ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF DEVELOPMENT RESEARCH (IDR)

Income Poverty Profiles and Level of Households Social Deprivation in Tigray. *The Case of Two Tabias (Villages) in Gulomekheda Wereda, East Tigray, North Ethiopia.*

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A Thesis Submitted to School of Graduate Studies in Fulfillment of the Requirements for the Master of Arts in Development Studies (Rural Livelihoods and Development)

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BY
Gebrehiwet Mezgebo Desta

DEVELOPMENT STUDIES

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Dedication

First and foremost I am deeply indebted to dedication of my immediate family.

Dedicated to my mother ***Awetash Gebreselasse***

Dedicated to my wife ***Wesenyelesh Zewdie***

To my kids ***YANS*** ☛Excessive enthusiastic to my graduation ***"Temerekh".***

I find it difficult to expressing my love for all of you!

I Love You From Details of My Heart! ***"Aziye Yifetwekum"***

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Acknowledgments

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Abstract

This paper addresses a central question: How is the welfare situation of the society including depth and magnitude of poverty both in terms of income and non-income indicators prevailing at grassroots of the study area. This study produces some aggregate poverty estimates; the minimum level of food basket, the absolute poverty line expenditures needed to escape poverty and the weight of the poor as well as the Human Poverty Index (HPI) drawing from primary data sets. In this study the researcher developed a questionnaire within the framework of the research which was used as a measuring instrument for the study.

My findings are based on empirical work, which is based on data gathered from a survey of 119 rural households in two Tabias (Villages). The methodology used is simple and easily understandable not marred with sophisticated concepts and econometric models. The Cost of Basic Need (CBN) and the UNDP-HPI approach are utilized for the income poverty lines and non-income deprivations respectively. The FGT poverty index is employed to examine the extent and severity of rural poverty and reveals that over 53 percent of the sample households live below poverty line with poverty gap and squared poverty gap of 0.1336 and 0.0478 respectively. The study also reveals that level of deprivation to socio-economic services (health, education, nutrition and water) together results Human Poverty Index (HPI) is found to be 44.5 percent. A low average daily calorie consumption and high prevalence of malnutrition reveals that a significant share of the population live under situation of chronic food hunger. Evidence more than 52 percent of the population is living under absolute food poverty. The recurrent draught coupled with other environmental problems accelerate food consumption short fall. Therefore separate and aggregate policy actions are required.

Decomposition of poverty against various socio-economic variables indicates that, as expected education status appear to contribute positively an improvement of welfare of the households and it is robust at first order stochastic dominance test. Gender headship difference does not make significant difference in the living standard of the population. Other variables also not found as expected, for example relate to the interlink of family size, it is robust at first order stochastic dominance test the highest the family size the poorest the household, and the interlink of land ownership to reduce poverty is insignificant and it is true at first order stochastic dominance test and the contribution of agricultural package beneficiaries to poverty reduction is not robust at all order of stochastic dominance tests.

Key words: Tabia, poverty (line incidence gap severity indices), consumption/expenditure, deprivation, Basic need, income and non-income poverty, Cost of Basic Need (CBN), Household, Adult equivalent.

CHAPTER ONE
1. INTRODUCTION

1.1 Background and Statement of the Problem

Poverty in Ethiopia is not a new phenomenon. The history of the country tells us that Ethiopians have been suffering from a range of deprivations and poverty has been a way of life for a large segment of the population for a very long period of time.

Generally poverty in Ethiopia is rampant. Ethiopia remains among the poorest in the world, with 80.7 percent of its 73.8 million people living on less than $2 a day and ranking 170th out of 177 countries. The Human Development Index (HDI) and Human Poverty Index (HPI-1) values are 0.367 and 55.3 percent respectively*. Despite improvements in the past few years, sustaining long-term growth remains a challenge; income poverty is still widespread and deep. About 31 million people live below a poverty equivalent to 45 US cents per day and between 6 and 13 million people are at risk of starvation each year (MOFED, 2005).

Taking the level of poverty in all Ethiopia's national regional states, Tigray recorded the highest proportion of the population living below the poverty line, the highest income gap and the lowest per capita consumption expenditures in the country (See Tassew and Tekie, 2002; MEDAC, 1999). As peasants constitute the vast majority of the poor, poverty in Ethiopia is intrinsically rural (See

* The details of Human Development Index (HDI) includes three end results of Income Index, Health Index, and Education Index, while Human Poverty Index (HPI-1) concentrates on deprivation in three essential dimensions of human life already reflected in the HDI (Longevity, knowledge and a decent standard of living) ranking for Ethiopia are taken from www.undp.org/reports. Relative poverty estimates for Ethiopia vary from one source to another, ranging from 31 to 45.5 percent (Wolday, 2001 p.8)

Tassew and Tekie, 2002). Rural poverty is heterogeneous and complex, its solution is also multifaceted as its causes.

In the view of mitigating such debilitating poverty, poverty reduction and ultimate eradication has been the Government of Ethiopia's overriding development agenda since 1991. Achieving broad- based (pro-poor) growth complemented by the renewed focus on pro-poor sectors has been considered central to addressing the poverty reduction agenda in the context of Ethiopia. Achieving macroeconomic stability has also been considered essential to address the poverty agenda. To this effect the government has been taking various measures aimed at combating poverty. Among others the New Coalition for Food Security (NCFS), Productive Safety Net Programs (PSNP) is usually a component or a continuation of (NCFS); The first generation Poverty Reduction Strategy Paper (PRSP) entitled "Sustainable Development and Poverty Reduction Program" (SDPRP) spanning the three year period 2002/03-2004/05 and its successor entitled "A Plan for Accelerated and Sustained Development to End Poverty" (PASDEP) spanning the five year period 2005/06-2009/10 are the core government's poverty reduction strategies designed to improve the lives of the poor people, taking a holistic view putting the growth agenda at the centre of its poverty reduction endeavor. Poverty alleviation is, therefore, a major development objective in Ethiopia aimed to reduce the total poverty head count and food poverty head count indices from 39 and 38 percent 2004/05 to 29 and 28 percent by 2009/10 respectively. (Details of strategies and targets see final MOFED-PASDEP Jan, 2007 p44-56).

Whether these measures are leading to significant reduction in poverty or not is both of academic and policy interest. Understanding the magnitude, scope, trend, depth and severity of poverty is necessary to provide feedback to policy. This paper does not directly assess the impact and the consequences of specific

public and economic policy measures but tries to understand the state of poverty in the given environment. Further more this paper addresses the fundamental theme of welfare situation of the society encompassing in combination of both money-metric (income) and social deprivation indicators. From a policy perspective, it is important to refer to the state of a part of the population which is not provided with the basic human needs to the minimum living standard of the society being studied. By doing so the study will show the magnitude of poverty in the population and who in the population is most vulnerable to poverty. Besides quantifying poverty, the study explores the determinants of poverty. Such research supported evidence is useful to inform policy makers in the Wereda or region so that appropriate policy responses could be designed.

Alleviating poverty at household level is a question of formulating appropriate development policies and strategies and implements them effectively. Designing such development policies and strategies requires micro level evidence on people's welfare and determinants of welfare situation. Furthermore, poverty reduction may require effective targeting of resources to where they could be effectively utilized. In order to undertake effective targeting for poverty reduction, which is necessary in view of very scarce resource in the country allocated for the purpose, the poor and the factors that keep them poor must be properly identified. This requires micro level evidence on the state of poverty, who the poor are, and the determinants of poverty. Therefore, an index that takes into account the intensity of poverty suffered by the poor at micro levels should be constructed. Moreover the effort required to eliminate poverty depends upon the extent to which the income of the poor lie below the poverty line as well as the extent of deprivation among the households is also a critical factor to address poverty reduction strategies.

Poverty measurements usually focus on assessing whether households or individuals have enough resources to meet their daily consumption (food and non-food) or basic living needs. As discussed in the next sections, techniques of measuring poverty mostly focus on the monetary aspects of poverty, but non-monetary dimensions are also important. If poverty has to be measured, incorporating the proxies of non-income indicators in the deprivation profile extensive information can be obtained than one merely obtained using money-metric welfare measures. But these should be viewed as complements, rather than replacements, for the more commonly used consumption per capita measures see Dercon (1997). David et.al (2003) on the other hand argues that deprivation indices are more accurate and useful indicators of welfare than consumption often measured over a brief period of time. The income method is at most a second best (Sen, 1981). Hence, this study also includes other non-money metric social deprivation measures prevailing at the ground of the study area.

There are mixed evidence on the state of poverty in the study area using qualitative approaches such as key informants interview and focus group discussions. On the one hand, there are qualitative evidences on the improvement of welfare in the study Tabias. There are evidences, still qualitative ones, which suggest the reverse. There is therefore, a need for a systematic and careful investigation on the state of welfare using well established approaches, i.e. the Cost of Basic Need (CBN), using primary data. The data used in this study include household income/consumption expenditure of food (calories intake) and non-food consumption, and some proxies of social welfare indicators (such as demography, water, child malnutrition, health, education and life expectancy not survive to age 40).

