INDIRA GANDHI NATIONAL OPEN UNIVERSITY

FOOD SECURITY IN KEBRIBEYAH WOREDA OF THE SOMALI REGION OF ETHIOPIA

MA. Thesis

By

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FOOD SECURITY IN KEBRIBEYAH WOREDA OF THE SOMALI REGION OF ETHIOPIA

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By

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Declaration

I hereby declare that the dissertation entitled **FOOD SECURITRY IN KEBRIBEYAH WOREDA OF THE SOMALI REGION** submitted by me for the partial fulfillment of the M.A.in Rural Development to Indira Gandhi National Open University (IGNOU) New Delhi is my own original work and has not been submitted earlier either to IGNOU or to any other institution for the fulfillment of the requirement for any course of study. I also declare that no chapter of this manuscript in whole or in part is lifted an incorporated in this report from any earlier work done by me or others.

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CERTIFICATE

This is to certify that Mrs. ABDINASIR MOHAMED AHMED student of M.A (RD) from Indira Gandhi National Open University, New Delhi was working under my supervision and guidance for his project work for the course MRDP-001.His project work entitled **FOOD SECURITY IN KEBRIBEYA WOREDA OF SOMALI REGION OF ETHIOPIA**, which he is submitting, is his genuine and original work.

Place Signature

Date name Address of the supervisor

List of Acronyms

AE - Adult Equivalent

DA - Development Agent

DDO - District Development Office

DFID - Department for International Development

DPPB - Disaster Prevention and Preparedness Bureau

DPPC - Disaster Prevention and Preparedness Commission

EAFPN - East African Food Policy Network

EDRI - Ethiopian Development Research Institute

EFSS - Ethiopian Food Security

EHNRI - Ethiopian Health and Nutrition Research Institute

ENI - Ethiopian Nutrition Institute

ERA - Ethiopian Roads Authority

EWS - Early Warning System

FAO - Food and Agricultural Organization of the United Nations

FDRE - Federal Democratic Republic of Ethiopia

FSPP - Food Security Programme Proposal

GDP - Gross Domestic Product

GHAFSB - Greater Horn of Africa Food Security Bulletin

GO - Governmental Organization

Ha - Hectare

HH – Household

IDS - Institute of Development Studies

IFAD - International Fund for Agricultural Development

IFPRI - International Food Policy Research Institute

Kcal - Kilo calorie

Kg - Kilogram

Km - Kilometer

LGP - Length of growing period

MAR - Mean Annual Rainfall

M.a.s.l - Meters above sea level

MAT - Mean Annual Temperature

M. Sc. - Master of Science

N - Number

NGO - Non Governmental organization

ODI - Overseas Development Institute

Ph. D. - Philosophy of Doctorate

PPS - Proportional to Population Size

SCF-UK - Save the Children Fund of the United Kingdom

SD - Standard Deviation

SERP - South East Rangelands Project

SoRPARI - Somali Region Pastoral and Agro-pastoral Research Institute

SPSS - Statistical Procedures for Social Science

SRS - Somali Regional State

List of Acronyms (Continued)

SSA - Sub-Saharan African

TLU - Tropical Livestock Unit

UK - United Kingdom

UNDP - United Nations Development Program

UNDP-EUE - UNDP – Emergency Unit for Ethiopia

UNEP - United Nations Environmental Programme

UNICEF - United Nations Children Fund

USA - United States of America

WDIP - Women Development Initiatives Project

WHO - World Health Organization

WIDP - Woreda Integrated Development Programme

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TABLE OF CONTENTS

Contents **Page**

TABLE OF CONTENTS (Continued)

List of Tables

Tables **Pages**

LIST OF FIGURES

Figures **Pages**

LIST OF TABLES IN THE APPENDIX

Appendix

Page **Table**

FOOD SECURITY AND COPPING STRATEGIES OF HOUSEHOLDS IN KEBRIBEYA WOREDA, SOMALI REGION ETHIOPIA

ABSTRACT

An understanding of the major causes of food security problems is important for interventions aiming at minimizing food insecurity. This study was conducted to measure food security status of households, to identify factors influencing rural households' food security status and to find out the coping strategies that the households practice to withstand the situation. In order to achieve these objectives, 100 respondents were selected from four kebeles in Kebribeya Woreda namely Kaho,Gilo, Hare and Guyo Using probability to population size stratified random sampling technique. A survey was conducted to collect the primary data from sample respondents using an interview schedule. Secondary data were collected from various sources. The data were analyzed using descriptive statistics like tables, mean, percentage and frequency distribution, standard deviation, percentage were used to describe characteristics of food secure and food insecure groups. The survey result showed that about (70%) of sample respondents were food insecure, while only (30%) were food secure. The determining factors of food security in the study area were age of the household head, sex of the household head, household size in AE, total cropping land in Ha, oxen ownership and remittances income in Birr. On the other hand, sale of livestock, borrowing cash or grain, reducing frequency and amount of meals served for the household members, selling of firewood and charcoal, and seasonal migration, were found to be more frequently practiced copping strategies by agro pastoralists of the study Woreda.

Finally, limiting population size through integrated health and education services, giving priority to old aged and female headed households in interventions, introduction of water harvesting technologies to practice intensified agriculture, controlling unfair market prices, opening money transferring agencies such as banks and micro finance institutions, and organizing the agro-pastoralists under associations in their respective areas and work in close collaboration with intervening agencies to have sustainable interventions and solutions with regard to food insecurity are some of the recommendations that the researcher recommend the concerned bodies in the region to undertake.

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Ethiopia is the second most populous country in Sub-Saharan Africa next to Nigeria with a population size of more than 70 million in 2007. According to the medium variant of the national population projections, the population will pass the 100 million mark by the year 2017, implying an average growth rate of 2.43 percent. Even under this favorable scenario that assumes a steep decline in fertility to 3.32 by 2030, the population growth will continue to exert serious pressure on the environment and the provision of basic social services will remain an enormous challenge to the country for the foreseeable future. With a per capita income of about US $100 per annum, Ethiopia falls among the five poorest countries in the world. The UNDP 2004 Human Development Report ranks Ethiopia 170th out of 177 countries (UNDP, 2004).

In order to address the challenges, the Ethiopian Government issued Ethiopia's Food Security Strategy' in November 1996 and updated it in January 2002. The strategy document highlights the government's plan to address problems of food insecurity in the country.

The overall objective of the strategy is to raise the level of food self-reliance nationally and to ensure household food security in the long-term (FDRE, 2002). However, what is needed to realize the strategy at household level is to comprehensively address the problem of food insecurity in the country. Moreover, identification and understanding of the major causes, coping strategies and policy options of food insecurity at the household level deserve empirical researches at various localities of the country, particularly in areas where food shortage has been pronounced. The problem of food insecurity has continued to persist in

the country; many rural households have already lost their means of livelihood due to recurrent drought and crop failures (Bogale, 2002). Currently, nearly about 14 million people are food insecure or live in what is defined as “absolute” poverty in Ethiopia. In the dry land areas, which cover about 66.6% of the land surface of the country, these forms of degradation is slowly leading to desertification. The cost of human suffering associated with this is very high.

On the other hand, crop production is based on rainfall conditions in almost all parts of the country and it is in bad shape. Hence, there is a pressing and urgent need to assist farmers to be able to achieve food security through rapid increase in food productivity and production on economically and environmentally sustainable basis (Ayele, 2003).

Food production and population statistics in Ethiopia are notoriously unreliable; all estimates of national food availability and consumption requirements are guesstimates at best (Devereux and Sussex, 2000). Given this limitation of statistics during the late 1980s, 52% of Ethiopia’s population consumed less than the recommended daily allowance of 2,100 Klc, Ethiopian agriculture appears to be locked into a downward spiral of low and declining productivity, caused by an adverse combination of agro-climatic, demographic, economic and institutional constraints, trends and shocks. Some observers argue that a Malthusian crisis is developing as rapid population growth (almost 3% per annum) is associated with steadily falling landholdings and per capita food production (Devereux and Sussex, 2000). Between 1960 and 1990 the population doubled from 23 to 48 million, while per capita landholding shrunk from 0.28 to 0.10 hectare, and per capita food output collapsed by 41% from 240 to 142 kg (Devereux and Sussex, 2000).

Agricultural growth contributes to improve the condition of food security in the country. There are indications that expected conditions of drought, even the present extension program could have sufficed to bring about a satisfactory level of national food security.

However, as it stands now drought occurs far too often and food security in all of its dimensions could not be sustained. Rain water harvesting and supplementary irrigation would have to be introduced in a significant way for a sustainable attainment of food security at the national level. However, food insecurity at the household level could still persist despite growth of food and cash crops at national level (MoFED, 2002).

Even though food self-sufficiency has remained the stated goal of the Government of Ethiopia, the problem of food insecurity has continued to persist in the country. Many rural households have already lost their means of livelihood due to recurrent drought and crop failures (Ayalneh, 2002).

The situation of Somali region where Kabri-Bayeh district found is not an exception to the food insecurity problem. Therefore, in order to comprehensively address the problem of food insecurity identifying the major determinants of food security becomes crucial. Hence, the aim of this is study is to understand the food security status, coping strategies and major determinants of household food security in the study area.

1.2. Statement of the Problem

More than 40 percent of the population in the Horn of Africa (HoA) is undernourished and millions are food insecure. Those suffering most from food insecurity are subsistence farmers, pastoralists and agro-pastoralists whose livelihoods largely depend on agriculture and animal production. Counting between 15 to 20 million people in the HoA, pastoralist communities live mainly in arid and semi-arid low lands and particularly suffer from droughts, as not only do they see their food consumption reduced, they also risk to lose their assets (FEWS NET, 2010).

The SRS is one of the Regional States in Ethiopia. It has nine administrative zones and 68 districts. According to (Disaster Prevention and Preparedness Commission/DPPC, 2004), the food security situation in most parts of the Region in general and agro-pastoral areas of

Jijiga Zone in particular is in a serious problem. In 2004, for instance, Jijiga zone experienced lowest rainfall of *Gu* season (main rainy season from February/March to June/July in Somali Region).

Considering the current performance of long cycle crops in Jijiga, Awbare, Babile and parts of Kabribeyah District of Jijiga Zone, was very much below the average for the past five years and it is deteriorating.

Thus, identifying, analyzing, and understanding demographic and socioeconomic characteristics of the households that are affected by food security problems is the main drive of this study to guide policy decisions, devise appropriate interventions and integrated efforts to combat food insecurity.

Moreover, an assessment on the features of the food insecure households as well as their potentials to cope with food stress will be made to help draw policy options. Hence, this research will be conducted to examine major determinants of food security and coping strategies in Kebri-Beya District, Jijiga Zone, Ethiopia.

1.3. Objectives of the Study

The general objective of the study is to assess the food security status and it's determinants among rural households of Kabri-Bayeh District.

The specific objectives of the Study are:

1. To assess food security status of rural households in the study area,
2. To identify the determinants of food security status of the rural households.
3. To identify local food insecurity coping strategies employed by rural households.

1.4 Research questions

- What is the condition of food insecurity in the rural households of the kebribeya worada?
- What are the households' level factors that contribute to food insecurity in the study area?
- What are households' food insecurity copping strategies?

1.5 Scope of the study

The study was conducted in Kabri-Bayeh District which is one of 68 districts in Somali region. Households are the unit of analysis in this study. The scope of this research is limited to the assessment of the food security status and its determinants and coping strategies. Even if the problems of food insecurity are multi- dimensional and dynamic, this study emphasizes only on household level situations by taking 'snap-shot' at a particular period of time. Besides, getting reliable and genuine responses from the respondent households will be quite difficult due to the feeling of dependence created by regular food aid distribution in the area.However, the researcher will do his level best to capture reliable information by getting the understanding of the respondents with regard to the purpose of the study and by establishing rapport with them.

1.6. Significance of the Study

A study of food security problems in a particular area is essential because it provides with information that will enable effective measures to be undertaken so as to improve food security status and bring the success of food security development programs. It will also enable development practitioners and policy makers to have better knowledge as to where and how to intervene in rural areas to bring food security or minimize the severity of food insecurity.

Moreover the empirical analysis carried out in this study was also expected to contribute towards better food gap estimation. Hence such studies are important in that they could help in designing food security development programs and food security related policies.

Furthermore, little work has been done about rural livelihood strategies in the study area. Hence, this study besides its narrowing potential of the wide gap of knowledge about livelihood strategies, it was also expected to equip the different organizations and policy makers with the more pertinent information of livelihood strategies adopted by the rural households of the area. Which in turn help them to design ways so as to build their intervention systems on the strength the rural households have. The study would also help as an input for further study in the area of food security.

1.7. Limitations of the Study

Due to time and resource constraint, the study was conducted only in four selected *Kebeles* of Kebribeya *Woreda*. Though useful, such study does not capture the complex and dynamic nature of food insecurity problems in all the kebeles of the woreda .Besides, getting reliable and genuine responses from the respondent households was quite difficult due to the feeling of dependence created by regular food aid distribution in the area. However, the researcher did his best to capture reliable information by getting understanding of the respondents with regard to the purpose of the study and by establishing rapport with them.

1.8. Chapterization of the paper

The chapterization of the thesis was done, keeping in mind the objectives and research question. This study is organized in five units. The first unit consists of the introduction. Under the introduction back ground information which describes the concept of food security was done. Statement of the problem, objectives of the study, and universe & significance of the study are also included the first unit.

The second unit consists of the review of related literatures under which the definitions and concepts of food security and food security related previous studies are overviewed. In the second unit the frame work of the study is also described.

The third unit consists of methodology the study; here brief descriptions of the study area, selection of the study site, sampling techniques, data collection procedures and methods of data analysis are done. The fourth unit consists of results & discussions of the research. In the fifth unit conclusions & recommendations are given. Finally references and appendices which consist of tables, glossary of terms, and interview schedule used in the research are given.

