



**Mekelle University
The School of Graduate Studies**



Faculty of Dryland Agriculture and Natural Resources



THE ROLE OF FOOD FOR WORK TO COOPERATIVES ON HOUSEHOLD FOOD

SECURITY IN ENDERTA WOREDA, TIGRAY ETHIOPIA

By

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DECLARATION

This is to certify that this thesis entitled “**The Role of Food for work to Cooperatives on Household food security**” in Enderta Woreda submitted in partial fulfillment of the requirements for the award of the degree of M.Sc., in Cooperative Marketing to the School of Graduate Studies, Mekelle University, through the Department of Cooperatives, done by Mr. Gedlom Gebremeskel, Id.No. FDA/PR0016/99 is an authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any Degree or Diploma to the best of my knowledge and belief.

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Signature & date

Biography

The author was born on February 02, 1977 in Mekelle, Dehub Wereda Tigray. He attended his elementary and junior high school education at Awet elementary and junior secondary school Asmara. He completed his secondary education in 1995 at Semaetat secondary school Asmara. Then, he joined Mekelle University Faculty of Business and Economics and graduated with B.A. degree in Accounting in July 12, 2003. Soon after his graduation, he was employed in Open Business and Technology College, Mekelle, as Finance and Administration Head. Then in 2004 he joined Construction and Business Bank S.C Mekelle Branch. The author served as a Loan officer of the Branch bank from June 2004 up to November 2006. He joined the school of graduate studies at Mekelle University in the Department of Cooperatives in November 2006/07 to specialize in Cooperative Marketing.

ABSTRACT

The research was conducted in Enderta Woreda, in southern zone of Tigray National Regional State, to assess the beneficiaries' perception on the role of food for work and to review and assess the discouragement effect. During the study, primary data were collected from 120 members of a multi purpose cooperative and 30 non members. In addition secondary data were collected from the relevant institutions.

For the data analysis, descriptive statistics such as frequency distribution and percentages were used to describe institutional and socio-economic characteristics of the respondents. In addition, the t and Chi-square tests were employed to test the relationship of dependent variables with respect to some explanatory variables. A Multiple regression model was used to analyze factors influencing average annual income of respondents.

The study revealed that the FFW beneficiaries have better access to food and their availability to food was also improved. The nutritional status has improved due to their participation in the project. FFW projects have also protected from migration for the 98.6% of the respondents. Moreover, it helped 88.4% of the respondents to enroll more children in schools. Besides, the study findings indicate that the only source of income for the majority of the respondents was farming. Even though, there are some problems in targeting in food aid, the study revealed that targeting in food for work was fairly done. This was confirmed by 94.3% of the respondents. Respondents in the survey area conformed that (51.4%) the payment was not enough and (48.6%) said it was enough. It was found from the study, the the average year of participation on food for work projects was 6 – 9 years. According to the

estimates of the regression model the variables which greatly affect the income of respondents include age of beneficiaries and number of oxen owned.

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Acronyms and Abbreviations

ADLI- Agricultural Development Led Industrialization

CSA – Central Statistical Authority

DA – Development Agent

EEA – Ethiopian Economic Association

EEPRI – Ethiopian Economic Policy Research Institute

EFSR – Emergency Food Security Reserve

EGS – Employment Generation Schemes

FAO – Food and Agriculture Organization of the United Nations

FDRE – Federal Democratic Republic of Ethiopia

FFW – Food for Work

GDP – Gross Domestic Product

Ha – Hectare

masl- meters above sea level

MoFED – Ministry of Finance and Economic Development

NGO- Non governmental organizations

NPDPM – National Policy on Disaster Prevention & Management

PSNP – Productive Safety Net Programme

Qt - quintal

REST – Relief society of Tigray

SSA- Sub-Saharan Africa

TBoFED – Tigray Bureau of Finance & Economic Development

TDPPC – Tigray Disaster Prevention & Preparedness Commission

UNICEF – United Nations Children’s Emergency Fund

UNDP- United nation development program

USAID – United States Agency for International Development

WARD – Woreda Agriculture & Rural Development Office

WFP – World food Programme

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CHAPTER-I

1. INTRODUCTION

1.1 Background

Ethiopia is an agrarian economy based country where the agricultural sector plays an important role in the national economy, livelihood and socio-cultural system of the country. The sector supports employment of over 80% of the population, accounts for 45%-50% of the national GDP, and makes the largest contribution to raw materials for agro-industries, food security and foreign exchange earnings. (Canadian Food Security Policy Group, 2006). However, Ethiopia's agriculture is characterized by its very low productivity.

Among the various reasons for the low agricultural productivity in the country are: traditional agricultural practices and implements, small land holding as each generation splits, insufficient resources, population growth in rural areas is high, underdeveloped rural infrastructure, unpredictable weather patterns, the decrease in rainfall periodic droughts, dependency on foreign grain, little access to information, training, tools and skills to improve their farming methods and to diversify their crops. Recurrent drought and the accompanying degradation of the natural resources base and political instability as well as wars have also contributed to the persistent of poverty and frequency of food insecurity in Ethiopia. (CDA, 2006)

The economic policy of Ethiopia aims at ensuring rapid and sustainable development through an agriculture-centered development strategy. This strategy is known as Agriculture Development Led Industrialisation strategy (ADLI), and concentrates mainly on the linkages between agriculture and other sectors of the economy. Agricultural growth is seen as a guarantee against food insecurity in the country. The food security strategy of Ethiopia is based on three important aspects: a) increasing food and agricultural production, b) improving food entitlement and c) strengthening capacity to manage food crises. In order to improve agricultural production a major emphasis is given to increasing productivity through the diffusion of improved technologies. In the food entitlement strategy, the focus is on reducing vulnerability in drought prone areas. The strategy also focuses on strengthening emergency capabilities. It involves maintaining emergency food reserves and developing an effective early warning system (Ayalneh Bogale, 2002).

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

Different studies suggested different reasons for the increasing trend of household food insecurity in the country. One of the major factors that have contributed to household food insecurity in Ethiopia was land degradation. At least 1.5 billion tones of top soil has been washed away each year. On top of this, recurrent drought and war torn economies of the country also aggravate the problem and led to a massive food grain deficit and household food insecurity (Ibid, 2002).

It is indicated that one of the major underlying factors for the current level of household food insecurity in Ethiopia is the over dependency on the farming community on erratic rain fed agriculture.

Tigray is the most drought affected region in Ethiopia. Severe Environmental degradation problems, mainly soil erosion and nutrient depletion, constrain agricultural production in the region. There has been a huge flow of food aid since early 1970's. FFW programmes have been very common in Tigray as a way of improving food security but also as an important means of undertaking environmental rehabilitation programmes (Fitsum, *et al* 2002). This research paper tries to investigate whether FFW has got an impact on the welfare of the poor households of the members of the multipurpose cooperatives or not. Moreover, it is intended to find out whether food for work has got a deterrent effect on productivity and has created dependency. (Fitsum, *et al* 2002)

1.2 Problem Statement

The Ethiopian economy is primarily a subsistence economy in which the traditional agriculture dominates. In such type of economy the major source of employment is agriculture. Unfortunately, in the economy, the sector is characterized by scarcity of factors of production (like capital, technology, and skill), rudimentary farming method, and low level of out put and so on. Such economy is highly exposed to food insecurity and famine during bad times.

Tigrai, one of the drought prone regions of Ethiopia, suffers from a persistent food deficit leading to highly levels of overlapping chronic and transitory food insecurity, associated with

poor agricultural productivity, combined with continuing reliance on rain agriculture. Even in good years, farmers can not produce enough to cover their subsistence need.

Tigrai also characterized by sever environmental degradation, high population pressure and over cultivation of the central highland areas. This combined with massive deforestation and distraction of natural vegetation cover has resulted in serious erosion and then low agricultural production. Thus, the region is affected by cyclical drought and food insecurity is the major problem facing the region. Food aid has been used to fill the food demand gap of the people. In the region food aid has been used to augment the level of food supplies and protect the income of victims of drought and famine (Clay et al. 1999).

Ethiopia hosts the biggest food for work (FFW) scheme in Africa and has more than 30 years experience with FFW programes. The country receives 20 – 30% of all food aid to sub Saharan Africa. A significant portion of this food aid is distributed through FFW projects. World food programme (WFP) alone distributed 20 to 30 percent of its food aid through different FFW projects. A number of government agencies and other local and international NGO's are also engaged in FFW programes. Food for work (FFW) refers to labour intensive public work programes (workfares) which use food as a mode of payment. A number of studies have been under taken about workfares programes in general and food for work in particular (Clay et al. 1999).

In recent years the cycle of drought seems to be occurring in short period intervals. At the same time availability of food aid in general has been on the decline since 1990s (Clay, 1999). Therefore, the ever declining food aid accessible to the country has to be more effectively utilized. As food for work is one way of using the food aid available to

developmental ends while at the same time transferring food to the poor, and since such projects have been wide spread in the country, it will be crucial to know their impact on cooperatives. In addition to contributing to the FFW debate, such knowledge can be of help to improve the performance and effective use of food aid in general and FFW in particular.

1.3. Purpose of the study

Employment programs are seen as a useful way of reducing poverty with out giving food hand outs, at the same time, such programs attempt to remove the underlying causes of food insecurity, such as deficient rural infrastructure, environmental erosion, and low agricultural productivity. Care must be taken however, to retain the advantages that food aid offers. Moreover, where appropriate planning, technical standards, and agreed work norms were applied, works supported by food aid consistently productive and often outstanding. Thus, this research work is intended to assess the role of food for work projects in addressing the problem of food insecurity, and by qualifying and to a certain level quantifying the perception of beneficiaries and some authorities with regard to dependency and other discouragement effects of food aid.

1.4 Hypothesis of the study

- Food for work schemes have an impact on household food- security
- Food for work improves income and household food security of the households via income smoothing and asset creation.

1.5 Objectives of the Study

1.5.1 General objectives

The general objective of the study is to compare and define the role of food for work in the effort for ensuring household food security and the risk for food dependency

This study is visualized in the area with the following specific objectives:

- To review and assess the beneficiaries' perception on the role and impact of food for work in their day to day life and the efforts for ensuring sustained household food security.
- To review and assess the disincentive effect of food for work
- To determine the socio-economic impact of Food for work projects
- To suggest strategies and policy recommendations for improving the food security

1.6 Significance of the Study

A study on impact of food for work on farmer's livelihood in general and specifically on cooperatives is important because it creates vital information on the implementation of food for work programs and its success. It will also enable policy makers and non governmental organizations to correct problems encountered during implementation of the program.

CHAPETR-II

2. LITERATURE REVIEW

Introduction

Under this section the review of different literatures on previous studies has been made in order to see its findings and appreciate the current studies. The researcher has used different secondary sources such as publications and report of government and non government organizations, dissertations, websites, and others to review previous studies.

2.1 Definitions

What is food security?

Food security is an ‘unobservable variable with complex, multi-factorial causality’ (Barrett, 2002). There is a consistent general idea in literature that the concept of food security is confusing with over 250 definitions and 400 different indicators of food security (Hoddinott, 1999).

A reason for the extensiveness of definitions and indicators, as presented in literature, is due, at least in part, to the preferences and tendency of organizations and researchers. Hence, food security definitions and measurements have a considerable degree of subjectivity (Boardman, 2002).

A common accepted definition of food security is that "all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life" The USAID (1992)

Food security is also defined as "access by all people at all times to sufficient food for an active and healthy life" (World Bank, 1986).

Food security includes at a minimum: the availability of nutritionally adequate and safe foods, and assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

Three conditions must thus be satisfied to ensure food security: food must be available through domestic production and imports; food must be accessible or people must have adequate resources to acquire the appropriate foods; and food must be utilized in conjunction with adequate water, sanitation and health to meet nutritional needs; often, however, food security is discussed with reference to grains only. This can be misleading especially for societies (example pastoral societies) that are primarily dependent on sources of food other than grains.

2.2 Core Concepts on Household Food Security

The concept of "enough food" is presented in different ways in the literature: as a "minimal level of food consumption"; as "the food adequate to meet nutritional needs". In more descriptive formulations, it refers to "enough (food) for life, health and growth of the young and for productive effort, "enough food for an active, healthy life" and " enough food to supply the energy needed for all family members to live healthy, active and productive lives.

“From these definitions, four aspects of the question can be distinguished (Maxwell and Frankenberger, 1992).

First, the unit of analysis in these definitions is the individual, not the household. Where the household refers to an aggregation of individuals whose food needs must be satisfied.

Secondly, although the definitions mostly refer to “food” the main concern is with calories not with protein, micro-nutrients, food quality and safety. This is mainly because analysts operate on the principle that other needs are usually satisfied when calorie intake is satisfactory.

Because it is difficult to estimate precise calorie needs for different groups in the population, it is concluded that all estimates of nutritional requirements have to be treated as value judgments (Maxwell and Frankenberger, 1992).