1.2 Research Objectives

General Objectives.

The broad objective of this paper is to investigate the existing state of welfare situations of the society using aggregate poverty indices and deprivation index of the income and non-income dimensions of poverty.

Specific Objectives.

The specific objectives of this study include:

- Estimating aggregate poverty measures using the Cost of Basic Need (CBN) approach, i.e. estimate head count ratio (Po), poverty gap index (P1) and severity of poverty measure (P2).

- Identifying the poor and non-poor households based on food poverty and basic consumption poverty lines.

- Indicating the total income expenditures spent per capita/adult and inverse food share of the total income of the households.

- Assessing the level of nutritional anthropometric indicators of children under 5 and social service deprivation of the Tabias and hence develop the Human Poverty Index (HPI).

- To draw as information guide to policy makers and development actors at Wereda level and could be at regional level would be better informed about the nature and magnitude of poverty in the study area.

1.3 The Significance of the Study and its Contribution

Development workers should always question their own assumptions about poverty when they consider working on poverty alleviation. Attempts aimed at measuring poverty have received considerable attention because summary indicators permit an overview of poverty that goes beyond individual experiences to set measurable targets for judging actions and outcomes.

Development should primarily mean, and be measured in terms of, an improvement in the general welfare situation of people. For developing countries like Ethiopia, development mainly constitutes poverty reduction (Wolday, 2001). Since poverty reduction is an important development concern, designing effective targeting indicators support effective policies and strategies aimed at combating poverty, and hence, it is critical to understand the characteristics of households in a given geographic area.

Though we know that a considerable number of the population falls below the poverty line, it is still important to look in to the proportion of the population adversely affected by deprivations among the poor is a critical factor in understanding the depth of poverty. However, the efforts required to eliminate poverty depends upon the extent to which the income of the poor lie below the poverty line.

Evaluating the socioeconomic impacts measured or changes in the welfare status of the people at household level is of paramount importance for development policy considerations, since it implicitly sets the target and can have an important impact on how poverty reduction programs are targeted and ultimately on who benefits (Ravalion, 1992).

Therefore, the choice of a measure of poverty over time indicates whether poverty is increasing or decreasing, or whether the programs are benefiting the poor and also important to revise poverty reduction strategies that have a better chance of benefiting the poor.

Generally, measuring poverty profiles and levels of deprivation is important to mainstream policies and can act as a point of departure for poverty reduction strategies. A credible measure of poverty therefore can be a powerful instrument for focusing the attention of policy makers (government) and civil society on living conditions of the poor". (Ravalion, 1998 p.1).

This study is equally important for regional and Wereda level development stakeholders to formulate and implement effective development plans and programs and to target beneficiaries, in a way that can address the root causes of poverty and enhance poverty reduction strategies.

Designing such development effort requires micro level data and information on the people's welfare situation on a continuous and up to date basis. For example TBFED (2006 p.4) faced a great shortage of micro data to evaluate the level of growth achieved in Tigray region in the past strategic plans and this has affected the formulation of the second strategic development plan of the region. Therefore, ranking of peoples in terms of poverty can inform policy choices, such as decisions about which group of the population should be targeted first in attempts to reduce poverty.

Essentially what distinguishes the current study from previous ones is that; the present study is the first, to the author's knowledge, to apply the CBN approach for the purpose of developing its own food basket and poverty lines at Tabia level. Exercising such poverty analysis at grass root level precisely can express

the Wereda's situation of poverty. Second I have used actual current and original prices rather than deflated prices since collected practically from the local sample households during the survey process.

Finally I believe the research yields a more realistic picture of the actual poverty situation in the particular study area, can contribute to knowledge on poverty in the Wereda, and can be used as a pocket evidence for Tigray. In this respect the study can contribute to the rural livelihood improvement strategies of the region to the Wereda through identifying potential target groups for specific programs.

1.4 Structure of the study

The structure of this report is organized as follows:

At first level the general guide constitutes background and statement of the problem, research objectives and significance of the study.

In the next section the reviews of the literature comprises poverty and poor, poverty measurement issues, the monetary and non-monetary dimensions of poverty and briefly discuss the issue of absolute and relative poverty. This section also describes poverty trends in national and regional (Tigray) level followed by the research framework.

Section three discusses the socio-economic situation of the study Wereda and the specific study area. The second part of this section constitutes the research methodology comprises data source, welfare indicators, poverty measurement approach and rationale of the chosen approach extending to methodologies of income poverty and social deprivation measurements and selected soft wares for the analysis and comparison of income poverty.

Section four presents' empirical results and discussions from monetary dimensions of poverty based on developed poverty lines, food basket and alternative poverty lines analysis of poverty incidence, poverty depth and severity of poverty. The income sources, income poverty profiles, the absolute consumption expenditures, absolute poverty indices, alternative poverty lines of the study area and consumption gap as well as social deprivations of health, nutrition, education and water are discussed in the second part of this section. The non-income indicators of social deprivation are combined into a single deprivation index to give a summary measure for the study area. Another important part discussed in this section is to answer who is the poor and hence poverty decomposition has been made to selected socio-economic variables of the households.

The last section provides conclusions, findings summary as well as specific recommendations emanating from the study.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Poverty and the Poor

Poverty is a highly complex problem, with multiple causes and manifestations (Deborah and Susane, 1995). There is no generally or officially accepted consensus on a single and official definition of poverty (ADB, 2002 p.6), and it was a major problem with many previous attempts to measure poverty (David et al, 2003). On a common sense level, to be poor implies that either an individual or family lacks the resources necessary to satisfy some measure of basic needs such as food, clothing and shelter. Yet while this definition might appear to be straightforward at first glance, all sorts of difficulties surface in its application. Poverty depends not only on income but also on access to social services, and poverty is a wide spectrum encompassing the overall denial of choices and opportunities and is a violation of human dignity (UN1995). Absolute poverty is a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information (Ibid). It is a consumption based measure referring to the inability to secure the minimum basic needs for human survival (Wolday, 2001 p.3) or the number of people in a given society and/or country who are unable to command resources to satisfy or to meet their basic needs (See Gaurave, 1998; Todaro and Smith, 2003).

Poverty is relative in manifestation as well. This means poverty is pronounced deprivation in well being, involving a lack of something generally held to be desirable and a state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belongs (David et.al 2003 p.6). Poverty can be said to exist in a given society when one or more persons do not attain a level of material well being

deemed to constitute a reasonable minimum by the standards of the society (Ravalion, 1992), and people affected by poverty are those unable to lead a decent life (Todaro and Smith, 2003).

Even though these definitions seem to be general and possibly accepted by many, it varies with culture, realization and social value systems in each country, it conceives of in different terms in different societies, and that poor people do not form an homogeneous group (Deborah and Susane 1995). Social science researches have also shown that all cultures have a concept and definition of poverty although these definitions often vary (David et al, 2003).

Furthermore, the World Bank (2005) stated poverty is not only a state of deprivation it is equally a state of vulnerability. The most striking and direct expression of poverty are related to the ability to survive (Dercon, 1997p.4). The people living in poverty as Wolday (2001) indicated are particularly vulnerable to adverse events outside their control.

The conventional definition of the poor refers to all those persons who subsist (lead) their life below a level of income that can sustain only a bare minimal standard of living. In the literature of poverty studies it is this level that is the threshold level referred as the poverty line (Todaro and Smith 2003). Therefore, absolute poverty is defined as the number of people in a given society and/or country who are unable to command sufficient resources to satisfy or to meet their basic needs. While the relative poor are those households facing a relative deprivation living below a certain proportion of their group.

As indicated earlier, there has not been any unique yard stick measure which would capture and explore all the manifestations of human deprivations resulting from poverty and setting this into a single index is unexpected.

Though there are alternative definitions of poverty depending on how we perceive the welfare of a citizen and/or the society at large. For the present study poverty is defined as 'the inability to attain the minimal standard of living and lack of something generally held to be desirable' expressed in terms of 'can sustain only a bare minimal standard of living and deprivation in wellbeing'. Paraphrased as suitable to the study from UN, 1995; Gaurave, 1998; David et.al, 2003; Todaro and Smith, 2003.

The two concepts of poverty and deprivation are tightly linked but there is general agreement that the concept of deprivation covers the various conditions, independent of income, experienced by people who are poor, while the concept of poverty refers to the lack of income and other resources which make those conditions inescapable or at least highly likely. Deprivation can be conceptualized as a continuum that ranges from no deprivation, through mild, moderate and severe deprivation to extreme deprivation at the end of the scale. (David Gordon, 2002; cited in D Gordon et.al 2003 p.6).

2.2 Poverty Measurement Issues

As defined earlier poverty is pronounced deprivation of well-being. But what is deprivation how can it be measured, this topic is devoted to this concept. As its definition and dimension poverty measurements and analysis is complex. There is also the problem of measuring the standard of living so as to be able to express the overall severity of poverty in a single index. An important question is, therefore, how should poverty measured? Since its measurement is necessary at the outset of any development action. Gross Domestic Product -GDP-per head, is a very crude way to measure poverty, as it is only a proxy measure of the social situation and living conditions within a country, but in reality there is a big disparity in both income and living standards.