CHAPTER TWO

LITERATURE REVIEW

In this chapter different literatures related to the topic of the study were reviewed to obtain relevant information required for the study. It started with the definition and concept of food security, the food security indicators, measurements, household vulnerability & copping strategies, causes of food insecurity, about pastoral and agro-pastoral livelihoods in relation to food security and finally it is concluded by indicating conceptual framework of food security determinants.

2.1 Definition and Concept of Food Security

A clear understanding of the concept of food security is an essential element to better explore the underlying causes and dimensions of food insecurity. Food security is a concept that can generally be addressed at global, regional, national, sub-national, community, household and individual levels (Kifle and Yosef, 1999)

Since the world food conference of 1974, the concept of "food security" has evolved, developed, multiplied, and diversified. At the last count, there were close to two hundred definitions of the term (Smith et al, 1992).

The conceptual framework of food security has progressively developed and expanded based particularly along with the growing incidence of hunger, famine and malnutrition in developing countries. The concept of food security attained wider attention in the early 1980s after the debate on 'access' to food and the focus of unit of analysis shifted from national and global level to household and individual levels (Habtwold, 1995). The history of thinking about food security since the World Food Conference can be conceptualized as consisting of three important and overlapping paradigm shifts. The three shifts are: from the

global and the national to the household and the individual, from a food first perspective to a livelihood perspective, and from objective indicators to subjective perceptions (Maxwell, 1996).

As reviewed in Getachew (1995), Sen, and Dreze and Sen, started to argue that 'the mere presence of food in the economy, or in the market, does not entail a person to consume it and thus starvation can set in without any obvious aggregate availability fall. To make it very clear available evidences indicate that during the last two decades, there has been an increasing trend in per capita food output in the world. In contrast, a significant proportion of the populations, particularly, in the developing world, have been suffering from hunger and malnutrition. In 1990, for example, the calorie supply at the global level was more than 110 percent compared to the total requirement. However, during the same period, more than 100 million people were affected by famine and more than a quarter of the world population were short of enough food (Debebe, 1995). These facts indicate that availability at global level does not guarantee acquisition of food at national or household levels. Moreover increased attention has been given to household and individual level food security because of the growing understanding that increasing food production, supply and sufficiency at the national level (although it is important) does not necessarily ensure that all households and their members are food secure (Kefile and Yoseph, 1999)

Food security is defined, in its most basic form, as access by all people at all times to the food required for a healthy life. Access to the needed food is necessary, but not a sufficient condition for a healthy life. A number of other factors, such as the health and sanitation environment and household and public capacity to care for vulnerable members of society, also come in to play Von Broun et al (1992)

Food security has three major components: availability, access and utilization (Haddad, 1997; Kifle and Yoseph, 1999).

Food availability refers to the need to produce sufficient food in a way that generates income for small-scale producers while not depleting the natural resource base, and to the need to get this food into the market for sale at prices that consumers can afford (Haddad, 1997). According to Kifle and Yoseph (1999) availability is basically the household's capacity to produce the food it needs.

The second component relates to people's ability to get economic access to this food. Economic access is typically constrained by income. If households cannot generate sufficient income to purchase food, they lack an entitlement to the food.

The third component concerns an individual's ability to use food consumed for growth, nutrition, and health. In an environment lacking clean water, sanitation, child care, and health facilities, the ability to use food to promote health and nutrition will be impaired (Haddad, 1997).

When any of the above food security components threatened seasonally or otherwise, households are said to resort to what are known as "coping strategies". These strategies involve behavioral changes with regard to food choice, frequency of eating, seeking other income sources, borrowing from kin, etc. In addition to this, households begin to sell their belongings or "assets" such as livestock, tools, personal possessions or household goods. The type of coping strategies adopted can vary from area to area, and from household to household. Thus household 'asset creation' as a component of food security is very important (Kefile and Yoseph, 1999).

The many definitions and conceptual models all agree in that the defining characteristic of household food security is secure access at all times to sufficient food. Moreover, there are four core concepts, implicit in the notion of "secure access to enough food all the time."

These are sufficiency of food, defined mainly as the calories needed for an active, healthy life; access to food, defined by entitlement to produce, purchase or exchange food or receive as a gift; security, defined as the balance between vulnerability, risk and insurance; and time, where food insecurity can be chronic, transitory or cyclical (Maxwell and Frankenberger, 1992).

The concept of “enough food” is presented in different ways in the literature. As reviewed in Maxwell and Frankenberger (1992) it is referred as a “a minimal level of food consumption”, “ target level”, “basic food (needed)”, as the food “ adequate to meet nutritional needs”, “ enough food for life, health and growth of the young and for productive efforts”, “ enough food for an active, healthy life”, “ enough food to supply the energy needed for family members to live healthy, active and productive lives.”

The same source also stated that from the above definitions some aspects of sufficiency or “enough” food can be distinguished. First the unit of analysis is the individual not the household. Only rarely (Eide, et al., 1985, 1986; Frankenberger and Goldestien, 1990; Jonsoon and Toole, 1991b; Cited in Maxwell and Frankenberger, 1992) the household considered as a unit. Second, although the definitions mostly refer to “food”, the main concern is with calories and not with food quality and safety. Third, not withstanding the difficulty of measurement, an important aspect of assessing whether people have access to “enough” food is to ask how far they fall below the threshold, i.e., to analyze food insecurity gap.Maxwell and Frankenberger (1992) further elaborated that the concept of enough food appears to make sense to concentrate initially on calories, to define needs not just for survival, but also “an active, healthy life,” to assess not just the fact of a shortfall but also its gravity, and to begin with individual needs and build up to the household.

A well elaborated understanding of underlying conceptual framework for food security should focus not only on the availability of food, but also on access (demand) and utilization (Webb and Von Broun, 1994; SLE 1999; cited in Bogale 2002). The concept "access" is the question of whether individuals and households (and nations) are able to acquire sufficient food. In other words, access indicates the ability of households to get command over food. For sufficient calorie intake, food availability in space and time may be a necessary but not a sufficient condition, for it does not guarantee effective demand for food. Accordingly, a decline in food availability does neither create hunger nor does necessarily improve household food security. Hence 'access' to food plays a critical role in securing command over food which in turn is determined by production, exchange or transfer (Habtwold, 1995).It is often argued that the focus on access is the phenomenon of the 1980s, largely resulting from the pioneering work of Amartya Sen (1981, cited in Maxwell and Frankenberger, 1992) on food entitlement. However the idea was already commonplace in nutrition planning and had been amply demonstrated in field studies. Sen's contribution, then, was to codify and theorize the access question, give it a new name, "food entitlement," and demonstrated its relevance even in famine situation (Maxwell, 1996).

According to Sen's entitlement frame work an individual's entitlement is rooted to his/her endowment-the initial resource bundle-which is transferred via production and trade into food or commodities which can be exchanged for food. If the entitlement set does not include a commodity bundle with an adequate amount of food, the person must hungry; or the individual suffer an entitlement failure. In private ownership market economy, the entitlement relations of individuals are determined by what they own, what they produce, what they can trade, and what they inherit or are given. Consequently, he demonstrated that a decline in food availability was neither necessary nor sufficient to create hunger. Hence famine could occur in absence of any change in production, if the value of people's

production and work activities declined relative to the cost of staple food (Maxwell and Frankenberger, 1992).

An African regional workshop held in 1992 concluded that households will be food-secure when the conditions relating availability and accessibility are met, noting that availability includes adequacy in staples, vegetable and animal protein relishes, vitamin supplements and concentrated energy sources. These foods must meet cultural preferences and be safe. Accessibility means that households are able to procure foods through the transformation of endowments (land, labor, capital and other resources, etc) into food entitlements (Republic of Zambia, 1992a). This implies that household food security (HFS) is not simply a function of household food production, but is linked, often in complex way, to the over all livelihood strategies of households (Frankenberger, 1992). Strategies include a household's ability to convert endowments into food entitlements, even to go hungry, up to a point, to meet another objective, such as asset preservation (de Waal, 1989, cited in Sutherland A.J.et al., 1999).

The third main concept is "security:" secure access to enough food. This builds on the idea of vulnerability to entitlement failure, focusing more clearly on risk (Maxwell and Frankenberger, 1992). The risk condition may vary from natural to manmade factors (Habtwold, 1995). Widespread crop failures, natural or other disasters as well as the risk of fluctuation in production are some risk conditions contributing to food entitlement failure.

Moreover, variability in food supply, market and price variability, risks in employment and wages, and risks in health and morbidity, and conflict are also an increasingly common source of risk to food entitlements. This issue is more explored in Table 2.

Table 2. Sources of risks of food insecurity and affected population

Risks	Households and people at risk of food insecurity
• Crop production risks (pests, drought, and others)	Smallholders with little income diversification and limited access to improved technology such as improved seeds, fertilizer, irrigation, and pest control.
• Agricultural trade risks (disruption of exports or imports)	Landless farm laborers smallholders who are highly specialized in an export crop. Small scale pastoralists Poor households that are highly dependent on food. Urban poor Poor, net food-purchasing households
• Imported	Wage-earning households and informal-sector employees (that is, in poor urban areas and
▪ Food price rises (Large, sudden price rises)	when there is a sudden crop production failure, In rural areas)
▪ Employment risks	Entire communities, but especially households that cannot afford preventive or curative care and vulnerable members of these households
▪ Health risks (infectious diseases, for example, resulting in labor productivity decline)	Households in war zones and areas of civil unrest. Households in low potential areas that are not connected to growth centers via infrastructure Women, specially when they have no access to education
Political and policy failure risks	Female-headed households Children at weaning age The aged
Demographic risks (individual risks affecting large ation groups)	

Source: Van Broun.et al. 1992.

Considering its span of duration, World Bank (1986), Maxwell and Frankenberger (1992), Habtwold (1995) Tesfaye and Habtwold (1995), and Bogale (2002) made a distinction between chronic and transitory food insecurity, which are closely intertwined. A constant

failure to food ‘access’ is distinguished as ‘chronic’ while a temporary decline is considered as ‘transitory’ food insecurity.

Chronic food insecurity is a continuously inadequate diet caused by the inability to acquire food. It affects households that persistently lack the ability either to buy enough food or to produce their own. Transitory food insecurity, on the other hand, is a temporary decline in a household’s access to enough food. It results from instability in food prices, food production, or household income-and in its worst form it produces famine (World Bank, 1986).

Transitory food insecurity can be further divided into cyclical and temporary food insecurity (CIDA, 1989, cited in Maxwell and Frankenberger, 1992). Temporary food insecurity occurs for a limited time because of unforeseen and unpredictable circumstances; cyclical or seasonal food insecurity when there is a regular pattern in the periodicity of inadequate access to food. This may be due to logistical difficulties or prohibitive costs in storing food or borrowing.

There is also an important difference in household food security issues in rural and urban contexts. In urban areas, HFS is primarily a function of the real wage rate (that is, relative food prices) and of the level of employment. Further, the miserable health environment in poor urban areas sometimes makes the urban food security situation qualitatively different from the rural situation. Difference in calorie consumption and requirements exist between rural and urban areas. Typically, calorie consumption is lower in urban areas, partly because of differences in activity levels Von Broun et al. (1992).

Finally, as it is mentioned at the beginning of this section there have been shifts in the thinking of food security. These shifts can be reflected in successive definitions of the term which are listed as an example in the Annex.

From these definitions, in Ethiopian context, many agencies involved in food security related activities adopt World Bank (1986) definition (Kifle and Yoseph, 1999). Accordingly for this specific study the definition of food security posed by World Bank (1986) was employed making the unit of analysis the household. Along with the development of the concept of food security, a number of food security indicators have been identified. As there are approximately 200 definitions of food security there are

2.2 Indicators of food security

Assessment of food insecurity is a difficult issue as there are no universally established indicators which serve as measuring tools. Food security requires a multi-dimensional consideration since it is influenced by different interrelated socio-economic, environmental and political factors. Because of this problem, assessing, analyzing and monitoring food insecurity follow diversified approaches (Debebe, 1995).

Along with the development of the concept of food security, a number of food security indicators have been identified. As there are approximately 200 definitions of food security there are also 450 indicators of food security (Hoddinott, 2001). One volume on household food security by Maxwell and Frankenberger (1992) listed 25 broadly defined indicators. As Hoddinot reviewed Riely and Moock (1995) listed 73 such indicators, some what more disaggregated than those found in Maxwell and Frankenberger (1992). Chung et al. (1997) notes that even a simple indicator such as dependency ratio can come with many permutations. They listed some 450 indicators.

With this abundance of indicators, an important methodological problem for researchers and development practitioners is to determine which indicators are appropriate. Nevertheless, the utilization of these indicators varies between the characteristics of the investigations, procedures and level of aggregation. In most cases, the purpose and depth of investigations highly influence the use of indicators. In some early warning systems, for example, three

sets of indicators are often used to identify the possible collapses in food security. These include food supply indicators (rainfall, area planted, yield forecasts and estimate of production); social stress indicators (market prices and availability of produce in the market, labor pattern, wages and migration) and individual stress (which indicate nutritional status, diseases and mortality) (RRC, 1990, as cited by Habtwold 1995).

Maxwell and Frankenberger (1992) made a distinction between “process indicators” which describe food supply and food access, and “outcome indicators” which describe food consumption. Many studies have found that process indicators are insufficient to characterize food security outcomes. As Hodinnot (2001) quoted, Chung et al (1997) found that there is little correlation between a large set of process indicators and measures of food security outcomes. This finding echoes the conclusion of some development agencies, that there is little correlation between area level food production and household food security (IFAD, 1997).