Finally, although the difficulty of measurement, an important aspect of assessing whether people have access to “enough” food is to ask how far they fall below the threshold. In the earlier literature on malnutrition and in the current literature on poverty, the size of the gap is an important theme (Maxwell and Frankenberger, 1992).

We find that the concept of enough food is problematic. Nevertheless, it appears to make sense (a) to concentrate initially on calories, (b) to define needs not just for survival, but also for “an active and healthy life”, and (c) to begin with individual needs and build up to the household (Maxwell and Frankenberger, 1992).

Availability refers to the need to produce sufficient food in a way that generates income for small-scale producers while not depleting the natural resource base and to the need to get this

food into the market for sale at prices that consumers can afford (Haddad, 1997). According to Kifle and Yoseph (1999) availability is basically the households' capacity to produce the food it needs.

Equating national food security with food self-sufficiency is such a problem that needs to be clearly understood. Attaining macro-level food self-sufficiency does not assure the achievement of food security at micro-level. This leads us to a further distinction between macro (food supply insecurity) and micro (food consumption insecurity) dimensions of the problem (FAO, 1986).

2.2.2 Access and entitlements

The second core concepts are “access,” the question of whether individuals and households (and nations) are able to acquire sufficient food. An individual's entitlement is rooted in his/her endowment, which is transformed via production and trade into food. As Sen himself agrees, food availability remains a key issue in food security (Maxwell and Frankenberger, 1992).

An important extension to entitlement theory focuses on the role of investments, stores and social claims in determining household vulnerability to famine. When households are able to generate a surplus over and above their basic food requirements, the excess resources are diverted into assets of these three kinds which can be drawn down when households faces a crises (Maxwell and Frankenberger, 1992).

Access to food is necessary but not a sufficient condition for a healthy life. A number of other factors such as health and sanitation and household and public capacity to care for

vulnerable members of society also come in to play (Von Broun *et al.*, 1992). Access to food plays a critical role in securing food, which in turn is determined by production or exchange (Debebe Habtewold, 1995). The usual food availability approach neither fully captures the plural causes of famine nor adequately explains its asymmetric impacts. An insufficient entitlement might be caused by a decreased endowment bundle or by an unfavorable shift in the exchange-entitlement-mapping (Sen, 1981)

2.2.3 Security

The third main concept is that of “security”. Secure access to enough food. This builds on the idea of vulnerability to entitlement failure, focusing more clearly on risk (Maxwell and Frankenberger, 1992).

It is necessary to identify the risks to food entitlements. These can originate from many sources and include variability in crop production and food supply, market and price variability, risks in employment and wages, and risks in health and morbidity. Conflict is also an increasingly common source of risk to food entitlements (Maxwell and Frankenberger, 1992). The risk condition may vary from natural to man made factors (Debebe Habtewold, 1995).

Risks to food entitlement could originate from a number of sources such as: weather variability, food production and supply variability, variability in price and market, health hazard and morbidity causing risks, employment and wage variability. In general, it could be environmental, natural, political, social, cultural and economic risks (Sen, 1981).

The most food secure households are those which achieve adequate access to food while using only a small proportion of available resources; the most food insecure, those most at risk, fail to achieve adequate access even by devoting a large proportion of available resources to food (Maxwell and Frankenberger, 1992). The food insecure have lost, or are at risk of losing, availability of and access to food or the ability to utilize it (Chung *et al.*, 1997).

2.2.4 Time

Finally, we come to “time”, secure access to enough food at all times. The topic is not much discussed in the literature. However, following the lead of the World Bank (1986), it has become conventional to draw distinction between chronic and transitory food insecurity. Chronic food insecurity means that a household runs a continually high risk of inability to meet the food needs of household members. In contrast, transitory food insecurity occurs when a household faces a temporary decline in the security of its entitlement and the risk of failure to meet food needs is of short duration. Transitory food insecurity focuses on intra- and inter-annual variations in household food access. This category can be further divided into cyclical and temporary food insecurity. Temporary food insecurity occurs for a limited time because of unforeseen and unpredictable circumstances. Cyclical or seasonal food insecurity occurs when there is a regular pattern in the periodicity of inadequate access to food. This may be due to logistical difficulties or prohibitive costs in storing food or borrowing (Maxwell and Frankenberger, 1992).

A food secure world requires a peaceful and stable environment. Civil and external conflicts as well as natural disasters seriously disrupt food production, orderly marketing and

stewardship of food reserves. Thus the NGO networks have a fundamental interest in conflict reduction and resolution (George, 1999).

2.3 Food Security Situation in the World

Overall the world some 800 million people are chronically malnourished. Fully 2 billion lack access to the sufficient, safe and nutritious food needed for a healthy life. More than half the world's population lives in low-income, food-deficit countries that are unable to produce or import enough food to feed their people. In 64 of 105 developing countries, food productivity increased at a slower rate than population growth during the 1985-1995 periods. Soil degradation, chronic water shortages, inappropriate agricultural policies and rapid population growth threaten food production in many poor countries. The world grain harvest increased about 1 percent annually between 1990 and 1997, less than the average population growth rate of 1.6 percent. The ocean's fisheries, a major source of protein, are also threatened. Nearly seventy percent of commercial fish stocks are fully exploited, over fished, or depleted. Food production often has a high environmental cost. The amount of topsoil lost to erosion in the 20th century equaled the total lost in the previous 1,000 years (UNPF, 2001).

Food security in 2025, when earth will have 8 billion people, will require a doubling of food production, equalizing distribution and protecting the environment. Research suggests that the world's farmers will have to produce 40 percent more grain by 2020 to meet rising demand. Between 1950 and 1996, the average amount of grain land per person dropped by almost half. It is expected to decrease further as population increases. Higher food production will have to come from yield increases rather than the cultivation of new land. But new high-

yielding crop varieties require specialized fertilizers and pesticides, which may disturb the ecological balance and create new disease and pest problems. Continuing soil erosion threatens increasing production and productivity. Slash-and-burn agriculture, water shortages, and improper agricultural practices all contribute to degradation of soils (UNPF, 2001).

At the UN Millennium Summit in 2000, world leaders agreed to halve by 2015 the proportion of people who suffer from hunger. This will require unprecedented cooperation within and among countries. The transfer of modern agricultural technologies and knowledge can help to protect soils. Research and development will have to continue on new high-yield crops. Distribution of existing supplies of food will have to be improved. Women, responsible in most countries for family health and for raising children, must be empowered to better manage food resources. Women, who gather the water and wood for cooking, grow household crops and tend to livestock, are among the most affected by environmental change. Deforestation and depletion of water supplies from inefficient irrigation cause women to journey further and further in search of these basic requirements. When women are provided with the rights they deserve and the education and economic opportunities they need, they can contribute to conservation, efficient production of goods and the fostering of healthy families (UNPF, 2001).

Sub-Saharan Africa (SSA) is the most important development challenge of the 21st century. World development indicators show that in 1998 the total production (gross domestic product) of the region amounted to only US\$ 201 billion, less than one percent of the world's total production (World Bank, 2002). Furthermore, poverty is higher in most African countries than elsewhere in the developing world, with about 40% of the population of SSA

living on less than one dollar a day. Those most vulnerable to poverty live in rural areas and large households that are often headed by women; education is low and they are also most likely to live in countries with real growth rates of less than 5% (World Bank, 2000). It is estimated that out of the world's 800 million people that are food insecure, about 180 million (or 23%) of them live in SSA (Pinstrup-Anderson *et al.*, 1999)

Between 1975 and 1995, per capita consumption of cereals stagnated in most SSA. Per capita consumption of cereals increased only slightly from 109 kg in 1975 to 114 kg in 1995 for the entire SSA, with central and western SSA recording the lowest per capita consumption. With respect to livestock products, although the average per capita consumption of meat, milk and eggs in the world increased significantly, those in SSA either stagnated or declined or increased only slightly. Per capita consumptions of meat, milk and eggs in SSA in 1995 were only 9.5, 23.9 and 1.4 kg, respectively, which were about 27, 31 and 20% of the respective world averages (Ehui *et al.*, 2002).

The 2020 projections show that per capita consumption of food crops and livestock products will increase only modestly as a result of rapid population growth, although total consumption will double between 1997 and 2020. In terms of food utilization, total daily calories supply will increase by 10% over the 1997 level to reach 2442 calories per capita, while the number of malnourished children under the age of five will increase by 20% (6.7 million children), with most of the increase taking place in northern SSA (Ehui *et al.*, 2002).

Looking at alternative scenarios that imitate the miserable past performance of SSA, where gross domestic product (GDP) growth is low and agricultural productivity and investments are declining, the total daily calorie supply will fall below the 1997 level to 2162 per capita,

and the number of malnourished children will increase rapidly to more desirable growth path similar to that projected for other developing countries, where total daily calorie supply is 3232 per capita and the number of malnourished children is 22 million. Thus SSA needs policies and strategies that can help address the challenges and exploit the opportunities to achieve future food security. These include improving health and education, especially for women; increasing investments in agricultural research that leads to improved crop and livestock technologies to increase production, provide greater employment opportunities and higher wages, lower food prices, and reduce the vulnerability of the poor to shocks via asset accumulation; improving markets, infrastructure, and institutions so that poor farmers can obtain remunerative prices for their outputs. Good governance and integrating the civil society in decision making and sharing of national benefits to avoid civil conflicts are also crucial (Ehui *et al.*, 2002).

However, given that no one-size-fits-all strategy will achieve food security everywhere in the region, specific policy and investment strategies should build upon and improve the various development pathways that exist in different agro ecological zones (Ehui *et al.*, 2002)

2.4 Review of Food Aid Practices in Ethiopia

2.4.1 The History of Food Aid

Food aid is the transfer from donor to recipient countries of food commodities on a totally grant basis or highly concessional terms. Some analysts make a distinction between emergency food aids. I.e. food offered to county in time of crisis, such as, famine, natural disaster, etc, and program (project) food aid, which is provided regularly and they often

exclude the former from their analysis. Thus we can alternatively define food aid as the provision of food for human consumption for development purposes including grants and loans for the purchasing of food, associated costs such as transport, as well as donor supplied food related items such as animal food and agricultural inputs related to food aid program (World Bank, 2002)

It is believed that food aid has started in Ethiopia, in association with the recent drought and famine periods. As viewed in some reports, the history of famine in Ethiopia caused by drought goes back to the 11th century. Food aid in Ethiopia became notable after the 1972/73 famine. Reports show that even before official acknowledgment of drought and famine at that time, the international community was only able to respond in a piecemeal fashion through missions, international organizations such as UNICEF, and NGOs such as Oxfam and save the children that had permanent field staff in Ethiopia (EEA/EEPRI, 2004). After 1974, the military government, the Derg, tried to manage relief activities by establishing the relief and rehabilitation commission (RRC). This gave foreign agencies a point of contact, although its functions were constrained by many factors including lack of roads, food handling facilities, transportation, and high fuel costs (ibid). The early warning system was not in place except some nutritional surveillance programmes.

2.4.2 FOOD FOR WORK IN TIGRAI

The agricultural productivity in the region has been declining over the decade as a result of environmental deterioration has been the major cause of drought. In order to improve this situation FFW programs have been implemented on a large scale through the region .FFW programs are believed to be one way to alleviate short-term food insecurity through food

distribution and attain food security through resource conservation, infrastructure development, irrigation etc. in long run.

The FFW programs can achieve economic development of the region in the long run through various public works. This work has the capacity of solving the root causes of hunger and drought in the region.

The FFW programs in Tigray primarily have long-term development as the main objective they use the principle of self-targeting in selecting participants. Self-targeting means people decide for themselves whether or not to take advantage of the assistance offered depending on whether they need it and what they must do to get it. The aim of the self-targeting is that the poorest will participate while the relatively wealthiest will choose not to join. Some empirical studies found this objective of self-targeting to be successful in encouraging the relatively high income households in the region.

Due to the scarcity of resources and its impracticality it is difficult to bring development at once in the whole region. Trying to cover too many areas at once may lead to lack of results and high costs. Thus, it is necessary to priority for promising areas for intervention.

During the slack season many of the rural work forces remain under employed or migrate elsewhere to seek job. FFW activities help this people to be employed and thus reduce migration. For religious reasons there are some days in which the rural populations do not work on their own farms but FFW programs are undertaken on most of these days. So FFW programs improves the working culture of the rural people and create employment opportunities for potential work forces which otherwise could have remained unemployed.

Table 1. The activities performed through FFW for the year 2005/6-2006/7 in Tigrai.