As widely discussed in the next section the most common way of measuring absolute poverty, following the Cost of Basic Need (CBN) approach, involves the estimation of poverty profiles using poverty indices. Calculation of poverty profiles, in turn, involves the choice of a (a) welfare measure – such as household income per capita, total expenditure per capita, food expenditure per capita,

calorie intake per capita, and household inverse food share are some of the indicators used to measure wellbeing specifically focusing the degree of representativenes of the indicators (b) establish a minimum threshold (the poverty line) to which each individuals or household's welfare can be compared and (c)poverty measure, select of poverty indices to enable aggregation of poverty (Ravalion and Bidani, 1994; See also Fitsum, 2003; Wolday, 2001). Setting poverty lines is often the hardest, and most contentious, step in constructing a poverty profile from household survey data (Ravalion, 1998).

Under the absolute poverty approach the common method of estimating poverty is some times called the subsistence measure (Aigbokhan, 2000) this focuses on material deprivation, such as inability to consume basic food and non-food items, otherwise known as the cost of basic needs approach (Ravalion and Bidani, 1994). The other, known as the basic needs measure focuses on both material deprivations and deprivation in access to basic services such as health, education and drinking water (David et.al 2003). If the household or individual does not have access to particular basic needs, they are defined as 'deprived'. Those who are deprived of two or more of the basic need indicators defined as being in absolute poverty (Ibid). Poverty analysis is, therefore, the activity by which poverty criteria are applied to mainstream policies at any level of intervention areas (Ravalion and Bidani, 1994).

The poverty threshold, or poverty line, is the minimum level of income deemed necessary to achieve a minimum standard of living (Ravalion and Bidani, 1994). Determining the poverty line is usually done by finding the total cost of all the essential resources that an average human adult consumes in one year. This approach is needs based in that an assessment is made of the minimum expenditure needed to maintain a tolerable life.

The objective of estimating poverty line is therefore to capture the basic needs necessary to meet minimum living standards. The cost of basic needs (CBN) method addresses this objective through defining a consumption bundle incorporating food and non-food items that is adequate to meet the minimum nutritional requirements, and estimates the cost of purchasing that consumption bundle*. The important question related to this method is that of how to estimate the non-food component of the poverty line, in a way such that it captures the basic non-food requirements.

Economic welfare is usually based on household, income or consumption and has been traditionally used as a measure of poverty. In developing countries expenditure, consumption expenditure is justified (Ravalion, 1992). Dercon (2000) also describes the recent poverty measurement in developing countries is based on monetary measures like consumption, expenditure or income data from household surveys, the non-monetary measures of poverty including 'Human Development' or 'Social indicators': typically health indicators like mortality and nutrition and educational statistic (enrolment), as well as qualitative (contextual studies) of poverty.

Consumption is typically preferred over income as the former better captures long-run welfare and may also better reflect households' ability to meet their basic needs (Ravalion, 1998). Moreover, Tassew and Tekie (2002) also noted that in developing country settings, households are likely to under report their income level more than they do with their consumption level. Typically households during the field survey are more and rationally willing to report what they have spent than what they have earned.

* The choice of CBN approach has been recently gaining in popularity. Recent example Ethiopia is adopted this method.

Nobel Laureate Amartya Sen (1981), however, has argued that in developing countries' settings poverty is best measured directly using only indicators of standard of living rather than indirectly using income or consumption measures, he noted further that they are only important in the absence of direct information regarding the satisfaction of the specified needs, so that the income method is at most a second best. Others for example (Caroline and Andrew undated P.1) argued that assets may provide a better picture of long term living standards than an income snapshot because they have been accumulated overtime and are last longer.

Another important issue in poverty measurement is the issue of the level of measurement of poverty, household or individual. Since households differ in size and composition, a simple mechanism of aggregating welfare can be misleading about the wellbeing of individuals in a given household. The most straightforward way of dealing with this problem is to convert from a measure of household consumption to a measure of individual consumption by dividing household expenditures by the number of people in the household. This is the easiest procedure, but does not taken into consideration the fact that different individuals have different needs (Ravalion, 1998) for example young child typically needs less food than an adult ones. An alternative approach could be to deal with this problem by assigning a system of weight using an equivalent scale that measure the number of adults. I follow the later approach in this study.

Once household consumption is computed, a poverty line is obtained which represents a minimum standard required by an individual to fulfill his or her basic food and non-food needs. The relationship among absolute poverty, expenditure and minimum nutritional intake is that absolute poverty line is calculated on the basis of expenditure (MEDAC, 1999), associated with minimum nutritional intake (the cost of a minimum consumption basket) and an additional

allowance for basic non-food needs, consistent with spending patterns of the poor (Wolday, 2001).

With the increased awareness and availability of data, various measures of poverty have been developed over time, among which the Foster-Greer-Thorbecke (FGT, 1984) class of poverty index is the most commonly, popular and widely discussed in the literatures. For example Kanbur (1987) as quoted in Aigbokhan (2000) suggests the following approach. Using a household survey, a poverty profiles is created that is disaggregated by socioeconomic groups that are relevant to the policy instrument under consideration. The poverty index to be applied should be decomposable by groups and should be sensitive to the depth of poverty among the poor. This FGT is widely used index that satisfies those conditions. Among others Tassew and Tekie (2002) for Ethiopia, Fitsum (2003) for Northern Ethiopia 'Tigray', Mekonen et.al (1997) for Ethiopia, Aigbokhan (2000) for Nigeria, Bidani and Ravalion (1994) and Ravalion and Sen (1996) for Indonesia and Bangladesh used the index for their poverty analysis.

Those FGT measures of poverty is important for effective policy considerations making to use for evaluation purposes to lift the richest of the poor (those close to the line) (P0) out of poverty, on the basis of (P1) and (P2); on the other hand, the policy emphasis is put on helping those who are further away from the line, the poorest of the poor (Dercon, 1997).

Moreover, income based measurement of poverty is a long tradition in the life of the World Bank and currently commonly uses two absolute poverty lines defined as extreme poverty as people living on less than $1 and moderate poverty as people living less than $2 per day does not thus however consider the non-income development results and ranked countries according to level based on real per capita income.

However poverty goes beyond lack of income. As quoted in Todaro and Smith, (2003) the UNDP (1990) substitutes Human Development Index (HDI) measured by three goals or end results of development (Income, Health and Education) to the banks per capita Income Index. Since the World Bank dollar-a-day income measure, does not satisfy the non-income welfare indicators the UNDP(1997) sought to substitute a measure of "Human Poverty" for the Bank's "Income Poverty" and constructed Human Poverty Index (HPI-1) measured in terms of three key deprivations of life: considering probability at birth of not surviving to age 40, adult illiteracy rate and deprivation of decent standard of living constituting percentage of population without sustainable access to an improved water source plus percentage of children underweight for age and percentage of population with no accessibility of health. (See Todaro and Smith, 2003; UNDP, 2004). For this study the UNDP HPI-1 has been adopted. The UNDP measure of deprivation is given as:

$$HPI\text{-}1 = [1/3\ (P_1^{\alpha} + P_2^{\alpha} + P_3^{\alpha})]^{1/\alpha}$$

Where P_1 = Probability at birth not surviving to age 40

P_2 = Adult illiteracy rate

P_3=Unweighted average of population without sustainable access to an improved water source, health services and children under weight for age.

α = 3 Sensitivity of the deprivation measure, determined to be enough to indicate the weight of deprivation.

2.3 The Monetary Dimensions of Poverty

The broader concept of wellbeing forms the basis of our overall approach in studying poverty, the most common approach to measuring poverty focuses on economic welfare, which looks at monetary aspects of poverty (Alie.C et.al undated). Measuring welfare in income is of course more problematic than

measuring consumption, especially for rural household whose income comes from self employment in agriculture (Aigbokhan, 2000). Similarly Ravalion (1992 and 1998) argues income data has limitations in both accuracy and measurement particularly in the context of developing countries. Income can be seasonal, and does not necessarily provide a reliable measure of wellbeing. Expenditure solves some of the problems of income, such as seasonality provides more robust information on wellbeing than income data particularly in rural areas.

In the current literature, the most popular methods of estimating poverty lines are the food energy intake (FEI) and the cost of basic need (CBN) methods. Both methods are anchored on estimating the cost of attaining a predetermined level of food energy or calorie intake requirements.

According to Bidani and Ravalion (1994), and Ravalion (1998); past methods of building poverty profiles have used the FEI method, defining the poverty line as the normal consumption spending at which a person typically attains a predetermined food energy intake in each sub group. The FEI is therefore, Aigbokhan (2000) aiming to measure consumption poverty, rather than under nutrition to find the monetary value of the poverty line based on two procedures in estimating the total expenditure at which "basic needs" are met. One procedure, and the simpler one, is to take a sub sample households whose total income or expenditure is equal or close to the recommended calorie level and compute a simple average. This gives the total line. The other involves fitting a regression of the cost of a basket commodities consumed by each households over the calorie equivalent or the food energy implied by the basket of goods.