One critical dimensions of HFS is the availability of food in the area for the households to obtain. A number of factors or indicators play a role in limiting food supply or availability. Borton and Shoham (1991, cited in Maxwell and Frankenberger 1992) classified these types of indicators as risk of an event indicator. These are supply indicators that provide information on the likelihood of a shock or disaster event that will adversely affect HFS. They include such things as inputs and measure of agricultural production (agro-metrological data), access to natural resources, institutional development and market infrastructure, exposure to regional conflict or its consequences. On the contrary, Habtwold (1995) argued that such supply indicators are in most cases aggregated and hardly serve to monitor food stress at household levels. Their application also varies between places depending upon the resource potentials of the area and economic activities of the people.

According to Maxwell and Frankenberger (1992) the importance of indicators that measure food access become apparent when it is realized that household food insecurity and famine conditions were occurring despite the availability of food. Food entitlement and effective demand of households are now seen as crucial to household food security. Socio-economic indicators are sought that represent the degree of stress being expressed by a population as economic and social conditions change and how they are responding to it. Recognizing that households are not passive to stress, a major aspect of vulnerability to HFS is the ability of households to cope with the stress. Borton and Shoham (1991, cited in Maxwell and Frakenberger 1992) referred to these types of indicators as coping ability indicators,that provide information on the capacity of the population affected by a shock or disaster to withstand its effects.

Moreover, according to Habtwold (1995) unlike supply indicators, food access indicators are relatively quite effective to monitor food security situation at a household level. Their use varies between regions, seasons and social strata reflecting various agencies in the process of managing the diversified sources of food; i.e., shift to sideline activities, diversification of enterprises, and disposal of productive and non-productive assets.

Given the cost and time involved with collecting intake data for households, outcome indicators are usually proxies for adequate food consumption (Maxwell and Frankenberger, 1992). In general, HFS outcome indicators can be grouped into direct and indirect indicators (Ibid 1988, cited in Maxwell and Frankenberger 1992). Direct indicators of food consumption include those indicators, which are closest to actual food consumption rather than marketing channel information or medical status. Indirect indicators are generally used when direct indicators are either unavailable or too costly (in terms of time and money) to collect.

According to Debebe (1995) outcome indicators can be disaggregated at lower level as opposed to food supply indicators. The problem with outcome indicators is that some of the indicators like anthropometric results may not exactly indicate the level of food crisis since nutritional intake is affected by a number of factors like health and care.

Table 2.1 Indicators of household food security

A. Supply indicators	-Agro ecological models
-Meteorologicalm data	-Food balance sheets
- Information on natural resource	-Information on pest damage
- Agricultural production data	-Regional conflicts
-Marketing information	
B. Food access indicators	-Diversification of livestock
-Land use practice	-Change of food source
-Dietary change	-Access to loan/credit
-Diversification of income sources	-Seasonal migration
-Livestock sales	-Distress migration
-Sale of productive assets	
C. Outcome indicators	-Household perception of food security
-Household budget and expenditure	-Storage elements
-Food consumption frequency	
-Subsistence potential	
-Nutritional status	

Source: Debebe (1995) as adapted from Frankenberger (1992)

Moreover in the report of IFPRI (1992) on improving food security of the poor explained thatgiven the multiple dimensions (chronic, transitory, short term and long term) of food security, there can be no single indicator for measuring it. Different indicators are needed to capture the various dimension of food insecurity at the country, household and individual levels, which include:

Food security at the country level can, to some extent, be monitored in terms of demand and supply indicators; that is, the quantities of available food versus needs, and net import

needs versus import capacity (import capacity is defined as foreign exchange earnings net of debt-service obligations and other necessary foreign exchange expenditure).

Food security at the household level is best measured by direct surveys of dietary intake (in comparison with appropriate adequacy norms). However, they measure existing situation and not the downside risks that may occur. The level of, and changes in, socioeconomic and demographic variables such as real wage rates, employment, price ratios and migration, properly analyzed, can serve as proxies to indicate the status of, and change in, food security. Indicators and their risk patterns need to be continually measured and interpreted to monitor food security at the household level. Anthropometric information can be a useful complement because measurements are taken at the individual level. Yet such information is the outcome of changes in the above indicators and of the health and sanitation environment. This information however, indicates food security after the fact.

Measurement is necessary at the outset of any development intervention and investigation to identify the food insecure, to assess the security of their shortfall, and to characterize the nature of their insecurity. As food security at the household level is best measured by direct measure of dietary intake and since this study bases its measurement of HFS on household calorie acquisition, the next section focuses on measures of outcome indicators.

2.3 Measuring food security outcomes

Recent research on the multi-factorial nature of food security has provided a wealth of analytical insight, but measurement problems remain as a major challenge, not only for research, but particularly for targeting, program management, monitoring and evaluation (Maxwell D. et al, 1999). However the search for viable indicators is driven by the lack of a 'gold standard' measure for food security. Measures of consumption, poverty and malnutrition are all used as proxy measures, indicators of assets and income are used as

more distal determining factors (Chung et al., 1997; Haddad et al., 1994; Bouis, 1993; Maxwell and Frankenberger, 1992; cited in Maxwell. D. et al (1999).

As further reviewed in Maxwell. (1999) the most common indicators of food security revolve around measures of food consumption (Bouis, 1993). A good measure of consumption requires data on household food consumption, household size, age and sex of individuals, as well as physical size and activity levels. Even if average size and activity levels are presumed, consumption measures capture only the physiological sufficiency elements of food security. There are also problems with the representativeness of consumption measures, particularly when relying on cross sectional data. However, in practice measuring calorie intake or the adequacy of household food availability over time continues to be suggested as the main 'benchmark' measures for food security (Chung et al., 1997).Many studies have found that process indicators are insufficient to characterize food security outcomes (Hoddinot, 2001). Accordingly, he outlined four measures of household food security outcomes: individual intakes, household calorie acquisition, dietary diversity, and indices of household coping strategies.

Individual food intake data: This is a measure of the amount of, or nutrients, consumed by an individual in a given time period, usually 24 hours. There are two approaches used to collect these data. The first is observational, in that an enumerator resides in the household throughout the entire day, measuring the amount of food served to each person. The amount of food prepared but not consumed is not measured. The enumerator also notes the type and quantity of food eaten as snacks between meals as well as food consumed outside the household. The second method is recall, in that the enumerator interviews each household member regarding the food he/she consumed in the previous 24 hours period.

While calculating this outcome measure, the data collected on quantities of food are expressed in terms of their calorie content, using factors that convert quantities of edible portions into calories. Then these intake data are compared against a definition of food needs. Individual calorie requirements reflect individual characteristics such as age, sex, weight, body composition, disease states, genetic traits, pregnancy, and lactation status, and activity levels as well as climate.

Household calorie acquisition: This is the number of calories, or nutrients, available for consumption by household members over a defined period of time. The principal person responsible for preparing meals is asked how much food was prepared for consumption over a period of time. After accounting for processing, this is turned in to a measure of the calories available for consumption by the household.

While generating these caloric acquisition data, a set of questions regarding food prepared for meals over a specified period of time, usually either 7 or 14 days, is asked to the person in the household most knowledgeable about this activity. In constructing these questions it is necessary to specify the lists of foods exhaustively, to unambiguously distinguish between the amount of food purchased, the amount prepared for consumption, and the amount food served. It is not also uncommon for individual to report consumption in units other than kilograms or liters. In such cases it is necessary to convert to a standard unit.

In converting these data into calories, first convert all quantities into a common unit such as kilogram, then convert these into edible portions by adjusting for processing; and lastly convert these quantities into kilocalories using the standard kilocalorie conversion.

Dietary diversity: This is the sum of the number of different foods consumed by an individual over a specified time period. It may be a simple arithmetic sum, the sum of the number of different foods within a food group, a weighted sum, when additional weight is given to the frequency by which different foods consumed.

The method for generating dietary diversity data is one or more persons within the household are asked about different items they have consumed in a specified period. In tern there are two possible methods of calculation for this measure. The first one is calculating a simple sum of the number of different foods eaten by that person over the specified time period. The second is calculating a weighted sum, where the weights reflect the frequency of consumption and not merely the number of different foods.

Indices of household coping strategies: This is an index based on how households adopt to the presence or threat of food shortage. The person within the household who has primary responsibility for preparing and serving meals is asked a series of questions regarding how households are responding to food shortages.

2.4 Vulnerability & Household Copping Mechanisms

2.4.1 Vulnerabilities

The vulnerability of the agropastoral households arises from and insufficient production of cereals produced for consumption and market dependence.An agro pastoral livelihood is dependent on livestock products and cereals for food. In most agropastoral livelihood systems the cereals produced doesn't cover food supply of the whole year.the remaining food supply come from cereals which obtained from purchasing. Dependence on the market for most period of the year makes agropastoralists vulnerable to changing prices of the products they sell: live animals, milk, animal products like hides and wool- and the cereals they buy. The successive droughts in the Somali region have raised the vulnerabilities of the agro pastoralists in different aspects. These vulnerabilities include the occurrence of livestock diseases, natural resource degradation such as water and pasture shortage, and shift of many pastoralists to sedentary life and the subsequent enclosures of grazing lands. The vulnerabilities of agro pastoralists in these areas are aggravated by remoteness of the area,

slow response of the government and donors to emergency, absence of off-farm employment opportunities and the terms of trade between livestock and cereal prices. Furthermore, the vulnerabilities of the areas have been increased by the limited capacity of the regional government to respond to the emergency situations, and poor targeting of beneficiaries of food aid.

The food security conditions of agropastoral community are deteriorating from time to time because of epidemics of animal diseases, decline of pasture lands and the farming system not assisted by modern techniques and environmental degradation. These situations have led to declining size of livestock herds, access to dry season grazing areas and water resources which have impacts on weakening the agro pastoral economy and raised vulnerability of agropastoral households to small shocks or disturb.

2.4.2 Household Copping Mechanisms

Households adopt and develop diversified coping strategies and sequential responses through which people used at times of decline in food availability. Degnew (1993) defined copping strategies as “a mechanisms by which households or community members meet their relief and recovery needs, and adjust to future disaster-related risks by themselves without outside support”. Households use different means to cope when a food crisis hits them. Their copping mechanisms are adapted depending on how bad the crisis are and what is available to help them manage their situation. Some sale their assets, look for part time work, turn to their social network, venture into income generating activities, engage in food for work activities and others get food relief from NGOs and the government (Chlembo, 2004). Copping mechanisms used by farm households in rural Ethiopia include livestock sales, agricultural employment, certain types of off-farm employment and migration to other areas, requesting grain loans, sale of wood or charcoal, small scale trading, selling cow dung and crop residues, reduction of food consumption, consumption of meat from their

livestock, consumption of wild plants, reliance on relief assistance, relying on remittances from relatives, selling of clothes, and dismantling of parts of their houses for sale. Some of them are likely to be implemented only after the possibilities of certain other options have been pursued (Cutler and Stephenson, 1984).The pattern of copping is largely determined by the pre-crisis characteristics of individual households that involve a succession of responses to increasingly severe conditions (Cutler and Stephenson, 1984).

This doesn't represent an overnight awakening to danger, rather a progressive narrowing of options that leads from broad attempts to minimize risk in long term through actions designed to limit damage caused by a crisis, to extreme measures aimed at saving individual lives, even at the expense of household dissolution (Webb and von Braun, 1994).

The study by Dagnew (1993) revealed that household responses to food shortages can be studied as a) production based b) market based and c) non-market based (such as depending on the use of different institutional and societal income transfer system). The findings emerging from the above study also show that rural households adopt copping strategies in a generally sequential pattern as the severity of food shortage increases. These strategies by category include a) a self-insurance strategy which involves changing production patterns; b) income stabilization strategy including reducing consumption, diversifying secondary economic activities, depending on kin and friends' support, borrowing food consumption, eating wild foods, depending on relief food, and begging; c) asset disposal, both productive and non-productive; and d) distress migration and family separation.

Another study by Eshetu (2000) further revealed that the most common copping practice that are sequentially used during food crisis consisted of reducing number and size of meals, sale of small ruminants and draft oxen, consuming wild food, and borrowing of cash and/or food from better-off neighbors and/or relatives. Another less frequently used strategies

were: postponing wedding and other ceremonies, sale of fire wood, with drawing children from school and eating toxic taboo foods.

The pattern of household responses to food crisis generally involves a succession of stages along a continuum of “copping” that runs from long-term risk minimization through crisis damage contained to the extreme instance of household collapse. These stages are grouped under three headings: risk minimization, risk absorption and, if necessary, risk-taking to survive.

The first stage involves insuring against risk in a pre-crisis period in an environment of limited credit and insurance markets. It incorporates measures of savings, investment, accumulation, and diversification. There are four key elements of this strategy. Resource-poor farmers make efforts to 1) protect minimum farm productivity through intercropping, special dispersal of fields, and use of multiple seed varieties; pastoralism make efforts to hold mixedspecies herds and preserve last-resort grazing grounds; 2) accumulate assets through food storage, capital accumulation, and investment in valuable goods such as jewelry, farm equipment, and housing goods; 3) add to credit through establishment of social-support networks based on gift, food-sharing and loan provision, and 4) diversify the income base to include non-farm sources (and migration remittances).

The second stage of copping involves disaccumulating earlier investment, calling in loans, and searching for new credit. As capital for investment dries up, consumption (both food and nonfood) is restricted, stores of food are drawn down, and the number and variety of potential income sources that are available become crucial to survival. And the ability to protect past investments decreases. Access to credit to stabilize consumption and to limit distress sales of assets are curtail at this stage for a quick recovery from food crisis.

Wealthier households handle this stage of crisis better than poorer households because they generally have more assets (equipment, durables, and livestock) that they can part with, and moreover, they can better afford to wait for more favorable market conditions.