No	Type of activity	norm	quantity
1	Check dam	M3	412,478m ³
2	Stone bound, trench, stone-faced soil bound...	m	1,763,768
3	Pond	No	395
4	Community road construction	km	579
5	Community road maintenance	Km	500
6	Pitting	No	209386
7	Seedling plantation	No	781228
8	Stone collection for construction	M3	31002.4
9	Cut of drain	m	66681
10	Rock fill dam	M3	567.88
11	Diversion trench	km	488.9
12	Diversion trench maintenance	Km	49.4
13	Sand collection for construction	M3	120
14	Gully rehabilitation	m	1868
15	Gabion (filling with stone)	M3	1914
16	Micro basin	no	8183
17	School and office construction	No of rooms	214
18	Fencing with stone	m	21891.6

Source: unpublished data from BOARD

2.4.2 Types of food Aid

There are three types of food aid delivery in Ethiopia: Emergency food, programme food aid and project food aid (Humphrey, 1999).

A) Emergency food aid: Emergency food aid is distributed freely for the people that have been stricken by a natural event, such as drought, flood or earth quake, and people who have been displaced by war. This includes the provision of supplementary food, clothing, fresh water, and medical drugs and protection against disease like cholera and typhus.

B) Programme food aid: This type of food aid primarily provides budget and/of balance of payment support. This is not intended to complete with commercial imports have actually been replaced.

C) Project food aid: This includes food for work in which food aid is used as a wage; supplementary feeding projects targeted at groups with inadequate levels of nutrition; projects aimed at the establishment of food reserves both for emergency relief and market stabilization. Food for work programmes employ the drought affected people as is the case in Ethiopia in the enhancement of agriculture like soil and water conservation measures, infrastructure projects and road building. The biggest food for work programme of the world food programme, project 2488 which was established in 1980 with the objective of rehabilitation of forests, undertaking soil and water conservation measures. Activities are designed to increase future yields by reducing land degradation, and there by improve food

security. This programme is still implemented in many parts of the country which is developmental tools in targeted areas.

2.5 Targeting

According to (Humphrey, 1999), there are three targeting mechanisms, which are applicable to food for work projects.

- ❖ Administrative targeting- This applies a specific set of criteria which qualifies members of a household to participate. Typical criteria might be income based, according to the size of land holding or nutritional status, and/of gender-based. This approach has the potential to select the most vulnerable house holds. However, it is both time and resource consuming and furthermore opens the possibility of leakages through corruption.
- ❖ Self- targeting projects offer a level of payment which is low enough that only the neediest will want to participate. This minimizes the costs incurred in selecting beneficiaries, but may ultimately undermine the project objectives of providing adequate welfare to the most vulnerable if the wages are too low to support a family. On the other hand, if the wages are too high, there is likely to be more volunteers than the projects can accommodate.
- ❖ Community targeting allows individuals who feel they should qualify to put themselves forward to participate in the project, while the final selection decision rests with a committee made up of community members. Whereas pure administrative targeting rests on outside assessment of a household, community targeting assumes that community members already know their neighbors' situation and have an inherent understanding of vulnerability. This mechanism avoids expensive and

lengthy administrative procedures, but difficulties may arise in determining who is an appropriate community representative for the committee.

Targeting strategies are in practice often a combination of the three approaches given. The most appropriate method will depend on the local context, including the economy, infrastructure and culture. Other factors that influence the course of action are the objectives of the programme, the resources available, and the cost effectiveness of different targeting options (Humphrey, 1999).

FFW programs have operated under widely differing rules (Humphrey, 1999). In some cases self targeting has been used, by which households decide whether to send members to work at the offered food wage. Typically a given project pays a constant daily food wage, not differentiating by the human capital of workers. In the past, offered wages have typically been higher than local market wages, which should result in much less income targeting than in a low wage regime. The justification for providing in-kind wages that are higher than local wage rates for manual labor is that poverty is endemic in many rural areas, so that targeting is implicitly not needed, plus a concern that a "livable" wage be paid. However, programs in other areas have targeted FFW opportunities more narrowly to specific types of households. In these schemes, a local community group chooses households who will be eligible for participation based on some underlying criteria, such as land size, livestock, and other asset ownership (Humphrey, 1999). In some cases there is *de jure* rationing of either spaces (restricting the number of eligible participants per household) or time allowed per person (ibid, 1999).

The rate of payment in most parts of the country is 3kgs of grain and 120 grams of oil per day (Humphrey, 1999). This provides 1800 calories per day for a household with six

members. However, this may not cover the consumption requirements of the household because of the fluctuating prices, since this is not equivalent with 3 Ethiopian Birr as this was the standard of WFP/MOA. The rate of payment is not adjusted based on the labour market. According to (Humphrey, 1999), the main reason to set the rate of payment is in order to discourage people with better income opportunities from participating in public works.

Ethiopia's official food aid policy states that no able-bodied person should receive food aid (food for work) without working on a community development project in return. This is complemented by targeted free food aid for those who cannot work. The official goal, as described above, is to expand work based food aid to the point where it accounts for 80% of all distributions (WFP 1995).

FFW is best suited to areas where there are adequate employment opportunities for the non-targeted groups (Yared Amare 1999), where rates of pay are of a value equivalent to normal labour rates, and where a free food component is organised for households which are not able to participate in FFW.

Thus the diversification of income sources has been recognized as an important way of coping mechanism. Households having access to secondary activities are often better able to withstand seasonal stresses (Chen, 1991), as cited in Yared Amare 1999.

2.6 Food Aid Policies Food Security and Agricultural Development Strategies.

2.6.1 National Policy of Disaster Prevention and Management

The national policy on disaster prevention and management (NPDPM) of 1993 emphasis's the need to give priority to disaster prevention programmes in all development endeavors.

This policy states that disaster relief should ensure adequate income transfer for disaster affected households, promote self reliance among the beneficiaries, and preserve assets to promote speedy recovery, be geared towards eliminating the root causes of disaster vulnerability, and contribute to sustainable development. The policy advocates community participation, priority at the most at-risk areas, coordination of efforts and no free distribution of aid to the able bodied among the affected population. Relief and emergency actions since 1993 have been undertaken in the context of NDPPM. (FDRE, 2002).

The policy sets employment generation schemes (EGS) as the cornerstone of food aid policy, in order to meet the needs of non-performing agricultural areas. The policy states that all food aid should be distributed on the basis of 80% EGS and 20% free distribution. In this respect, the official food security policy states that no able-bodied person should receive food aid with out working on a community project in return.

Those who cannot work will receive targeted free food aid. EGS is intended to link relief with development and its programmes provide opportunities for immediate food security against encroaching famine, and also for public works that develop infrastructure and the environment. The contribution of relief resources in mitigating future disaster has been part of food aid policy for a long time, but the schemes face challenges, including lack of implementation capacity in skilled manpower, logistics, communication road accessibility, etc.

2.6.2. The Food Security Strategy

The federal food security strategy (2002) rests on three pillars; increasing supply and availability of food, improving access and entitlement to food; and strengthening emergency response capabilities.

Some of them are highlighted below.

A) **Agricultural in mixed farming systems:** The main objective of this strategy is enhancing supply and availability of food through increasing domestic food production where moisture availability is relatively adequate. It envisages that subsistence farming has to be transformed into small scale commercial agriculture and employs house hold based integrated and market oriented extension packages in order to realize the goal.

B) **Pastoralist Development:** - communities who depend mainly on livestock for their livelihoods must be supported in order to benefit from this sub sector. This strategy focuses mainly on livestock development, strengthening livestock marketing.

C) **Additional Entitlement and Targeted Programs:** - There are three components devised to enhance entitlement. Supplementary employment income support schemes, targeted programmes for disadvantaged groups and nutrition intervention.

D) **Emergency Capability:** - This intervention includes increasing the capacity of the Ethiopian strategic food reserve (ESFR) in food and relief distribution, among others, to enhance emergency response capability like strengthening the early warning system, surveillance and monitoring.

2.7. The new Coalition for Food and livelihood Security

This strategy aims to improve long-term food and livelihood security for chronically food insecure citizens through its various food security programmes. The three objectives of the coalition are to increase the production and availability of food, improves access to food and improves peoples' health. It is believed that this programme will improve the food security problem of the 15 million people who are chronically food insecure. The coalition by consolidating partnership between all stakeholders involved in food security programme it is the first of its kind in the country. It also aims to improve access to land through resettlement for about 2 million people who are chronically food insecure people.

2.8. The Productive Safety Net Programme (PSNP)

This programme intends to facilitate transfers of food or cash to chronically food insecure woredas without depleting assets at household level and creating assets at community level. It has got 2 components which are labour intensive public works component and direct support for chronically food insecure house holds with out the ability to work and with no other means of support. The PSNP is designed to address immediate human needs while simultaneously supporting rural transformation; preventing long-term consequences of short-

term consumption shortages; encouraging households to engage in production and investment; and promoting market development by increasing household purchasing power.

2.9. Rural Development Policies and Strategies

Rural and agricultural development is at the centre of Ethiopia's poverty reduction programme. The poverty reduction and sustainable development programme and participatory sustainable development to eradicate poverty are the two main policies and strategies which are intended to have an impact on food availability and access, by ensuring rapid development and releasing people from dependence on food aid. (FDRE, 2002(B)).

The rural development policy emphasis that economic development will be ensured through a strategy of agriculture-led and rural centered development (FDRE, 2002). Agriculture will induce accelerated trade and industry development by supplying raw materials, creating opportunities for capital accumulation and enhancing the domestic market. Emphasis has been given to supporting small holder farmers using agricultural extension programmes as an instrument to increase the supply and adoption of modern inputs, mainly seeds chemicals, fertilizers, and advisory services.

Commercializing smallholder farms through engagement in high value and export- oriented production systems is the core strategy in agricultural and rural development.

2.10. Resettlement

Resettlement during the Derg regime has been done forcefully and people's perception is quite not a good experience towards settlement outside their original homeland. The new resettlement strategy actually favours voluntary settlement within regions if there is enough

land. This is assumed to avoid any clash between ethnic groups since this is done with in the same region. It is intended to settle more than 2 million people in potential areas of the country. Furthermore, these settlers are supposed to be from the chronically food insecure people.

2.11 Empirical Review

2.11.1 Empirical review on the disincentive effect of FFW

The literature of disincentive effects is theoretical. Practically this has less relevance (Tengroth 1996:20), as cited in Humphrey 1999.

There are three types of disincentive effects:

- Production disincentives for individual farmers who grow less of their own food because they have the chance to earn food on a local FFW projects. A practical reason for such a trend is linked to time constraints: if the farmer has to work to retain a place on the project, there may not be enough time to farm the household land.
- Price disincentives are linked to production in that the injection of food for work grain into the local market could lower the demand and therefore depress the price of locally produced food. Then the farmer gets lower returns for grain produced on his own land and is discouraged from producing a surplus. Traders are also discouraged from bringing in food to the local market
- Labour disincentives could occur as a result of poor targeting. If too many workers are attracted to join the FFW project, or wages are higher than the

average local rates, there will be distortions in the labour market and local wages may be pushed upward.

Various practitioners have recently reported that there is generally little proof of disincentive effects through prices or labour supply in Ethiopia, although much effort has been put into proving the theory (Tengroth, 1996), as cited in Humphrey 1997. Food aid can only cause distortions when an economy was in a state of equilibrium before the ‘injection’ of, say, the grain imports. However, when aid is needed to make up a food deficit as in the case of Ethiopia, food aid has a beneficial impact in making up the shortfall rather than a distorting negative effect.

Yeraswork and Solomon (1985: 97), as cited in Humphrey 1999, found no evidence that suggested that project 2488 activities had reduced farm output. They concluded that farmers saw FFW as an additional rather than alternative source of income. Instead, the survey finds the incentive value of the project is people with potential labour who would have remained idle now had the chance to contribute to the family income; 85% of respondents said the main reason for previously not engaging in off-farm work was the lack of employment opportunities (ibid: 83). The labour disincentive cannot function while there is no labour market to distort.

