

Indira Gandhi National Open University

School of Graduate Studies

Rural Development Department

**Assessment of Food Security and Household Copping Strategies:
The Case of Kachabira Woreda, Kembata Tembaro Zone,
Southern Nations Nationality Peoples Region, Ethiopia.**

By

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A Thesis submitted to the school of Graduate Studies in Indira Gandhi National Open University for the partial fulfillment of the requirements for the Degree of Master of Arts in Rural Development.

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Addis Ababa

Ethiopia

Indira Gandhi National Open University

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Advisor_____

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Declaration

I hereby declare that the Dissertation entitled Assessment of food security and household coping strategies: The case of kachabirra woreda, Kembata Tembaro Zone, Southern Nations Nationality Peoples Region, Ethiopia submitted by me for the partial fulfillment of M.A. in rural development to Indira Gandhi National Open University, (IGNOU) New Delhi is my own original work and has not been submitted earlier to IGNOU or to any other institution for the fulfillment of the requirement for any course of the study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from earlier work done by me or others.

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Certificate

This is to certify that Mr. Baharu G/Yesus, 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 Assessment of Food Security and House hold Coping Strategies: The case of Kachabirra woreda, Kembata Tembaro Zone, Southern Nations Nationality Peoples Region, Ethiopia which Southern Nations Nationality Peoples Region, Ethiopia he is submitting, is his genuine and original work.

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“ACRONYMS”

IGNOU: INDIRA GHANDI NATIONAL OPEN UNIVERSITY

SNNPRS: SOUTHERN NATIONS NATIONALITY PEOPLES REGION

RD: RURAL DEVELOPMENT

NGOs: NON GOVERNMENTAL ORGANIZATIONS

FDRE: FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

ADP: AREA DEVELOPMENT PROGRAMME

USD: DOLLAR OF UNITED STATES

GTP: GROSS TOTAL PRODUCT

PSNP: PRODUCTIVE SAFETY NET PROGRAMME

FAO: FOOD AND AGRICULTURAL ORGANIZATION

MOARD: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

MOARDB: MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT BIROU

DA: DEVELOPMENT AGENT

MT: METRIC TONE

GDP: GROSS DOMESTIC PRODUCT

FGD: FUCUS GROUP DISCUSSION

DPPB: DISASTER PREVENTION AND PREPAREDNESS BIROU

EWS: EARLY WARNING SYSTEM

SPSS: STATISTICAL PACKAGE FOR SOCIAL SCINCES

IDS: INSTITUTE OF DEVELOPMENT STUDIES

IIED: INTERNATIONAL INSTITUTE OF ENVIRONMENT AND DEVELOPMENT

TDI: TRANSFORMATIONAL DEVELOPMENT INDICATOR

HH: HOUSEHOLD

Abstract

Ethiopia is one of the food insecure countries in the Sub Sahara region. Official figure indicated that on the average about 10% of population of the country faces food shortage every year (Workneh, 2004). Kachabirra woreda is located in Kambata Tembaro zone, Southern Nations, Nationalities, Peoples Region. The average ten years Federal Disaster Prevention and Preparedness Commission data indicated that about 21.33% of kachabirra woreda populations are food aid recipients and safety net programme beneficiaries every year. This figure was raised to 60% in 2008(2000 E.C). Even though food insecurity is the major concerns in the woreda, there was no any comprehensive research undertaking that support planning and disaster prevention intervention effort. Thus, this study attempted to play a role to fill the gaps in these regards through generating useful information, lesson and provide empirical data to guide rural development planners and policy makers. This study was conducted with the major objectives of identifying the major causes of food insecurity, major coping strategies practiced by the households, identifying the most vulnerable groups and diversification of activities in Kachabirra woreda. The study was conducted using interview schedule and made use of both qualitative and quantitative data. The study was conducted in four farmers associations two from highland and two from lowland agro ecological zones. A total of one hundred female headed and male headed households were interviewed for this study. The result indicated that food aid and food crop production are the two major sources of income in both agro ecologies. Drought was the major causes of food insecurity followed by insufficient land size and population pressure.

Their coping strategies vary along the agro ecologies and households. Households with insufficient land size, large family size and lack of oxen were the most vulnerable, where as children, pregnant and lactating women, elders landless and female headed were the most vulnerable groups in both agro ecologies. Diversification of activities was limited to on-farm activities on limited groups in both agro ecologies. Thus, this study strongly recommended that a fire fighting of humanitarian action that aim to save life in short term need to replaced by long term reduction of vulnerability that are linked to development and due attention should be given for vulnerable groups, ensure better access to basic and social services, initiate natural environment conservation programmes, strengthen Early Warning systems and it is also very important to initiate resettlement program based on careful studies and on volunteer basis.

Chapter One: Introduction

1.1. General Background

Food security is the concept that can generally be addressed at global, regional, national, sub-national, community, household and individual levels.

Ethiopia is one of the most food insecure countries in the Sub Sahara region (Eshetu, 2000). As most developing countries, it has been experiencing poverty and food insecurity over the last four decades. Many policy makers in the country have been concerned about food insecurity that affects the majority of its rural population. The problem is becoming chronic and it occupies the due attention of the government, NGOs, and international communities. Official figures indicated that on average of about ten percent of the population of the country faces food shortage every year (FDRE, 2002). In some bad years such as in the year 2008 the figure of food insecure population can be raised up to 60% of the population (Getachew, 1995).

A combination of chronic and transitory factors can cause food insecurity. Factors such as natural resource degradation, high population density, diminishing land holding, lack of on-farm technological innovation, misguided policy and inefficient institution are examples of chronic factors while drought, disease, pests, price instability and poor resource endowments are transitory causal factors.

In addition a loss of pasture and forest has led to environmental degradation and increased pressure on farm lands. Securing food and livelihood is linked to the exploitation of the natural resources base under Ethiopian condition (Sisay,2003). Most rural communities directly or indirectly earn their living by tiling lands and exploitation of natural resources such as common pool resources. Besides factors related to food production, food insecurity also occurs due to lack of access or short supply in market, and lack of purchasing power due to low income(Wiley,1994).

The problem of food insecurity varies from place to place and from household to household depending on the duration and seriousness of the cases. Thus, the degree of vulnerability due to food insecurity varies among different social groups; this might be due to age, sex, land holding, family size, land less, seasonal fluctuation, lack of other resources etc. However, there could be some specific strategies at household level to minimize the risk of food insecurity problem.

In agrarian/farming communities, better land and water management are critical to improvement of human well being. Century old farming practices compounded with high population pressure and steep topography have accelerated land degradation. In Kachabirra woreda, despite tremendous efforts by households to increase their productivity and bring food security by cultivating even the steep slopes, lead to rapid deterioration in land quality and resulted in food insecurity of a large population and adversely affected the sustainable use of natural resources.

The area also has been adversely affected by recurrent droughts over the past decades. Environmental degradation has been increasing the rural population's vulnerability to recurrent drought and famine (Ethiopian Catholic Church, Jan 2012).

According to Kachabirra ADP community Disaster Preparedness Plan assessment (conducted on March, 2012) finding which participated 304 respondents in the survey reported the following livelihoods: "Average annual income is found to be 113 USD, which is half of the current estimated real per capita income of 235 USD (GTP, 2010). The majority of households are highly dependent upon market for their consumption needs. Only 47 (15.5%) of the households reported that they produced sufficient production to meet their household consumption needs last year. Accordingly, 255 (83.9%) of the households reported that what they produced was not sufficient to feed their household members for the whole year. Among the total households that reported the purchase for food items, nearly 66% purchased for three or more months. The significant proportion of people who are depending on PSNP followed farming in the woreda. 88 (29%) of the households reported that they received food aid or relief from government or NGOs. Only 28 (9.2%) reported that productivity is increasing in recent years. The majority (275, 90.8%) of respondents reported that productivity is not increasing over the past few years."

In most cases, some of the situations related to food insecurity are specific in certain areas. For each food insecurity cases different coping strategy practices are undertaken at global, national, community and household levels.

A threat to household food insecurity ultimately threatens national food security; hence food security at the household level is a prerequisite for national food security.

1.2. Statement of the problem

A number of factors aggravated problem of food insecurity in Ethiopia; both natural and manmade. Adverse climatic changes (recurrent drought) combined with high human population pressure, natural resources deterioration from time to time, technological and institutional factors have led to a decline in the size of per capita land holding and food production (FAO,2003).

The government of Ethiopia developed a national food security strategy (MoARD, 2002) in line with the rural development policy and strategy (MoARDB, 2001). A targeted intervention for drought prone and food insecure areas is one of the focus issues among others in the strategy. Subsequently, PSNP has been designed and implemented to address the needs of chronically food insecure households.

Kachabirra is one of the seven woredas found in Kembata Tembaro zone of the SNNPRS which is targeted for the PSNP. It is characterized as high level of vulnerability to disaster and shortage of resources. It is based on this fulfillment of woreda targeting criteria that kachabirra woreda was included as a safety net *woreda(1)* in the year 2005. The implementation is still under way using the same rules and guidelines for the implementation of the programme throughout the country. (1: woreda=district)

Kachabirra woreda is one of the top marked food insecure woredas in Kembata Tembaro Zone. Though the magnitude of food insecurity varies from place to place, most of rural society is supported by frequent food aid over the last several years. While food aid has its own contribution to save lives, it has a long term negative impact in eroding self-esteem, confidence and development of dependency syndrome. This gradually degrades the traditional coping mechanisms and the value of indigenous knowledge in addressing similar issues in the future. On the other hand any food aid and development intervention should first identify existing traditional norms and practices of the community at times of food insecurity.

The problem of food insecurity in the woreda is escalating from time to time. The average ten years data indicated that about 27,632 number of the population is food recipient and safety net programme beneficiaries. From this population, 18498 are safety net beneficiaries, 4000 were food recipient and the rest are 5% and 15% contingency budget beneficiaries. This figure accounts about 21.33% of the total population of the woreda. One of the frequently mentioned reasons for the food insecurity problem of the woreda is erratic rainfall and population pressure. However, combination of factors such as declining soil fertility, small land holding and inadequate opportunities of livelihood can be cited as problems that aggravate food insecurity in the study area.

Even though food insecurity is one of the major concerns of kachabirra woreda, there was no any comprehensive research undertaken that support planning and disaster prevention efforts.

Generating appropriate information about the causes of food insecurity and vulnerable community members is timely to design informed and appropriate intervention measures.

1.3. Objectives of the study

The general objective of the study was to assess food security situation and household coping strategies during the time food insecurity prevails.

The specific objectives are

*To identify the main causes of food insecurity in kachabirra woreda.

*To identify the major household coping strategies practiced by the household during food insecurity

*To examine the groups who are most vulnerable to the incidence of food insecurity.

*To assess the diversity of livelihood activities in the study area used as means of subsistence.

1.4. Research questions

What are the major causes and situations of food insecurity in the study area?

What types of preventive and coping strategies are practiced to reduce the occurrence and effect of food insecurity in the study area?

Who are the most vulnerable groups affected by food insecurity situation and what types of livelihood activities are performed in the study area?

1.5. **Scope of the Study**

The study was conducted at Kachabirra woreda, Kembata Tembaro zone, Southern Nations Nationality Peoples Region. The study was carried out in four farmers associations. The farmers associations were selected from among 22 farmers associations of the woreda. The study was conducted in two strata or two agro ecologies, from lowland and highland parts of the woreda. The lowland part of the woreda includes Buge and Messena farmers associations and the highland part includes Hobicheqa and Hoda farmers associations. Two farmers associations were stratified in each agro ecology. The classification depends on land size, agro climate, population density, farming system of the woreda, location elevation range and homogeneity of the living condition of population.

In the selection of these farmers associations some important features has been taken in to consideration. Frequent exposure to drought and excessive vulnerability to food insecurity many times for the last few years were considered for this study. More over transportation facilities and presence and cooperation of potential DAs for collection of genuine and knowledge based data were also taken in to consideration.