The final stage in copping, which may become inescapable if famine conditions persist in the absence of external aid, involves the disengagement of all normal systems of survival. At this point, the diet of most households is dominated by unusual “famine foods” (roots, leaves, rodents), and they are obliged to sale their remaining assets, including homes, fields, and clothes. If they are still able to do so, many house many households leave their villages in search of assistance from distant relatives or at a relief camp.

Somali culture is based on the concept of mutual support, and has a variety of traditional mechanisms through which those in need can be helped, either within the extended family or by the society in general(Birch and Halima, 2001). Sadaqa encourages the giving of alms, while hersi refers to the collection of milk from families in one rer or homestead to be given to travelers or to those who have lost their livestock. Zakaat is a mandatory tax of a 2.5 percent that every Muslim is supposed to pay annually to the poor.

There are varietis of household level coping mechanisms during the on set of famine in the region indicates that that, Somali pastoral and agropastoral communities are often more mutually supportive, especially within clans. Where it is difficult to find access to shared resources, households may resort to credit, mostly from relatives or merchants. The coping mechanisms in response to drought and food shortage are moving the livestock to distant places (even some times by crossing international borders), selling livestock (as male cattle, calves, and small ruminants), and migratory employment in peri- urban centers as well as moving to towns which offer food aid distribution centers.

.

More importantly, diversification of incomes remains a very important strategy to supplement incomes from cereal & livestock and substitute when herds have been decimated. Pastoralists have always had such auxiliary incomes, from wood cutting and charcoal making, trade, sale of labor, craftwork and so on. Formal interventions to encourage alternative incomes have tended to be unsuccessful (Scoones, 1995) whether irrigated agriculture, fishing or craftwork. Thus, there are clearly limits to how far outsiders can identify promising areas for supporting alternative forms of income generation to improve the house household food security status of agro pastoral households

2.5 Causes of Food Insecurity

The causes of food insecurity, in sub-Saharan Africa, are highly related with poverty and mainly include unfair rural development policies, war, lack of technological changes, institutional weakness, lack of basic infrastructures and drought. Although, causes of food insecurity vary among households and localities, the common ones as suggested by Young (1992), are reduction of people's food entitlements due to poor harvest; reduction in food availability; increased market prices; loss of livestock and other resources; loss of waged laborer or other sources of income. These conditions together thus explain the issues to entitlement. Entitlements are the legal means by which an individual or households gain access to his/her basic requirements.

A combination of short-term and long-term causal factors can explain the trend towards the increasing food insecure caseload. Long term factors, such as the interaction between environment, high population growth, diminishing land-holdings, and a lack of on-farm technological innovations have led to a significant decline in productivity per household. These trends have combined with the repeated effects of drought over the years, to substantially erode the productive assets of communities and households. A loss of community assets (*e.g.*, pasture and forest) had led to increasing environmental degradation

and increased the pressure on farm leading to declining investment in soil and water conservation practices. More importantly, households are less able to cope with shocks because they cannot accumulate saving (*e.g*., livestock holdings and food stores) even in good years (FDRE, 2002).

2.6 Pastoral and Agro-pastoral Livelihoods

Pastoral livelihood is form of livelihood system that is primarily livestock-based economy, external shocks, such as drought, besides lowering of production (milk and meat), and the terms of trade, heavily affect livestock both in terms of morbidity and mortality. Recurrence of drought at shorter interval will thus have the compound effect of eroding the livestock assets of the pastoral community and, ultimately, aggravating the food security and livelihood problems of the communities, making them more vulnerable and dependent on relief handouts (Beruk, 2003a).

Similar to other countries in the Horn of Africa, agro-pastoralism in Ethiopia has been spreading into purely pastoral rangelands as people have increasingly adapted to farming over the last few hundred years, particularly the last 100 years (Holt,1989). Farming could be considered both a response to food insecurity as well as an economic diversification (Gufu, 1998).

The emergence of agro-pastoralism could be partly associated with the decline in range resources as well as decrease in both livestock numbers and productivity. This compounded situation may have forced pastoralist to resort to agro-pastoralism. According to a study by International Livestock Center for Africa/ILCA (1984), there was little cultivation in the former Eastern Hararghe until the 1940s. According to CEDEP (1999); as cited in Beruk (2003b), 127,000 hectares (out of 339,688) in Teferi ber (Awbare) *Woreda* and 220, 000 hectares (out of 619,940) in Kebribayah *Woreda* have been converted to crop cultivation. In both *Woredas* the areas converted to crop farming range between 36-38% of the total

available land. In addition, according to a survey conducted in the Ogaden area by Save the Children UK, Holt and Lawrence (1991) indicated that about 32% of the rural people in the area have become agro pastoralists.

Agro-pastoralists may be described as settled pastoralists who cultivate sufficient areas to feed their families from their own crop production. Agro-pastoralists hold land rights, use their own or hired labor to cultivate land and grow staples. While livestock are still valued property, their herds are on average smaller than other pastoral systems, possibly because they no longer solely rely on livestock and depend on a finite grazing area around their village which can be reached within a day. Agro-pastoralists make greater investment in housing and other local infrastructure and if their herds become large, they often send them away with more nomadic pastoralists (Blench, 2001).

Agro-pastoralism is often also the key to interaction between the sedentary and mobile communities. Sharing the same ethno-linguistic identity with the pastoralists they often act as brokers in establishing cattle-tracks, negotiating the 'camping' of herds on farms, which potentially exchanges crop residues for valuable manure, and arranging for the rearing of work animals which adds value to overall agricultural production (Blench, 2001).

According to Beruk (2003b), agro-pastoralism could be taken as a form of farming system combining both livestock and crop production. Also according to Holt (1995), agro-pastoralism is a broad term which has become popular recently to refer to agricultural production system which incorporates some form of crop cultivation at the same time as a pastoral, livestock rearing at particular area of land, usually referred to as a farm.

Agro-pastoralism is very underdeveloped which is characterized by low production and productivity, vulnerable to serious environmental and agro-ecological degradation, food shortage and recurrent drought (ERA, 2003). The reality in the agro-pastoral areas is that, because of climatic and man-made problems and lack of adequate policy support on the part

of the government, the agro-pastoral communities have become food insecure to such an extent that their livelihood is threatened, thereby making them more susceptible to external shocks, such as drought.

2.7 Determinants of Household Food Security

In much literature of food security three core determinants of household food securities are drawn (Omosa, 1998; Alamigir and Arora, 1991; Hubbad, 1995; and Gittinger, et.al, 1987). These distinctions include availability, access and utilization dimensions. Availability factor refers to the preference of sufficient food for all people through production and purchase. Availability of sufficient food is determined by domestic food stock, commercial food imports, food aid and domestic food production.

The general environment, household resources and shocks determine the household access to food. The household resources include the household income, intra-household distribution of income, price of food and bargaining power of the household. Thus, food insecurity can be traced back to lack of adequate purchasing power. Basically, there are four forms of household entitlements, which can be converted into purchasing power such as production based, own-labor, trade based (inheritance) and exchange (Drez and Sen, 1989). A household would be afflicted by food insecurity if the purchasing power obtained from the sum of these entitlements at a given period of time, were not adequate to meet target consumption levels. The capacity of a household's purchasing power would be dependent on not only on the size of these ownerships but on the prices of these ownerships relative to the price of food.Similarly, the country's political environment, marketing systems, food import conditions, and monetary policies and so on affect the access of household to food. The access to food by a particular household is also determined by whether there is shock or not. These shocks can be defined by the presence of droughts, natural disasters and conflicts. The other core determinant of household food security is the utilization

dimension- the appropriate use of the available food. The feeding patterns, the cooking processes, the women's time, and the conditions of health of household members determine the utilization dimension. Based on these contexts, the determinants of household food security are depicted as follows.

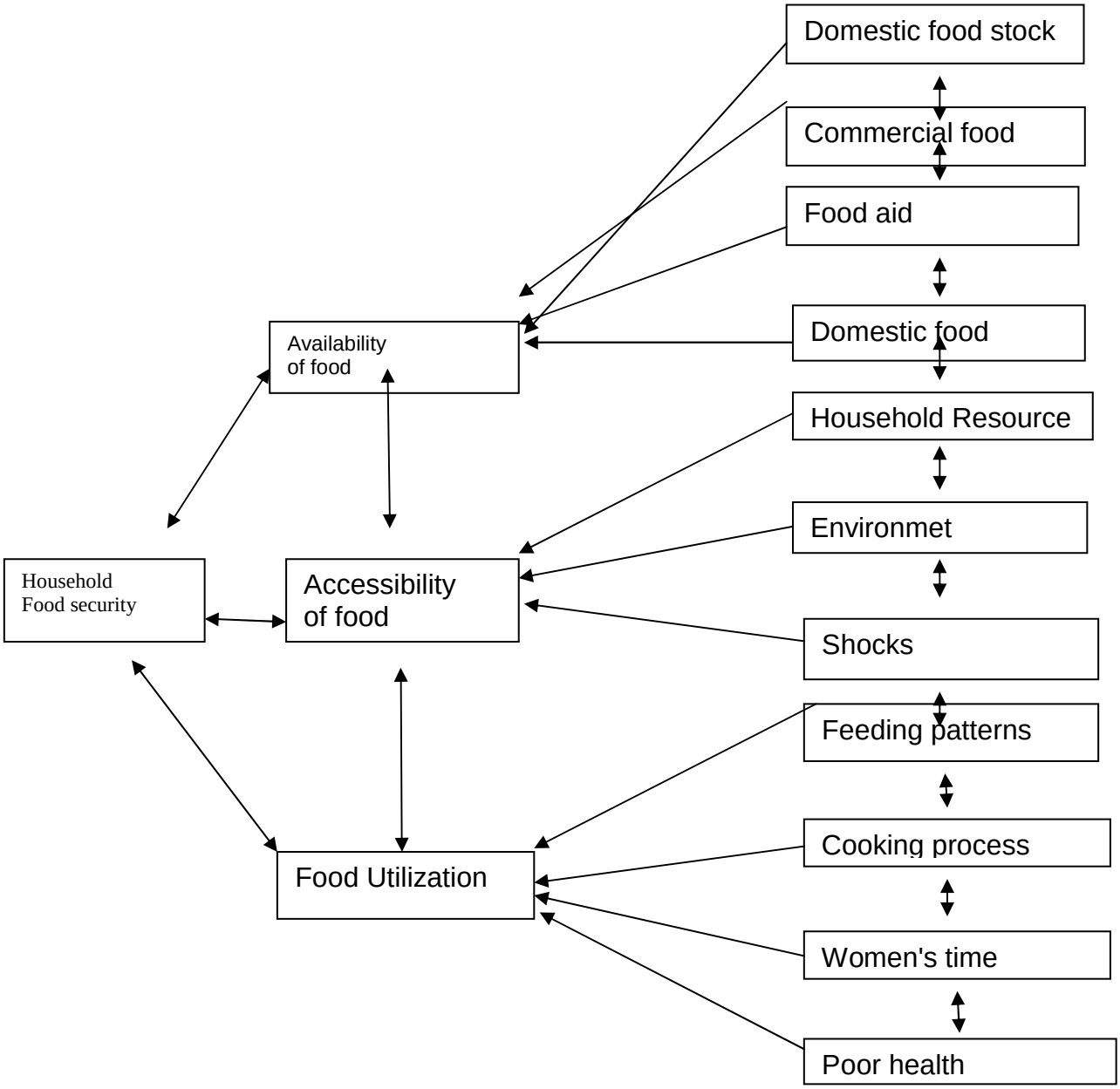

Figure 2.1.Conceptual framework of household food security
Source: Organized by the author, 2012

Determinants of food security can be measured by food production, food stock, export, and import of food in the case of availability. In the case of food accessibility, it can be measured through household income and expenditure, which constitute household composition, household expenditure patterns, calorie intake, consumption of major products and socio-economic characteristics. The household access to food can also be measured through adult equivalent units or weighting based on caloric requirements. This kind of concept allows a number of measurements to be computed including food energy deficiency, diet quality, and vulnerability. It further, allows identifying target groups and monitoring interventions and it seems more reliable where as in the case of food utilization, individual dietary surveys are carried out to judge accuracy of diet to meet requirements and identify linkages between dietary risk factors and health outcomes.

According to FAO, the real indicator used in measuring food utilization is dietary energy supply (DES) reflected in the kilocalorie, thus food insecure is the proportion of population whose daily food consumption is below the minimum daily requirement (2100Kcal/day). In the case of Ethiopia, the total calorie intake per individual per day is 2211kacl (CSA, 2001), which is almost equal to the minimum requirement.

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter study area methods used data collection tools and techniques are described.

3. Description of the Study Area

3.1 Location of the study area

Kabribeyah woreda is located 50 km away from the regional capital town Jigjiga. It is one of the seven districts of Jijiga zone of Somali Regional State (SRS). It is bounded by Somalia in the north eastern, Jigjiga district at the north and Harshin districts at the east, Fik zone at the south west. The population of Kabribeyah is 165,422 people with demographic distribution of 89644 men and 75777 women. The population growth is fast and 25491 of its population residences in urban whereas 139,931 lives in rural area. Concerning household size, a rural household has an average size of 6.7 while the urban has 6.3. The average household size for the Jijiga Zone is 5.9, less than the average for the Somali Region, which is 6.7 (CSA, 2007).

Geographically it lies 9^0, 25’ and 9^0, 44’, North Latitude and 42^0, 43 and 43^0, 32’East Longitude. The total area of the district is 407,870 hectares; the population in Kabribeyah district is mainly from Somali tribes' which are Muslim in religion and 100% agro pastoralists in occupation.