Some argue that food aid induces productivity, employment opportunities and income. Others, on the other hand, consider food aid as a barrier to development resulting in discouraging domestic production by creating labour competition as well as depressing prices on local markets. One of the major disincentive effects of food aid is that it disrupts prices, which finally results in undesirable effects on agricultural production. This is often observed

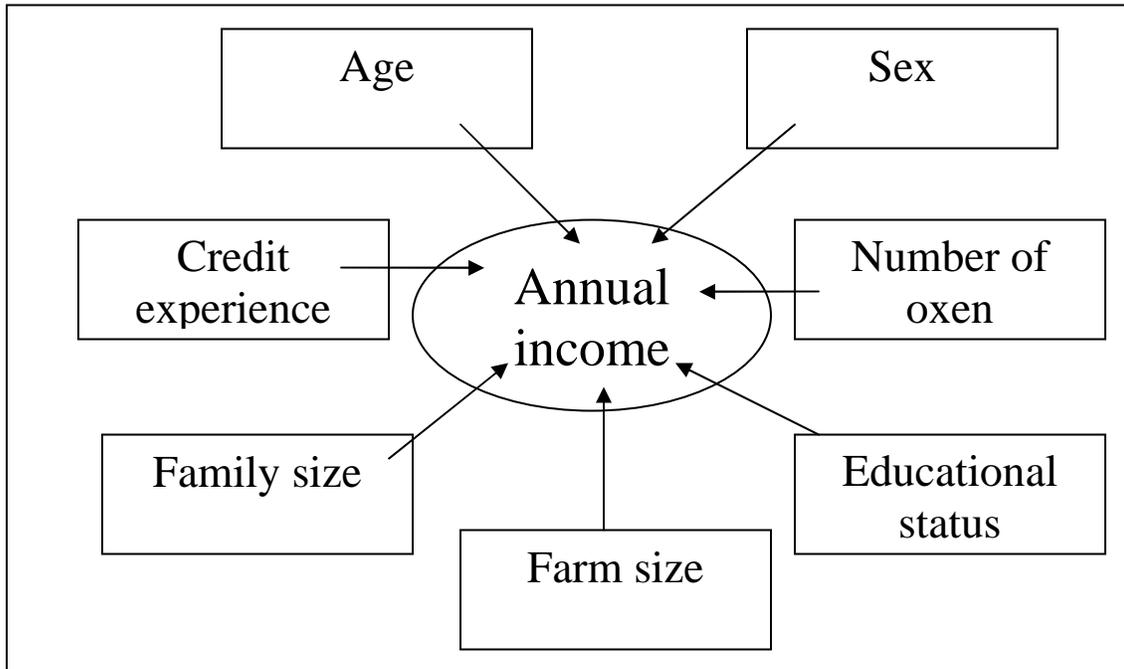
in areas where food aid distribution is rather localized and gets its way onto local markets. Particularly, project food aid discourages marketing of local foodstuffs by shifting the supply curve upwards (Maxwell, 1992).

Food aid also hinders agricultural development by creating competition for labour between food-for-work and on-farm activities. Excess supply of food aid, as noted by most, often removes farmers' incentives to intensify agriculture (Maxwell, et al, 1992). It also retards farmers' capabilities towards innovating income earning opportunities if its rate of payment for labour is relatively higher than the prevailing market wages. The other negative effect is that food aid may exert changes in food habits and shifts in production pattern of the agricultural system. The increasing share of food aid to the daily intake of food may gradually increase dependency on food imports. There is also an increasing concern that the changing trends in the consumption patterns and marketing behaviours may in the long run lead to a shift to other agricultural production patterns.

Food aid, on the other hand, has positive contribution towards improving the overall well-being of the people. It particularly results in nutritional gains directly either through free handouts or through wages in the food-for-work programmes. It also raises the consumption level of basic food items of the poor people as a result of lowered prices. Low-income households (landless, rural labourers and other disadvantaged groups) could benefit more at the expense of surplus producers. These situations will particularly be achieved if food aid resources are perfectly targeted to these social groups (Clay et al., 1999). Food aid, if properly handled, also contributes to the creation of employment opportunities. Income created by food-for-work programmes would in the long-term improve productivity and increase own production. Though the effect is small and is not widely evidenced by a survey,

this would in turn reduce dependency on food aid and stimulate consumption of home produced food items (Clay et al, 1999).

Figure 1. Conceptual frame work



CHAPETR-III

3. MATERIALS AND METHODS

Introduction

In this section the study area has been described in order to give clear picture of the woreda and its over all opportunities in terms of agriculture and other sectors. Moreover, the data collection methods, techniques of sampling and data analysis method have been discussed.

3.1 Site selection and description

Tigray is one of the 9 states of the Federal Democratic Republic of Ethiopia (FDRE) and the region belongs to the African Dry lands, which is often called the Sudano-Sahelian Region (Bharat, 2004). Tigray lies in the northern Ethiopia, extending from 12⁰15' to 14⁰ 54' north and 36⁰ 27' to 39⁰ 59' east. The region is bordered with Eritrea to the north, to the west by the Sudan, to the south by the Amhara National Regional State, and to the east by the Afar National Regional State. It is one of the most land-degraded regions of the country, which has an approximate area of 80,000 square kilometers. Out of this, about 25 per cent of the land area was cultivated and about 40 per cent used for grazing in 1992/93. The rest is unused land. The potential cultivable area of the region is estimated at about 1.5 million hectares.

Altitude varies from 550 m.a.s.l in the Tekezze gorge to 3935 m.a.s.l in the south highland. About 53 per cent of the land is low land referred to as *Kola* (less than 1500 m.a.s.l) according to the traditional classification. Due to the marked variations in topography and

altitude, there are agro-ecological niches or microclimates within short distance (Haileselassie, 2005).

The climate of the region is highly unpredictable characterized specially by unreliable rainfall. Severe droughts causing famine have affected the region approximately every tenth year through this century. The topography of the region is characterized as mountainous plateau and the climate is categorized as tropical semi-arid.

It is characterized by sparse and highly uneven distribution of seasonal rainfall, and by frequent drought. The amount of rainfall increases with altitude and from east to west, and decreases from south to north. Annual rainfall ranges from 450 to 980 ml with significant spatial and temporal variability. Most of the precipitation falls within the three months of June, July and August, and with high intensity (Berhanu *et al.*, 2000). Generally, the rainfall distribution is mono-modal in character, with few exceptions in the Southern and Eastern zones, where it is bimodal.

Average temperature in the region is estimated to be 18⁰c, but varies greatly with altitude. In the highlands of the region, during the months of November, December and January, the temperature drops to 5⁰c. In the lowlands of Western Tigray, especially in areas around Humera, the average temperature increases from 28⁰C to 40⁰C during the summer.

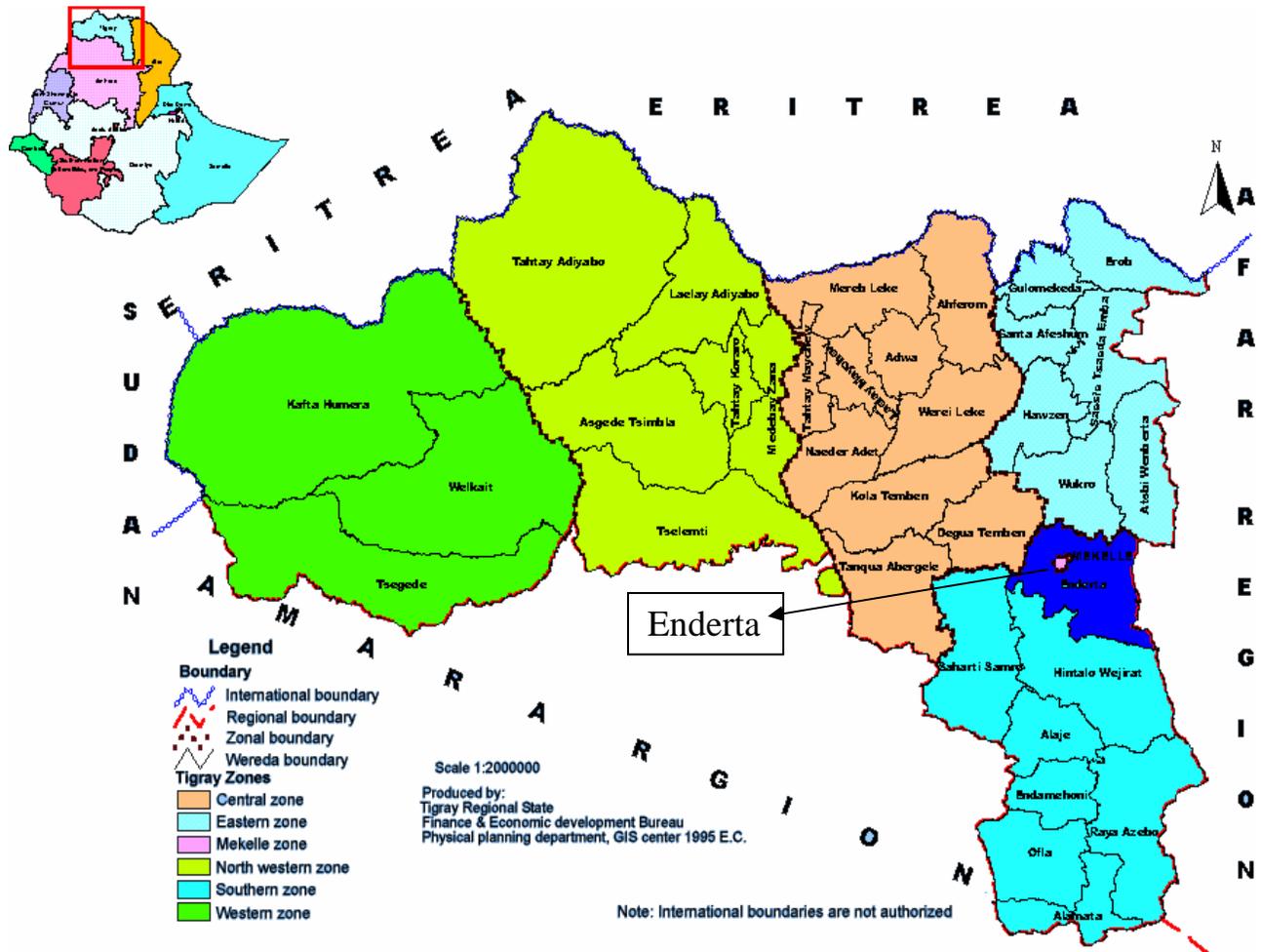
Tigray is divided into 6 administrative zones, 34 woredas (Districts), 550 *Tabias* (Fitsum *et al.*, 2002), more than 3500 *kushets*, and 74 towns. The zones are Eastern, Central, Southern, Western, North Western and Mekelle city. *Kushet* is the lowest unit in the administrative

hierarchy. It has an estimated total population of 4,334,996 consisting of 2,136,000 men and 2,198,996 women. Out of which 3,519,000 or 81.2 per cent of the population are estimated to be rural inhabitants, while 816,000 or 18.8 per cent of the population are estimated to be urban inhabitants (CSA, 2005).

Based on the 1998/99 economic account estimates, agriculture and its allied activities constituted about 55 per cent of the regional GDP and provided employment for more than 85 per cent of the population (BoPED, 2000). Crop production and livestock raising are the major agricultural activities and sources of livelihood in the rural population. The farming systems of the region are largely based on traditional technologies and practices. The production system is characterized by scarcity of arable land, highly fragmented farm plots, and highly variable and insufficient rainfall (BoPED, 2000).

According to the estimation of CSA (2005), the types of crops growing in the area includes: cereals, pulses, oilseeds, vegetables, root crops, fruits and cotton are produced for food, making drinks, stimulation and for making fabrics or clothing. Moreover, farmers in Tigray had a total of 2,713,750 cattle, 72,640 sheep, 208,970 goats, 1,200 horses, 9,190 mules, 386,600 asses, 32,650 camels, 3,180,240 poultry of all species and 20,480 beehives. The political map of Tigray is presented in figure 1.

Figure 2:- Location of Enderta Wereda in Tigray region



3.2 Geographical Location and Climate of Enderta Woreda

The study area (Enderta woreda) is located in the Southern part of Tigray, Southern zone. Enderta woreda is one of the eight woredas of Southern zone. Quiha town is the capital of Enderta woreda. Enderta Woreda is located at the vicinity of Mekelle, the capital city of Tigray, with a total area of 1339.93 kilometer square situated at 13.5⁰ latitude and 39.5⁰ longitude. The woreda is bordered with Hintalowajerat woreda in the south, Deguatemben