The limitations of FEI approach is that the minimum food energy requirements vary across individuals and over time for a single individual (Wolday, 2001). The other limitation of this method yields differential in poverty line in excess of the

cost of living facing the poor. In other words, this method does not yield a consistent thresh hold (poverty line) across groups, regions and periods (Tassew and Tekie, 2002). The FEI method is therefore not guaranteed and not consider relevant to asses welfare build in differences between the poverty lines.

Notably when this FEI was applied to Indonesia and Bangladesh, (for details of the methods matter see Ravalion and Hupi, 1991; Ravalion and Bidani, 1994; Ravalion and Sen, 1996) the CBN method finds more incidence, depth, and severity in rural areas where as the FEI method finds all measures of poverty worse higher poverty line and higher level of poverty in urban areas than rural areas however both real income and real consumption were lower in the rural areas. The authors specifically argued that where food relatively cheap people will consume more, while if food prices are higher poverty lines will be higher and the authors showed that higher food prices in urban areas and lower calorie intake than the rural areas. At the same level of per capita expenditure urban consumers tend to consume fewer calories than rural consumers. As a result, the same nutritional standard requires a higher level of per capita expenditure in urban areas. Due to its limitations of which suffering inconsistency, the authors therefore suggested the cost of basic need methods.

The CBN involves the identification of a common food basket based on the expenditure pattern of the poor. The cost of achieving the minimum calorie then computed from this basket (for details see Wolday, 2001, Mekonen et.al, 1997; Fitsum, 2003).

The common method of setting poverty line utilized in the analysis of poverty is therefore the Cost of Basic Needs (CBN) method holds the food and non-food components of measuring poverty, whose income is measured as long as one locates the total consumption expenditure of a sub-sample households. Because

for the purpose of informing policies a poverty line should always be absolute in the space of well fare, such a poverty line guarantees that the poverty comparisons made are consistent in the sense that two individuals with the same level of welfare are treated the same way (Ravalion, 1998, p.5).

Absolute poverty line in Ethiopia is estimated based on expenditure associated with minimum nutritional intake (the cost of a minimum consumption basket) and additional allowance for the basic non-food needs, consistent with the spending patterns of the lowest income groups (Wolday, 2001 p.14). This approach considers poverty as a lack of command over basic consumption needs, and the poverty line as the cost of those needs. The modified CBN method suggested by Ravalion and Bidani, (1994) relies on: First, set the basic food basket, using the nutritional requirements. The composition would need to reflect local foods and the observed diets of the poor. Then cost the bundle at local prices to get the food poverty line component of the CBN poverty line. It is a utility consistent cost-of-living index; in this regard poverty is measured by comparing actual expenditures to the CBN, and the initial choice of the reference group is interpretable as a 'first guess' (Ravalion, 1998).

In literature studies the scope for disagreement appears to be far greater with respect to the non-food component, there is less agreement on how best to estimate this varies among analysts. A common practice is to divide the food component of the poverty line by some estimates of the budget share devoted to food, but rarely transparent and very different lines can result and then of all the data that go in to measuring poverty, setting the non-food component of the poverty line is probably the most contentious (Ravalion, 1998 p.16&17).

Because of the less agreement on an anchor for estimating the non-food component of the poverty line, there tends to be much arbitrariness in

determining the level of poverty. Other wise there may be as many poverty lines as there are variations in assumptions used to determine the level of non-food component, even from the same data set, which may not be helpful to policy makers. Therefore the mean of non-food spending patterns of the reference group from the CBN approach is apparent (Ravalion and Bidani, 1994).

Generally the food poverty line is based on required daily per capita calorie intake. Accordingly the recommendation by the World Health Organization (WHO) is that an adult person requires a minimum of 2200 calorie on daily basis. The food component of the absolute poverty line is based on this bench mark by converting food quantities into basket values to identify the minimum consumption basket results food poverty line (Wolday, 2001).

First the estimation of food poverty line depends on the selection of the dominant food items defined by selecting a 'basket' of food items typically consumed by the poor. The quantity of the basket is determined in such away that the given bundle meets the predetermined level of minimum calorie requirement. The food 'basket' is therefore, valued at local prices and of course at national or regional representative average prices to reach at consistent poverty lines across regions and groups (Wolday 2001). However, for this study to estimate the poverty line is based on the current or local prices collected and computed from own primary survey data.

Therefore, the food energy intake method could be estimated by the cost of a basket of commodities in order to attain a predetermined level of food energy intake or food requirements (Dercon and Kirshman 1998, Ravalion 1998), and predetermined food value expressed in terms of calorie equivalent (Wolday, 2001). The percentage of minimum calorie intake is therefore, a useful

measurement of overall households' poverty and food insecurity in countries like Ethiopia where food deficit is common every year.

As Tassew and Tekie (2002) noted, once food poverty line is developed, then an allowance of the non-food mean share of the poorest household is made and added to develop consumption expenditure poverty line of the community. This method yields a representative poverty line as it provides a monetary value of a poverty line that accounts for both food and non-food components.

2.3.1 Absolute Poverty versus Relative poverty

The two dominant approaches to the construction of poverty lines are the absolute poverty approach and the relative poverty approach (See Wolday, 2001; Aigbokhan, 2000). In the former some minimum nutritional requirement is defined and converted into minimum food express. To this some add or consider minimum non-food expenditure.

The absolute approach has fixed real value over time and space and is common across all countries while the relative poverty line is in contrast, is set in relation to changing standards of living. This method takes the proportion of the population living in conditions below the average level of the community as those falling below the relative poverty lines of their countries and this approach allows for difference in poverty lines depending on a countries level of development and is harder to compare over time and space (Wolday, 2001).

The relative poverty approach measure rises with average expenditure and is valued more highly as average income rises and is least important in the poorest countries where absolute income levels are the main consideration of poor people (Ravalion, 1998 p.5, 31). In other words relative poverty takes a proportion of a mean income as the poverty line. For example one-third and two-

thirds of mean income have been popular across the world; the former defines the core poverty line and the latter defines the moderate poverty line. All absolute and relative poverty approaches are used but the former is more discussed in this study.

Absolute poverty contains both food and non-food components and is often taken to mean lack of access to purchasing power sufficient at least to cover the cost of minimal basic needs.

Some times it may be useful to look over relative poverty lines, focusing on the poorest segment of the population, assessing whether poor people are better or worse of. It is often helpful to identify those who are poor today, and it is helpful to design targeted programs that are geared towards the poor and the government can use to revise them with the increase with per capita consumption (Ravalion, 1998).*

2.3.2 Absolute Poverty Indices

The FGT poverty index that measures poverty based on a single formula capable of incorporating any degree of concern about poverty through the poverty aversion parameter, $\alpha \geq 0$

* In general the relative ways of measuring poverty refers mainly a situation of relative deprivation, and the real value of absolute poverty line is fixed over time, while the relative poverty lines will vary with level of average income (Ibid).

$$P_{\alpha} = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^{\alpha},$$

Where α = Poverty aversion parameter/FGT parameter which takes 0,1and2 depending on the degree of concern about poverty.

n = Total number of individuals of the sample population.

q = Total number of households below the poverty line.

Z= Poverty line

Yi = Expenditure or income of the ith of individual households below poverty line i = 1, 2 ....q

The next stage is aggregating the overall income poverty in to a single index. The simplest and common measure is the head count ratio (H) which is the ratio of the number of poor to total population.

If there is not aversion to poverty, α=0 the index is simply:

$$\text{If } \alpha = 0 \rightarrow P_0 = \frac{q}{n}.$$

$$\text{H or } P_0 = \frac{q}{n}.$$

This is a poverty measure of the head count ratio. This index measures the incidence of poverty. Where q is the number of poor and n is the total sample population. This gives the proportion of the population with income below the poverty line of both food and non-food components. The important qualities of this method is one, it is simple to construct and easy to understand. The second advantage of the head count measure is that the overall progress in reducing poverty can be assessed right away. The head-count ratio has been criticized for focusing only on the number of the poor and being insensitive to the severity of poverty and to changes below the poverty line. That is, it treats all the poor equally, where as not all the poor are equally poor. Therefore this measure does

not give any adequate information on how poor are the poor, even though poverty is reduced. Nevertheless, it is insensitive to the depth or severity of poverty and hence, not good to assess the impact of policy measures (Ravalion, 1992). The latter is captured by the poverty gap index.

