credit	Agro-ecology	Educational level
Sex of HHH	1	0.033	0.000	0.230
Access to Credit		1	0.361	0.044
Agro-ecology			1	0.188
Educational level				1

Household Well-Being Ranking

Well-Being Criteria	Rich(Duressa)	Medium(Giddu-galeessa)	Poor (Dhabaa)
Livestock No. ☐ camel ☐ cattle including ox	Own ☐ 10-15 camel ☐ 110-130 cattle	Own • 5-7 camel • 60-70 cattle	Own • 5-7 cattle • 7-10 goats

☐sheep & goats ☐donkey ☐mule	☐40-60 shots ☐2-4 donkeys ☐0-1 mule	• 20-30 shots • 1-2 donkeys	and sheep
Food Security Status ☐months that own food supplies	• 9-12 months	• 6-8 months	• Less than 4-5 months
Land Own ☐Area in hectares	• From 0.75 – 1 hectares	• From 0.5 to 0.75 hectares	• Less than 0.5 hectares
HH income in a year ☐ Income from different sources	• More than 10,000 birr per annum	• 5,000 – 10,000 birr per year	• less than 5,000 birr per year
Participation in Agriculture, Off and Non-farm activity	Participate in Livestock production, farm and livestock trading	Engaged on farm and livestock trading	Involve in FFW, fair wood selling and daily labour