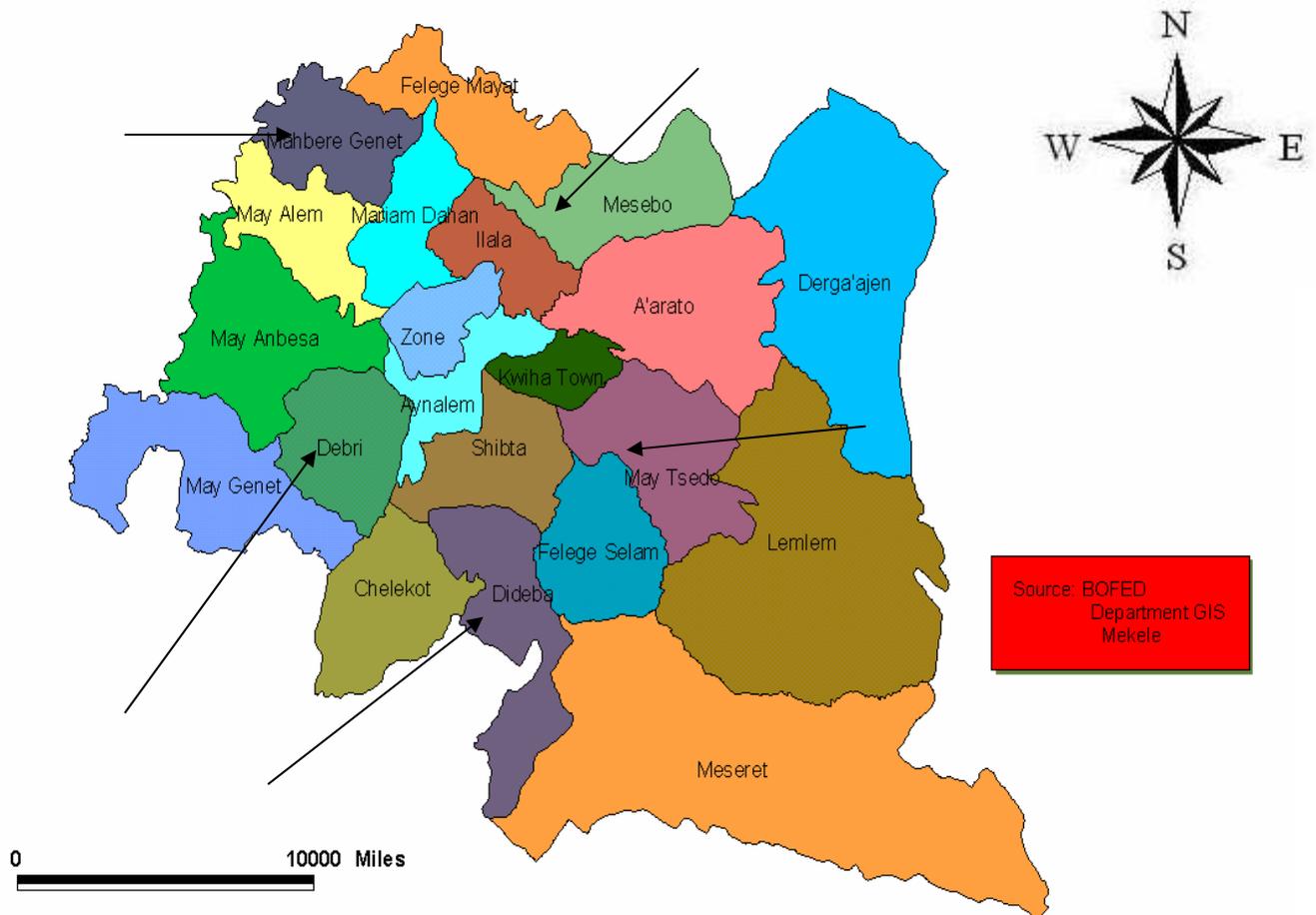
woreda (river Giba) in the west, Wukro and Atsbiwomberta woredas in the north and Afar region in the east.

Besides, the altitude of the woreda is 1,500-2,300 m.a.s.l that gave the woreda different climatic zone. Ethiopian agro-ecological conditions are commonly classified into three categories, namely *dega* (highland), *weyna dega* (mid-altitude) and *kolla* (lowland). *Dega* zones refer to highland areas with an altitude of over 2,300 meters while *weyna dega* represents mid-highlands with an altitude of 1,500 to 2,300 m.a.s.l. Area lying below 1,500 m.a.s.l is known as *kolla*. Mean annual rainfall of the area ranges from 400-799 milliliters and the average temperature is 15-20 °c. The location map of Enderta woreda is presented in figure 2.

3.3. Population Characteristics of Enderta Woreda

Based on the study of CSA (2005), the total population of the woreda is 144,784 persons. Out of this size, 70,897 are males and 73,887 are females. The density of the population is 108.6 persons / kilometer square. Regarding the population profile, 46-48 per cent of the total population in the woreda are youngsters (whose age is below 16 years) while the remaining 52-54 per cent are middle age and old age groups. Life expectancy at birth remains at 47 years and infant and child mortality rates are high at 118 and 173 per 1000 births, respectively. The woreda is subdivided in to 17 rural *kebele* administrations. The economically active population is estimated at 51.04 per cent. More than 99 per cent of the populations are followers of the Ethiopian Orthodox Church. (Tigray Bureau of Information and Culture (TBIC), 2002).

Figure 3:- Map of Enderta Woreda



3.4 Agricultural Production and Food for Work Projects

Tigray is one of the drought affected regions in Ethiopia. Drought and famine are more frequent in the region. Severe environmental degradation problems, mainly soil erosion and nutrient depletion, constrain agricultural production in the region. Like in the other drought prone areas of the region, agriculture in Enderta woreda is only subsistence, which is unable to secure adequate food supply and cash for the farm households' yearly expenditure. Farmers grow different food and cash crops and rear livestock including bee keeping and poultry. The dominant crops grown in the area include wheat, barley and *Teff*. According to the key informants, the major problems of agriculture in the woreda are erratic and shortage of rainfall, poor soil fertility, pest and disease.

There has been a huge flow of food aid to Tigray since 1970's. Food for work programs have been common in the region as a way of improving household food security and also as an important means of undertaking environmental rehabilitation programs (Web et al, 1992; Catterson et al., 1994) as cited by Fitsum 2002. Many households have participated in FFW activities for several years thus adding considerable income to the household. In rural areas where alternative income-generating opportunities are in short supply, the food for work activities have provided employment opportunities on a relatively large scale.

3.5 Data Source, Sampling and Collection

3.5.1 Data Collection and Methods

For this study, primary and secondary sources were used to collect quantitative and qualitative data. The primary sources were used to collect data from the selected samples.

The target respondents represent farmers who could be members or non members of the cooperatives as well as officials of the cooperatives. The data were gathered by employing a combination of different methods. The primary data were obtained from the sample of food for work beneficiaries through a *structured interview schedule*

Structured interview schedule was administered to collect qualitative and quantitative data from the sample household heads. Detailed information on households' demographic and socio-economic characteristics, asset possession, income earned from livestock and food for work, food security situation, Targeting and dependency issues, farm management and soil and water conservation practices and household expenditure of beneficiaries were assessed.

The secondary data were collected from records of different institutions such as the cooperatives in the woreda, Relief society of Tigray (REST), Enderta woreda agricultural office, Tigray bureau of Finance and Economic development, Tigray bureau of Agriculture and rural Development, websites, and other related dissertations. They were used for analyzing different data which are relevant to the study.

3.5.2 Sampling Techniques

Enderta wereda is selected purposively, because it is one of the drought prone areas in the region. According to the wereda bureau of cooperatives there are 18 multipurpose cooperatives, one union and other cooperative societies. Among them five multipurpose cooperatives were selected randomly for the study. The following table provides information on population and sample size of the selected multipurpose cooperatives. The total sample size of member respondents were 120. Moreover 6 non-members from each were selected at random for the study for comparison.

Table 2 Sample Size of Respondents

s/n	Name of the cooperative/wereda	Membership in number			Sample (2.5 %)
		Male	Female	Total	
1	Romanat	968	206	1174	29
2	Debri	901	157	1058	27
3	Messobo	474	134	608	15
4	Debregenet	633	166	799	20
5	Didiba	1032	118	1150	29
Total	5				120

Source: own sample

3.6. Methods of Data Analysis

All the data collected were coded and entered into a computer using statistical package for social scientists (SPSS version 15 software) to compute descriptive statistics (frequency, mean and chi square tests) on selected parameters. Percentage and frequency of occurrences were employed to assess farmers' perception on the attributes of food for work activities. Besides, regression model was also employed so as to investigate the Impact food for work might have brought on the life of beneficiaries.

The first and second objectives are simply descriptive analysis where as for the third objective the researcher has used multiple regression.

3.6.1 Empirical Model: Multiple Regression Model

3.6.1.1 Specification of the Multiple Regression Model

This study is intended to analyze which and how much the hypothesized regressors are related to the impact food for work might have brought on the life of beneficiaries. From the mathematical point of view the multiple regression model is used due to its simplicity and flexibility in the analysis of dichotomous outcome variable. (Montgomery, 1998)

Therefore, the multiple regression model is specified as follows:

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_kx_k + \epsilon \dots \dots \dots (1)$$

Where: Y = represents the dependent variable

β_0 = denotes the intercept of the regression which is constant.

$\beta_j, j = 0, 1, \dots, k$, are called the regression coefficients

x_1, x_2, \dots, x_k = refers to the regressor variables

ϵ = is the error or deviation between y value and the expected value of y given by

$$\beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_kx_k$$

It is a multiple linear regression model with k regressors. The parameters $\beta_j, j = 0, 1, \dots, k$, are called the regression coefficient. This model describes a hyper plane in the k -dimensional space of the regressor variables x_j . The parameter β_j represents the expected change in the response y per unit change in x_j when all the remaining regressor variables $x_i (i \neq j)$ are held constant. For this reason the parameters $\beta_j, j = 1, 2, \dots, k$, are often called *partial* regression coefficients. Multiple linear regression models are often used as approximating function. That is, the true functional relationship between y and x_1, x_2, \dots, x_k is unknown, but over

certain ranges of the regressor variables the linear regression model is an adequate approximation.

3.6.1.2 Test for Significance of Regression

In multiple regression problems certain tests of hypothesis about the model parameter are useful in measuring model adequacy. The test for significance of regression is a test to determine if there is a linear relationship between the response y and any of the regressor variables x_1, x_2, \dots, x_k . Separate tests of the null hypothesis that individual coefficients are zero can be computed using t-test of the multiple linear regression models (Gujarati, 1988). This test can be used to see the statistical significance of each coefficient. An overall test of the null hypothesis that all the parameters associated with the explanatory variables in these models are equal to zero is an F-test based on the Ordinary Least Square (OLS) estimation procedure. The Chi-square tests the null hypothesis that the coefficients for all terms in the current model except the constant which is zero.

The appropriate hypotheses are :

$$H_0: \beta_1 = \beta_2 = \dots \beta_k = 0$$

$$H_1: \beta_j \neq 0 \text{ for at least one } j \dots \dots \dots (2)$$

Rejection of H_0 in the above hypothesis implies that at least one of the regressors x_1, x_2, \dots, x_k contributes significantly to the model

3.6.1.3 Coefficient of Multiple Determinations

The coefficient of multiple determinations R^2 is defined as

$$R^2 = SS_R / S_{yy} \dots \dots \dots (3)$$

The multiple coefficient of determination represents the percentage of variability in y that is explained by the estimated regression equation. We have $0 < R^2 < 1$ as in the case of simple regression case. However, a large value of R^2 does not necessarily imply that the regression model is a good one. Adding a regressor to the model will always increase R^2 regardless of whether or not the additional regressor contributes to the model. Thus it is possible for models that have large values of R^2 to perform poorly in prediction or estimation. The positive square root of R^2 is the multiple correlation coefficient between y and the set of regressor variables x_1, x_2, \dots, x_k . That is, R is a measure of the linear association between y and x_1, x_2, \dots, x_k .

The functional relationship between the probability of improvement in income and explanatory variables is specified as follows:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \epsilon \quad (4)$$

Where: Y is average yearly income of respondents

β_0 is Constant or intercept

$\beta_1, \beta_2, \dots, \beta_k$ refers Regression coefficients

x_1, x_2, \dots, x_k refers vector of explanatory variables that include: age of the respondents, sex of the respondents, educational status of the respondents, family size, number of oxen owned, , access to credit and ownership of land.

3.6.1.4 Working Hypotheses and Definitions of Variables: Socio-Economic Impact

In this study, the following demographic, socioeconomic and institutional factors were hypothesized to explain the impact of FFW on increasing beneficiaries' income.

Income (Revenue) is defined as the income of beneficiaries of the FFW programs, which is the income derived by the beneficiaries after they become members of the project.

Independent Variables

Age of Beneficiary (Age): is defined as the period from the respondent's birth to the time of the interview and was measured in years. The more the working labour in the household; the more the family members can contribute to the household's income. Therefore, this variable is hypothesized to have positive impact on increasing income of the beneficiaries after joining the FFW project.

Sex (Sex): Represents whether the respondent is men or women. In this study in one hand, it is assumed that male household heads have more exposure and access to information and new interventions than female household heads, which might enable them to participate in different income generating activities like the FFW project to increase their income. Therefore, men headed households are expected to affect income positively.

Family Size (Famsz): This refers to the number of members of a family. Households with many number of dependant children can have lower income than households with many number of children working in farm areas. On the other hand, if the majority of the household members are productive, the level of income at household level will be increased. Therefore, family size is expected to increase or decrease income of beneficiaries.

Oxen (Nuoxen): It is defined as the number of oxen owned per household after they become beneficiary of the FFW project. Oxen are the most important source of traction power in the area. Therefore, beneficiaries who own more oxen would be in a position to undertake farm

activities on time and when required. Ownership of more oxen power is expected to be positively related to income.(Bamlak 2006)

Educational Status (Edstat): This represents the level of formal schooling completed by the household head. Educated farmers are expected to have more exposure to the external environment and accumulated knowledge through formal learning which might enable them to pursue livelihood strategy that leads to better income through making use of available opportunities, Therefore, it is hypothesized that education has positive effect on income of the beneficiaries. It is measured in terms of the educational level of the beneficiaries.

Credit Experience (Creexp): When a beneficiary stays in touch with credit for an extended period of time he/she develops experience in properly utilizing credit and hence is more likely to increase his/her income. Therefore, experience in credit is expected to have positive effect on income. It is measured in terms of the number of years a client became beneficiary of the credit services.