If the degree of aversion to poverty is increased so that α=1, the index becomes:

$$\longrightarrow \quad \text{If } \alpha = 1 \rightarrow P_1 = \frac{1}{nz}\sum_{i=1}^{q}(z - y_i). = \text{HI}$$

This index measures the depth of poverty; the poverty gap index (P1) that measures the depth of poverty is defined as the mean proportionate deviation or the distance that poor people fall from the poverty line. That is an indicator of income shortfall showing the extent to which the poor fall below the poverty line. Here the head count ratio is multiplied by the income gap between the average poor person and the poverty line. It is also referred as "income gap" measure. The poverty gap could be understood as the amount of income transfer (shortfall) needed to close up the gap (Ravalion and Bidani, 1994). In other words it measures the average level of deprivation among the poor (Ayalneh et.al, 2002). So not only is the prevalence of poverty indicated but also the extent of the fall below the poverty line is indicating the existence of acute vulnerability. The main advantage of the poverty gap index are that it gives an idea of the minimum amount of financial resources that are needed to tackle poverty problems (Aigbokhan, 2000), and highlights the importance of identifying the characteristics of the poor, as it demonstrates the potential savings of well-targeted poverty alleviation programs (Aline et.al, undated). However, it should be noted that this is not a precise measure because it requires exact information on each poor member of the society, and this is an average measure over all people of the gaps between poor people's standard of living and the poverty line (Dercon, 1997). Although superior to P0, P1 still implies uniform concern about the depth of poverty, in that it weights the various income gaps of the poor

equally. P_1 is sensitive to the depth of poverty but not its severity. In other words it does not reflect the severity or inequality of poverty among the poor. Income gap squared index allows for concern about the poorest of the poor by attaching greater weight to the poverty of the poorest than to that of those just below the poverty line. This is done by squaring the income gap to capture the severity of poverty:

$$\longrightarrow \quad \text{If } \alpha = 2 \rightarrow P_2 = \frac{1}{nz^2}\sum_{i=1}^{q}\left(z - y_i\right)^2.$$

Therefore the index that measures the severity of poverty (P2) is defined as the square of the gap between the expenditure of the poor individual and the poverty line indicates the inequality among the poor, gives more weight on the observations that fall well below the poverty line. Hence, P_2 takes into account not only the distance separating the individual poor from the poverty line, but also the inequality among the poor. In other words it depicts the severity of poverty by assigning each individual a weight equal to his/her distance from the poverty line.

If poverty has to measure by lack of command of basic goods and services, the nutritional wellbeing or income alone is unlikely to explain the extent of poverty problems prevailing in a given society. Because socioeconomic improvements of the community is determined by a number of interrelated factors, including food security, health and nutrition situation, safe and adequate water supply, education, etc. Therefore, availability and accessibility of basic social and economic services to the community may contribute in minimizing vulnerability to poverty. The details of non-income poverty literature are discussed in the following section.

2.4 Non-Monetary Dimensions of Poverty.

Health-nutrition and education are among the priorities of human wellbeing, and recently access to sustainable improved water source is becoming a non-income indicator of poverty in which Human Poverty Index is formulated from those dimensions of poverty. This means poverty is manifested not alone in terms of low income but including, poor access to health services and poor drinking water, high children mortality rate and low life expectancy, expressed in terms of malnutrition.

Malnutrition is a condition in which an individual lack adequate macro and micro nutrients to live a fully productive life. Not only being well-nourished widely considered one of people's primary capabilities, malnutrition is also posses a large burden on current and future economic growth (World Bank, 2005).

Malnutrition is an important indicator of vulnerability and deprivation and affects the survival probabilities of individuals directly as well as indirectly through increased vulnerability to morbidity (Dercon, 1997). Nutritional wellbeing is determined by a number of interrelated factions, including food security, health-sanitation, safe adequate water and education, besides economic factors largely affect health and nutrition status (TFSCO, 2002).

Access and utilization of health services, health and nutritional status of children and mothers etc (for details see Tassew and Tekie, 2002; EDHS, 2005) and other related variables are each known to be important determinants of household health situation. For a varied reasons women and children are vulnerable to health and nutritional problems. The health and nutritional status of women and

children (the latter is employed in the research study) are thus best indicators of the well being of a society.

The commonly used anthropometry measurements; Stunting, Wasting, Under-weight, the Middle Upper Arm Circumference (MUAC); and Body Mass Index (BMI) are used to measure long and short run malnutrition and I employed the first three anthropometry measures of nutritional status. Anthropometric measurements (weight and height) of children are used to assess the degree of malnutrition among population groups and help, for instance, to set priorities of food-targeting policies to the severely malnourished groups. Children are chosen for the purpose of anthropometric analysis because they are more susceptible to nutritional deficiencies, which could be an indication of lower welfare status of households, hence children are the most important indicators to explained the socio-economic status of the study area. In addition, nutritional indices in the case of children are sensitive indicators and signal serious problems that might require an immediate policy response.

Height for age (stunting) or low-height for age ratio is an indicator of stunting (shortness) is a long-term cumulative nutritional deficiency indicating chronic malnutrition associated with over all poor socio economic conditions and /or repeated exposure to adverse conditions. An individual is stunted when he/she is shorter than he/she should be at his/her current age. Stunting (impaired physical growth) impacts negatively on livelihoods and economic development as well as poor school performance (Anne and Punam, 1999).

Height for weight that is low weight to height ratio is an indicator of wasting (thinness) indicating recent malnutrition which may be caused by acute food shortages or serious infection; it is associated to failure to gain weight or a loss of

weight. Wasting then refers to the magnitude of the weight (kilograms) to height (meters) ratio of a person.

The Weight for age (underweight) of a child, i.e. with unexpected low-weight for his/her age, is an indicator of either chronic or acute malnutrition. Nevertheless it is considered as a good proxy measure of food insecurity (Maxwell and Frankenberger, 1992).

Generally children whose height-for-age, height-for-weight and weight-for-age Z-score below minus two standard deviation (-2SD) from the median of the reference population, are considered stunted, wasted and underweight, while, those children whose their Z-score is below minus three standard deviation (-3SD) from the median of the reference population are considered severely stunted, severely wasted and severely underweight respectively.

A decline in an individual's anthropometric index could indicate food deficiency, illness as well as lack of care. Therefore, employing child malnutrition, absolute poverty and dietary energy availability information, it is possible to understand the food poverty situations of a study area (for anthropometry details see Maxwell and Frankenberger, 1992; Deborah and Susane, 1995; Anne and punam, 1999; Tassew and Tekie, 2002).

Education status of a household is another indicator of its wellbeing, adult literacy is important in poverty reduction strategies because has an important effect on the poor children's chance to escape poverty in their adult age especially those households living in rural communities. Limited access to education affects the ability of poor to get jobs and to obtain information that could improve the quality of their lives.

Literacy is an indicator of economic opportunities and of the ability to participate in society, as a sign of empowerment (Dercon, 1997). Educated people are better able to improve the quality of their lives. Obviously, this is a long-term indicator, reflecting the cumulative effects of formal education and literacy programs. Educated people have higher income earning potential (Tassew and Tekie, 2002) could allows a person to rise above the poverty class status which she/he may be born.

Education is the primary vehicle by which economically and socially marginalized adults and children can lift themselves out of poverty and obtain the means of to participate fully in their communities, while poverty and illiteracy are linked with each other leads to poverty (UNESCO, 1997). Poverty constrains stable access to schooling, and lack of education perpetuates poverty. Therefore, it deserves an important place in formulating poverty reduction strategy. How ever "Education is not a way to escape poverty-It is a way of fighting it" (Julius Nyerere, cited in UNESCO, 2001). The role of education in poverty eradication is therefore in close co-operation with other social sectors, is crucial; it is perhaps the best long-term solution to poverty reduction in the developing world (UNESCO, 2001).

Poor people's lives are closely linked to their access to water and its multiple use and functions. Providing "clean water and sanitation are among the most important determinants of public health, where ever people achieve reliable access to safe drinking-water and adequate sanitation they have won a major battle against a wide range of diseases,"//www.who.int/.

Access to improved water source can bring down the risk of child mortality (World Bank, 2005). Families with improved water sources reduce diseases,

improving maternal and infant health, more nutritional food, and more opportunities for women and children etc see //www.worldvision.com.aus/.

At any given time nearly half of the people in the developing world are suffering from more of the main diseases associated with inadequate provision of safe water and sanitation and related diseases to those are remain biggest causes of the deaths among children, diarrhea caused by inadequate water and sanitation alone for example causes the death of 1.8 million every year, 90 percent of which occurs in children less than five years old (WHO, 2004 p.3).

2.5 Poverty Trends at National and Regional Level

At National level new data are generated every 5 years with production of nation wide household income consumption expenditure (HICE) and welfare monitoring (WM) surveys and is not possible to review and report definitively in year-to-year changes in income poverty.

MEDAC (1999), Tassew and Tekie (2002) analysis of poverty data from 1995/96 and 1999/2000 show that national expenditure per capita is Birr 1087 and 1056 respectively. While the national expenditure per adult was Birr 1311 and 1327 taking each region Tigray recorded the lowest per capita consumption expenditure in the country.