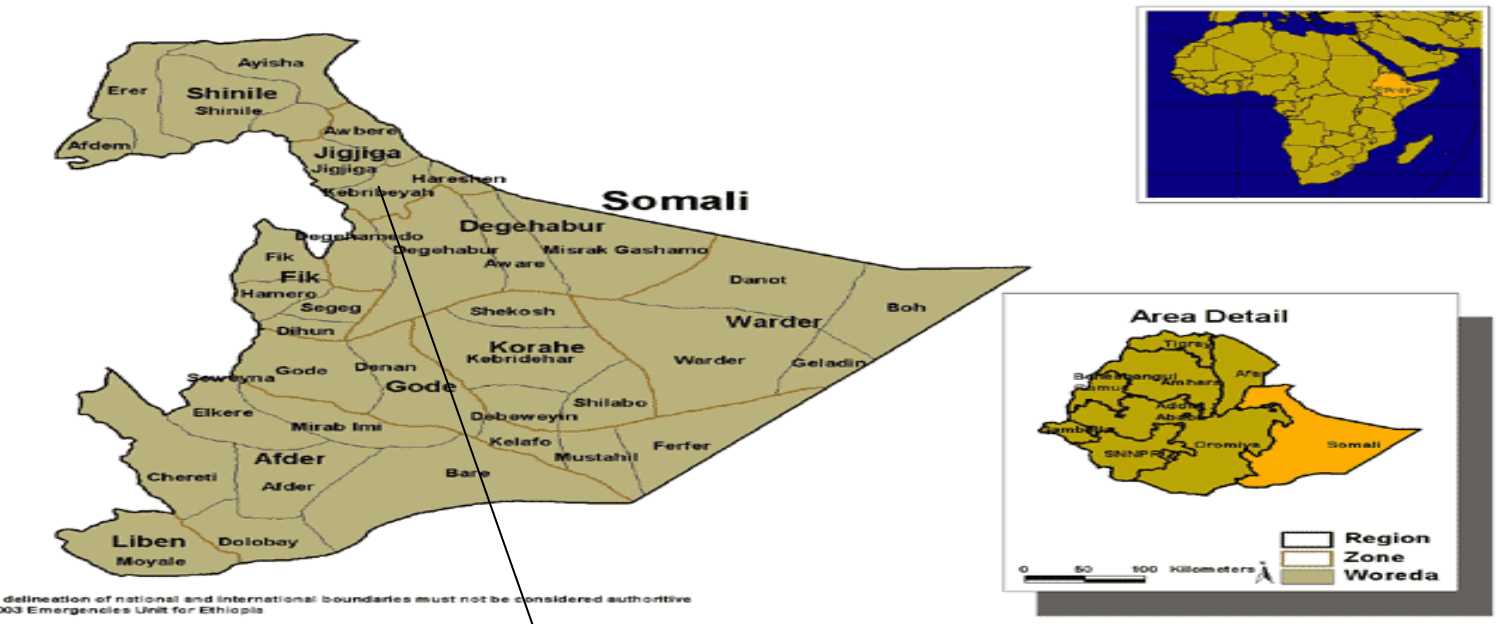

Figure 3.1 Area of the study
Source UN OCHA Ethiopia 2003.

3.2 Farming system

The major crops grown in the study area are sorghum & maize (cereals), tomato and onion (Vegetables) and coffee and chat (perennials). More than 50 percent of sample farmers do not have land for vegetable and perennial crop production. However, as revealed from the survey result every household in the study area own land for cereal production. Moreover, 95 percent of the total farm size allotted for cereals was occupied by sorghum and only 5 percent is shared by maize. The average farm size for cereal, vegetable and perennial crop production owned by sample respondents was 0.58 ha, 0.05 ha and 0.10 ha, respectively.

The farming system in the district is characterized by agro-pastoral system. Crop husbandry practice land preparation mostly carried out using *plough* and in some parts using tractor plough. The major crops grown in the study area are sorghum & maize (cereals), tomato and onion (Vegetables) and coffee and chat (perennials). More than 50 percent of sample farmers do not have land for vegetable and perennial crop production. However, as revealed from the survey result every household in the study area own land for cereal production. Moreover, 95 percent of the total farm size allotted for cereals was occupied by sorghum

and only 5 percent is shared by maize. The average farm size for cereal, vegetable and perennial crop production owned by sample respondents was 0.58 ha, 0.05 ha and 0.10 ha, respectively. Production in the district is dependent on rain-fed agriculture mainly undertaken by waiting the rainy season that is twice per year. If rain is not sufficient in amount and do not keep its normal cycle, farmers in the area often face hazards of drought and consequently food shortage.

3.3 Livestock production system

Livestock plays a significant role in the agro-pastoral farming system of the study area.

Livestock types kept by the farmers include camel, cattle, sheep, donkey and goats. Oxen are kept to provide draft power, cows to provide farm households with milk and butter for consumption and sale, donkeys for transporting goods, while sheep and goats are mainly kept for sale as well as for their meat. The feed sources commonly used for livestock include natural grazing and crop residues.

The contribution of natural pasture as sources of feed is very limited due to the extensive coverage of the land by crops; livestock rearing is a source of income, way of life and their prestige which is closely correlated with the size of their herd. They enlarge their herd when they have surplus money and convert it to cash when they need money. They consider livestock like a bank especially camel. At present, livestock based farming is becoming reduced. On the one hand, due to the ever-increasing trend of population growth, even marginal lands are becoming under cultivation, the other cause for the reduction of animal population in the area is that farmers use traditional and extensive system of animal production that cannot cope up with the prevailing shortage of grazing land.

The major livestock production constraints are disease and lack of feed. Shortage of animal feed is closely associated with the wide spread resource degradation in the area.

Crop fields fail to produce adequate bio-mass that supports the existing livestock. Forage trees in communal lands were destroyed due to increasing sell of fire wood and charcoal. Grazing lands were taken over by croplands (Tesfaye, 2000).

3.4 Infrastructure

One of the preconditions for rapid economic and social development of a given society is the availability of physical infrastructure such as road, water supply, education, health and telephones and these elements has directly and indirectly related promotion of the livelihood in the society.In Kabribeyah, majority of the population obtain drinking water from pond, Berka, shallow well and drilling wells, but some people are located in place that far from water resource. Moreover, the water used for drinking purpose in many areas is not clean due to many factors and causes health hazard both for human and animal.

There is asphalt road which is connected with Jigjiga, Kabribeyah and Dhagahbur. Majority of the existing rural road network are seasonal and due this problem the movement and transportations is restricted and development effort is hampered during rainy season.

There is government intervention of education and health, establishment of schools and health posts but still there is high demand both education and health service.

3.5 Sources and Methods of Data Collection

In this study both primary and secondary data sources were used. Primary data was collected through survey using questionnaire based on purpose of the study from the randomly selected 100 rural households in the Kabribeyah district Kebeles. This questionnaire was pre-tested on non sampled households and improved based on the results obtained from the pre-test. In addition to this questionnaire, personal observation, informal discussion with rural households and development agents was done.Moreover, secondary information and qualitative data about the research agenda was collected from the different regional organizations; Like, Agriculture Development Office, Regional Agricultural

Research Organization, Disaster Prevention and Preparedness Bureau, Central Statistics Authority and NGO's for the various documents related to Food Security information in the region generally, & specifically Kabribeyah district.

Finally, enumerator's were recruited and trained to equip them with the necessary interviewing techniques based on the subject of the research. After the training, enumerators collected the primary data using the questionnaire with close supervision of the researcher.

3.6. Sampling Technique

In this study, a multi stage sampling procedure was used to select sample households. In the first stage, Kabribeyah district was selected purposively (based on personal observation and previous exposure). In the second stage, 4 Kebeles were selected among the 29 Kebeles in the woreda using a random sampling technique. The kebeles are Kaho, Gilo, Hare and Guyo. Finally, as households are the basic sampling unit for this study, 100 households were selected randomly from the 4 Kebeles. The number of households selected from each Kebele was based on probability proportional to HHs size in each kebele. Selection of starting point from the farmers' list was done by a lottery method. Thus, a total of 100 households were selected for the survey as in the table below. The respondents were both women and men.

Table3.1. Sample Kebeles and respective sample size

	Name of kebeles	Total house hold	Sampled household
1	Kaho	300	30
2	Gilo	315	31
3	Hare	221	22
4	Guyo	170	17
	Total		100

Source: CSA, 2007

3.7 Methods of Data Analysis

This study used descriptive statistics for its analysis. The descriptive data analysis method that was used in this study is table, mean, percentage, ratios, frequencies, standard deviation, percentage and frequency distribution. They were used to analyze and compare factors between food secure and food insecure households based on the socio economics characteristics of the samples.

3.8. Measuring food security status

The households' food security status was measured by direct survey of consumption. Household caloric acquisition is a measure of the number of calories, or nutrients available for consumption by household members over a defined period of time. The principal person responsible for preparing meals is asked how much food was prepared for consumption over a period of time. After accounting for processing, this is turned into a measure of the calories available for consumption by the household. Data on available food for consumption, from home production, purchase and /or gift/loan/wage in kind for the last seven (7) days before the survey day to the household was collected. This seven days recall period was selected due to the fact that it is appropriate for exact recall of the food items served for the household within that week. If the time exceeds a week for instance 14 days, the respondent may not recall properly what he has been served before two weeks. Also this method was applied in the poverty and livelihood studies conducted at national level by Addis Ababa University in collaboration with International Food Policy Research Institute (IFPRI) and other international organizations.

After that the collected data using seven days recall method, were converted to kilocalorie using the food composition table manual (Ethiopian Health and Nutrition Research Institute/EHNRI, 1997). Then the converted data were divided to household Adult Equivalent (AE). Following this, the amount of energy in kilocalorie (kcal) available for the household was recorded. Then the results were compared with the minimum subsistence requirement per AE per day (*i.e.* 2100 kcal). This means that the value of minimum amount of energy (2100kcal/AE/day) was used as a threshold beyond which the household is said to be food secure and if below, food insecure.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents and discusses the results of households' food security analysis in the study area. The first section of the chapter reports the food security status of the households. The next three sections present socio-economic background, about resource endowment, food aid and institutional characteristics of the sample households. The purpose of these sections is to provide the existing food security status of the sampled HHs. Then, respondents' HHs food insecurity copping strategies are presented and discussed.

4.1 Measuring the food security status of the households

Though the households' food security status can be measured by direct survey of income, expenditure and consumption, in this study, households' food or calorie acquisition/consumption per adult per day is used to identify the food secure and food insecure households. The calorie consumed by the household is compared with the minimum recommended calorie of 2100kcal per adult per day. If the consumption/acquisition is less than the recommended amount, the household is categorized as food insecure and if greater than is considered as food secure.

The reason for use of this measure was that it produces a crude estimate of the amount of calorie available for consumption in the household. Moreover, it is not obvious to respondents how they could manipulate their answers. Because the questions are retrospective, rather than prospective, the possibility that individuals or households will change their behavior as a consequence of being observed is lessened (Hoddinott, 2001). In addition, the reliability of income data in subsistence farming where record keeping is limited is always questionable (Tesfaye, 2003). Of course, it cannot be denied that

measuring food security in terms of income is consistent with objectives of many rural development interventions aimed at raising the level of income of rural households. However, the correlation between income and food security status of household is not always strong (Hoddinott, 2001).

As it is mentioned above the households' food security status was measured by direct survey of consumption. Data on the available food for consumption, from home production, purchase and /or gift/loan/wage in kind for the previous seven days before the survey day by the household was collected. Then the data were converted to kilocalorie and then divided to household size measured in AE. Following this, the amount of energy in kilocalorie available for the household is compared with the minimum subsistence requirement per adult per day (i.e. 2100 kcal). As a result, from all respondent households, 70 sample households were found to be unable to meet the minimum subsistence requirement and only 30 households were found to meet their energy requirement. It means that (70%) of the respondent households were food insecure and (30%) of them were food secure.

Table 4.1.Energy available per AE (Adult Equivalent) in kcal for sample households

Energy available (N=100) per AE in (kcal)	Food insecure (N=70)	Food secure (N=30)	Total
Minimum	1643	2203	1643
Maximum	2092	2886	2886
Mean	1901	2429	2060
Standard Deviation (SD)	119	194	283

Source survey result

4.2 Households Demographic Characteristics

Household's productivity and escaping from food insecurity are determined by various household attributes. The household characteristics are compared to see the difference among food insecure and food secure groups. The variables discussed in this description are those which do have a relationship to the food security status of a household in the study area. Different aspects of a household like age group of the household, the household head's age, sex, marital status, educational level and households access to productive resources like land and livestock, cash income and expenditure etc & household's size in AE were given due consideration.

4.2.1 Household size

Household size, which means number of individual members of a household, is a variable used by many empirical studies on food security to see how it affects food security status of households. The distribution of sample households with regard to household size, measured in AE, showed a statistical difference between food secure and food insecure households.

Family size was considered and hypothesized as one of the potential variables that would have due contribution for food insecurity. The proportion of sample households becoming food insecure increased as the family size increases.As shown in Table 4.2 below, the minimum family size in AE was 1.75. The 1.75 result indicated that household which consists of a husband and wife had an AE of one and 0.75, respectively, which adds up to 1.75 AE. All respondents were married, widowed with few numbers of children or divorced but also having some children which sum up 1.5 AE and more, other than the household head. Unfortunately, no single household head was sampled in this study. The maximum family size in AE was 12.2. From food insecure households (52%) have got a family size which ranges from 5.91 to 12.2. On contrary, only (11.11%) of food secured households, got family size which ranges from 5.91 to 12.2. On the other hand, only (8.33%) of food

insecure and about (39%) of the food secure got a family size, measured in AE, which ranges from 1.75 to 3. This means that the higher the family size, measured in AE, the more it is related to food insecurity status of the households in the study area. The greater the family size the more is the number of dependent family members like children and old aged who cant work. As we can see from Table 4.2 the higher the family size in AE, the more the households becoming food insecure.The mean family size of food insecure and food secure households was 6.21 and 3.94, respectively. The standard deviation of household size for food insecure was 2.11 and that of food secure was 1.96, while that of the total respondent households was 2.892

Table 4.2 Distribution of sample households by family size in AE

Family size (N=100)	Food insecure (N=70)		Food secure (N=30)		Total	
in AE	Number	Percent	Number	Percent	Number	Percent
1.75 - 3.00	6	8.57	12	38.89	18	18
3.01 - 4.99	13	18.57	12	38.89	25	25
5.00 - 5.90	15	21.43	3	11.11	18	18
5.91 - 12.20	36	51.42		11.11	39	39
Mean	6.21		3.94			
SD	2.11		1.96			
Minimum			1.75			
Maximum			12.2			
Sum			663.48			
T-value			5.517**			

*** Significant at less than 1% probability level
Source: survey result

4.2.2. Dependency Ratio and Age of Household Heads

Dependency Ratio: With respect to the specific characteristics of food insecure and food secure households, dependency ratio was hypothesized to be positively or directly related with food insecurity. So, households with large dependency ratio tend to be food insecure than those with small ratio. Accordingly, the statistical analysis showed that there is significant difference at less than 1 percent probability level in the mean dependency ratio between food insecure and secure households, which is 1.35 for food insecure and 0.92 for the food secure households (4.3).