1.6. Significance of the study

Most emergency studies focused to address the immediate food shortage only when the problems happened in the area and the attention given for encouraging indigenous strategies is insignificant. Thus, results of this study are expected to provide information that will guide rural development planners and policy makers in their effort to develop intervention programmes and formulate policies that will ultimately lead to household and national food security. Furthermore, this study attempts to fill the gaps in these regards by generating useful information, lesson and provide empirical data, which will be useful in planning self-help projects in the study area. Moreover, it is strongly assumed in this research that identification of existing values and coping strategies of vulnerable groups to food insecurity will help to design and implement sustainable intervention models of relief and rehabilitation initiatives in the future.

Chapter Two: Literature Review

2.1. Concept of Food security and food insecurity

Various authors and organizations have addressed food security and food insecurity using different definitions. For instance, Calkins (1988), defined food security: in terms of people having sustainable means to satisfy basic needs regardless of change of the situations. He addressed that food security means the capacity of a population to produce or to buy enough food, even in the worst years, to satisfy their basic food needs. This definition more or less shared the same idea with the definition given by FAO, (1983) that was, food security is ensuring that all people at all times have both physical and economic access to the food they need.

The term food insecurity, defined as “the inadequacy of the quantity of food consumption as well as the irregularity overtime “, and it can lead to the contraction and ineffectiveness of the institutions that might serve as positive spurs to the enhancement of food production and distribution (Breycesson, 1990).

A study carried out in two peasant associations of Ethiopia, concluded that food security concept is split in to two ways , on one hand for a household to achieve food security either a household can consume its own food from outside such as by exchanging of labour , goods or cash (they call it “ food purchase”. This means that the production of sufficient food by a household does not by itself guarantee of food security for that household.

If the household sells the food produced and is then left with insufficient food for consumption needs , or with insufficient means to purchase the food needed , the household becomes food insecure (Stetegn,2002).

Benson (1988), in his study summarized the term household food security in to three basic components that is a household having assumed sets of entitlements from food production , cash income , reserves of food or assets and/ or government assistance programs such that in times of need they will be able to maintain sufficient nutritional intake for physical wellbeing . This means that there are three important elements in determining household food security: the average level of the household income, the magnitude and probability of seasonal and annual fluctuations around the average and the value form of stocks a household can maintain. On the same year studies CARE (1988), defined food security as the availability of a country `s population of an adequate and reliable supply of food; this can involve a number of elements: that are increasing local food production, improve the stability of food supplies and guaranteeing access to food supplies.

In general from the above concept food security/food insecurity could be expressed in terms of production, access to market and access to purchasing power.

2.1.1. The Four Dimensions of Food Security

Food Security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.(1996 World Food Summit)

1. Physical Availability of Food

Food availability addresses the “supply side” of food security and is determined by the level of food production, stock level and net trade.

2. Economic and Physical Access to Food

An adequate supply of food at the national or international level does not in itself guarantee household level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives.

3. Food Utilization

Utilization is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals is the result of good care and feeding practices, food preparation, and diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals

4. Stability of the other Three dimensions over time

Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status.

Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status.

For Food Security objectives to be realized, all Four dimensions must be fulfilled simultaneously.

2.1.2. The Duration of Food Insecurity

Food Security analysts have defined two general types of food insecurity:

1. *CHRONIC FOOD INSECURITY*: is long-term or persistent.

It occurs when people are unable to meet their minimum food requirements over a sustained period of time.

Results from extended periods of poverty, lack of assets and inadequate access to productive or financial resources.

Can be overcome with typical long-term development measures also used to address poverty, such as education or access to productive resources, such as credit. They may also need more direct access to food to enable them to raise their productive capacity.

2. *TRANSITORY FOOD INSECURITY*: is short-term and temporary.

Occurs when there is a sudden drop in the ability to produce or access enough food to maintain a good nutritional status.

Results from short-term shocks and fluctuations in food availability and food access, including year-to-year variations in domestic food production, food prices and household incomes.

Transitory food insecurity is relatively unpredictable and can emerge suddenly. This makes planning and programming more difficult and requires different capacities and types of intervention, including early warning capacity and safety net programmes.

- The concept of **seasonal food security** falls between chronic and transitory food insecurity. It is similar to chronic food insecurity as it is usually predictable and follows a sequence of known events. However, as seasonal food insecurity is limited duration it can also be seen as recurrent, transitory food insecurity. It occurs when a cyclical pattern of inadequate availability and access to food. This is associated with seasonal fluctuations in the climate cropping patterns, work opportunities (labor demand) and disease.

2.1.3. THE SEVERITY OF FOOD INSECURITY

When analyzing food insecurity, it is not enough to know the duration of the problem that people are experiencing, but also how intense or severe the impact of the identified problem is on the overall food security and nutrition status. This knowledge will influence the nature, extent and urgency of the assistance needed by affected population groups.

Different 'scales' or 'phases' to 'grade' or 'classify' food security have been developed by food security analysts using different indicators and cut-off points or 'benchmarks'.

Examples include: Measuring the Severity of Undernourishment. The measure for hunger compiled by FAO, defined as undernourishment, refers to the proportion of the population whose dietary energy consumption is less-than a pre-determined threshold. This threshold is country specific and is measured in terms of the number of kilocalories required to conduct sedentary or light activities. The undernourished are also referred to as suffering from food deprivation.

2.1.4. VULNERABILITY

The dynamic nature of food security is implicit when we talk about people who are vulnerable to experiencing food insecurity in the future. Vulnerability is defined in terms of the following three critical dimensions:

1. Vulnerability to an outcome;
2. from a variety of risk factors;
3. because of an inability to manage those risks.

Indeed, a person can be vulnerable to hunger even if he or she is not actually hungry at a given point in time.

Vulnerability analysis suggests two main intervention options:

1. Reduce the degree of exposure to the hazard;
2. Increase the ability to cope.

By accounting for vulnerability, food security policies and programs broaden their efforts from addressing current constraints to food consumption, to include actions that also address future threats to food security.

2.1.5. HUGER, MALNUTRITION AND POVERTY

It is important to understand how these three concepts are related to food insecurity.

Hunger is usually understood as an uncomfortable or painful sensation caused by insufficient food energy consumption. Scientifically, hunger is referred to as food deprivation.

Simply put, all hungry people are food insecure, but not all food insecure people are hungry, as there are other causes of food insecurity, including those due to poor intake of micro-nutrients.

Malnutrition results from deficiencies, excesses or imbalances in the consumption of macro- and/or micronutrients. Malnutrition may be an outcome of food insecurity, or it may relate to non-food factors, such as: - inadequate care practices for children,

- insufficient health services; and

- an healthy environment.

While poverty is undoubtedly a cause of hunger, lack of adequate and proper nutrition itself is an underlying cause of poverty.

A current and widely used definition of poverty is:

“Poverty encompasses different dimensions of deprivation that relate to human capabilities including consumption and food security, health, education, rights, voice, security, dignity and decent work.” Organization for economic Co-operation and development (OECD).

It is argued that a strategy for attacking poverty in conjunction with policies to ensure food security offers the best hope of swiftly reducing mass poverty and hunger. However, recent studies show that economic growth alone will not take care of the problem of food security.

What needed is a combination of:- income growth; supported by

- direct nutrition interventions; and

- investment in health, water and education.

2.2. The Ethiopian Food Security Strategy

It has been stressed in the foregoing section that food insecurity is still a major contributor to poverty in Ethiopia. The need for expediting the implementation of the food security strategy has also been stressed. A strong and systematic action to address the food security situation in the country started only in the 1990s when the government developed its food security strategy and subsequent food security program in 1996 and 1998 respectively. Based on the strategy and program document, food security related action programs are being undertaken in *Tigray, Amhara, Oromiya* and SNNPR regional states.

A comprehensive national food security strategy was presented by the Ethiopian Government to the donor Governments at the 1996 consultative group meeting in Paris.

It was well received by the donors at the time and remains the core statement of Ethiopia's food security objectives and guidance for food security related programming. The national food security strategy describes a state of wide spread and profound insecurity in Ethiopia. It notes that sustainable improvement in food security status must focus simultaneously on :i) increasing agricultural production and the nation's food supply, ii) improving entitlement(access) to food for the poor majority in both rural and urban areas, and iii) enhancing capacity to both reduce the risk of food crises and speed the response to such crises.

The strategic elements which are focused on increasing food production include diffusion of simple agronomic packages to smaller holder agriculturalists in high potential areas. This involves increased availability and diffusion of improved planting materials, expanding and enhancing extension services, and enabling greater access to fertilizer and other inputs. In addition, in the lower potential areas, food access or entitlement programs would be instituted, and aimed at developing additional on and off farm employment opportunities. These activities recognize the fact that rural households in this areas are unlikely to produce enough on characteristically small plots on less- fertile, less well watered lands to satisfy (through self production or sale of crops and animals) their food security and nutrition requirement. Food-for-work and Cash-for-work programmes were envisioned in the governments food security strategy which would raise incomes in food insecure areas while at the same time creating economically beneficial and enduring physical assets such as feeder and farm-to-market roads.

The Government's strategy also identified the need for (relatively large) investments in its deteriorated primary transport infrastructure to reduce the cost of transporting food from surplus areas to deficit areas and enable-to the extent possible- the expansion of private marketing of agricultural commodities.

The strategy recognized the likelihood of continued need in to the indefinite future for external financing of food aid, and the need for complementary development investments outside the food production sub-sector, e.g. in health, education, local capacity-building, and safety net-type transfer programmes to the worst-off of the absolutely poor households. Investment in these complementary activities would be made in the context of the governments overall growth and development strategy (e.g. through the education and health sector investment programmes, government and NGO humanitarian assistance efforts) consistent with, but outside the proposed national food security programmes.

Some of the most important points (statement) indicated in the revised (an update) versions of the national food security strategy have been presented below.

Promotion of irrigation where the water resource exist. Irrigation development would have the following objectives, in order of priority:

- A. Improving food security in drought prone areas;
- B. Production of high value crops, especially fruits and vegetables;
- C. Opening up of agricultural land in marginal areas and
- D. Increasing volume of production in rain fed areas.

Progress has been made in improving food security at the woreda level. However, the situation is still severing in some countries of Sub-Sahara Africa and South Asia. While poverty is the main cause of food insecurity across the world, there are particular issues that make poor people even more vulnerable. These include

- Climate change
- HIV
- Conflict
- Economic governance

Emergency response capabilities strengthened include the monitoring, surveillance, and early warning arrangement, arrangement for food and relief distribution, and strategic reserve of food grain.

The concept of food security can be divided in to four main areas:

- Availability of food
- Access to food
- Quality of and nutritional value of food
- Stability in provision of food.

The country Government and development organizations that wants to improve food security must consider activities in all of these areas (Kachabirra ADP, March 2009).

2.3. Causes of Food Insecurity

The causes of food insecurity are various in nature that include: be manmade and natural factors depending on the situation. Among these, drought has been the major immediate causes of alarming level of food insecurity in many regions of Ethiopia for the last many years. There are also other several factors that contribute for the outcome of food insecurity.

Degnew (1999) identified special causal factors that contributed for serious food insecurity problems. He summarized the factors as rain failure at critical times in the agricultural operation , human and animal disease outbreaks , crop pest and disease out breaks , hailstorm, flood and related hazards leading to serious harvest failure , livestock loss , sharp grain price increase accompanied by sharp decrease in livestock price, lack of purchasing power, food availability decline in local markets , declining or lack of labour demand during crisis which further aggravates the magnitude of household insecurity. From this finding, to minimize these risks and their socio economic impact, a combination of relief by government and non governmental agencies is required. .

Getachew (1995) conducted a study in six rural areas of Ethiopia on famine and food insecurity at the household level. He concluded that farming systems in different agro-ecological zones, land size, livestock, use of fertilizer for production and household size are all determinants of household food security/insecurity. Furthermore, his study revealed that households which have established access to larger land size, access to oxen, access to income opportunities , grow diverse food crops with three agro ecological Threshold for food insecurity zones are

better-off than those with less land size , lack of ownership of livestock particularly oxen , less access to income opportunities, the food insecurity is more severe. Moreover, the magnitude of food insecurity increase in the lowlands compared to the highlands and the larger family size with small land size, those who have the smaller the number of economically active household members, increasing Threshold for food insecurity.