Farm size (Famsz) in hectares: Refers to the total farm size owned by the respondent. Since farm size reflects ownership of land to be cultivated it is expected that it would enhance the income of beneficiaries. Thus, beneficiaries with large farm size would be expected to have better income than those with small land to cultivate.

Concluding Remark

From the above discussion, it can be understood that the researcher have used structured interview schedule to collect information from the 120 sample respondents who were selected at random. Multiple regression model was used to analyze the data. Moreover, the researcher has developed working hypothesis to show the relationship between the dependent and independent variables.

CHAPTER-IV

4. RESULTS AND DISCUSSION

4.1 Demographic and socio-economic characteristics of households

4.1.1 Family size and age distribution of households

Food security level of households is affected, among others, by the family size and age distribution of household members. That is, the more the working labour in the household; the more the family members can contribute to the household's income. On the contrary, if the family size of households, particularly in the age group of 0- 14 and 65 and above years is large, the households' food security status will be negatively affected. In Enderta woreda, 25% of the households were women headed.

Table 3: Distribution of sample household heads by Gender

Household sex	Number	Percentage
Male	90	75
Female	30	25
Total	120	100

Source: survey result, January2008

The table below depicts that 45.83% percent of the sample respondents incorporated in the study are found in the age of 36-50 years of old. But only 1.7 percent is in the range of 18-25 years of age. But only 18.74% is in the range of 51-75.

Table 4: Distribution of sample household heads by Age group

Age category	Number of respondents	Percentage
20-35	43	35.83
36-50	55	45.83
51-75	22	18.34
Total	120	100

Source: survey result, January 2008

4.1.2. Marital Status of Respondents

The table below reveals about the marital status of respondents. It indicates that 74.17 percent of the sample respondents are married while 10.00 and 9.17 percent for divorced and widowed respectively and only 10.00 percent of the household in the sample are not married.

Table 5 Distribution of Marital Status of Respondents

Marital Status	No. of Respondents	Percent
Married	89	74.17
Unmarried	10	8.33
Divorced	10	8.33
Widowed	11	9.17
Total	120	100

Source: survey result, January2008

4.1.3 Educational status of households

Understanding the level of respondents' education helps in identifying and determining the type of development approaches to be followed. The role of education in affecting the household income, adaptation of technologies, demographic, health and socio-economic status of the family is obvious. The ability of rural poor to transform their life through access to financial resources depends on many factors of which education is one of the most important. Better education helps farmers in the identification of better business opportunities.

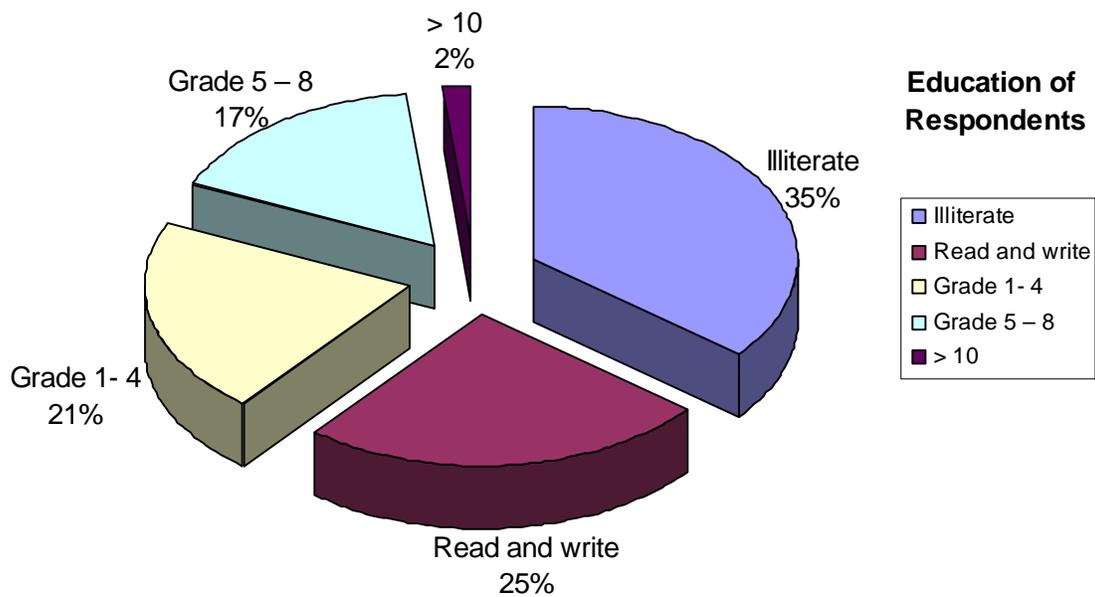
The survey result showed that 35.8% of the household heads are illiterate, 25% can read and write and 16.67% are from grade 5 – 8.

Table 6: Educational Status of the Households

Status	Number	Percentage
Illiterate	43	35.83
Read and write	30	25
Grade 1- 4	25	20.83
Grade 5 – 8	20	16.67
> 10	2	1.67
Total	120	100

Source: survey result, January2008

Figure 4:- Level of education of the household heads



4.1.4 Family Size of the sample households

Table 5 shows the family size of the sample respondents. The household size of a family indicates the level of dependency in the household. The average family size of the sample respondents is found to be 4.6 persons. 15.83 percent and 25.83 percent of the household in the sample have a family size of 4 and 5 respectively, while the percentage of respondents having only one is 3.33 percent.

Table 7 Distribution of Family size of Respondents

Family size	Number of respondents	Percent
1	4	3.33
2	6	5
3	22	18.34
4	19	15.83
5	31	25.83
6	30	25
7	8	6.67
Total	120	100

Source: survey result, January2008

4.1.5. Occupation of Respondents

Occupation is an important factor as it provides income to households. The type of occupation a household head engages determines the living condition of the household. Off-

farm activities such as petty trading, selling home made drinks, firewood selling etc provide additional income. Table 7 shows the primary occupation of household heads in the sample. Farming dominates as the first occupation of most household heads. 61% of male heads and 25% of female heads are engaged in farming respectively.

Table 8 Respondents Occupation

Type of Occupation	Number of Respondents		Percentage	
	Men	Women	Men	Women
Farming	100	15	60.61	25
Trade or Retail	17	5	10.30	8.33
Handicraft	8	0	4.85	0
Wage labour	40	20	24.24	33.33
Household work	0	20	0	33.34
Total	165	60	100	100

Source: survey result, January 2008

4.1.6. Farm Income

It is not easy to set standard criteria to describe the wealth status of households from a community's perceptions. The criteria differ from place to place and from community to community. In rural areas the most important economic resources that form the foundation of the household economy are land, Oxen and other livestock as well as labour. The average revenue earned by the beneficiaries from all crops, livestock and vegetable production in

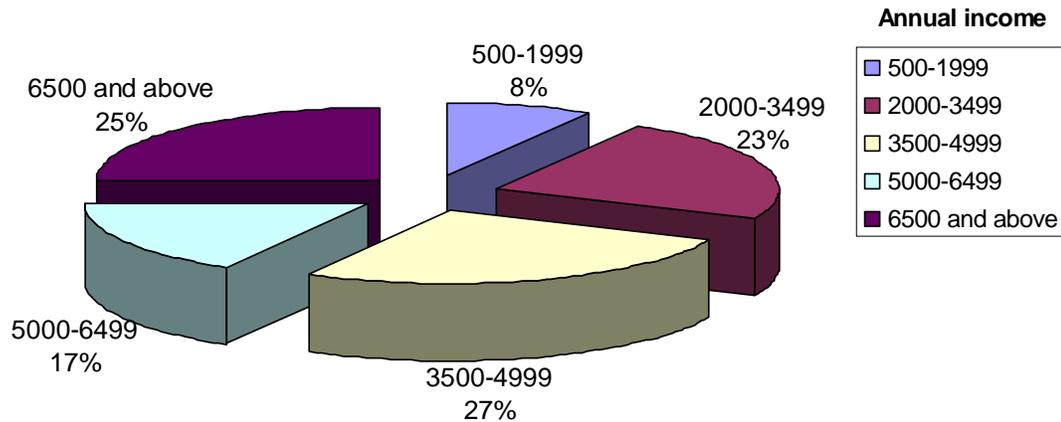
2006/7 was 3,634.67 annually. The minimum and maximum amount is 615 and 11,200 Birr respectively. Table 8 below showed that 25% of the respondents obtain an annual income of more than Birr 6500. But only 8.33% of sample respondents get below Br 2000 annually.

Table 9 Annual On-farm and non-farm income of sample households

Annual income (in Birr)	Number of Respondents	Percent
500-1999	10	8.33
2000-3499	28	23.33
3500-4999	32	26.67
5000-6499	20	16.67
6500 and above	30	25
Total	120	100

Source: survey result, January2008

Figure 5 Annual income of Respondents in Birr



4.1.7. Oxen Ownership

Although, an ox is part of livestock enterprise, it is important to see separately since it is the main source of draught power in the study area. Moreover, oxen are important input in crop production, because owning them directly helps in taking up farm operations timely there by facilitates for better crop production. In addition, number of oxen shows wealth status of households in the farming community. Out of the total 120 respondents, 17 farmers (14.16 per cent) did not own any ox, 34 farmers (28.33 per cent) own single ox, 49 farmers (40.83 per cent) own pair of oxen and the remaining 20 farmers (16.67 per cent) of the respondents own more than a pair of oxen.

Table 10 Oxen ownership of the sample households

Number of Oxen	Number of respondents	Percentage
0	17	14.16
1	34	28.33
2	49	40.83
3	13	10.83
4	1	0.83
5	3	2.5
6	3	2.5
Total	120	100

Source: survey result, January 2008

4.1.8. Land Holding

Land is the most important input factor for agricultural production. It is widely acknowledged among peasants the land, its size and fertility is the most important basis for differences in production and wealth between households. Poor farmers point to their meager land resources when explaining their low economic status. However, empirical analysis show that land area alone failed to adequately account for differences in productivity and wealth (Yared Amare, 1999).

Peasants generally agree that land holdings are the critical resources determining productivity and wealth in comparison to other factors of production like labour and draft power. The average land holding in the study area was found to be greater than 0.75 hectare. The land holding of households ranges from 0.0 to 1.5 hectare. 23% of the households own on the average 0.5 hectare and 53.27% own more than 0.5 hectare.

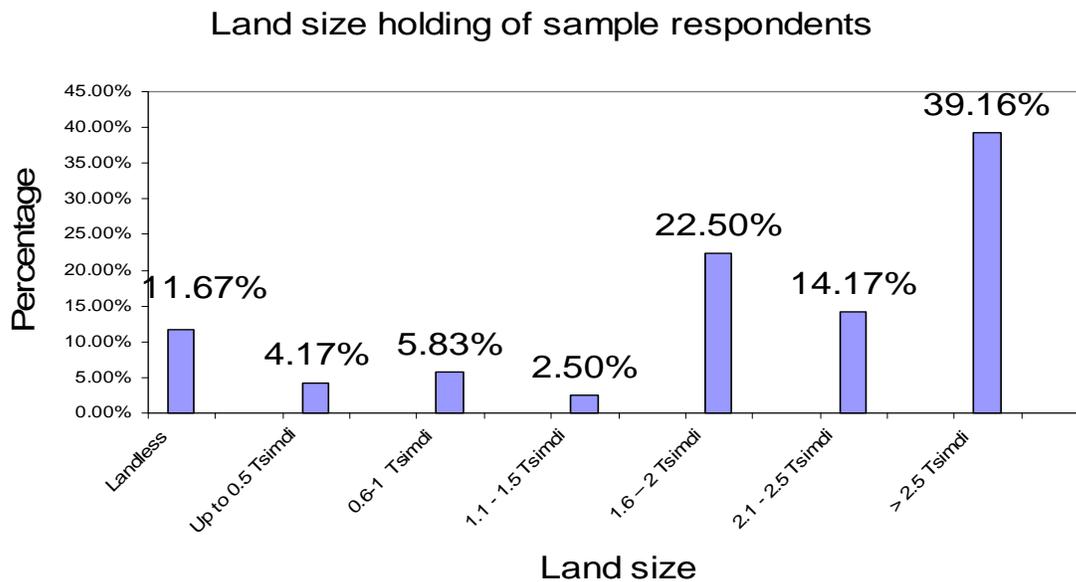
Table 11 land size holding of sample households

	Frequency	Percent	Valid Percent	Cumulative Percent
Landless	14	11.67	11.67	11.67
Up to 0.5 Tsimdi	5	4.17	4.17	15.84
0.6-1 Tsimdi	7	5.83	5.83	21.67
1.1 - 1.5 Tsimdi	3	2.5	2.5	24.17
1.6 – 2 Tsimdi	27	22.5	22.5	46.67
2.1 - 2.5 Tsimdi	17	14.17	14.17	60.84
> 2.5 Tsimdi	47	39.16	39.16	100
Total	120	100.0	100.0	

Note: Tsimdi = 0.25 ha

Source: survey result, January2008

Figure 6 Land holding size of sample households



4.2 Perception of Beneficiaries and Role of Food for Work on Food Security

4.2.1 Perception of Food Security

Food for work projects can have positive impacts on both short term food consumption and longer-term food security through enhanced productivity or marketing efficiency. By offering employment to people in the localities where they live, food for work can also reduce seasonal and long-term out migration from marginal areas, which is disruptive of family stability and the local economy, including agriculture and hence household food security. The food wages paid to workers can be expected to reach local men, women and children more directly than income earned elsewhere outside their locality.