Table 4.3 Distribution of sample households by dependency ratio

Dependency ratio	Food secure(N=70)		Food insecure(N=30)		Total(N=100)	
	Number	Percent	Number	Percent	Number	Percent
< 1	21	30	14	46.7	35	35
1-2	37	52.9	16	53.3	53	53
>2	12	17.2	-	-	12	12
Total	70	100	30	100	100	100
Mean	1.35		0.92		1.23	
SD	0.84		0.64		0.82	
T-value			2.888***			

*** Significant at less than 1% probability level.

4.2.3 Age and sex of the household heads

The average age of household head of surveyed households was 45 years. The age range of all respondents ranged from 20 to 77 years. On comparison, (41.43%) of the food insecure households fell within age category of 51 to 64 years, while only (10%) of the food secure

households fell within the same category. On the other hand, (70%) of food secure households were under the age category of 20 to 35 years, while only (14.29%) of food insecure households had age which were under the same category. The mean age of food insecure and food secure households were 48 and 35, respectively.

The sex of respondent household heads had shown a variation due to the fact that there were few numbers of female headed households. From food insecure, (63%) of them and (29%) of food secure ones were male headed households. While only (6.7%) of the food insecure households and (0.8%) of food secure ones were female headed households. On the other hand, out of the whole sample, (92.5%) were male headed while the remaining were female headed households. From the table 4.4 we can observe that the mean age of the respondents in the food secure house holds is less than the mean age (35.25) of the respondents in the food insecure household heads (48.62).Off the total food secure HHs (70%) of the them fall under 20-35 age group where as only (10%) of the food insecure HHs fall in these age group, indicating that age of HHS and food security has relations. The Chi-square test had shown that the sex of the respondent head was 1.653.

Table 4.4 Distribution of household head by age groups

Age group (N=100) (Years)	Food insecure (N=70)		Food secure (N=30)		Total
	Number	Percent	Number	Percent	Number Percent
20 – 35	10	14.29	21	70	31
36 – 50	23	32.85	5	16.67	28
51 – 64	29	41.43	3	10	32
65 – 77	8	11.43	1	3.33	9
Mean	48.62		35.25		
SD	11.448		11.495		
Minimum			20		
Maximum			77		
t- value			5.855***		

*** Significance at less than 1% probability level

Source: survey result

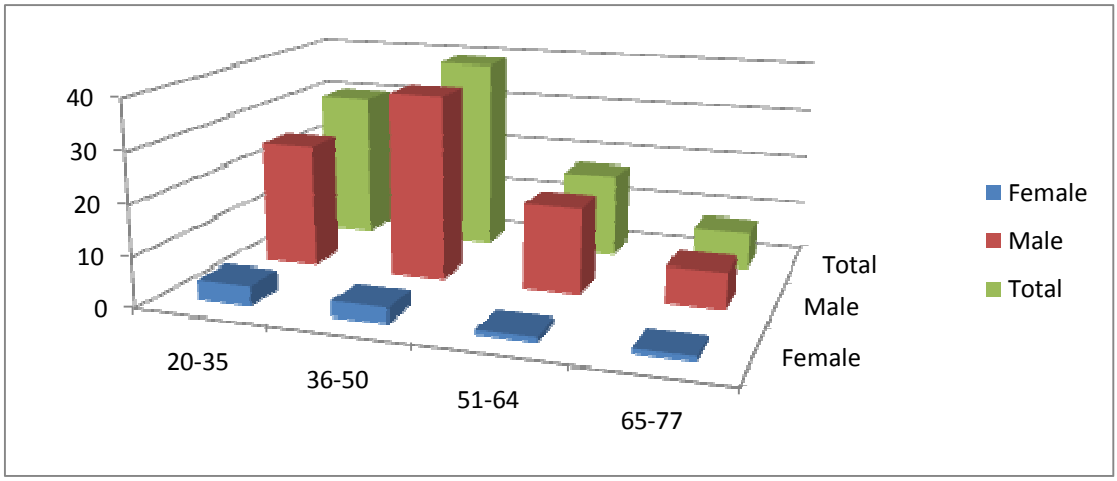

Figure 4.1 Age category and sex of the household heads

Source: survey result

4.2.4 Marital status of the household heads

The majority of the respondents (84%) were married, while (9%) and (7%) of the respondent household heads were divorced and widowed, respectively. The marital status of food insecure, food secure and all respondent cases was presented in Table 4.5.

Table 4.5 Distribution of household heads by marital status

Marital status of (N=100) The HH heads	Food insecure (N=70)		Food secure (N=30)		Total	
	Number	Percent	Number	Percent	Number	Percent
Married	59	84.52	25	82	84	84
Divorced	6	8.33	3	10	9	9
Widowed	5	7.14	2	7	7	7.

Source: survey result

4.2.5 Educational level of the household heads

It was hypothesized that literate household heads are more productive than the illiterate. The survey result indicated that the educational status of the head of the households inclined to illiterate and to those who can read and write Arabic language. About (40%) of food insecure households, (20%) of the food secure group and (34%) of all respondents were illiterates. With regard to the respondents who read and write Somali, (15.71%) of food insecure households and only (10%) of food secure ones could read and write Somali language. No members of the food secure HHs & food insecure HHs heads have completed grade twelve. About (5.71%) of food insecure households and (6.7%) of food secure households had an educational level which ranges from grade one to four. On average the proportion of literate food secure household heads were larger than the proportion of literate food insecure household head. The distribution of respondent household heads educational level is presented in Table 4.6.

Table 4.6.Distribution of households by level of education

Level of Education	Food insecure (70)		Food secure (30)		Total (100)	
	Number	Percent	Number	Percent	Number	Percent
Illiterate	28	40	6	20	34	34
Read and write Somali Language	11	15.71	3	10	14	14
Read and write Arabic Language	19	27.14	9	30	49	49
Grade1-4	4	5.71	2	6.7	6	6
Grade5-8	6	8.57	7	23.3	13	13
Grade 9-12	2	2.85	3	2.5	5	5
>Grade 12	0	0.0	0	0.0	0	0
t-value			-2.733**			

** Significant at less than 5% probability level
Source: survey result

4.3 Resource Endowment and Remittances

This sub section also presents the different aspects of resource endowments such as, livestock resources and cultivated crop land in hectare were also given due consideration. In addition to these, remittances the household's get is also used to show the different characteristics of food insecure and food secure households.

4.3.1 Cultivated crop land holding

From any other productive resources land is by far the most important resource in agriculture. The fertility status, location and other attributes of land in association with its size made it a binding resource in agriculture. In the study area the land holding size per household was higher, as it is in the rest *woredas* of the zone. As indicated in Table 4.6, the average land holding was 3.15 hectares per household. The cultivated land holding had a range which ranged from 0.4 hectare to 16 hectares. About (57%) of food insecure, (27%) of food secure respondents and (48%) of all respondents possessed cultivated crop land, which

ranges from 0.4 hectare to 2 hectares. The mean cultivated land size of food insecure and food secure households was 2.65 hectare and 4.3 hectares, respectively. The minimum cultivated land size was 0.4 hectares while maximum was 16 hectares.

Table 4.7.Distribution of sample farmers by cultivated land size

Land size in Ha (N=100)	Food insecure (N=70)		Food secure (N=30)		Total	
	Number	Percent	Number	Percent	Number	Percent
0.4 – 2.00	40	57.14	8	26.66	48	
2.01 – 3.50	11	15.71	7	23.33	20	
3.51 – 5	12	17.14	8	26.66	20	
5.01 – 7	4	5.71	4	13.33	8	
7.01 – 16	3	4.28	3	10	6	
Mean	2.65		4.30			
SD	3.407		2.296			
Minimum			0.4			
Maximum			16			
Sum			377.8			
t- value			-2.651**			

** Significant at less than 5% probability level
Source: survey result

4.3.2 Livestock resources

Livestock production plays an important role both in the crop producing and agro pastoral areas of the study area. Livestock provide milk, meat, traction power and transport. Livestock that are owned by the sample households include camel, cattle, sheep and goat, equine and poultry.

A. Herd composition

As shown in Table 4.7, the respondent households had got a different composition of livestock. Among these, food secure households got an average 3.6 heads of sheep, food insecure ones possessed 5.44 heads of sheep on average and 9.04 sheep was possessed by all

the respondent household heads. On the other hand, food secure households had a non-milking cow population of about 2 on average, while food secure households got on average of 1.5 non milking cows.

Table 4.8. Average herd composition holding of the sample households

Animal type	Food insecure (N=70)	Food secure (N=30)	Total (N=100)
Oxen	0.14	0.36	0.5
Young bulls	0.81	0.34	1.15
Milking cows	1.46	0.83	2.28
Non-milking cows	2.01	1.51	3.52
Sheep	5.44	3.6	9.04
Goats	2.99	1	3.99
Donkeys	0.4	0.16	0.56
Camels	0.11	0.35	0.46

Source: survey result

B. Oxen ownership

Livestock is an integral part of crop production activities in the study area. It providessubstantial non-human labor and manure to the soil. With regard to the contribution of labor, oxen ownership is an important variable. In the study area, survey esults in Table 4.8 show that, the oxen ownership per household had ranged from zero to 4. While, the average oxen holding per household was 2. About (23.33%) of food secure households possessed two oxen, while only (1.43%) of food insecure households possessed 2 oxen. On the other hand, No food insecure HHs got 4 oxen; while about (10%) of food secure households had the same number of oxen. Also about (80%) of food insecure, (40%) of food secure households and (68%) of all respondents got no ox at all. The total oxen owned by all respondents were 50. The mean ox holding for food insecure households was 0.2, whereas that of food secure was 1.39.

Table 4.9.Distribution of sample households by oxen ownership in number

Oxen owned In number	Food insecure (N=70)		Food secure (N=30)		Total (N=100)	
	Number	Percent	Number	Percent	Number	Percent
0	56	80	12	40	68	68
1	13	18.57	7	23.33	20	20
2	1	1.43	7	23.33	8	8
3	0	0	1	3.33	1	1
4	0	0	3	10	10	10
Mean	0.2		1.39			
SD	0.433		1.238			
Minimum			0			
Maximum			4			
Sum			50			
t-value			-4.687***			

*** Significant at less than 1% probability level
Source: survey result

C. Livestock ownership in TLU

There was a variation among the respondents with regard to TLU owned which ranged from zero to 151.2 TLU per household for all respondents. As Table 4.9 shows, about (30%) of food insecure respondents and (43.33%) of food secure households had TLU which varied from 9.01 to 15. The mean livestock holding in TLU for food insecure households and food secure ones were 8.35 and 13.9, respectively. The standard deviation was 4.74 for food insecure households while 24.27 for food secure group. The average livestock holding measured in TLU was 10.07 for all respondents. On the other hand, the total number of livestock possessed by all respondents was 1,201.96 TLU.

Table 4.10.Distribution of sample households by livestock holding in TLU

Livestock holding in TLU	Food insecure (N=70)		Food secure (N=30)		Total (N=100)	
	Number	Percent	Number	Percent	Number	Percent
0	3	4.28	0	0	3	3
0.70 – 4	7	10	2	6.66	9	9
4.10 – 7	17	24.28	8	26.66	25	25
7.01 – 9	14	20	3	10	17	17
9.01 – 15	21	30	13	43.33	34	34
15.01 – 151.20	8	11.43	4	13.33	12	12
Mean	8.35		13.9			
SD	4.74		24.27			
Minimum			0			
Maximum			151.2			
Sum			1201.96			
t-value			-1.359			

Source: survey result

4.3.3 Remittances

In this study, remittances refer only to economic support from relatives in terms of money sent to the household. Somali's have a culture which encourages helping each other. According to Table 4.10, the economic support from relatives, in terms of money, given to the respondent households ranged from 200 to 1200 Eth. Birr. About (26%) of the all the respondent households got economic support from their relatives. Out of the total number of food insecure respondent households, (14.28%) of them had got economic support from relative, while about (53.33%) of the food secure HHs got remittance from relatives. Overall, the total sum/amount of money transferred to about (26%) of all respondent households by their relatives was 20100 Eth. Birr. I

Table 4.11. Distribution of sample households by remittances earned in (Birr)

Money support in (Birr)	Food insecure (N=70)		Food secure (N=30)		Total (N=100)	
	Number	Percent	Number	Percent	Number	Percent
200	2	2.86	3	10	5	5
300	1	1.43	2	6.67	3	3
400	2	2.86	4	13.33	6	6
500	2	2.86	4	13.33	6	6
800	1	1.43	2	6.67	3	3
1000	1	1.43	1	3.33	2	2
1200	1	1.43	0	0	1	1
Total	10	14.28	16	53.33	26	26
Mean	181.43		246.67			
Minimum			200			
Maximum			1200			
Sum			20100			

Source: survey result

4.3 Household income and expenditure

Household income: Household income in the study area not only depends on the agricultural potential and the relative price obtained by the farmers for agricultural produce and livestock and livestock products, but also on the time of sale and the type of off farm activities a household performs. In the study area, as it is observed from the survey results the relative share of income from livestock to the total annual household income is the largest. Hence, livestock production is the most important source of income in the study area. It is followed by l cereal production, and off-farm activity, respectively.