Webb and Braun (1993), conducted a study in Ethiopia revealed that Ethiopian agriculture is characterized by low technology ,low productivity, and high risk , as a result yields and crop output are poor even in years of relatively good rainfall. The study identified four main agricultural constraints for low productivity which included poor quality of the land, lack of livestock, lack of seed stock, and lack of other farm inputs.

Though drought has been identified as the major cause of food insecurity in our country for the last four decades, there are other potential factors that are equivalently important in reducing food security. But the degree of vulnerability has been noted to vary from one area to another, community to community and household to household depending on the availability of means and the severity of the situation.

2.3.1. Indicators of Food Insecurity

Food security requires a consideration of multitude of factors since it is influenced by different interrelated socio-economic, political and environmental factors. Because of this, assessing, analyzing and monitoring food insecurity follow diversified approaches; ranging from a mere quantitative and qualitative measurements.

In fact, the purpose level of aggregation and depth of the investigation determines the utilization of indicators. In some early warning systems, for example, three sets of indicators are often used to identify possible collapse in food security. These include food supply indicators (rainfall, area planted, yield forecasts and estimates of production); social stress indicators (market prices, availability of products in the market, labor patterns, wages and migration) and individual stress (which indicate national status, disease and mortality).

The different types of indicators are mostly classified in to two categories; 'process' and 'outcome' indicators. The former provides an estimate of food supply and food access situation and the later serves as proxies for food consumption (Frankerberger, 1992:84 cited in Debebe, 1995). As indicated in the following table, indicators supply of food include factors in the physical environment that affect agricultural production and institutions and features of the market for food items. Indicators in of food production include meteorological data, such as volume, variability, and timeliness of rainfall, and temperature; agro-climatological data such as characteristics of soil; information on natural resources and common property resources. Common property resources are given a special place because they affect the availability of resources for housing, fuel, food supplements, wild foods used during periods of crises, and off-farm income generating activities. Indicators of food supply include indicators of efficiency of food markets in addition to indicators of food production. Market data such as prices, the pattern of flow of food items into and out of the market, and the volume of transactions in a market are valuable indicators of impending shortage of food. The institutions and the physical infrastructures supporting the market are also very important part of the data. These indicators provide the general picture of a given area and society.

However, they are in most cases aggregate and hardly serve to monitor food stress at a household level (Debebe, 1995). Unlike supply indicators, food access indicators are relatively quite effective to monitor food security situation at a household.

'Outcome' indicators include all direct and indirect indicators of household consumption of food items. Direct measures include household income and consumption obtained from the household budget and surveys, subjective judgment of households regarding food security, and assessment of food frequency. Indirect indicators of household consumption of food include storage estimates, nutritional assessment and calculation of various indices that indicate availability of food in a household. They can be disaggregated at lower level as opposed food supply indicators. The problem with 'outcome' indicators is that some of the indicators may not exactly indicate the level of food crises since nutritional intake is affected by a number factors like health and care.

Indicators might also be categorized temporally in relation to actual event they represent. Early indicators (also called leading indicators) include variables, conditions and changes in conditions and variables that appear before the actual decline in access to food and food consumption. Stress indicators (also called concurrent indicators) are those that occur simultaneously with the decline access. Late outcome indicators (also called trailing indicators) are those that appear after access has declined and show the extent of suffering by households.

Fluctuation in the level of food production, possession of productive capitals and changes in terms of trade are also useful indicators of food security.

Table 1: Indicators of household food security

<p><i>Food Supply indicators</i></p> <p>Meteorological data</p> <p>Information on natural resources</p> <p>Agricultural production data</p> <p>Market information</p>	<p>Agro-ecological models</p> <p>Food balance sheets</p> <p>Information on pest management</p> <p>Regional conflict</p>
<p><i>Food access indicators</i></p> <p><i>Land use practices</i></p> <p><i>Dietary changes</i></p> <p><i>Diversification of income sources</i></p> <p><i>Livestock sales</i></p> <p><i>Sale of production assets</i></p>	<p>Diversification of livestock</p> <p>Change of food source</p> <p>Access to loans/credit</p> <p>Seasonal migration</p> <p>Distress migration</p>
<p><i>Outcome Indicators</i></p> <p><i>Household budget and expenditure</i></p> <p><i>Food consumption frequency</i></p> <p><i>Subsistence potential</i></p>	<p>Household perception of food insecurity</p> <p>Storage estimates</p>

Source: Mulat et al, (1995)

2.4. Extent of food insecurity in Ethiopia

Since food production and population statistics in Ethiopia are notoriously unreliable, all estimates of national food availability and consumption requirements are “guesstimates”. At best during the late 1980s, 52% of Ethiopia’s population consumed less than the recommended daily allowance of 2,100kcal but in the recorded harvest year of 1995/96, this proportion fell only to 43%.

This figure approximates the 40% of rural household whose farm <0.5 hectare that is inadequate to meet subsistence food needs even in good rainfall years.

Table 2. National beneficiaries and food requirement in different regions of Ethiopia

No	Region	Beneficiaries	Food requirements(MT)
1	Tigray	702,922	101,233
2	Amhara	114,610	5,560
3	Oromiya	682,755	90,490
4	Gambella	49,500	5,502
5	SNNPR	426,667	44771
6	Subtotal (1-5)% of total	1,676,454	257,571

		52%	55%
7	Harari	6605	736
8	Somali	1,240,806	137,916
9	Afar	544,476	63,471
10	Diredawa	38,454	4987
11	Total	3,806,797	464,385

Source: A joint Government and humanitarian Appeal May 4, 2005, the reporter, Vol ix, No 456, June4, 2005 Addis Ababa, Ethiopia.

The above table shows the degree to which the Ethiopia portion of the Nile basin finds itself in chronic food shortage. Last year a joint government and humanitarian partners appeal made it clear that 52% of the Nile basin people are food insecure.

Given this they appealed for 55% of relief food requirements even though food insecurity and poverty are conceptually and empirically distinct in Ethiopia, the overlap between the two is greater than in most countries. Another indicator of the interconnectedness of food insecurity and poverty is that government calculates poverty lines based on food consumption basket ,the water monitoring unit finds that 50% of the population is living in “ food poverty”. 52% of rural finds that 36% urban Ethiopians (Government of Ethiopia 1999:15), food insecurity is also differentiated by wealth.

Survey of food consumption in rural Ethiopia households finds that transfer –food aid from government donors or NGOs plus gifts from other households were the second most important of food , after production and heads of purchases for but the wealthiest 25% of the sample . Real GDP grew just at 1.9% during the 1980s; with given population growth of 3% produced a negative per capita growth, at 2% per annum negative in four years of drought during the decade insufficient per capita food consumption.

Ethiopia economic performance has improved since the EPRDF took power from the Dergue in 1997/8 on 1.3% precipitate. Agricultural performance was weaker and more variable.

2.5. Productive Safety Net Programme in Ethiopia

The productive Safety Net programme provides transfers to food insecure populations in a way which prevents asset depletion at the household level, creates assets at the community level and stimulates markets.

The programme has two components

1. A labour based public work component
2. A direct support component to ensure support to the households who lack labour, have no other means of support , and who are chronically food insecure.

The PSNP provides cash or food transfers to chronically food insecure households. Transitory needs are covered through the programme contingency budgets and risk financing using the same modalities at that for the chronic case load.

The PSNP is a core component of the Government of Ethiopia's food security programme which aims to ensure that food security status for male and female members of chronically food insecure households in chronically food insecure woreda's enhance. This outcome of the food security programme is the goal of the PSNP. In making progress towards achieving this goal , the programme also expects to make a contribution towards the overall goal of the food security programme: "Food security for chronic and transitory food insecure households in rural Ethiopia achieved"(PIM of PSNP,2005).

2.6. Vulnerability in relation to food insecurity

The degree of vulnerability to food insecurity is different among different social groups such as children, pregnant and lactating mothers and at different agro-ecological conditions.

Degnew (1993) in his study defined vulnerability as the extent to which the community structure, service or region is likely to be damaged or disrupted by the impact of particular hazards. Their incomes and livelihoods are also at risk because of the destruction of buildings, crops, livestock, or equipment, which they depend on .The same study revealed "peasants living in kola agro-ecologies in particular are more vulnerable to serious disaster –induced food shortages than people who live in Dega and Winadega areas". Because of traditional , cultural and the other related factors men have access to better quality and quantity to the available food particularly in rural areas , they would be less vulnerable to food deficit than mothers children and elders . In general, for every food deficit problems the rural household has an indigenous coping strategies that initiated by themselves at least to minimize the risks. 28

2.7. Coping strategies with food insecurity

Another set of data that are very useful for household level assessment of food security is related to coping mechanism. This generic name 'coping mechanism' is used to represent a wide range of recipes used to minimize and manage risks arising from variations in income-generating capacity of households (Alem, 1999). Coping mechanisms involve diversification of income sources (between crop production, livestock and non-farm employment), variation in degree of use of natural resources (farm land and common property resources), and social networks that serve as safety-net during period of crises. Diversification as an instrument of coping applies within each sub-sector (crop, livestock, non-farm employment). In the livestock sub-sector, it may involve, for instance, diversification of herd based on feed requirements; in the crop sub-sector it involves based and land based diversification; and in the non-farm sub-sector it may involve a portfolio of diversified small-scale trading activities.

Coping mechanisms provide valuable guidance in designing food policy and in selecting, customizing, and employing instrument of interventions. Different intervention strategies can be mapped to different patterns of coping mechanism and specific thresholds (distribution) of insecurity corresponding to specific patterns of coping mechanisms, and specific thresholds (distribution) of insecurity call for some specific policy-mix. Moreover, since most coping strategies adopted during periods of crises are extensions of those used in 'normal' years, monitoring household coping strategies would deepen our understanding of the root causes and characteristics of food insecurity.

People facing the problem of food shortage make strategic decisions about how to meet their needs. These decisions and actions are what are commonly called coping mechanisms. Lots of coping mechanisms have been identified by various research findings on the issues of household food security. These coping mechanisms can range from informal safety net in which people draw on their social networks, to eating less and cheaper meals or even searching for wild foods. They may also sell off assets or migrate off the land.

In general, this array of coping mechanisms can be divided into three major categories. One of these categories is production based coping mechanisms. These are ways of expanding crop production or increasing crop productivity through various means. The other category of coping mechanisms is market-based responses, which include purchase of food grain. Mostly, the main source of income for purchase of grain in times of food shortage is sales of livestock species, asset or wage labor. The third category of coping mechanisms is the non-market-based responses, which include institutional and social income transfer systems such as gifts, borrowing grain or cash from relatives or reliance on relief food distribution. These different responses are taken up by farmers differently according to the possibility and degree of severity of the problem.

Rural people have practiced different indigenous coping strategies to minimize the risk at community, household or individual levels to both transitory and chronic related food shortages. Based on the nature and practice of coping strategies undertaken by the household the following definitions are given by researchers.

Degnew (1993) defined “coping strategy” as a mechanism by which households or community members meet their relief and recovery needs, and adjust to future disaster related risks by themselves without outside support.

Maxwell (1992) gave a detail description and all possible means about coping strategies, he said that people who live in conditions which put their main source of income at recurrent risk will develop self insurance coping strategies to minimize risks to their household food security and livelihoods. Examples of such strategies are dispersed grazing , changing in cropping and planting practices , migration to towns in search of urban employment , increased in petty commodity production, collection of wild foods, use of inter-household transfers and loans , use of credit from merchants and money lenders, migration to other rural areas for employment, rationing of current food consumption, sale of possessions (e.g. jewelry) sale of firewood and charcoal, consumption of food distributed through relief programs, sale of productive assets, breakup of the household ,distress migration.