The national calorie intake per adult per day in 1995/96 was 1953.97 increased to 2606.18 in 1999/00. For the same years the calorie intake per adult per day in Tigray is below the national average. The national mean food share for these respective years of poverty analysis 1995/96 and 1999/00 is 59 and 65 percent of the total expenditure. While the household inverse food share in Tigray was 70 percent during the 1999/00 HICE.

The absolute poverty indices of 1995/96 were (Po = 0.445), (P1 = 0.129), (P2 = 0.051) and absolute poverty line was Birr 1075 and for the year 1999/00 (Po = 442), (P1 = 0.119) and (P2 = 0.045) and absolute poverty line was Birr 879 and 942 at prices of 1999 and 2000 (for details see Tassew and Tekie, 2002).

According to those years of poverty analysis the minimum cost of the food consumption basket that provides the minimum food requirement per adult per annum in the country during the 1995/96 was Birr 647.81, while at prices of 1999 and 2000 was Birr 686.26 and 695.83 per adult per annum. Benchmarks on these food poverty estimations 45 (1995/96) and 42 (1999/00) percent of the population cannot meet this minimum food basket. Moreover 44.5 and 44.2 percent of the population remained below poverty in 1995/96 and 1999/00 basic Household Income, Consumption Expenditure (HICE) poverty line. As indicated above the poverty gap was 12.9 and 11.9 percent for 1995/96 and 1999/00 respectively implies the deviation or the shortfall to fulfill the minimum consumption level of the country*.

Comparing to other regional states the poor people in rural and urban Tigray (See Tassew and Tekie, 2002) have the highest average income gap reported Birr 322.97 and 353.23 per adult respectively.

Dercon and Kirshman (1996) as quoted by Wolday (2001) argues that food poverty line for the country was estimated Birr 557.23 per adult and the basic consumption poverty implied by this poverty line was Birr 1106.83, accordingly 42 and 27 percent of the population can not address the minimum food requirement and the absolute poverty line respectively.

* 1995/96 represents the first national household income, consumption and expenditure (HICE) and welfare monitoring (WM) surveys of the Central Statistical Agency (CSA) analysed by MEDAC (1999), while 1999/00 represents the second nation wide HICE and WM surveys of CSA analysed by Tassew and Tekie (2002) which provides a broad image of poverty profiles of the regional states in the country. This analysis also made comparisons to 1995/96 poverty situations.

Among Ethiopian regional states Tigray has the largest percentage of population living below poverty lines both in rural and urban areas. Moreover, poverty in Tigray increased in 1999/2000 by 9.45 percent compared with the incidence of poverty in 1995/96 (See Tassew and Tekie, 2002).

Fitsum (2003) analysis of poverty dynamics in Tigray using data from a panel of 400 rural households from sixteen villages extending between 1998-2001 indicated the presence of strong mobility across poverty profiles and expenditure quantities but the proportion of the people falling into poverty was far higher than those escaping poverty. This underlines the chronic nature of poverty in the region and the need for longer term investments.

The recent national CSA's 2004/05 WM survey as cited in MOFED (2005 and 2007) provides national outcome indicators on the non-income dimensions of poverty. In 2001/02 (at the beginning of the SDPRP-I 2002) only 66.6 percent of children attended school. But now education enrolment (1-6) has nearly doubled (74.2%) compared to its level in 1996(37.4%). Spending on education by the government has more than doubled from Birr 35 in 2001/02 to Birr 72 per person in 2004/05. The literacy rate in 1999/00 was 29.2 percent while in 2004/05 raised to 37.9 percent. Since 1996 literacy rate has increased by 50 percent.

The Ethiopian Demographic and Health Survey EDHS (2005) found that the health and nutrition status of children under 5 years, the prevalence of wasting at country level is 8.3 percent and the prevalence of child stunting declined significantly from about 57 percent 1999/00 to 47 percent in 2004/05. The prevalence of underweight children has also declined 45 percent in 1999/00 to 37 percent. At national level those indicators may have a trend in income poverty; Ethiopia shows that gains in economic growth doubled in the last 3 year SDPRP-I period. The malnutrition indices in Tigray shows a little improvement in severe

stunting (See EDHS 2005 p.161) while prevalence of stunting and underweight remaining as high as 41 and 41.9 percent respectively indicates inadequate access to food, poor nutrition and health services.

With regard to clean water provision, in Ethiopia over all access to clean water increased from about 19 percent in 1996 to 35.9 percent in 2003/04. The number of people with access to clean water increased from about 20 million at the beginning of SDPRP-I to about 26.6 million in 2004/05.

The annual overall GDP growth has been averaging over 5 percent during the 5-year period ending 2004/05 resulting in a per capita growth of over 2 percent per year. Per capita private final consumption expenditure (PFCE) which is a more proximate proxy indicator of the possible decline/consumption poverty has increased on average by 3 percent for the SDPRP-I period (MOFED 2005). The recent study on sources of growth analysis made by MOFED (2005) has also shown that the elasticity of poverty reduction with respect to growth is 1.3.

The national poverty analysis based on the latest 2004/05 nation wide HICE survey indicates an improvement in poverty reduction (Po=38.7%, P1=8.3%, P2=2.7%) as compared to those 1995/96 and 1999/00 nation wide HICE poverty results. Moreover the level of real total per capita household consumption expenditure is at Birr 1256 ($146) accounts Birr 557 food and Birr 678 non-food expenditures while the level of real total per adult household consumption expenditure is Birr 1542 and the national calorie intake is 2746.4 (MOFED, 2007).

The increasing per capita/adult equivalent expenditure is from government efforts to growth and it is partially can defined by the fact that the gross national product of the country has raised from Birr 47.6 billion in the mid of 1990's to about 105 billion on the basis of FY 2005 (TBFED, 2006 p.6).

The new poverty profile of the country is expected soon. This could allow a major update of the poverty profiles of Ethiopian regional states and the first meaningful assessment of changes in poverty since 2000.

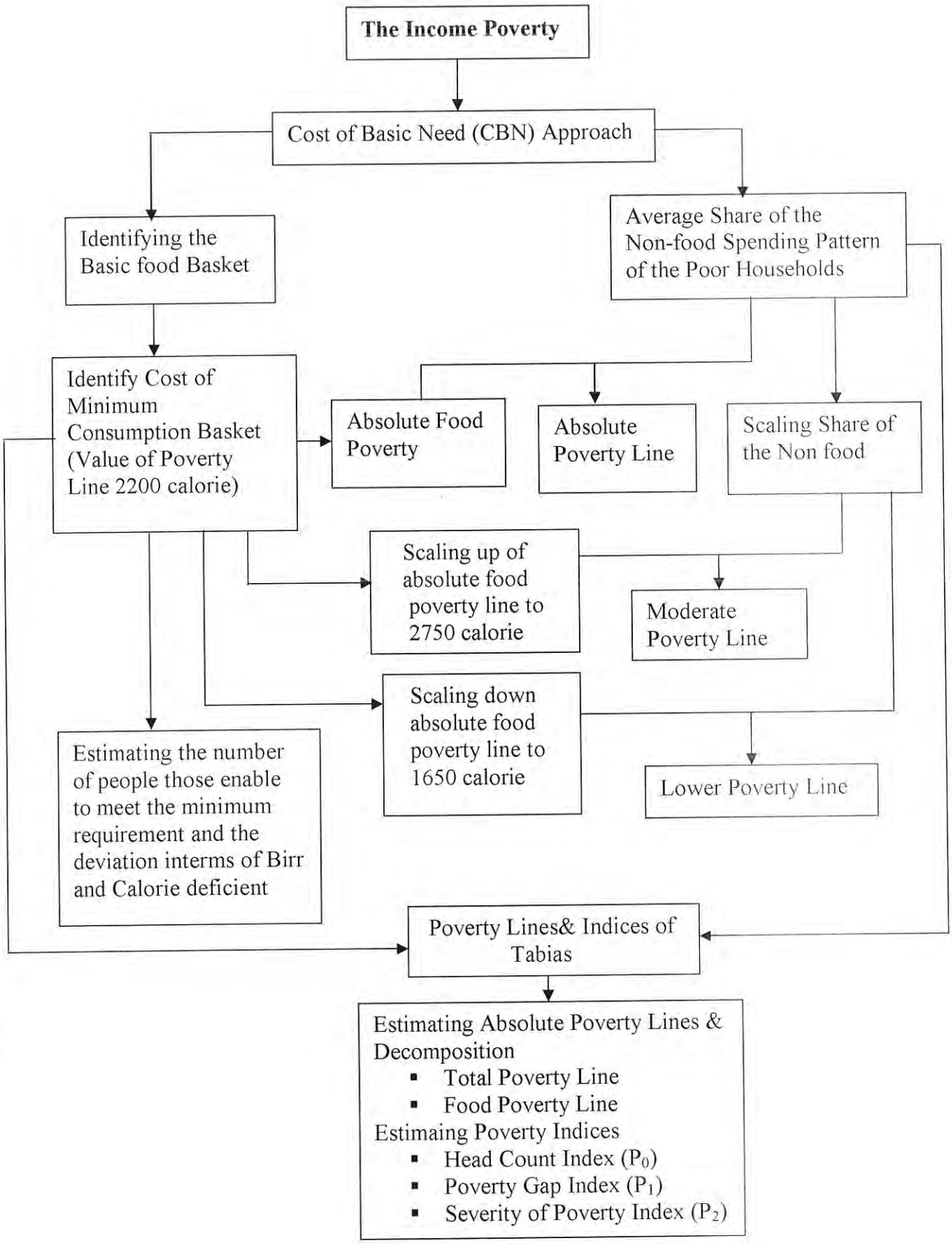
Table 2.1 Country context-trends in non-income dimensions of welfare indicators.