The average household income per AE of the sample households was found to be Br. 376.87. Most of the sample farmers earned average annual income below or equal to 250 Br./AE. All households in this income level are food insecure and their proportion from the total sample is amounted to 37.4 percent. It is only 17.4 percent of the sample households earn that average household income over 600 Br.AE. Of this proportion 90 percent is food

secure and only 10 percent is food insecure. The group statistics also showed that there is significant difference in income of household/AE between the food secure and food insecure household groups at less that 1 percent ($p<0.01$).

Where household income/AE in the food insecure group is 285.49 Birr, This amount is by far less than the mean income of the sample. However, the mean income of food secure households is 661.41 Birr per AE. The gap between the two groups is highly substantial. More than 94 percent of the food insecure sample households earn an annual average income less than Br. 500 per AE. Where as the corresponding proportion for the food secure households is only 14.2 percent. In the contrary, more than 85 percent of the food secure sample farmers earn an average annual income greater than 500 ETB per AE while only 5.78 percent of the food insecure earns the same amount.

4.4 Institutional Characteristics

This sub-section presents different institutional services available in the area. The first two sections present the services of agricultural extension and formal credit in the study area. The next section provides a brief exxplanation about the input and output market situations. The final section concludes by presenting about agricultural inputs.

A. Extension service

Though there is an agricultural office in the woreda and extension agents assigned to rural araeas in the *Woreda* much work is not done regarding extension service in the sampled kebeles. As it was discussed with group discussions in Kaho, Gilo, Durya and Guyo kebeles they have never used extension service. They never used inputs for agricultural production and due to lack of awareness and weak extension service in the Region in general and the study *Woreda* in particular, the agro-pastoralists could not benefit from the extension service. This obviously had bad implication in the agro-pastoral production system which might benefit more if it is functioning as intended.

B. Formal credit service

This study found out that there was no formal credit service available in most parts of the study *Woreda*. Except the project called Women Development Initiatives Project (WDIP), which gave a credit for 35 women in kebribeya town two years ago. But there are no other formal credit lending institutions available in the rural areas. The formal credit sources are Agriculture Bureau's, micro-finance institutions, banks and the like. Agro-pastoralists of the *Woreda* do not have accessed inputs on credit bases. The only available source of credit to these people was the informal sources.

The informal sources are local level money and grain lenders who got a small shop in the road sides near to the agro-pastoral villages in the *Woreda*. And most of the respondents got a credit in terms of money and grain, most of the time, from these informal sources. It is unquestionable that the importance of formal credit in agro-pastoral context where rain fed crop and animal production is practiced. The provision of formal credit helps agropastoral households to divert to other income generating livelihood styles like export of livestock and livestock products by organizing themselves. In general, the availability of formal credit may help agro-pastoralists in their efforts to cope with food insecurity.

C. Input availability

This study also found out that there were no access to inputs such as fertilizers, improved seeds, improved breeds, pesticides and the like. Also Mahdi, (2005) find out the same result with regard to the access to inputs. The input availability is related to both extension and formal credit services. Appropriate types of inputs should be available through proper extension service and credit provision in order to ensure food security in that agro-pastoral context.

D. Market availability

The distance taken to travel from home to the nearest market place ranged from an hour of walk to four and half hours of walk. The kebribeya market is one of the known markets for agro-pastoralists who are nearer to the town. The agro-pastoralists of the *Woreda* had also used markets in the neibhouring woredas such as Jijiga and Togochale to sale and buy inputs. Market is an important for the agro-pastoralists from food security point of view. It is where they sale their animals in normal and food insecure situations to cope with. But what happened at the food insecure times was that as most agro-pastoralists want to sale their livestock as copping strategy and the prices of livestock would dramatically decline. On the other hand food insecurity and recurrent drought had been the occurrences of most years where mortality of livestock was high and agro-pastoralists depleted their remaining livestock by selling at unfair prices.

4.5 Food Aid Received

This is an important variable which have practical implication in supporting the capabilities for copping. Food aid plays a role in giving relief to those households who are perceived to bemost at risk of severe food insecurity. The study found out that most respondents did not received food aid for the last six months by the time of the data collection period (February to March 2012). Besides, most respondents were unwilling to give information about the issue. Because of fear of exclusion from food aid receiving if they told that they receive it. But attempts were made to get the information with regard to food aid distribution from DPPB. The food aid distribution for the year 2010 E.C.

Table 4.12.Food aid distributed to kebribeya *Woreda* in 2010 G.C.

Month of distribution	Quantity of Wheat distributed in Quintals
September	8,760
October	8,760
November	8,760
February	5,330
April	5,434

Source: (DPPB, 2010a).

4.6 Household Copping Strategies

Households had been using different means to cope when they face food insecurity. Their coping mechanisms were adapted depending on how bad the crisis are and what they experienced to do in order to manage their situations. Agro-pastoral communities were highly vulnerable to food insecurity. Vulnerability to food insecurity is aggravated by peoples' internal capacities to cope with the shock, and depend on factors such as social networks, assets, and political status. Households in the study area use different copping strategies during food insecurity period that is at the initial and later or severe cases of the condition. The following two sections presents the different copping strategies practiced by the agro pastoralists and the discussion of the findings follows.

4.6.1 Initial stage strategies

Households interviewed mentioned 14 different copping strategies they practiced in the past during food insecurity. Of all respondents, 79% employed borrowing cash or grain from others (relatives or neighbors) as copping strategy; 72% reduced the number of meals served to their households; and 61% reduced amount and quality of meals that their households consume and 53% of all respondent households cope with by selling of livestock. On the other hand, 78.57% of food insecure households and also 80% food secure respondent households cope with by borrowing cash or grains from others. About 83% of food secured

and 67% of food insecure households cope with by reducing number of meals that served for their household per day. Also 60% of food insecure and 63% of food secure households cope with food shortages by reducing the size of the meal served for their household members. Lastly, 43% of food secured and 57% of food insecure households cope with by selling their livestock. In addition to these, different copping strategies were followed by the respondent households which are indicated in Table 4.14.Livestock sold at initial stage of food insecurity were shoats, while in the severe stage of food insecurity oxen and cows were sold more.

Table 4.13.Types of coping strategies at initial stage of food insecurity

Practiced Strategies	Food insecure (N=70)		Food secure (N=30)		Total (N=100)	
	Number	Percent	Number	Percent	Number	Percent
1. Sales of Livestock	40	57.14	13	43.33	53	53
2. Borrowing cash or grains from others	55	78.57	24	80	79	79
3. Reducing number of meal	47	67.14	25	83.33	72	72
4. Reducing size of meal	42	60	19	63.33	61	61
5. Sale of firewood and charcoal	27	38.57	10	33.33	37	37
6. Participate in food for work	6	8.57	1	3.33	7	7
7. Received Food aid	4	5.71	1	3.33	5	5
8. Seasonal migration (some of the family members)	5	7.14	2	6.66	7	7
9. Go for begging	2	2.86	0	0	2	2
10. Making mortar and selling	3	4.28	2	6.66	5	5
11. Becoming temporary trader	9	12.86	23	76.66	32	32
12. Eat wild food	14	20	9	30	23	23
13. Remittances (Relative Economic support)	15	21.42	15	50	30	30
14. Become daily labor	7	10	1	3.33	8	8

Source: survey result

4.6.2 Severe stage strategies

The households in the study area used to practice various copping strategies in a different manner at severe stage of food insecurity. Out of all respondent households, (79%) cope with by selling their livestock, (67%) by seasonally migrating (migration is by some members of the family members), (52%) by getting remittances in terms of money and (51%) cope with by selling fire wood and charcoal. All respondents of food secure households got remittances, while only (31.4%) of the food insecure groups depend on remittances as a copping strategy. On the other hand, (63.3%) of food secured and (69%) of food insecure households cope with by seasonally migrating to other areas. Also (76.7%) of

food secured and (40%) of food insecure households cope with by selling firewood and charcoal in the towns such as Kebribeya and Jijiga.

Table 4.14.Types of coping strategies at severe stage of food insecurity

Practiced Strategies	Food insecure (N=70)		Food secure (N=30)		Total (N=100)	
	Number	Percent	Number	Percent	Number	Percent
1. Sales of Livestock	51	72.8	28	93.3	79	79
2. Borrowing cash or grains from others	24	34.2	7	23.3	31	31
3. Reducing number of meal	29	41.4	13	43.3	51	42
4. Reducing size of meal	28	40	14	46.7	42	42
5. Sale of fire wood and Charcoal	28	40	23	76.7	51	51
6. Participate in food for work	20	29	8	26.7	28	28
7. Received Food aid	16	23	8	26.7	24	24
8. Seasonal migration (some of family members)	48	69	19	63.3	67	67
9. Go for begging	1	1.4	4	10	5	5
10. Making mortar and selling	7	10	5	13.3	12	12
11. Becoming temporary trader	20	28.6	9	30	29	29
12. Eat wild food	13	18.6	8	26.7	21	21
13. Remittances (Relative Economic support)	22	31.4	30	100	52	52
14. Become daily labor	25	35.7	11	36.6	36	36

Source: survey result

By initial stage of food insecurity, we refer to the beginning time of the situation where different conditions are responsible for it. For instance, rainfall shortage for a year, other factors kept constant, is likely to cause crop failures which result temporary/initial stage food insecurity. But when the shortage of rainfall, for instance, lasts for two and more consecutive years, severe food insecurity is likely to occur. In both situations households used to cope with by practicing different copping strategies.

During initial stage of food insecurity, the rural households cope with more frequently by borrowing cash or grain from neighbors or relatives, and by reducing both the frequency/number and size/amount of meals that served for their household members. On the other hand, they cope with selling of livestock, by seasonally migrating to towns in search of work (daily laborer, which is also one of the copping strategies to food insecurity if the opportunities are there) or to other rural areas with few numbers of livestock, by receiving income through remittances, and by setting at far mountainous areas to collect firewood and make charcoal in order to sell at major towns like Kebribeya and Jijiga.

The copping strategies pastoral and agro-pastoral communities have accumulated and practiced through their indigenous institutions for generations have been eroded due to several factors. Erosion of the safe copping strategies leaves only irreversible and risky survival strategies; their practice makes households even more vulnerable (Beruk, 2003b). In any stage of food insecurity (initial or severe), agro-pastoral households practice different copping strategies but with low frequency. The less frequently practiced copping strategies were: becoming temporary traders*, by making mortar from trees and selling in main towns inside the country or outside as well, by working as daily labor in nearby towns or areas, by participating in the food for work program and by eating wild foods were found out by this study.

Even if the agro-pastoralists used to cope with by selling livestock, at both stages of food insecurity, livestock market price did not became stable. The agro-pastoralists sale their animals to cope with at both stages of the situation, (livestock sold in the initial stage of food insecurity were mostly shoats, while in the severe stage of food insecurity oxen and

cows were sold). But at both stages the market price of the livestock decreased, while that of the grain increased. This is due to the fact that once food insecurity hit the area; most agropastoral households want to cope with by selling livestock but number of buyers decreased in number. This strategy might be no more viable as the average livestock holding was decreasing and livestock mortality rate increased on the other way. This situation in combination to recurrent drought and food insecurity hit the agro-pastoralists consecutively most years. There was a decrease in asset especially in livestock since it is used as a copping strategy year after year. Studies in Somali

Region, indicated that the livestock mortality rate following the 2002/2003 E.C drought ranged between (5-12%) for camel, (30-80%) for cattle, (30-60%) for sheep, and (20-30%) for goats in Gode, Jijiga Afder, Korahe and Warder Zones (DPPC, 2003).

On the other hand, the rural people cope with by borrowing cash or grain. This was an informal credit service which might be unreliable and without credit and saving trainings. No formal credit service provider institution is available in the study area. The availability of formal credit service would greatly help the agro-pastoralists in their efforts to cope with food insecurity. Most respondents were dependent on their social network to cope with food insecurity. If they had children working in the city or in town they sent them money to buy food or they brought food for them. This social network, which is one of the well known cultural practices of Somali people, was also among one of the most frequently used copping strategies. But due to poor availability of financial institutions such as banks, the agro-pastoralists travel long distance to towns to receive their claims and they delay in collection of their cash.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

This chapter is the last chapter of this thesis. It contains a brief narration of the objectives, research methodology, findings and the copping strategies that are practiced by the agro-pastoralists. Finally, from the findings of the investigation, conclusions were drawn and useful recommendations, which have policy and intervention implications, were developed.

5.1 Summary

Agro-pastoralism is the mainstay of the Somali Region's economy and plays a predominant role in the development of the region but also the country at large. However, despite huge amount of potential livestock, the sector is very underdeveloped and is characterized by low production and productivity, recurrent drought and food shortage. Food security status of agro-pastoralists of Kebribeyah *Woreda* is below normal.

The objectives of the study were to assess food security status, identify the determinants of food insecurity status and to identify local food insecurity coping strategies employed by rural households of the study area. First, kebribeya woreda was selected purposefully on the basis of personal observation and previous exposure. Second, four kebeles out of all the 29 kebeles in the woreda were selected using random sampling technique, then 100 sample HHs were selected from the four kebeles by proportional percentage of HHs in each kebele. Finally using lottery method each sampled HH was selected from the lists of HHs in concerned kebeles. To collect data structured interview schedule was mainly used. Data was analyzed by using descriptive statistics like table frequency, percentage, mean, standard deviation. The results of the study showed that (30%) and (70%) of sample households were found to be food secure and food insecure, respectively.