In general, coping strategies that are pursued by the households are to ensure future income generating capacity rather than simply maintaining current level of food consumption. These strategies will vary by region, community, social groups, ethnic groups, household, gender, age and season. Amongst the coping strategies that have been carried by the rural households, employing diversification of activities such as on-farm and off-farm are the usual practices that are undertaken without the involvement of outsiders.

2.8. Diversification of Livelihood

2.8.1. The Livelihoods Concept

The food security of poor households is dynamic and influenced by a range of factors. The poor live in a changing world to which they must constantly adapt, and are often unprepared for the changes. There is a constant struggle to meet daily basic needs in the world. Furthermore, their daily needs consist of more than food; vital non-food needs such as shelter, clothing and health compete with food needs in terms of a household's resource allocation (Frankenberger, 1992). Looking at livelihoods provides a richer and more detailed picture of how poor families cope with a variety of risks and shocks in meeting their basic needs.

Households can have several possible sources of income and other resources that constitute their livelihood. Livelihood systems are maintained by a range of on-farm and off-farm activities, which together provide a variety of procurement strategies to food and cash. A household's total resources are based not only on its productive activities and endowments, but also on its legal, political and social position within society (Sen, 1981). Livelihood systems imply a concept of sustainable food security, where the benefits of today are balanced with the benefits of tomorrow. Livelihood systems incorporate the present situation, the short term and long term perspective. The objective is not only to preserve current patterns of consumption, but also to avoid destitution or sacrificing future standards of living.

Looking at livelihoods highlights two important elements influencing a household's food security are:

- The risk of livelihood failure determines the vulnerability of a household to income, food, health and nutritional insecurity; and
- The greater the share of resources devoted to the acquisition of food and health services, the higher the vulnerability of the household to food insecurity.

Livelihoods are thus secure when households have secure ownership of, or access to, resources and income earning activities, including reserves and assets, to offset risks, ease shocks and meet contingencies (Chambers, 1988 and Coney, 1992).

The concept of livelihoods broadens the traditional understanding of food security. In a livelihood system the goal is to procure all the capabilities, assets and activities required for a means of living: adequate food is a central concern, but not the only one. By looking at how poor households cope to meet their basic needs, the importance of adaptation and risk diversification has come to the forefront in the battle against vulnerability. The implication for policy making is that increased agricultural productivity is not the only solution. The answer lies in supporting the diversification of income sources and assets, as well as promoting investments and activities that help households to face shocks to their livelihoods and reduce risks.

Maxwell (1992) defined livelihood in terms of “the capabilities, assets (stores, resources, claims on access) and activities required for means of living. A livelihood is sustainable when it copes with and recovers from shocks, maintain or enhance its capabilities and assets and provide opportunities for the next generation”.

Diversity of food and income sources (cash and kind, farm and nonfarm) is considered to be one of the main “buffers” households can develop against risk in agrarian environments. It is therefore vital to understand household coping and survival strategies and to effectively design food security strategies.

Braun (1983) noted that in Africa: Diversification may entail a fair amount of specialization within the household according to gender or age. He stated that in Gambia, for instance most subsistence crops are produced by males and most income from the craft –work and services is generated by specialized individuals in the extended household system women cultivate around 30 percent of the cash crop fields (groundnuts). In Rwanda, subsistence crops are produced mostly by women, whereas wages are generated mostly by men. Women substantially generate service and trading incomes. Diversification of activities is the better means to minimize food insecurity risks and to maintain sustainable means of living standards of the rural household. To emphasize the importance of this issue several studies conducted by researchers so far. Among these, research carried out by the farming systems Research unit in Zimbabwe together with Institute of Development Studies (IDS) and the international Institute of Environment and Development (IIED) proved that: diverse factor is the key to responding to risk. Agricultural research needs to reflect farmers’ own diverse conditions. Research needs to be adapted to different spatial settings (e.g. both dry fields and wet land agriculture) to different field conditions and to different cropping patterns (e.g. multiple and intercropping patterns) rather than focusing on standardized ,uniform trial plots so that the process of local level adaptation and technology development are understood and can be supported. 34

2.9. Summary Literature Review

In general, there have been many definitions of food security used in the literatures expressed at global, national, household and individual levels. Though at the household food insecurity is affected by several interrelated factors, the degree of vulnerability could be varying among sex, age and social groups. Rural households usually have practice their own coping mechanisms at least to minimize the food insecurity risks without the involvement of outsiders support. At the same time, most of the researchers who are concerned on this issue strongly believe that diversified activities undertaken by the rural households through the aid of modern technology, the risk of food insecurity would be minimized through time.

Therefore, from this understanding, it is expected that important information would be gathered from the woreda being researched. The result of the studies will be useful to use as baseline information for those who will implement sustainable development programmes in the area.

Chapter Three: Research Methodology

3.1. Description of the Study area

3.1.1. Location

The study was conducted in the state of Southern Nations Nationality Peoples Region. Kembata Tembaro Zone is one of the food insecure zones of the region. From this zone, Kachabirra woreda is one of the seven woredas in Kembata Tembaro which was the case of this study. It is located at N712'03" to 717'07" Latitude and E3747'04" to 3750'30" Longitude. The total area of the woreda is 21957 hectares (259.41km²). Altitude ranges from 1700 to 2653 meters above sea level. Currently, the woreda has a total of 22 kebeles; 21 rural and 1 urban kebeles(1).

(1: kebele= Peasant Association)

3.1.2. Population

According to the woreda Finance and Economic Development office statistical data the total population of the woreda is 129,547 (63478 males and 63462 female) , and it has been known to be one of the most densely populated woreda's in the country with an average of about 500 people per square kilometer.

3.1.3. Weather and Climate

The climatic condition of Kachabirra woreda has been categorized in to three agro-climatic zones known as Dega (wet high lands and relatively cold), Woinadega (moderately warm midlands) and kola (lowland and relatively hot);

which account for 24%, 73% and 4% respectively. The rainfall occurs in kachabirra twice a year. The major rainfall months range from the first week of June to the end of September, and sometimes extend even up to the end of October. The shorter rainy season ranges from mid February to the end of April. The average annual minimum and maximum precipitation of the woreda ranges between 900 and 1400mm. Average daily temperature ranges from 19 to 27 degree centigrade.

3.1.4. Soil Characteristics

Based on the information from woreda agricultural office, in most parts of the woreda the parent rocks are covered by very deep soil, and in some places the soil extends to depth of several meters. Nitosols (red to dusky red and shiny pad faces), (Bisha bucha in local language) and Cambisols (black/brown, (Gambala bucha in local language), moderately developed soils are the predominant soil groups. Nitosols accounts for more than half of the area in the highlands. The remaining parts of the highlands are comprised of Cambisols (about one third) and Leptosols (shallow, stony soils), which named Borbora bucha in a local language. In midlands, Nitosols cover more than three fourth of the area, and the remaining parts are occupied by Cambisols. These soils are rich in potassium, but poor in phosphorus content, and below the average in their nitrogen content at ploughing depth.

3.1.5. Agro ecology and land use

The average land holding per household in the woreda is found to be 0.4 hectare, and this in turn contributed to low agricultural productivity and to have less number of (three on average) livestock.

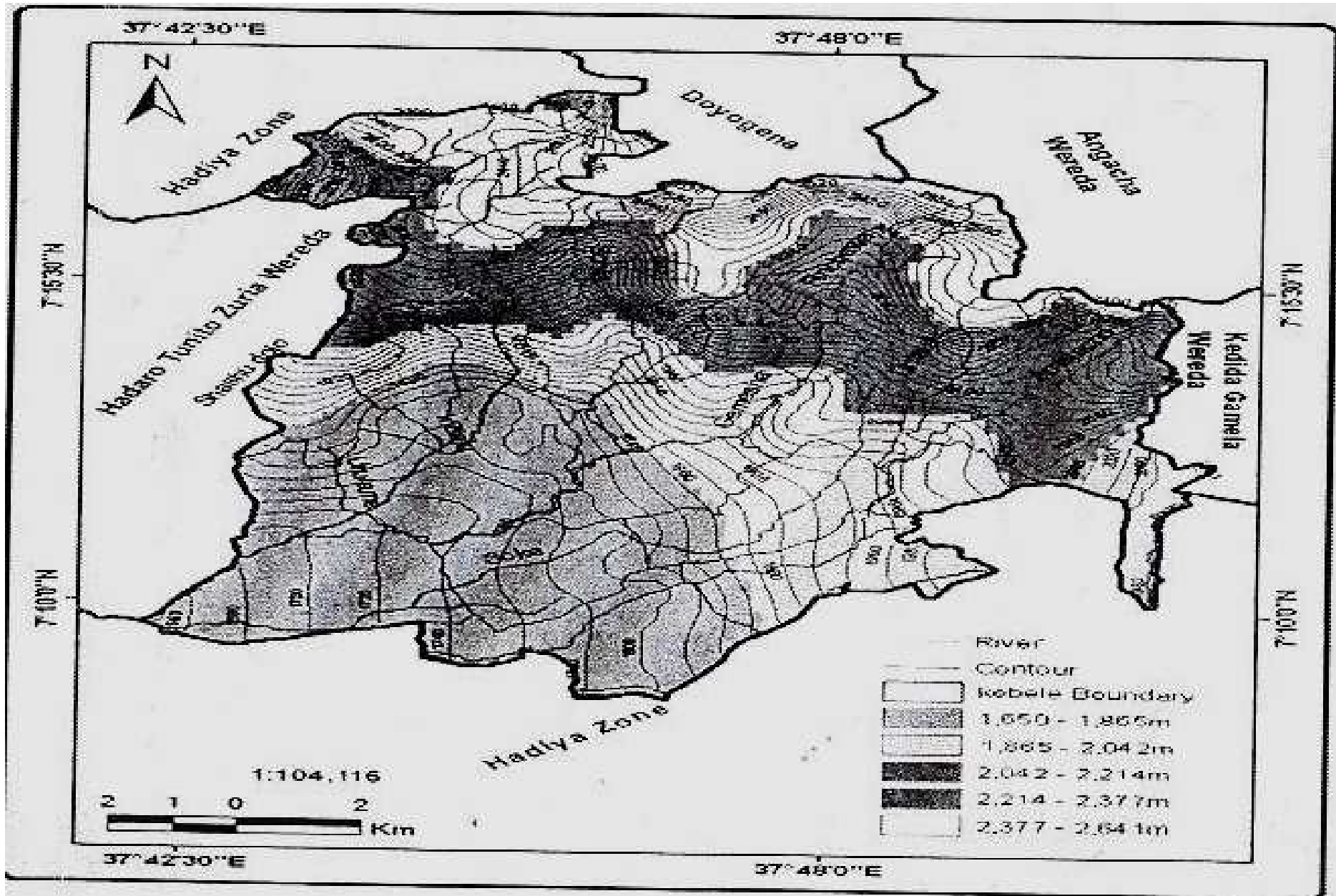
Enset is important in both highlands and midlands. The major annual crops grown in the woreda include wheat, teff, maize, barely, bean, sorghum, pea, potato, sweet potato, taro and green cabbage. Similarly, coffee, ginger, banana, sugar cane, avocado, mango and orange are major perennial crops grown in the woreda. The land use pattern of the woreda has been as follows: crop lands 21,241 hectares; forest lands 1760 hectares grazing lands 1320 hectares and degraded lands 1623 hectares. The highlands are dominated by wheat while the midlands are dominated by high value crops like coffee and ginger as well as maize. Generally, there are two distinct farming systems mainly on the basis of crop types and agro-ecological factors like altitude topography, slope and rainfall:

Enset-wheat-barely farming system in the highland

Enset-maize-coffee farming system in the midland.

The diversification of crop types in the mid land would enable the farmers to make use the better opportunities of different agricultural practices.

Figure 1. Map of the Kachabirra Woreda
/Location of the study area



3.2. Methods of study

Descriptive method was used for this study. The research utilizes both quantitative and qualitative methods to clarify concepts, characteristics, descriptions, counts and measures to demonstrate implications of the issue under question.

Data presented in the study were obtained from primary and secondary sources. Primary data was collected directly from respondents using questionnaires and interviews and group discussion with focus groups. Secondary data was collected through review of related literatures.