Sector	Indicator	Years				%Change 2004/1996	%Change 2004/2000
		1995/96	1997/98	1999/00	2004/05		
Education	Primary (1-6) Gross Enrollment Rate (%)	37.4	52.3	61.1	74.2	98%	21%
	Literacy Rate (%)	25.8	26.6	29.2	37.9	47%	30%
Nutrition Status	Stunting	65.7	54.7	56.7	46.9	-29%	-17%
	Underweight	45.4	44.9	45	37.1	-18%	-18%
Health	U5 Child Immunization Measles	39.1	46.9	48.1	56.8	45%	18%
	BCG	35.1	47.2	45.9	54.9	56%	20%
Water	Access to Safe Drinking Water (%)	19.1	23.7	27.9	35.9	88%	29%

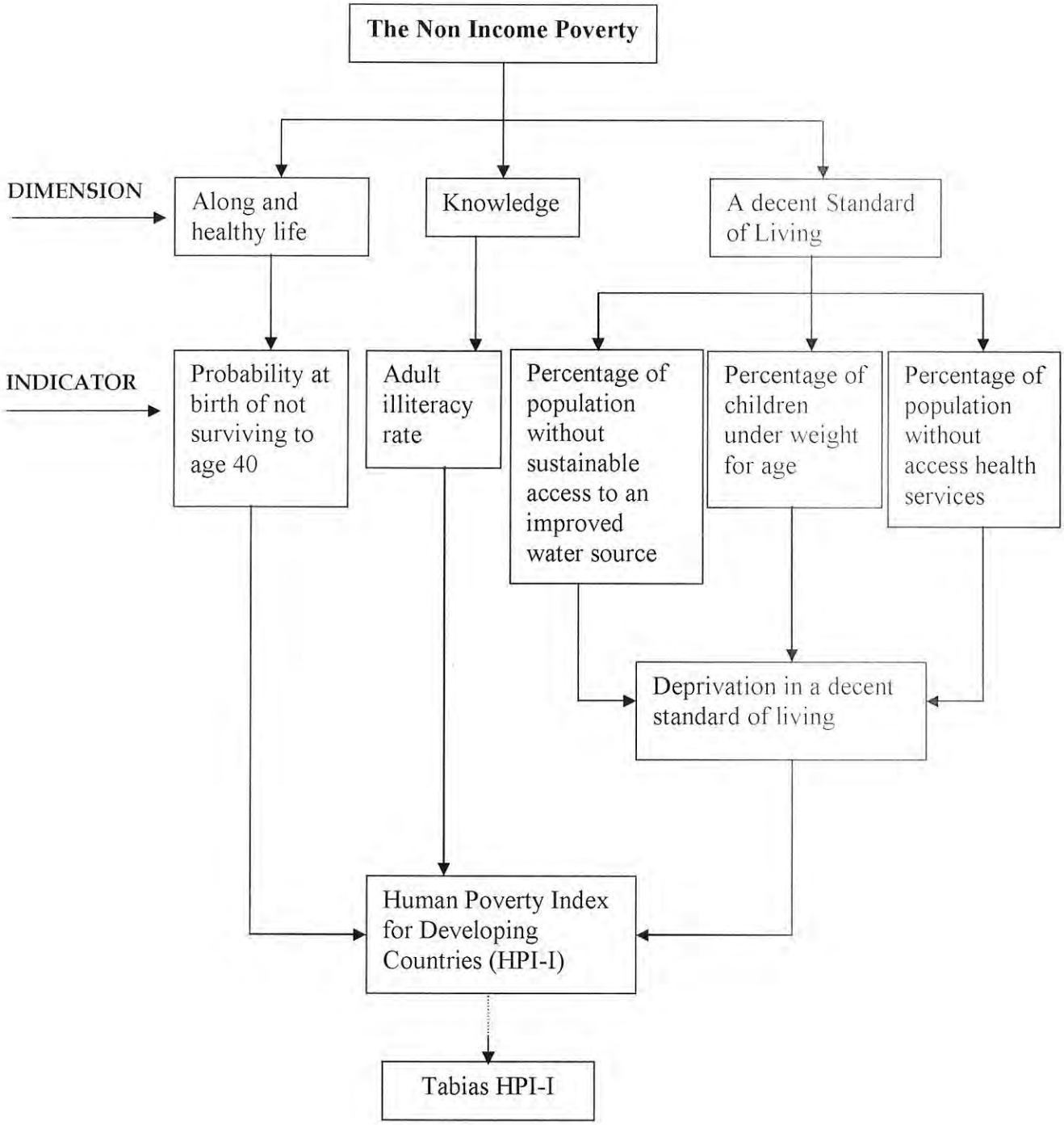
Source: MOFED (2005) adopted from Welfare Monitoring Survey, 2004/05(CSA, 2005)

2.6 The Research Framework.

To frame the study linking the areas discussed thus far in to set of ideas the absolute poverty approach is adopted to examined both income and non-income poverty analysis.



Source: Framed by the researcher



Source: UNDP, 2004

CHAPTER THREE

3. The Study Area and Research Methodology

3.1 Description of the Study Area

Gulomekheda Wereda is located in the northern most region of the country Tigray at about 929 kilometer from Addis Ababa. The selected Tabias Kilate and Haben are found within the aforementioned Wereda at 145 kilometers to the Northeastern direction from the regional capital Mekelle.

The Wereda covers an area of 569.83km^2. It consists of 17 Tabias and 63 Kushets (the lower level political administration). The total population size of the Wereda is estimated about 107,121 of which 49.47 percent are male and 50.53 percent female. There are 19,233 households of which 12,276 are male headed and the rest 6957 are female headed.

The agricultural sector, which depends on erratic rainfall, is the main stay (nearly 90%) of the Wereda population. The average arable land holding ranges from 0.25 to 0.75 hectare per household. The majority of the Wereda farmers do not produce enough to cover their minimum subsistence needs. Average production of all major crops (wheat, barley, hanfets (local name) does not exceed from 6 to 8 quintals per hectare, even in years of good harvest. This indicates that the households are extremely food deficit.

Next to crop production livestock production is the second most agricultural activity of the rural people. Cattle are mainly reared for the purpose of traction power (ploughing), live sale, as well as milk and milk products. Moreover, small ruminants are mainly produced for the purpose of cash income (from live sales)

and for household meat requirements (Source: Wereda Office of Agriculture and Rural Development).

According to the Health Office of the Wereda, there is only one health centre in the Wereda capital, 4 nucleus health centers (former clinics), and 13 health posts. Above all there is serious shortage of heath personnel in the health centers.

The total number of schools in the Wereda including both government and private owned is one high school, 12 schools with (grades 5-8), 25 schools with (grades 1-4) and one kindergarten. Particularly grades 5 and above are constrained by qualified teachers, explained by only 11 and 78 teachers with BSc/BA and Diploma holders respectively. (Source: Wereda Education Office).

There are many reasons for selection of Tabias Kilate and Haben as research sites in this study. The Wereda is peculiar for various reasons: drought prone, war affected etc so that development interventions may not be effective. The nature of the research objectives are also a major reason. Intensive research work was undertaken to collect data that are used to calculate the poverty and deprivation level in aggregate and decomposed way. In doing so, the researcher stayed for more than four months in the Tabias, where additional costs are covered by my families living in the area. The nature of the collected data should also be raised as justifiable reason for the delineation of the study areas. Researching the issue under discussion demands to raise sensitive issues of landholding, income sources etc, where most of respondents are unwilling to give the correct information. Hence, rapport demands to get priority in order to generate genuine data. Two Tabias (Villages), namely Kilate and Haben were therefore purposively selected for this study. In this regard, I did not face any problem as long as I am familiar with the peasants in the study area.

Table 3.1 Tabias socio-economic information.

Name of Sample Tabia	Arable Land in hectare	School		Health Facility		Population			Total No. of Households			Size of Randomly Selected HHs
		1-6	7-8	Health Post	Nucleus (Clinic)	M	F	Total	M	F	Total	
Kilate	736	1	1	1	-	3450	3782	7232	644	624	1268	75
Haben	523	1	-	1	-	2236	2406	4640	681	237	918	45

Source: Respected Tabias office of agriculture and rural development.