Food secure groups were characterized by smaller family size measured in AE and more number of oxen ownership compared to the food insecure groups. They also got more hectares of cultivated cropping lands and source of remittances income support than food insecure ones.

In addition, the coping strategies of the households mostly practiced in the study area are borrowing cash or grain from others (relatives or neighbor), reducing number of meals served to their households and reducing size (amount) of meals that their households consume and selling of livestock at the initial stage of food insecure condition. On the other

hand, other coping strategies included, seasonally migrating, getting remittance in terms of money and selling firewood and charcoal.

5.2 Conclusion and Recommendations

Family size and food security were strongly negatively related. Therefore, proper attention should be given to limit the increasing population in the study area. This could be done by having proper awareness creation activities through integrated health and education services as far as the issue is concerned. This means that, it could be done through practicing family planning activities in the area. And a proper training and awareness creation activities have to be conducted in order to make effective the family planning activities so as to limit the growing family size.

Age of the household head and being women headed household had negative impact on food security. This means old household heads and female headed households are less likely to be food secure. Therefore, capacity building for older household heads and female headed households should be given more priority. In addition, interventions intended to help agro pastoralists have to give priority to old aged and female headed households.

Cultivated land size was found to be significant. But this did not drive to a conclusion that states to increase total cropping land size. Rather intensified agriculture and livestock production have to be introduced and implemented in the area. By doing so, the agro pastoralists have to keep the quality of the cultivated lands with good physical and biological conservation measures. All these efforts have to be supported with proper extension service in order to support the agro-pastoralists' crop and livestock production activities. And this could focus on introduction of water harvesting technologies suitable to the area. Development intervention strategies are needed in order to enable immediate survival during food insecurity. They must be designed based on an analysis and

understanding of the characteristics and dynamics of local context copping strategies needed to support the vulnerable agro-pastoralists. And they have to focus on the provision of formal credit service to agro-pastoralists. Since agro-pastoralists used to cope with by borrowing cash or grain from relatives or neighbors, which is informal source of credit. This is to say that if they have access to formal credit service, they will be in a good position to cope with food insecurity.

The formal credit service may help ago-pastoralists in their production systems and in their efforts to cope with food insecurity. But care has to be taken in the case of interest rate, which might affect the interest of the agro-pastoralists of the study area, who all are Muslims. The interest rate associated with the credit service is not taken by these people since it is forbidden/ *Haram* by their religion. But the interest rate should be incorporated in the repayment as some other forms of payments such as payment for service provision that is by, for instance, saying that the workers responsible to give such service needs salary and the salary comes out from what you paid for service.

The other thing is that the interventions have to also focus on controlling unfair market prices, and this is due to the fact that agro-pastoralists cope with by selling their animals during food insecurity. During this time agro-pastoralists are forced to sale their livestock with lower prices, since the prices for livestock decreases. Therefore, government's and NGOs intervention with regard to market, have to focus on stabilizing price fluctuations in the local markets. Besides the local market, the intervening agencies have to give attention to border and trans-boundary markets in alleviate the problem.

In addition, opening money transferring agencies such as banks and micro-finance institutions in appropriate towns in the *Woreda* will have an important implication for agro-pastoralists. This is because of the fact that those agro-pastoralists in the study area cope

with by getting economic support from their relatives in towns inside and outside the country but after a long delay. As a result, the social network will be better in making the money transfer activities to be available on time. Therefore, this situation might help the agro-pastoralists with regard to their effort to cope with food insecurity.

Last but not least, to have sustainable interventions and solutions with regard to food insecurity, it is better to organize the agro-pastoralists under associations in their respective areas and work in close collaboration with intervening agencies. By doing that, they should be given technical training on saving and credit schemes, they should also be linked to good market and given technical assistances as well.

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7. APPENDICES

7.1. Appendix I

Appendix Table 1.Conversion factors use to compute AE

Age Group (years)	Male	Female
<10	0.6	0.6
10-13	0.9	0.8
14-16	1.0	0.75
17-50	1.0	0.75
>50	1.0	0.75

Source: Storck, *et. al.*. (1991)

Appendix Table. 2. Conversion factors used to estimate TLU

Animal category	TLU	Animal Category	TLU
Calf	0.50	Donkey (young)	0.35
Weaned Calf	0.34	Camel	1.25
Heifer	0.75	Sheep and Goat (adult)	0.13
Cow and Ox	1.00	Sheep and Goat (young)	0.06
Horse	1.10	Chicken	0.013
Donkey (adult)	0.70		

Source: Storck, *et. al.* (1991)

7.3 Appendix II

Interview Schedule for Collecting Data from Sampled Respondents

Interview schedule for agro-pastoral household's survey in Kebribeya woreda, 2012

Part One: General Information

1.1 Kebele _____

2.2 Village _____

2.3 Name of head of the household _____

2.4 Name of the enumerator _____

2.5 Date of interview _____ Signature _____

Part Two: Household Demography

2.1 Household characteristics

01	**02**	**03**	**04**	**05**	**06**	**07**
N	**Household members**	**Marital status**	**Sex M =1 F =2**	**Age**	**Education level**	**Currently going to school** 1
1						
2						
3						

NB: For code 02 = 1) Head 2) Wife 3) Son 4) Daughter 5) Relative 6) Raised 7) other, specify

For code 03 = 1) Single 2) Married 3) Divorced 4) Widowed

For code 06 = 1) Illiterate 2) Can read and write Arabic language 3) Can read and write Somali language 4) if attended school, write the grade

2.2 For the last five years, your household size _____

1) Increased 2) Decreased 3) Not changed

2.3 Has any member of your family ever migrated out during food crises? _____

1) Yes 2) No

2.4 If yes:

2.4.1 Who? _____ 1) Head 2) Wife 3) Son 4) Daughter 5) Relative 6) Raised 7) other, specify

2.4.2 To where? _____ 1) To Jijiga town 2) To Somaliland

3) In the *Woreda* 4) other, specify

2.4.3 Which season of the year? _____

2.4.4 Which year _____

2.4.5 for how long? _____

Part Three: Land Use Information

Plot number	**Site of the plot**	**Total plot Size in Qodi***	**Types of crops Grown**
P1			
P2			
P3			

Qodi is local measurement of land, 1 Qodi = (1/5) of ha.

** Galan is local measuring equipment, 1 Galan = 1.5 Kgs.

*** P1 plot one to indicate one of the different locations of the plots.

Part Four: Crop Production

4.1 How much do you produce during…

a) Good harvest year? _____ in Galan/Qodi.

b) Normal harvest year? _____ in Galan/Qodi.

c) Poor harvest year? _____ in Galan/Qodi.

4.2 Do you produce enough for your family to eat throughout the year? _____ 1) Yes

2) No

4.3 If no, what are the constraints in order of importance, that prevent you from doing so? _____ 1) Minimum rainfall 2) Lack of early maturing variety

3) Lack of plough oxen / lack of money to rent a tractor 4) Others specify

4.4 Where there any damage to your crop last year? _____ 1) Yes 2) No

4.5 If yes, specify the type of crops lost and the extent of loss in the following table

Type of the crop	**Area planted (in Qodi)**	**Causes of loss**	**Amount of loss (in Galan)**
1			
2			
3			

Code: 01 = to buy some food items for family consumption

02 = to pay a loan

03 = to buy other animals

04 = others, specify

Part Five: Livestock Ownership

5.1 livestock ownership

Type of the livestock	**No. owned**	**Average price in (Birr)**	**No born during last 3 months**	**No died during last 3 months**	**Sold during last 3 months How many**			**How many slaughtered**
					No	**Total sales value**	**Reasons for sale (code**	
Oxen/bull								
Young bull								
Cows (Milking)								
Cows (Nonmilking)								

Sheep								
Goat								
Donkey								
Camel								
Others specify								

Code: 01 = to buy some food items for family consumption
02 = to pay a loan
03 = to buy other animals
04 = Others, specify

5.2 Gross income from the sale of milk.

Milk type	**Production in Kob***	**Price of milk in Birr per Kob**	**For home consumption in Kob**	**For sale in Kob**

* Kob : It is local milk measuring cup : 3 Kob = 1 litre

Part Six: Input Use

6.1 Do you use any fertilizer? _____ 1) Yes 2) No
6.2 If yes, which ones? _____ 1) Inorganic DAP and/or Urea 2) Organic (manure)
6.3 What other inputs do you use? _____ 1) Improved seed 2) Improved breeds 3) Chemicals 4) Others specify

Part Seven: Household Expenditure and Income

7.1 Household consumption expenditure

7.1.1 What	Food type	Source

food items were used for consumption during the last seven days in your household?		Home produced		Purchased			Gift/loan/wage in kind	
		Unit	Quantity	Quantity	Price/ unit	Total expenditure	Quantity	Source
7.1.2 Did your household consume any cereals such as sorghum, maize, wheat, barely, millet, etc	Sorghum							
	Maize							
	Wheat							
	Barely							
	Millet							
	Rice							
7.1.3 Did your household consume any pulses and oil crops?	Lentils							
	Beans							
	Chick pea							
7.1.4 Did your household consume Any animal product	Cow Milk							
	Camel milk							
	Cattle meat							
	Camel meat							
	Goat meat							
	Sheep meat							
	Egg							
	Butter							
	Cow Milk							
7.1.5 Did your household consume any chat, cigarettes, tea or soft drinks	Tea							
	Chat							
	Cigarettes							
	Soft drinks							
	Tea							
	Chat							
7.1.6 Did your	Sugar							

household consume any sugar, edible oil, salt or any other spices?	Edible oil								
	Salt								
	Floor								
7.1.7 Did your household consume any fruits, vegetables or root crops?	Potato								
	S. potato								
	Spinach								
	Onion								
	Carrot								
	Tomato								

Part Eight: Marketing

8.1 Which market (s) do your household use? _____

8.2 What means of transportation do you use to take your produce to the market?

_____ 1) Pack animals 2) Vehicles

3) Human 4) other, specify

8.3 What is average market distance you traveled to nearest market from your home, measured in hours of walk? _____

1) ½ 2) 1 3) 1 ½ 4) 2 5) 2 ½

6) 3 7) 3 ½ 8) 4 9) 4 ½ 10) > 4 ½

8.4 Amount of food grain purchased and sold by the household during last three

Number		**Type of grain**	**Purchased in**		**Sold out**	
			Galan	**Birr**	**Galan**	**Birr**

Part Nine: Credit Services

9.1 Have you received any type of credit for the last couple of years? _____

1) Yes 2) No

9.2 If yes, from where do you get the credit? _____

1) Local money lender 2) friends and relatives 3) NGOs

4) Commercial bank of Ethiopia 5) other private banks

5) Other, specify _____

Part Ten: Copping Mechanisms

10.1 How do you (your family) used to cope during minor and major crop failure?

Stage of the problem	**Copping mechanisms During crop failure in (Rank)**	Code for the Numbers
At initial stage of a food shortage	1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ ,,	1. Sale of livestock 2. Borrow grains or cash from relatives 3. Reduce number of meals 4. Reduce size of meals
At severe stage of a	1 _____	

food shortage	2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ ,,	5. Sale firewood and charcoal 6. Participate in food for work 7. Food aid 8. Seasonal migration (some of the family members) 9. Go for begging 10. Others, specify

10.2 Have you ever resorted to the below mechanisms in cases of sever food crises?

No	**Type of response to crises**	**How often do you do this?**		
		Most Years	**Every year**	**Only in famine year***
1	Sale of small animals (Sheep & Goat)			
2	Sale draft oxen			
3	Consume wild foods			
4	Eat exotic and taboo foods			
5	Reduce number of meals			
6	Reduce size of meals			
7	Borrow cash or food from neighbors or			

8	Relatives			
9	Sale farm equipments			
10	Sale household equipment			
11	Distress migration to find work			
12	Sale fire wood and charcoal			
13	Withdraw children from school			
14	Postponing wedding and other ceremonies			

* Indicate the year

Part Eleven: Food Aid

11.1 If you (your household) have ever received food aid during the last 12 months, Please indicate the type and amount received

No	**Type of food aid item received per household**	**household household**	**Season received**			
			Gu*	**Dayr***	**Haga***	**Jilal***
	Grain (Galan) a) Wheat b) Other grain,					

	specify					
2	Edible oil (Lit.)					
3	Hand tools (specify					
4	Others, specify					

* Season's local names

11.2 Since when do you use to receive food aid (if you receive ever food aid)? Since _____ (year).

11.3 How was the amount of food aid received? _____

1) Increased 2) Decreased 3) No change

Part Twelve: Non-Farm Employment and Wage Earnings

ID code* of the household member	**Kind of work**	**If it is Permanent =1 Temporary =2**	**Do it need qualification**	**Location of the employment**	**Total days of work**	**Total earning (Birr)**

* ID code : 01- Household head 02- Wife 3- Son 4- Daughter 5- Relative 06- Raised 07- Other, specify

Part Thirteen: Other Income Sources

ID code* of the household member	**(Kind of work)****	**Total earning (Birr)**		

* ID code: 01- Head 02- Wife 3- Son 4- Daughter 5- Relative 06- Raised 07- Other, specify

** A = Sale of fire wood

B = Traditional equipment (like *Kabad* making)
C = others, specify
Kabad – means traditional Somali house constructing material

Part Fourteen: Social Capital

Traditional organization	**Member**	**Committee Member**	**Formal organization**	**Member**	**Committee member**
*Hagbad**			PA		
			Cooperatives		
			Others,specify		

* *Hagbad* = Local organization which is a kind of social economic benefit sharing through a lottery system
(it is known as *equb* in Amharic).