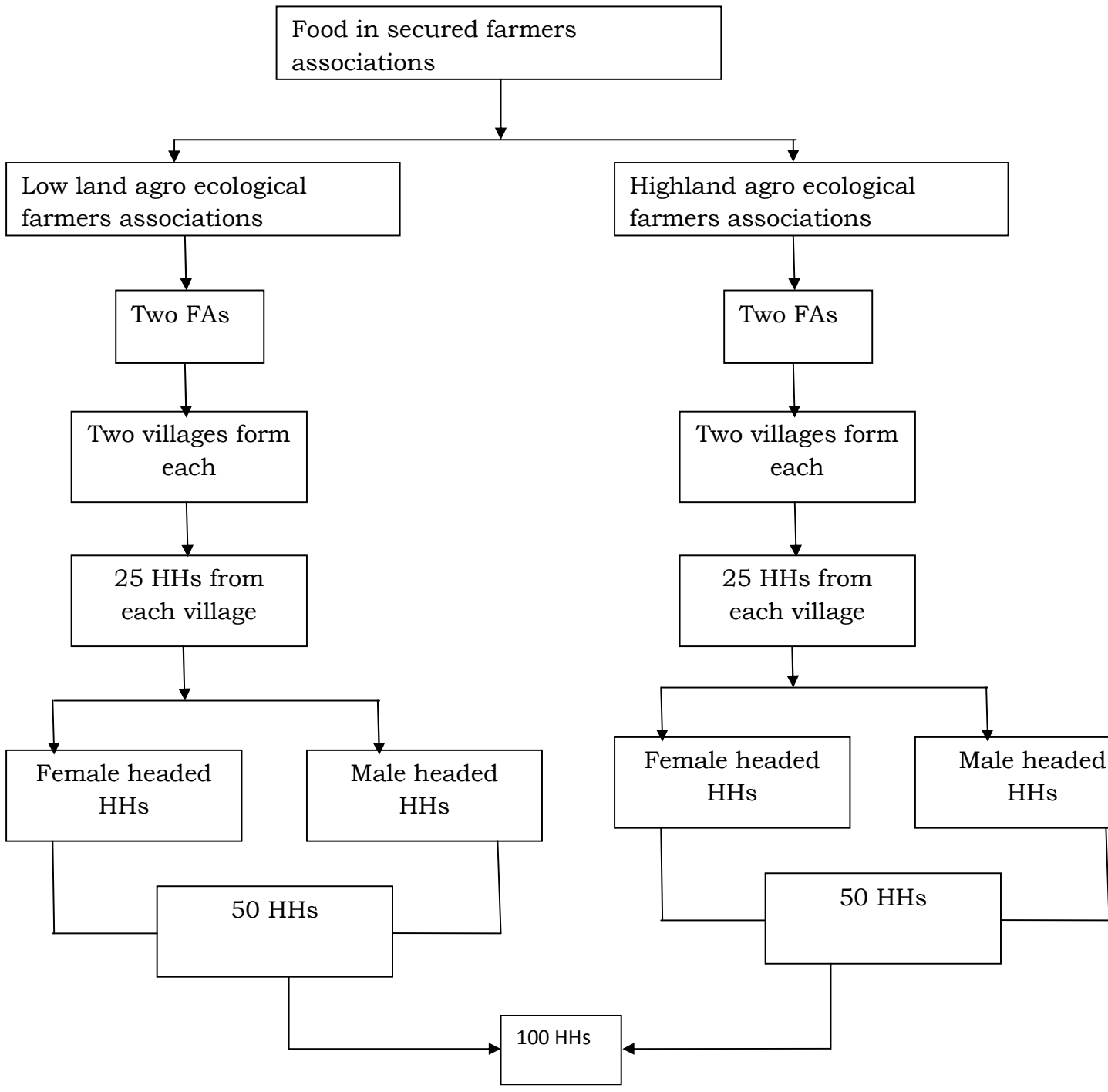
3.3. Sampling Technique

The farmer associations were selected randomly among the food insecure areas in collaboration with kachabira woreda Early Warning, Response and Food Security work processing. During the selection process, the two agricultural agro-ecological zonation (Dega and Kola) were taken in to account. This meant the study area was selected based on highland and lowland agro-ecological representation i.e. two farmer associations from each stratum was selected using simple random sampling.

Sample households were selected using two stages stratified sampling techniques. To this effect, households were categorized in to female and male-headed households from both lowland and high land areas. Finally, the households were selected from each stratum by employing proportional sampling method.

In the second stage, again from each farmer's association one representative village was selected randomly and from each village twenty female-headed and male-headed households, three local leaders and two farmers' association leaders were selected for household interview.

To supplement the household questionnaire survey and to get detailed information, specific issues of interest FGD with ten to fifteen individuals including both men and women was in each village. This means a total of 100 (one hundred) households were interviewed from the four farmers associations from four villages for this study (fig 2).



3. 4. Data collection Methods

Different methods were triangulated for generating both quantitative and qualitative data from the primary and secondary sources. The formal method of data collection was employed through the use of structured questionnaires to the respondents to collect the quantitative data, where as the informal one was prepared in the form of interview of key informants and FGDs which were employed to generate supplementary qualitative data from the group members. The discussion group will be formed in such a way that they will ensure representative of economic or livelihood activities, gender and age of participants.

The members for FGD were drawn from farmer's association officials, elders, village leaders, influential people including both men and women and development agents in the above four farmers associations.

Before conducting the household questionnaire interview, the assistants who were taking part were oriented about the objective and the process of the study. The questionnaire were pretested and refined for application ahead of time.

3.5. Method of Data Analysis

The study employed appropriate method for the analysis of both qualitative and quantitative data collected from primary and secondary sources. Survey questionnaires collected were first edited, coded and entered in to computer for compilation and analysis. All questionnaires administered to the villagers, were properly collected and qualified for entry and analysis works.

Similarly questionnaires administered to the local leaders and farmers associations leaders were also properly filled in. SPSS was used in the analysis of the quantitative data collected through the survey. To make inferences and draw conclusions about the subject of the analysis descriptive analysis was used as statistical measures to describe and summarize views of the different interviewees. The data collected from secondary sources, quantitative and qualitative were analyzed and summarized on subject basis. Thus, in the analysis of the data and information, induction method and descriptive statistics were applied to draw inferences and made conclusions about issues and ideas relevant to the study. Tabular and graphics formats were also used in the presentation of the data summary along with texts that explain the variables and the parameters.

Chapter Four: Results and Discussion

4.1. Demographic and Socio-economic Information

Quantitative data on demographic and social characteristics of survey respondents was collected and analyzed. Demographically, respondents were asked about their age, sex marital status, and type of family, family size and religion. Socio-economic characteristics were analyzed on educational background, family income, possession of land, occupation and period of stay in the village by utilizing qualitative survey questions observation checklists.

4.1.1. Demographic characteristics of survey respondents

Sex of a Household

Out of the total respondents (n=100) the majority (85%) of the participants were male-headed households while women-headed respondents were 15% (Table 2). The proportion of women and men headed households in highland and lowland area was found to be comparable.

Table 3. Respondent sex of the two agro-ecological zones

	Agro-ecological zones				Study area	
	lowland		highland			
Sex	N	%	n	%	n	%
Male	42	84	43	86	85	85
Female	8	16	7	14	15	15
	N=50		N=50		N=100	

N= Number of respondents.

Source: Own survey data in sample farmers association, June, 2012.

Sex of the household could have an influence on a household's livelihood and food security. According to the review literature, female headed households have higher probability of being food insecure because they can find difficult than men to gain access to valuable resources. Moreover women headed households can be either widowed or divorced who are more vulnerable to food insecurity. Hence in this study gender is expected to be positively related with household food security.

Age of respondents

The age range distribution of the respondents based on agro ecological classification showed

that 5% of the respondents were in 15-25 age groups, 37% were in 26-35 age groups, 31% were in 36-45 age groups and 27% were above 45 age groups (Table 3). The average age of the respondents were within the range of 26-45 years. This implies that majority (68%) of the respondents were at their highest productive and reproductive age group, which indicates that they practice high work load due to either having higher number of children or fully participating in different agricultural and non agricultural activities (Table 3).

Table 4. Distribution of House holds Respondents by age range

Age range	Agro-ecological zone				Study area	
	Lowland		High land			
	N	%	N	%	n	%
15-25	3	6	2	4	5	5
26-35	20	40	17	34	37	37
36-45	15	30	16	32	31	31
46 and above	12	24	15	30	27	27
Total	N=50		N=50		N=100	

Source: Own survey data in sample farmers association, June, 2012.

Older people have relatively richer experiences of the social and physical environments as well as greater experience of farming activities (Gebrehiwot, 2005).

That is when heads get higher age; they are expected to have stable economy in farming. Moreover, older households are expected to have better access to land than younger heads, because younger men either have to wait for land redistribution, or have to share land with their families. However, Mullen Jospey, (2007) and other related studies, stated that young head of households were stronger and were expected to cultivate larger-size farm than old heads. Hence, the expected effect of age on household food security could be positive or negative.

Family size distribution

The average family size of the sample was 5.38 and 5.02 in high land and lowland respectively. The highest family size that was observed in the high land area was 12. But comparing to the average family size of the country, which is 6(six), the average family size of the sample area was lower. This implies that high population pressure was observed in the highland area which tends to exert more pressure on consumption than the labour it contributes to production. Thus a negative correlation between household size and food insecurity is expected in this study.

According to reviewed literature, in developing countries like Ethiopia subsistence agricultural production with limited participation in non agricultural activities larger household size exert more pressure on consumption than the labour it contributes to production. The per capita food availability declines as family size increases due to population growth (Paddy 2003)

Table 5. Distribution of Household respondents by type of family, marital status and religious status

Demographic characteristics	Agro ecological zone				Study area	
	Low land		High land			
Family type	N	%	N	%	n	%
Nuclear	46	92	44	88	90	90
Joint	4	8	6	12	10	10
Total	N=50		N=50		N=100	
Religion	N	%	N	%	n	%
Orthodox	5	10	7	14	12	12
Catholic	6	12	8	16	14	14
Protestant	39	78	35	70	74	74
Muslim	0	0	0	0	0	0
Total	N=50		N=50		N=100	
Marital status	N	%	N	%	n	%
Un married	2	4	1	2	3	3

Married	45	90	43	86	88	88
Divorced/Widow/er	3	6	6	12	9	9
Total	N=50		N=50		N=100	

Source: Own survey data in sample farmers association, June, 2012.

The type of family of respondents was 90% nuclear family and 10% were classified as joint family. The marital status of the respondents was 88% married and only 3% and 9% were unmarried and divorced respectively. With regard to religious status of the respondents, 74% were Protestants, 12% were Orthodox and 14% were Catholic. There were no any Muslim religion followers in the study area (Table 4).

4.1.2. Socio-economic characteristics of survey respondents

Educational level of the respondents

The majority (40%) of respondents in the study area were illiterate. The proportion of illiteracy in the lowland (46%) was found to be higher compared to highland (34%). In the contrary, the proportion of respondents in the categories of non formal education and formal education was better in highlands than the lowlands. Thus respondents in the highland were better educated as compared to their lowland counterparts.