Inline with this, 95% of the sample households indicated that their nutritional status has improved due to their participation in the project. The food wage that was received from the food for work projects supported the beneficiaries for six months on the average. In money terms the mean income from FFW was 316.28 Birr.

Table12 Improvement on Nutritional status

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	114	95.0	95.0	95.0
no	6	5.0	5.0	100.0
Total	120	100.0	100.0	

Source: survey result, January2008

Inline with enrollment of their children, 88.4%, confirmed that they have enrolled more children in schools when they got access to participate in FFW. One of the main objectives of food aid, be it free handout or in the form of employment creation, is to protect asset depletion of the affected community. 98% of the respondents reported that FFW avoided asset depletion, while 51.72% of the respondents indicated that FFW did not contribute to asset creation.

Table 13 Food for work contribution for household asset creation

	Frequency	Percent	Valid percent	Cumulative percent
Valid yes	56	46.67	48.28	48.28
no	60	50	51.72	100
total	116	96.67	100	
Missing System	4	3.33		
Total	120	100.0		

Source: survey result, January2008

FFW has also played a key role in alleviating food shortages and prevented migration of people in search of other labour. This was supported by 98.6% of the sample households.

4.2.2 Changing dietary food habits of beneficiaries

The literature argues that in situations where delivery of food aid involves foods normally exotic to that area, a taste for foreign foods often develops creating future demand for those foods and depressing the production of local grains. In Enderta woreda 81% of the sample households reported that they did not sell part of the food aid they received. However, from the group discussion it was learnt that food aid has not affected the eating habit of the community, and people do not sell their food aid supplies. The reason for sell part of the grain by 19% of the respondents was in order to purchase some important food items like salt, pepper and sugar.

Table 14 Response of respondents whether they sell part of the food aid they receive or not?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	23	19.0	19.0	19.0
no	97	81.0	81.0	100.0
Total	120	100.0	100.0	

Source: survey result, January2008

4.2.3 Practice in saving after participating in FFW projects

The table below shows that the participation of the households in saving after they become beneficiaries of the FFW project. Majority of the respondents (68.6%), they practice saving after they become beneficiaries of the FFW projects.

Table 15 Response of respondents in saving after they became beneficiaries of FFW projects

	Frequency	Percent	Valid Percent	Cumulative percent
Valid Yes	83	68.6	68.6	68.6
No	37	31.4	31.4	100
Total	120	100	100	

Source: survey result, January 2008

4.3 Beneficiary Targeting Mechanisms

Self-targeting is the widely used targeting mechanism in FFW projects around Tigray. The assumption when using this mechanism as (Humphrey, 1999), indicated could be people who do not really need the aid will be unwilling to spend the time and effort required to obtain it and/or that they have more profitable ways to spend their time. According to the key informants in the survey area, even though self-targeting is used as targeting mechanism, there are some occasions that people who are interested to participate in FFW projects in which their size is more than the demand. Therefore administrative targeting may be applied by the development committee of the tabias based on the wealth status of the beneficiaries. However, there could be a chance of inclusion and exclusion. In the case of finite resources this can lead the transfer to few administratively selected geographic (Humphrey, 1999). This indicates that there is a need to expand the coverage of food for work projects in order to meet their objectives.

The survey households in the research area (96%) reported that they know how house holds are targeted and even they participate in endorsing the targeted beneficiaries, or else to react if the selection was unfair. However, 94.3% of the respondents indicated that targeting is

done fairly by the committee. All most all the sample households agree on the selection criteria. When asked about who decides the ration size or amount, 55.7% of the respondents said woreda authorities, and 25.7% of the respondents said tabia authorities.

Table 16 Knowledge about household targeting

	Frequency	Percent	Valid percent	Cumulative percent
Valid yes	115	96	96	96
no	5	4	4	100
Total	120	100	100	

Source: survey result, January2008

4.3.1 Time and mode of payment

A timely provision and distribution of food commodities is crucial for not disrupting work programs. Experiences have shown that an irregular food delivery in the “Ethiopian Employment Generation Schemes” has resulted in beneficiary’s choice not to participate in the works (Humphrey, 1999). Food for work beneficiaries normally work in periods of 15 days per month. In the study, an attempt is made to assess the prevalence of the problem. Accordingly, it is found that there is an irregular delivery of food payments in the sample areas. 51.67% of the respondents reported that the payment was not enough and 48.33% of the respondents reported that the payment was enough. The rate of payment in the survey area is 3 Kg of wheat.

Table 17: Response whether households receive their exact wage or not?

	Frequency	Percent	Valid percent	Cumulative percent
Valid yes	58	48.33	48.33	48.33
no	62	51.67	51.67	100
Total	120	100	100	

Source: survey result, January2008

4.3.2 Involvement and Year of Participation of individuals in FFW Projects in the family

On the average the year of participation on food for work projects was found to be 6-9 years, and this was supported by 35.7% of the sample households. 21.4% of the respondents participated from 1-3 years and 15.7% participated from 4-5 years. 66.67% of the sample households sent on the average two persons to participate in FFW projects, and 28.33% sent only one person.

Table 18: Number of individuals involved in FFW in the family

	Frequency	Percent	Valid percent	Cumulative percent
Valid 1	34	28.33	28.33	28.33
2	80	66.67	66.67	95
3	6	5	5	100
Total	120	100	100	

Source: survey result, January2008

4.4 Assessment on Farm management and soil and water conservation practices

4.4.1 Practice on soil fertility improving measures

90% of the respondents confirmed that they have been taking soil and water conservation improving measures on their land. Moreover, 97% of the sample households reported that they have been participating in the government extension program.

4.4.2 Experience in credit use for the last five years

Utilization of credit enables farmers to purchase inputs or acquire physical capital thus contributing to technology adoption and land investment practices (Tesfay 2002).

95% of the respondents have used credit in the past five years. The main reason for using the credit was indicated by 53.7% of the respondents was for the purchase of farm inputs. 34.3% of the sample households used the credit for the purchase of livestock. Therefore, these measures are indicators how the people of Enderta woreda have been undertaking different land management measures in order to be self sufficient.

Table 19 Respondents credit utilization

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	114	95	95	95
	No	6	5	5	100
	Total	120	100	100	

Source: survey result, January2008

4.4.3. Evaluation on food availability of the respondents in the coming few years

When respondents were asked about the future of their food security, 98.6% of the respondents confirmed that they do not like to receive food aid. And the remaining 1.4% of the total sample households reported that it depends on the weather and food production.

4.4.4 Do people give less attention to agriculture because of receiving food aid or not?

When asked about the attention people give to agriculture, 65% of the household respondents indicated that people are giving enough attention to agriculture, while 35% said people are giving less attention to agriculture.

4.4.5 Advantages of FFW in protecting natural resources and environment

Moreover, when asked about the advantages of food for work, 85.7% of the sample households revealed that it stops cutting trees, and 11.4% said it helps to reduce cutting of trees. The sample households, in general, (98.5) agreed in that food for work protected the natural resource and the environment. It was also learnt from the survey that irrigation is not exercised around the survey tabias. Only 30.5 of the sample households utilized irrigation for crop production and 69.5.5% of the respondents did not use irrigation. This could be due to the in availability of water points in the area; however, there seems a need of technology adoption in irrigation.

4.5. The Socio-Economic Impact of FFW

One of the primary objectives of FFW program is to improve the income of the beneficiaries through creating employment opportunities. The regression model is selected for analyzing the factors influencing the average annual Income of Respondents. The coefficient of determination R^2 provides a measure of goodness of fit of the estimated regression equation to the data, which indicates the number of sample observations correctly predicted by the model.

Table 20 Estimate of the Regression Model

Coefficients(a)

Model		Un standardized Coefficients		Standardized Coefficients	t- ratio	Sig.
		(B) Regression coefficient	Std. Error	Beta		
	(Constant)	821.669	1091.495		.753	.453
	Age	-8.778	2.801	-.296	-3.134	.000**
	Credit experience	-11.030	6.165	-.168	-1.789	.076
	Family size	-1.913	2.394	-.070	-.799	.426
	Sex	-18.297	534.529	-.003	-.034	.973
	Number of Oxen	105.746	36.354	.280	2.909	.004*
	Educational status	78.711	320.921	.021	.245	.807
	Farm size	-160.033	255.572	-.130	-.626	.533

* Significant at 5%

** Significant at 1%

$R^2=0.256$

DF= 11

a Dependent Variable Total annual income

DF=degree of freedom

Source: survey result, January2008

Table 21 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.506	.256	.181	526.21176

Source: survey result, January2008

Predictors: Constant,age, credit experience, family size, sex, number of oxen, educational status and farm size.

Table 22 Model Summary ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10388057.955	11	944368.905	3.411	.000(a)
	Residual	30181971.549	109	276898.822		
	Total	40570029.504	120			

(a). Predictors: Constant,age, credit experience, family size, sex, number of oxen, educational status and farm size.

(b). Dependent Variable: Total annual income

4.5.1 Discussion on the Significant Explanatory Variables

Out of the seven variables hypothesized to influence the average annual income of the respondents only two were found to have statistical significance. Age (Age) of respondents is statistically significant at less than or equal to 1 percent and number of oxen (Nuoxen) owned

by respondents is statistically significant at less than or equal to 5 percent. The results of the model estimates are interpreted in relation to each of the statistically significant variables.

Number of Oxen Owned: Those beneficiaries of FFW who own more oxen would be in a position to undertake farm activities on time and even when required. Ownership of more oxen power is expected to be positively related to income. The result of the regression model shows that the number of oxen owned is positively related to the average annual income which is consistent to what was hypothesized.

Age of the beneficiary (Age): those individuals in the age category of working group have positive impact on increasing the income of the respondents after participating in the FFW projects which is consistent to what was hypothesized before.

4.6 Non - Member Response

For the purpose of control group, non-members were contacted through an interview schedule. They were asked question related to their membership, contribution of cooperatives, challenges facing cooperatives and others.

Table 23 Perception of Respondents on Membership

Do you want to be a member of multipurpose cooperative	Number of respondents	Percent
Yes	12	40
No	18	60
Total	30	100

Source: survey result, January 2008

Further, the respondents were also asked whether they have negative perception towards cooperatives. 90 percent of the households sampled responded that they do not have negative perception towards cooperatives. In addition respondents were asked if they have any suggestion to forward. Majority of the sampled respondents suggested that there should be equal treatment to members and non members while targeting is done.

CHAPTER-V

5. CONCLUSION AND RECOMMENDATION

5.1.1 Limitation of the study

The study aims at assessing the influence of food for work on the livelihood of cooperatives who are considered to be beneficiaries of the program. More specifically, it refers to the household of Enderta wereda of Tigray. However, not all the beneficiaries were included in the survey. This limitation is attributable to the financial, time and other resource limitations as well as the possible non response of respondents. Therefore, the study was undertaken to meet its objectives within the limitations mentioned.

5.1.2 Conclusion

There are different views regarding food aid. Some supports the impact of food aid in a positive way while others reject this idea. However, a country like Ethiopia is a least developed country faced with food deficit and requires foreign assistance in the form of food aid to protect disasters and to improve development activities. Similarly, Tigray is one of the food deficit regions and food aid is very important for different reasons. In this region food aid is linked with food for work activities and will help to alleviate poverty in the future. In general food aid is important in this region to reduce the misery of hunger and malnutrition of the deficit areas in the short run. It will be also helpful to attain food security and improve the living standard of the people in the long run because of the development achievements that it brings.

The National policy on Disaster Prevention and Management (NPDPM) of 1993 emphasises the need to give priority to disaster prevention programs in all development endeavours. The policy sets employment generation schemes (EGS) as the corner stone of food aid policy, in order to meet the needs of non-performing agricultural areas. Random sampling technique was employed to select a total of 120 sample beneficiaries from five multi-purpose cooperatives of the woreda. The study has tried to assess the role of FFW projects in alleviating the problem of food security. The study revealed that, 95% of the respondents in FFW projects have improved their nutritional status. The food wage received from projects supported for 6 months on the average. Moreover, it helped 88.4% of the respondents to enroll more children in schools who could have been employed in different activities hired by other people in order to gain income. Besides, it has helped the house hold samples to start saving. The majority (98%) of the cases conformed that FFW has protected their asset depletion, while 51.72% of the respondents indicated that FFW did not contribute to asset creation. FFW projects have also protected from migration for the 98.6% of the respondents. In the group discussion, the community elders assured that FFW projects have helped to save lives and contributed positively to minimize the loss of livestock assets through desperate sales to buy food. It was learnt from the study that, the only source of income for the 97% of the respondents was farming.