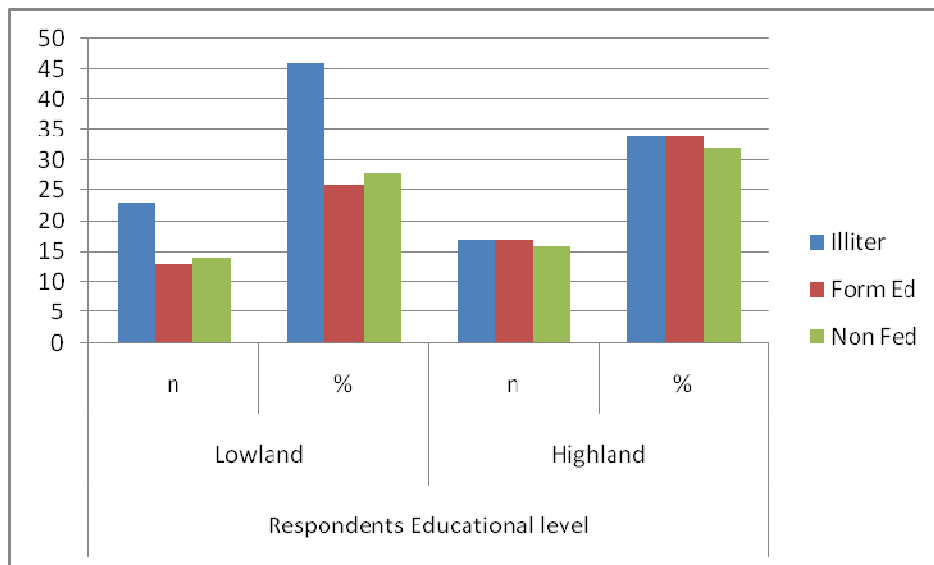


Fig 3 . Educational level of Respondents

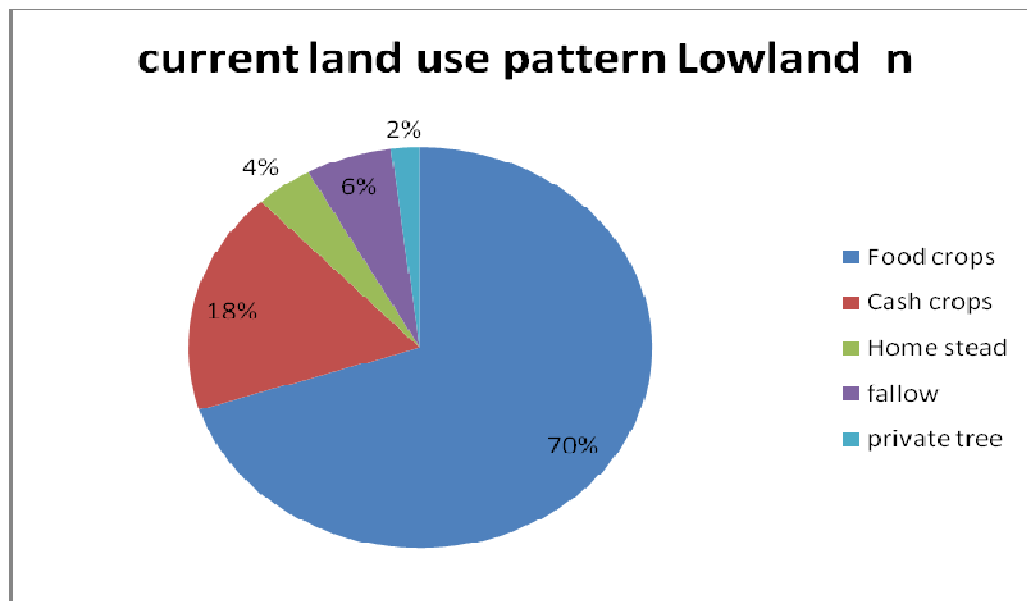
Education is a social capital which could impact positively on a household ability to take good and well-informed production and nutritional status (Alem, 1999). Education could also have an influence on the food security status of the households. Educational attainment by the household head could lead to awareness of the possible advantages of modernizing agriculture by means of technological inputs; enable them to read institutions on fertilizer packs and diversification of household incomes which in turn, would enhance households food supply (Hadgu, 1995).

Land holding

Farm land is one of the major assets that are owned by the majority of respondents in the study area. Normally, the major source of income derived from land as in the form of on-farm production of foods and cash crops, grazing or tree planting etc. However, the landholding is generally characterized by diminution,

fragmentation and loss of productivity due to continuous usage without resting (fallowing). The population explosion coupled with low level of modern technology usage leads to susceptibility for erosion as a result of human induced action such as deforestation and overgrazing that aggravate the community vulnerability and ill being.

The average land holding per household in the woreda (lowland and highland as a whole) is found to be 0.4 hectare; and this in turn contributed to low agricultural productivity and to have less number of (three on average) livestock (Fig 4).



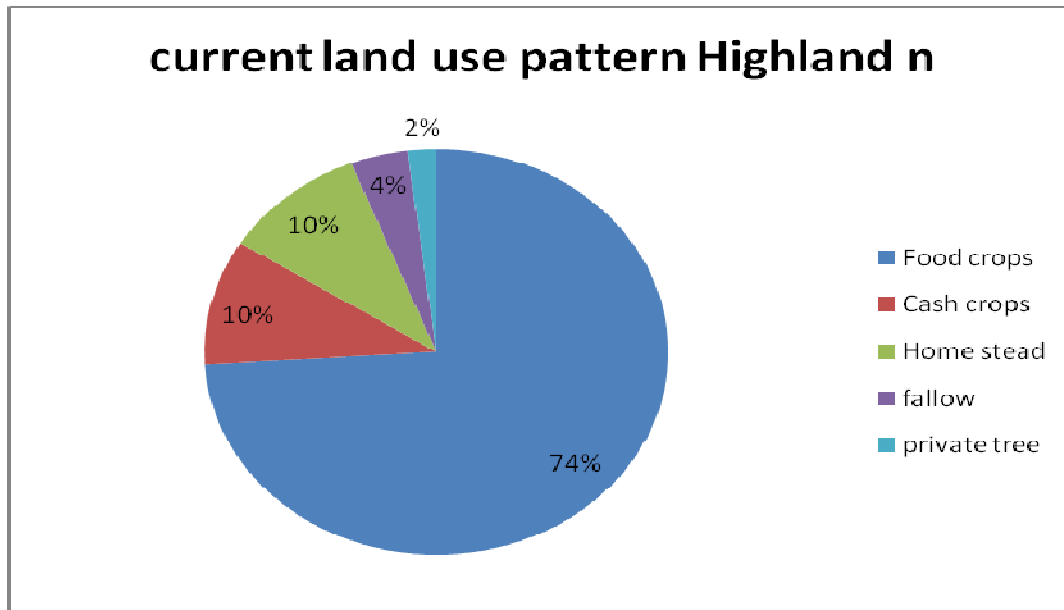


Fig 4. Current land use pattern of the two study areas.

Diversification and sources of Household income

The agricultural income in this study expressed in birr is the income the household received from agricultural activities. The performance of the agriculture sector largely influences the overall returns of the rural households; as agriculture is the dominant sector in Ethiopia. Households that are able to generate higher income from their farms affect food insecurity negatively. In addition to this, employment in off-farm activities enables farmers to modernize their production by giving them an opportunity for applying the necessary inputs and reduces the risks of food shortage during periods of unexpected crop failure. From this perspective, it was attempted to see any significant difference existing between households who worked in off-farm activities and those who did not.

Respondent households employed a variety of sources to diversify their incomes. As it has presented below in fig 5, households have indicated the different income sources which are ranging from on-farm to off-farm options. In the lowland, food aid contributes income to 76% of the respondents while 68% of the highland respondents reported to generate income from food aid. The proportion of households who derive income from food crops were equal (96%) in both high and lowland areas. More than 52% of highland respondents mentioned to get income from cash crop while 46% of the households witness to get income from the same. About 22 and 18 percent of lowland and highland respondents got income from selling personal labour. The overwhelming majority of lowland and highland respondents (62%) obtained some portion of income from fattening activity. Petty trade was not mentioned much as source of income in the lowlands where as about 16 percent of highland respondents reported to generate income from it. Remittance was not common source of income in both sites. Livestock sale contribute household income for 42 and 58 percent of low land and highland respondents in respective order.

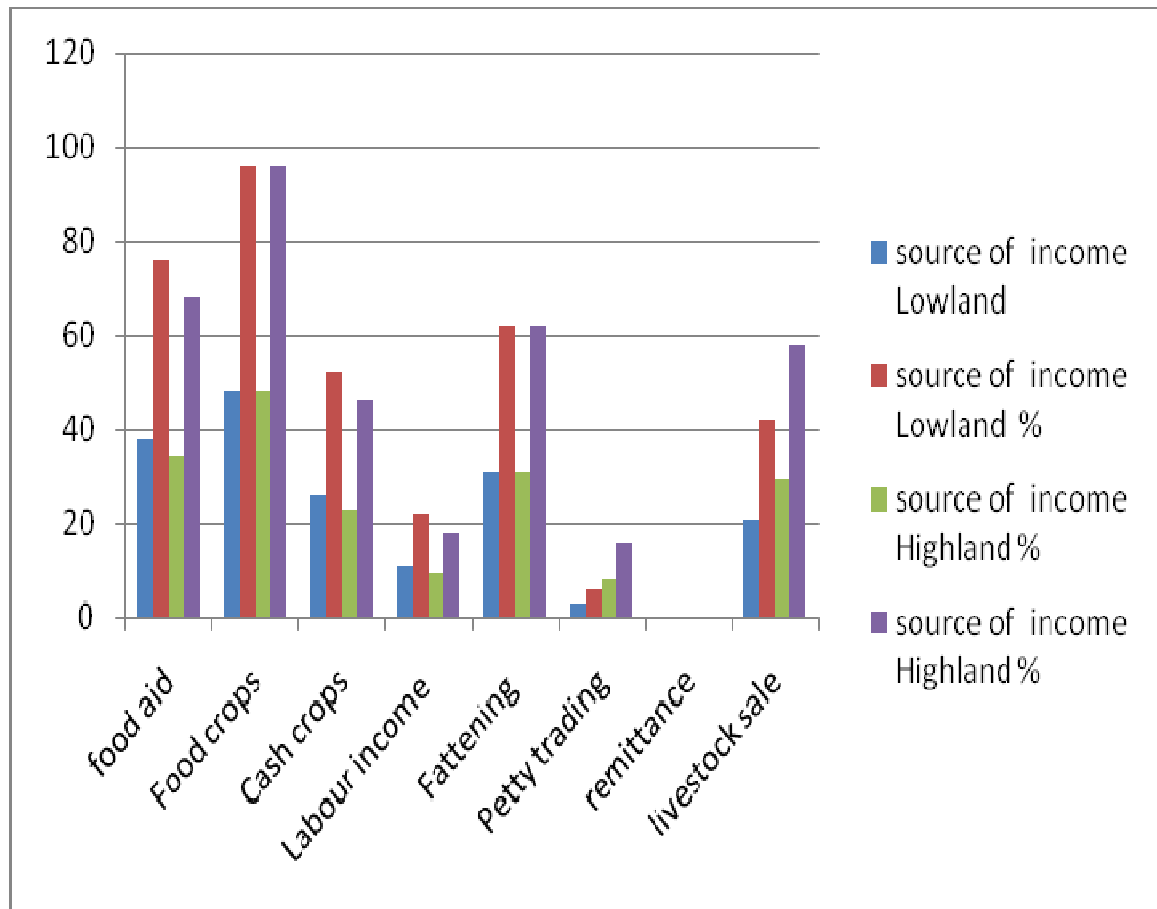
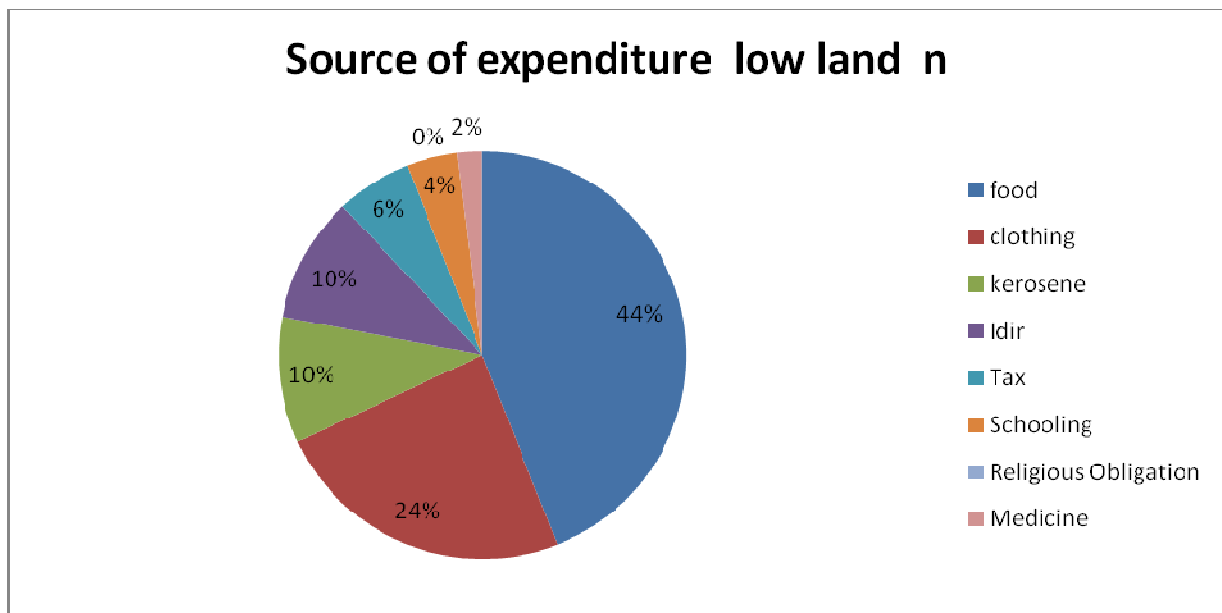


Fig 5. Source of income

Expenditure

It was found that low land respondents spend about 44 percent of their income for food while the highland respondents spent 38 percent for the same purpose. Next to food, clothing constitutes the major expenditure in both sites. The other source of expenditure by the highland respondents include kerosene, *idir*(*Social obligation*), tax schooling, religious obligations whereas tax idir kerosene, medical, schooling in the respective order.

This finding implied that the highland respondents spent relatively larger proportion of their income compared to the lowland. As education expenditure is an investment worth paying in the future the difference in the lowland and highland will have its own impact. This indicated that because of high population pressure in the highland there could relatively higher expenditure expected than lowland area.



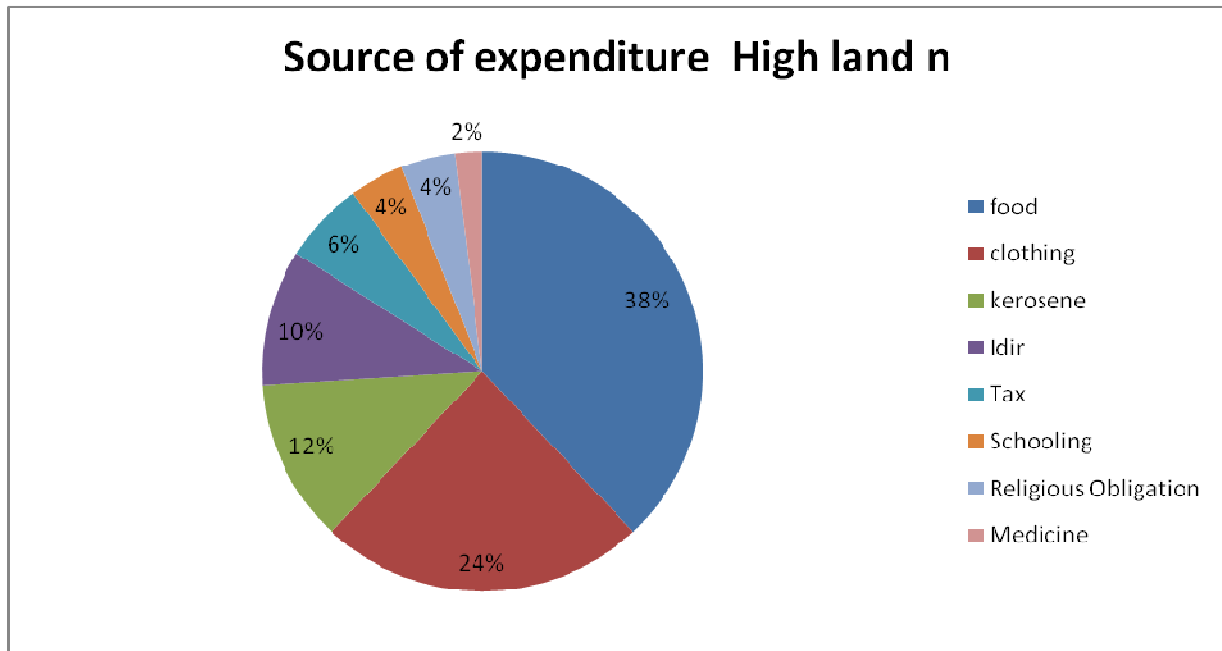


Fig 6 . Source of expenditure pattern

Family Indebtedness, Occupation and Period of stay

Data collected on family indebtedness reveal that out of the total 100 respondents, 33% were in debit, 55% were not indebted and the rest 12% were free or nil from indebtedness. The farmer's association leaders confirm the above reality (table 5). With regard to occupation of respondents, 79% were occupied in farming and 21% were hired laborers. When it comes to the length of time the respondents lived in that locality, 97% of them claimed to have lived for more than 10 years. Period of stay in specific area is important for acquiring local knowledge and the adaptation to the environment.

Table 6. Distribution of respondents in family indebtedness, occupation and period of stay.

Socio economic characteristics	Agro ecological zone				Study area	
	Low land		Highland			
Family indebtedness	n	%	n	%	n	%
Indebted	19	38	14	28	33	33
Not indebted	26	52	29	58	55	55
Nil	5	10	7	14	12	12
Occupation of respondents	n	%	n	%	n	%
Farming	38	76	41	82	79	79
Farming labour	12	24	9	18	21	21
Business	0	0	0	0	0	0
Period of stay	n	%	n	%	n	%
1-5 years	0	0	0	0	0	0

6-10 years	2	4	1	2	3	3
>10 years	48	96	49	98	97	97

Source: Own survey data in sample farmers association June, 2012.

4.1.3. Other background variables

Livestock ownership

According to the Ethiopian Catholic Church survey conducted at Jan 2012, the preliminary findings indicated that the mean oxen holding of lowland and highland respondents during the study period were 0.68 and 0.72 respectively. The mean holding five years before was 1.35 and 1.83 in that order. Both highland and lowland respondents owned an average of 0.52 milking cows. However, the average number of milking cows was much better in both lowland and highlands before 5 years than at the moment. Deterioration of stock has been observed in all types of livestock with in the recent five years period. However, still the number of stock ownership is still better in the low lands as compared to the highland areas.

This showed that due to repeated occurrence of food deficit, the household depleted their asset since sell of livestock was the major coping strategies in the area.

Housing type

Houses covered by corrugated iron sheet are rare phenomenon. Only 12 and 16 percent of household respondents in lowland and highland reported to have corrugated roofs house respectively.

The majority of respondents in low land (88%) have only grass roof houses while 74 and 10 percent of the highland respondents own grass roof and both types of houses in that order. The respondents were informed during the study that owning houses made of corrugated iron sheet considered as a better economic status in the area. The above information confirmed that the majority of respondents live under low economic status (Table 6).

Table 7. Respondents housing pattern in the study area

Housing Type	Agro ecological zone				Study area	
	lowland		High land			
	N	%	n	%	n	%
Corrugated iron sheet	6	12	8	16	14	14
Grass roof	44	88	37	74	81	81
Corrugated iron sheet and grass roof	0	0	5	10	5	5

Source: own survey data in sample farmers association, June 2012.

Farming System

Overwhelming majority of respondents in both lowland and high land are dependent on rain fed production. 0 percent of the respondents have been using irrigation in both sites. The finding implied that farmers in the study sites are dependent on the amount and distribution of rainfall they received year after year (Table 7).

Table 8. Reported rain fed and irrigation usage pattern in the study area

Water source	Agro ecological zones				Study area	
	Lowland		highland			
	N	%	n	%	n	%
Rain fed	50	100	50	100	100	100
Irrigation	0	0	0	0	0	0
Both	0	0	0	0	0	0

4.2. Determinants of food insecurity

The findings from this study indicate that all respondents in both lowlands and high land areas were faced with food shortage in the farmers associations for ten years. Regardless of the agro-ecological zone classification all respondents pointed out that drought and insufficient land size were the major determinants of food insecurity (Table 9).

Table 9. Reported determinants of food insecurity

No	Reported determinants of food insecurity	Highland		Lowland	
		n	%	n	%
1	Drought	50	100	50	100
2	Insufficient land size	48	96.7	35	71.7
3	Large family size	37	75	34	68.3
4	Lack of oxen	27	53.3	21	41.7
5	Low level of productivity	24	48.3	18	35
6	Shortage of seed	24	48.3	25	50
7	Crop pest	9	18.3	13	25
8	Death of livestock	7	13.3	15	30
9	Livestock disease	6	11.7	12	23.4
10	Insufficient productive labour	5	10	6	11.7
11	Human disease	1	1.7	12	23.4

Source: Own survey data in sample peasant association, June 2012.

Low level of productivity and shortages of seed contribute to food insecurity and 48.3 percent each by highland respondents and 35 and 50 percent by lowland respondent substantiated these respectively. Large family size and lack of oxen were reported by 75 and 53.3 percent of highland respondents while 68.3 and 41.7% lowland respondents mentioned the same as causes for food insecurity.

4.3. Household coping strategies

Households do employ different types of coping strategies during time of food shortage depending on its chronic or transitory nature. Corbett (1989) identified a three stage sequences in coping strategies and argues that this model may provide a useful tool for analyzing the economic behavior of households prior to and during disaster such as drought and famine. According to the author these three stages are insurance mechanism, dispose of productive assets, and destitution. In the study area lowland and high land respondents were responding the shortage of food as indicated in the table 9.

Table 10. Reported coping strategies of study participants (n=100)

n	Coping strategies	Lowland		highland	
		n	%	n	%
1	Insurance mechanism				
	Shift to less preferred or less expensive foods	35	70	47	94
	Use of interhousehold transfers and loans	32	64	35	70
	Send household members to eat elsewhere	4	8	7	14
	Gather wild food or hunt for food	7	14	8	16
	Harvest immature crops	33	66	25	50
	Petty trade (small animals, sell of food injera/bread, local drink ,etc.	4	8	21	42
	Daily labour	19	38	19	38
	Feed working members at the expense of non-working members	1	2	4	8
	Giving priority for adults	7	14	6	12
2	Dispose of productive assets				

	Purchase food on credit	14	28	20	40
	Sell of fuel wood and charcoal	34	68	13	26
	Consume seed stocks held for the next season	28	56	23	46
	Limit the quantity of water or food during meals	29	58	24	48
	Giving priority to children	21	42	21	42
	Reduce number of meals eaten in a day	40	80	44	88
	Sell of productive asset	35	70	54	90
3	Destitution				
	Send household members to beg	2	4	2	4
	Go for the entire day without eating	17	34	8	16

The result revealed among the insurance mechanism shifting to less preferred and less expensive food were employed by 70 percent of lowland and 94 percent of highland respondents. Consuming immature food was more common in lowland (66%) than the highland (50%). Similarly, other coping strategies such as inter-household transfer, sending children to neighbors' or relatives, gathering wild food were reported to be used at different extent.

About 55 percent of lowland respondents were consumed their seed stock as coping strategy while only 45 percent of highland respondents did the same. Regarding sell of productive assets, 90 percent of highland respondents were engaged in this coping strategy as compared to 70 percent of the lowland respondent. Both lowland and highland respondents emphasized that sell of oxen and milking cows, mortgaging of land was considered as the last resolution and most households opt to cope with their problems by selling small stocks or limiting with other options such as selling labour.

The majority of the respondents also stated that limiting the quantity of meal and reducing the number of meals eaten in a day were their usual practices for the last ten years in both agro-ecological zones. On the other hand, sell of firewood and charcoal were more practiced in lowland than highland, but petty trade such as sell of local drink were common among the highland respondents.