Targeting of beneficiaries has got recognition by 96% of the respondents in the survey area. The respondents emphasized that even they endorse the list of the beneficiaries who were targeted by the committee. They noted that even they can react if the targeting is not fair. Respondents in the survey area confirmed that (51.67%) the payment was not enough and

(48.3%) said it was enough. It was found from the study, the average year of participation on food for work projects was 6 – 9 years.

Generally the sample households and the group discussants did not deny the free distribution of food aid does create dependency. Some people were selling their assets in order to be eligible for food aid. Even though, there are some problems in targeting in food aid, the study revealed that targeting in food for work was fairly done. This was confirmed by 94.3% of the respondents. The efforts that have been under taken in the research area are indicators for not dependent on food aid. The incentives of FFW programmes as has been revealed by the study, the sample households were investing in their land in order to escape from food insecurity. As was reported by 90% of the sample households, they were taking soil and water conservation measures. The study also revealed that the sample house holds were taking credit in order to purchase farm inputs like fertilizer, seed and chemicals. Besides they have participated in the government extension in order to improve their living standard.

Generally food for work projects have improved both availability and access food beyond the investments in soil and water conservation and significant improvements gained on biophysical conditions such as reduction of soil loss, better soil depth and increased vegetative cover.

The most important explanatory variables affecting average annual income were also analyzed using multiple regression. Out of the seven variables hypothesized to influence the average annual income of the respondents only two were found to have statistical significance. Age (Age) of respondents is statistically significant at less than or equal to 1

percent and number of oxen (Nuoxen) owned by respondents is statistically significant at less than or equal to 5 percent.

5.1.3 Recommendation

Based on the study findings, some recommendations that require due attention in the efforts to ensure food security at house hold level in Enderta woreda are forwarded below.

- The food security strategy of federal and regional governments must pay sufficient attention to appropriate support mechanisms to rehabilitate and improve the productive capacity of food aid recipient communities.
- Food for work beneficiaries need to be monitored and evaluated so that the impact of FFW projects on production, markets, labour allocation, behavior and attitudes for words work can be assessed to help improve the management of food aid in general and food for work in particular.
- There must be appropriate policies and strategies for water resource development and irrigation use is essential for sustainable food security in Ethiopia.
- The delay in the arrival of the food wages should be corrected in order to meet the objectives of FFW projects in protecting livelihoods and the long-term benefits that FFW renders.

5.1.4 Implication for future studies

- Similar research studies on the Role and effect of FFW on household food security can be undertaken on other Woredas of Tigray Region.
- It will also enable policy makers and non governmental organizations to correct the problems in the implementation of food for work programs.
- It creates awareness for improvement by drawing lessons from the weaknesses of the past activities.

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7. Appendices

7.1 Appendix 1

Interview Schedule to Study the Role and Effect of Food for Work to Cooperatives on Household Food Security:

I. Demographic, economic and social characteristics of the household

Name of Respondent (optional) _____

Name of multipurpose cooperative _____

1.1 Household information

01	02	03	04	05	06	07	08
Serial No	Name of the Household members	Age (years)	Sex	Marital Status	Religion	Highest level of school com.	Occupation other than agriculture
1							
2							
3							
4							
5							
6							

Codes for 05: 1. = Never married 2. = Married 3. = Divorced 4. = Widowed

Codes for 06 1 = Muslim, 2 = Christian 3 = others (specify) -----

Codes for 07 and 08 of the head of the member of cooperative/non member

Level of education	Code	Type of occupation	Code
Illiterate	0	Farming	1
Read and write (non formal)	1	Trade or retail	2
Grade 1-4	2	Handicraft	3
Grade 5-8	3	Wage labour	4
Grade 9-10	4	Retired	5
> 10 grade	5	Household work	6
		others	

Part II. Land resources

- 2.1 Do you have your own land? _____ 1. Yes 2. No
- 2.2 If no land the source of land for cultivation is _____
- 2.3 What is the total size of your land? _____ in hectare or local units
- 2.4 What is the total area of land you cultivated in 2006/7? _____ in” hectare”
1. Owned _____ 2 Rented in _____
3. Share cropped ____ 4 Received as a gift _____ 5. Others (specify) _____

Part III. Livestock possession

- 3.1 Do you own livestock? _____ 1. Yes 2. No
- 3.2 If yes, indicate the number of livestock owned:

No	Type of Livestock	Number Owned
1		
2		
3		
4		

- 3.3 Do you use oxen for your farm operation? _____ 1. Yes 2. No
- 3.4 If yes, are your oxen enough for your farm operations? _____ 1. Yes 2. No
- 3.5 If you don't have enough oxen, how do you get additional oxen you need? _____ 1. Hire from someone 2. Coupling with other farmer 3. Borrow from friends 4. By contributing labor to a person who has oxen. 5. Others (specify) _____
- 3.6 Please list your cash income raised from farm operation in the following table in the year 1999 E.C

s.no	Type of crop	Amount (quintal)	Income from crop	Type of livestock	In number	Income from livestock	Total income from farm operation

3.7 Cash income from off-farm work in the year 1999 E.C

S.No	Operations involved	Total number of working days	Total income received in Birr
1	Trading		
2	Handicraft		
3	Fire wood selling		
4	Home made drink		
5	Daily laborer		
6	Others (specify)		

3.8 During last year (1999 E.C) how much did you spend per month on average on purchase of food and non-food items? If no expense, write 0.

No	Expenditure items	Expenditure per month (birr)	Total expense per year
	Food and stimulant items		
1	Purchase of cereals, pulses, etc		
2	Relish items (Salt, oil, spices, pepper etc.)		
3	Food preparation costs (e.g. milling flour)		
4	Purchase of meat		
5	Purchase of milk, egg, etc.		
6	Purchase of coffee, sugar, tea.		
7	Purchase of potato, tomato, etc.		
8	Purchase of fruits and vegetables etc.		
	None –food items		
9	Clothing		
10	Foot wear		
11	Kerosene, candle, firewood, charcoal		
12	Medical expenditure		
13	Soap, hair care		
14	Transportation expenses		
15	Education, school fees, etc		
16	Purchase of farm tools and implements		
17	Purchase of inputs: fertilizer, seed, pesticides, vet.		

	Drugs		
18	Agricultural taxes (land, income taxes...)		
19	House utensils		
20	Payment for Edir,Equb,etc.		

Part IV Perceptions on Food Security Situation

4. How many months of the household's food demand are met by?

1=FFW_____ kind/cash 2= Food Aid_____ kind/ cash

3= cash for work _____ 4. other_____

5. How do you evaluate the contribution of Food aid (food for work) in overall income?

1. Low 2 fair 3. High 4. Very high

6. Does food for work contribute to household asset creation and built up?

1=yes 2=No

7. Have you enrolled more of your children in school since you participated in some jobs offered through food aid like the food for work than other years without participating?

1=yes 2=No

8. Have you avoided having to sell household assets to buy food since you participated in some jobs offered through food for work?

1=yes 2=No

9. Have you experienced selling household assets to buy food stuffs?

1=yes 2=No

10. Have you acquired any new household assets (eg. Livestock, Corrugated sheet, radio etc.)?

1=yes 2= No

11. Number of family member out migrated, if any,

(If there are no out migrated members, skip to Q No 14)

Migration	M	F
Permanent		
Temporary		

11.1 Destination

1= with in wereda 2=Other wereda/ rural

3= Other wereda/Town

4= Out of Region

11.2. Reason for migration:

1. _____

2. _____

3. _____

4. _____

5. _____

12. Do you think that they would have migrated had they been accepted to join the FFW

1=yes

2= No

12. Do you sell part of the food aid you received?

1=yes

2= No

13. If yes, why?

1= to buy cheaper food

2= to buy more quality food

3= food aid is not tasty

4= I need the money for other purposes

5= Other _____

14. What were your coping mechanisms in times of food shortage? (✓ in the box)

S. No	Coping strategies	
1	Reducing quantity of meal	
2	Participate in jobs offered by food aid	
2	Eating less preferred food	
4	Selling of livestock	
5	Skip eating the whole day	
6	Sale of fire wood and charcoal	
7	Sale of productive assets (non livestock)	
8	Migration in search of job	
9	With drawing children from school	
10	Credit service	

15. Do you think that the nutritional status of your family has improved since your participation in jobs offered by food aid programs?

1=yes 2=No

16. Do you practice saving after participating in food for work programs?

1=yes 2=No

17. Does food aid affect your family's food eating habits?

1=yes 2= No 3= I do not know 4=It is difficult to notice such
difference 5= Others_____

29 . If the answer for Q 30 is no why?

1= Not commensurable

2= Market price for the food item fluctuates

3=others (specify) _____

30. Who decides the ration amount?

1= Tabia authorities

2=Woreda authorities

3=It is fixed at country level 4= others (specify)

Part VI

Farm management and soil and water conservation practices

31. Is any of your farm plots irrigated?

1= yes

2=No

32. If yes did you start it before or after you participate in FFW PROJECT?

1= before 2= after

33. Did you use fertilizers? _____ 1. Yes 2. No

34. If yes did you start it before or after you participate in FFW PROJECT?

1= before 2= after

35. If no state your reasons in the order of their importance_____1. Not necessary for cultivated crops 2. Too expensive 3. Not available 4. Shortage of income 5. Lack of credit 6.

Specify other reasons _____

36. Do you practice soil conservation or soil fertility improving measures on any of your land?

1= yes

2=No

37. Has your household received any type of extension from any government and/ NGOs?

1. Yes

2. No

38. Have you participated in the new agricultural extension package program?

1.Yes 2.No

39. If yes for how long? _____ years.

40. For how many years did you participate in food for work schemes?

For_____years.

41 . Are you still beneficiary of food aid through employment generation schemes?

1= yes

2= No

42. If the answer for question no. 43 is no why?

1. No use 2. No impact 3. Others specify
43. Have you used credit service in any of the last five years?
 1=yes 2=No
44. If yes, for what purpose did you use the served credit?
 1=Purchase of farm inputs
 2= Purchase of livestock 3= Purchase of irrigation technologies
 4=for business expansion
 5= Others (specify)_____.
45. How do you see the future or the coming few years in terms of food availability for your family?
 1=I think my family will continue receiving food aid 2=It depends on the weather and food production
 3=I think we will be able to produce or buy our own food 4=I do not know about the future
 5=It depends on the support we get from the government to improve our food production 6=I do not like to receive aid food in future 7=other (-specify)
46. What kind of efforts have you been making to produce enough food for your family?
 1=I do not make any efforts 2=No hope here to produce enough food due to shortage of rain 3=I do not have oxen for ploughing 4=I do not have sufficient land 5=I am conserving soil and water for better production 6=I have shortage of necessary inputs 7=I am working hard to produce sufficient food 8=other - specify)
47. Do you think that people in your Tabia tend to give less attention to agricultural work since they started receiving food aid?
 1=yes 2=no 3=I do not have any idea 4=It may be true with the other farmers, but not with me 5=other – (specify)
48. What employment and income earning opportunities are available in your area? (Multiple answers possible)
 1= only own farming (self-employment)
 2= Own non-farm employment (trading, handicrafts)
 3= Farm labour (work on other farms)

4=Migrate to work in other areas

5. Non-farm labour (e.g. work in cities)

49. Does food for work schemes protect the natural resources and environment?

1=yes 2= No 3= I do not know 4=Others_____

50. If yes, what are the benefits?

1=food aid stops cutting trees 2= It helps reduce cutting trees

3=Food aid supports agricultural activities 4= Other_____

7.2 Appendix 2 Non - MEMBERS INTERVIEW SCHEDULE

➤ Area Identification		
1.	Zone:	Date:
2.	Wereda:	Month:
3.	Tabia:	Year:

➤ Background Information	
1.	Respondent Name:
2.	Age:
3.	Sex:
4.	Occupation: a) Crop production b) Livestock rearing c) Both crop & livestock d) Trading/merchant e) Manual Worker f) Housewife g) Civil Servant
5.	Marital status: a) Married b) Widowed c) Divorced d) Single e) Separated
6.	Educational status: a) Illiterate b) Literacy campaign c) Elementary school d) Junior school e) High school f) College preparatory g) College/University

Membership	
1.	Have you ever think of joining the multipurpose cooperatives? Yes No
2.	If your response is no what are the reasons?
	a)
	b)
	c)
	d)
	e)
3.	Do you perceived cooperatives are helpful to members Yes No
4.	Do you have any negative feeling about cooperatives Yes No
5.	If Q4 is yes, state the reason
	a)
	b)
	c)
	d)
	e)
6.	What are the major problems/challenges that the cooperative faced?
	a)
	b)
	c)
	d)
	e)
7.	What suggestion you have to make more people member of cooperatives?
	a)