4.4. Vulnerable Groups

In the study area agriculture is the major source of livelihood for the households. However, the sector has been affected by the recurrent drought and consequently food insecurity became a common phenomenon for the farmers associations many years. This condition is also aggravated by insufficient land size; low yield lack of oxen, shortage of seed at planting time, inefficient institutional capacity, etc. The resultant of these combined man-induced and natural factors drained the household's ability and limits its action to short-term fire fighting type response (Table 11).

The strong food aid dependency syndrome of the study area and more particularly the lowland explained lack of buffer to contingencies such as drought. However generalization of vulnerability at community level has a risk of hiding the more vulnerable groups that are affected even by the slightest risk events due to lack of readily available resources which serve as a buffer to protect their survival or livelihoods. The finding showed that the degree of vulnerability was different in agro-ecological zones, among households and among different groups in the area. The low land households were found to be the most vulnerable than the highland due to their exposure to severe moisture stress, and shortage of grazing land for their animals. The households with insufficient land, large family size, shortage of productive labour and drafting power were the most vulnerable in both agro-ecological zones. On the other hand, among the groups, landless, children, elders, pregnant and lactating women and women headed households were also the most vulnerable groups in both cases.

Table 11. Identified vulnerable group distribution of the study area

Vulnerable groups	Lowland		Highland	
	n	%	n	%
Children	47	94	49	98
Pregnant women	33	66	39	78
Lactating women	36	72	36	72
Elders	35	70	40	80

Landless	25	50	33	66
Female headed	30	60	34	68

About 94 percent of the respondents in low land and 98 percent in the high land confirmed that children were the most vulnerable groups during food shortage. As indicated in the table above the lowland respondents witnessed that pregnant women, lactating women, elders, and the landless were the most vulnerable groups respectively. This finding indicates that the highland respondents perceived that these groups were more vulnerable to food shortage than the rest of the community members.

4.4.1. Food Aid

There was food aid appeal for kachabirra since 2003 to date (Kachabirra woreda, Early warning, Response and food security, June 2012). The magnitude of people in need of food aid has showed an increasing trend. The largest numbers of people were registered for food aid in kachabirra woerda was in 2008 that was above 60% of the total population. The ever increasing figure for food aid appeal year after year implied the development of dependency syndrome and the failure of governments and Non Governments institutions to mainstream drought proofing programmes, that link relief with development. Saving lives through food budgeting should not be considered as an end in itself, but mitigating people vulnerability to drought and famine once and for all through holistic development should get due consideration (Fig 7).

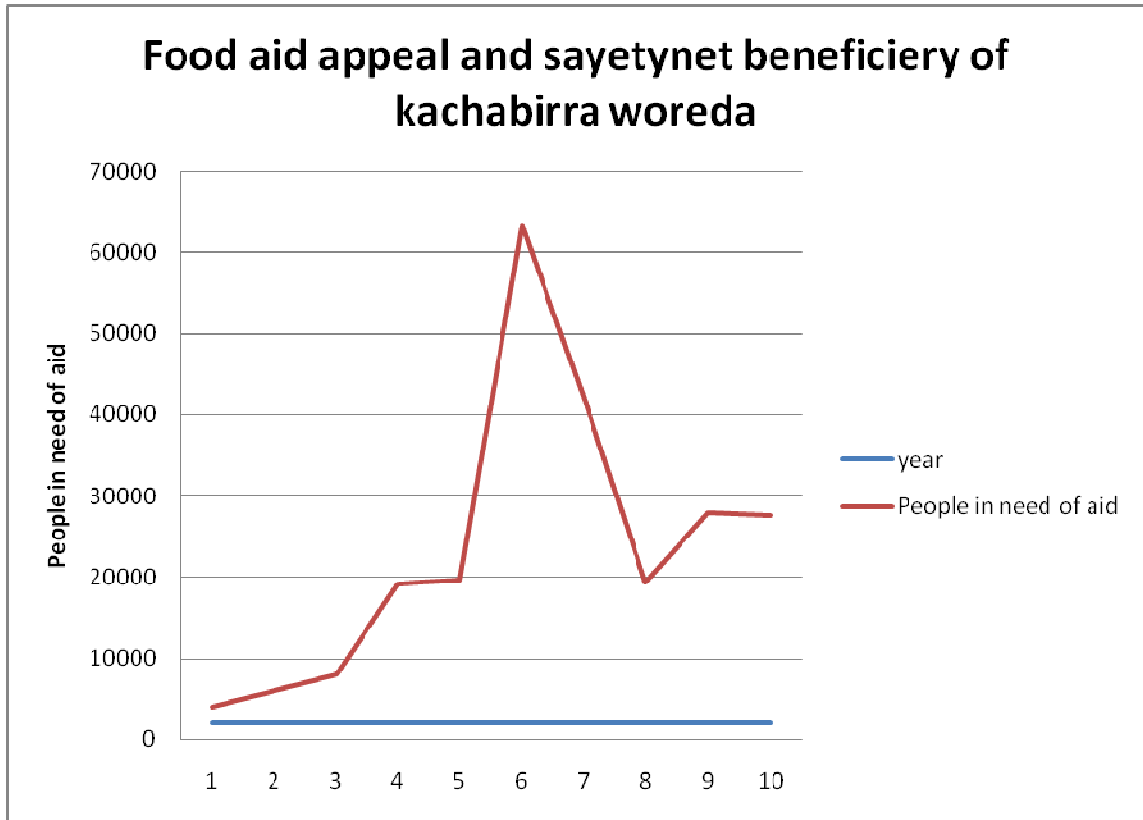


Fig 7. Ten years food aid appeal (Adapted from Kachabira woreda agricultural office, EWRFs work process)

Chapter Five: Conclusion and Recommendation

5.1. Conclusion

The sample respondent households have indicated that food insecurity is a deep rooted problem for the farmers associations several years ago. The Federal Disaster Prevention and Preparedness Department in the last ten years huge and ample data confirmed that kachabirra woreda is as one of the highest food aid recipients among the Kembata Tembaro Adiminstrative Zone, however the magnitude varies from year to year. The figure in 2008 accounts roughly above 60% of the total population of the woreda (Kembata Tembaro Zone DPPB, 2008). This situation revealed that the majority of the people are vulnerable to chronic food insecurity that explains their ill being to meet their minimum basic needs. The whole scenario reinforce vicious cycle of poverty where the communities depleted their productive assets due to the incidence of recurrent drought in the farmers associations two or more decades and still dependent on food aid assistance and safety net programme.

The major causes of food insecurity had several dimension in the area but drought and flood hazard (2009) was the major once followed by infestation of crop pest (2008), lack of oxen, insufficient land, low production, shortage of seeds at planting time, and human and livestock disease outbreak were among the everlasting problems in the last decade in the area. However the contributions of each of the above factors to food insecurity were varied in high land and lowland agro ecological zones. The contribution of food aid in saving lives was very much crucial

in the woreda; the negative impact of this intervention like dependency syndrome was much reflected by the people during FGD. Particularly this condition was much significant in the lowland residents.

Diversification of activities much focused on farm types that utterly rely on nature. This includes growing food crops and limited type of cash crops; the latter was much significant in the lowland. The productivity of on-farm activity depends on the presence of adequate rainfall and absence of other natural risks like pest and disease infestation. In addition, cropping similar types of crops on the same plot for several years increase the incidences of pest and diseases; key informants reported this condition during group discussion particularly with lowland households.

The productivity as well as the population of livestock was significantly reduced from year to year in the last ten years in the area. This was mainly due to erratic and uneven distribution of rainfall coupled with the expansion of agricultural land, population pressure, shrinking of the size of communal lands (lowland) as well as individual grazing holdings. Beside this, sale of animals had been considered as major coping strategies by the household and unpredictable animal diseases outbreak particularly in lowland aggravated for the reduction of livestock in number as well as their productivity.

When the households faced food shortage, they practiced various coping strategies to minimize the risk until they have got external support. These mechanisms were different from place to place and also varied with agro ecologies. But there were some strategies that are

specific to certain households or agro-ecologies and some also commonly practiced regardless of spatial difference. The commonest strategies used by the study respondents were sale of animals, daily labour, reduce the amount and frequency of meals. In addition, petty trading and sale of charcoal were also employed. Selling of their limited produce immediately at market to repay earlier debt and purchase of household member, clothes and others were aggravating the situation. On the other hand, ill treating the existing limited natural resources such as deforestation for firewood, charcoal production and extension of farm land were the main reason for depletion of private as well as communal possessions.

Even though the majority of the respondents were food insecure, the most vulnerable groups were children, elders, pregnant and lactating women, female headed households and landless. This was because these groups naturally rely on other productive groups and stationed around the homes because of their age, physical weakness, natural law and cultural taboos. Beside this, due to their biological system, they could not eat all food types locally available at times of acute food shortage. Female headed households were the most vulnerable due to shortage of productive labour for the labour intensive agricultural activities. Landless households were also the most affected group by this condition and mostly youngsters and newly married were categorized under this group. Besides due to lack of land frontier and the limited land market in both lowland and highland, the landless are pushed into vulnerability. This situation was much more serious in the high land area. Pregnant and lactating mothers were also victims of food shortage since they were exposed to additional burden and responsibilities in the household chores.

In general unimproved farming practices, landlessness, small sized land, environmental degradation, limited asset ownership, and large family size per household are the major factors contributing to the household food insecurity in the woreda. Both transitory and chronic food insecurity is inherent in the area. These resulted in distinct socio-economic problems like low production and productivity, and overall poor income status. The current socio-economic situations of the Woreda community indicate that most of the people hardly earn their daily survival, as their income is much low to meet their basic and indispensable needs.

According to the TDI Report of the ADP, 29% of the HHs belong to the 'poorest of the poor' income group where individuals have little access to any of the elements of basic human needs. The 'poor' income group constitutes some 34% of HHs, whereas, 32% of the people are categorized under medium income group and 5% of the total HHs are categorized as 'better off' income group.

5.2. Recommendations

Based on the above findings about food insecurity and related issues of the study area, the following bullets were recommended to improve the existing situation:

- Introduce appropriate services such as improved agricultural extension programs that can mitigate the negative impact of drought, disease and pest as well as capable enough to improve both labour and land productivity.
- Promote high yielding food and cash crops varieties as an entry point to encourage farmers and to rebuild their assets.

- Increase the productivity and quality of livestock through introducing improved feed and management. The recently started interventions such as water harvesting and management, afforestation and soil and water conservation programs should be continued in a very responsible and in the most integrated way to rehabilitate the degraded environment.
- Strengthen extension and back up by other services such as credit scheme, provision of oxen, inputs like seed, fertilizer, pesticide etc.
- Provide health services for both human and livestock by government and NGOs that can contribute to minimize vulnerability.
- Initiate resettlement program based on careful studies and on voluntary basis. This opportunity can benefit more particularly the landless and those vulnerable groups who do not have enough lands to meet their basic necessities. So it should be strengthened.
- Diversify agricultural systems which have the direct impact to improve income of households as well as it reduces pressures on natural resources.
- Provide training on entrepreneurship and availing the necessary financial and technical support.
- Ensure better access to basic and social facilities such as safe drinking water, health services, formal and informal education, road, market facilities, etc.

- Integrate relief programs with development programs in a responsive and accountable manner and close monitoring and supervision of the intervention by concerned bodies for paramount importance.
- Network between Early Warning System (EWS) At Federal and grass root level institutions. A fire fighting type of humanitarian actions that aim to save life in the short term need to be replaced by long term reduction of vulnerability that are linked with development.
- Involve the community in planning and implementing of integrated development programs in the area through participatory and interactive process, which reduces the likelihood of project failure. Targeting the right people to the right intervention is now the most important issues to be given due attention because the priorities of the local leaders, influential people may not give guarantee the priorities of the most vulnerable groups so that defining and identifying the needs and priorities of the poorest of poor and intervene accordingly must be crucial in order to improve their living condition of these group otherwise the better off would snatch the benefit and the discrepancy will persist.
- Integrated development programs should work to alleviate the root cause of food insecurity in order to come up with sustainable development in the area rather acting on the symptoms of the incidences.

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