3.2 Research Methodology

3.2.1 Data Source

Based on proportionate sampling the size of sample households are determined to be 75 and 45 respectively for Kilate and Haben represents about 5.5 percent of the total households. The study has adopted a simple random sampling procedure and is wished-for to give representative results. A structured survey questionnaire was designed as a research tool to acquire and collect primary information to the proposed study. The most important source of data for the study on welfare situation (living standards) is obtained from 119 rural household respondents, that provided complete household income from various expenditures of food and non-food items, data on demographic characteristics and information on the existing non-monetary (health, nutrition, education and water) were gathered. A one year 2005/06 (1998 E.C) one round rural household income consumption expenditure conducted in these two Tabias, is utilized in this survey study.

3.2.2 Determination of Welfare Indicators

The two welfare indicators selected for this study are consumption expenditure and the non-monetary dimensions of poverty in which poverty profiles and human poverty index are respectively developed from.

In the poverty literature, consumption expenditure is preferred over income because the latter is volatile (incomes of the poor often vary considerably over time) while the former captures long-run welfare (Ravalion,1992 p.6-11) and consumption patterns are believed to have changed substantially over time. For this reason the questionnaire was explicitly developed encompassing all expected household sources of income for the particular study area.

The use of consumption expenditure is of course associated with some problems like the issue of consumption from own production which is more prevalent in rural areas. The issue of per capita nutritional requirements within the household size and household distribution of consumption is greatly varied from person to person depending on the age, gender and also activity level of the person. The issue of consumption from own production was reasonably taken care of in the survey data in arriving at the value of total expenditure. For the later adjustments are usually made using adult equivalent scales to approximate the number of single adults. See Fitsum, 2003; Tassew and Tekie (2002) and Dercon and Krishman (1998).

The research considers purchased and/or transfer foods and owns production food as well as an inputted value for those not paying commodities but excluding expenditure incurred for business or production activities to construct the welfare indicator (total expenditure per capita, food expenditure per capita, calorie intake per capita and household inverse food share). Even some

households that can not afford adequate quantities of food devole, some expenditure to other items (such as clothing) are assumed that these items represent very basic needs of the household, and are included in the poverty measures.

Poverty goes beyond lack of income among others it encompasses economic and social dimensions. Social indicators such as health access and life expectancy, access to potable water, nutritional anthropometric indicators and literacy rate are selected for this study.

3.2.3 Poverty Measurement Approach.

There are two broad classes' methodologies for estimating poverty line: a "relative" poverty line and an "absolute" poverty line. The absolute poverty line is explicitly fixed at a specific welfare level so that changes in poverty over time or across geographic areas can be easily checked with reference to this same fixed poverty line. An example of an absolute measurement would be the percentage of the population eating less food than is required to sustain the human body (in Ethiopian case 2200 calories per day per adult). While relative poverty line is appealing in that it is both simple and transparent; however, it provides little on poverty profiles over time and place.

To measure both income poverty profiles and social deprivations the absolute poverty approach has been applied in this study. A welfare level of a person defined as per adult expenditure who able to meet a certain minimal nutritional anchor of 2200 calories is commonly used in Ethiopia. The minimum food basket poverty line was therefore determined using the minimum level of calorie consumption 2200 calories per adult per day.

The next step is to define the poverty line corresponding to nutritional anchor 2200 calories per adult per day. This is done using a nutrition-based anchor for the poverty lines otherwise the Cost of Basic Need (CBN) measure is used to estimate this absolute poverty line. This approach considers both food and non-food consumption expenditures. The standard approach for poverty line estimation using the CBN method is to first find a food consumption bundle of the population likely to be poor (called henceforth the "reference group"), and then estimate the cost of consuming this bundle using the prices faced by the reference group. The method outlined above is implemented to derive the food poverty line in the following way: the lower half of the distribution of consumption in the expenditure survey is used as reference group. The basket was valued based on the unit price of the 28 food items collected during the household survey rather than external prices. The food expenditure thus derived constitutes what is referred to as the food poverty line. Once the food component of the poverty line is selected, then a specific allowance is made for the non-food component consistent with the spending patterns of the poor. This is because the welfare (or utility) of an individual depends not only on his or her nutritional intake but also on consumption of items other than food, such as clothing, shelter, education and health services. Therefore, the calorie requirement, the cost of food bundle to achieve that requirement and the allowance for non-food goods based on spending pattern of the poor is estimated to produce the total poverty line.

3.2.4 Rationale for the Chosen Approach

Initially estimating poverty line is to compare the basic needs necessary to mme minimum living standards and CBN method addresses this objective. Therefore, due to its representative threshold and consistency and expected to meet the basic needs (basic food and non food) I adopt the cost of basic need (CBN) method suggested by Ravalion and Bidani (1994) for measuring poverty. With

this method, an absolute poverty line is defined as the value of consumption needed to satisfy minimum subsistence needs.

3.2.5 Income Poverty Indices Measurement.

Because of its additively decomposable measure which enables aggregation of poverty, the FGT class of poverty measure was employed to estimate poverty indices; the incident (P0) measures how wide spread poverty is, depth (P1) measure how poor the poor are, and severity (P2) assigning more weight to the poorest of the poor. The FGT measures reflect not only the number of poor persons, but also the depth and severity of poverty for sub groups of the population because they are additively separable and this makes them useful to investigate a group's contribution to overall poverty. This feature of the measures implies that when any group becomes poorer, aggregate poverty also increases. The second advantage of the FGT measure is their decomposability it permits the summing up of poverty indices for various sub groups in the population. In other words the overall poverty can be expressed as the sum of groups' poverty weighted by the population share of each group.

3.2.6 Social Deprivation Measurement

Poverty goes beyond monetary yardstick. The UNDP (1997) class of measure of deprivations "Human Poverty Index" (HPI-1) for developing countries is applied for the non-income dimensions of the research. The indicators used to measure the deprivations are already normalized between 0 and 100 because they are expressed as percentages. So there is no need to create dimension indices as for the HDI*.

*If the HDI lies in between; 0.0-0.499 low human development, 0.5-0.799 medium human development and 0.8-1.0 high human developments.

3.2.7 Data Analysis and Comparison of Income Poverty

Data collected are dominantly quantitative: Soft wares applied for the research process is SPSS and STATA as well as EXELL for the poverty and deprivation analysis and SMART nutrition software for nutritional anthropometric indicators. Then a deep analysis based on those tables and figures will be brought up to answer clearly the research question.

Poverty decomposed on selected socio-economic variables such as gender headship, family size, arable land, agricultural extension package and literacy of household heads. Stochastic dominance analysis is conducted to test the robustness of the poverty line[+].

For outlook purposes, I will refer to the essential parts of other quantitative studies of deprivations and poverty lines selected to Tigray. Of course importance of each section is also supported by influential literature reviews.

[+]If the curves between the cumulative distribution function i.e. the level of expenditure on the horizontal axis (various poverty lines), and the cumulative percentage population (head count ratios) on the vertical axis usually called a poverty incidence curve. If the curves for two groups do not across we can say unambiguously that one group has higher or lower poverty incidence than the other group. If the two curves cross at any of the point on the graphs we can not say one group has higher or lower poverty incidence than the other. Taken from Tassew and Tekie (2002) Apendix A3.3.

CHAPTER FOUR

4. EMPIRICAL RESULTS AND DISCUSSIONS

4.1 Income Source

Through the questionnaire developed for this purpose the total amount of annual consumption expenditure is found to be Birr 606577.92 of which 57.95 and 42.05 percent of it is food and non-food consumption expenditures.

The main source of income is agricultural production. Agricultural production is the main source of subsistence and income for the majority of these rural people accounting for 65.68% of the total income. The second most important source of income next to agriculture is employments like labor work, food and cash for work accounting for 20.47%. 7.75% of the total income is from transfer including migrant income, remittance and free food aid (for the disabled); while 3.97% is from self employment and the rest (2.13%) is from different sources.

Total food expenditure is Birr 351512.97(57.95%) of the total income.
Total value of food consumption expenditure (from own direct crop production) Birr 98137.97 (27.92%).
Total value of food consumption expenditure (from other sources) Birr 253375 (72.08%). This includes an indirect way of own capital receiving from animal and animal products sale, self employment, remittance, vegetable sale and so forth.
Total non-food expenditure is Birr 255064.95 (42.05%).

4.2 Income Poverty Profiles

It is generally agreed that GNP per capita is not, in itself, an adequate measure of welfare. Food expenditure per capita, calorie expenditure per capita, household inverse food share, household income per capita, total expenditure per capita are

some of the monetary indicators used to measure wellbeing. The details of poverty indicators and/or lines are discussed in the following sections.

4.2.1 Absolute Consumption Expenditure Poverty Profiles

The objective of developing a poverty measure is to identify vulnerable groups of a society who are unable to attain a standard of living that is consistent with social standard of a given community. Poverty line is the first step in the development of a poverty measure that can be used to asses the incidence of poverty. Policy makers need to have the accurate location of the poor where they are located in attempts aimed combating poverty. Measuring poverty across sub-groups maximizes accuracy in the development of poverty line. Similarly the moderate and lower poverty lines are developed to minimize the jeopardy of poverty reports.

Absolute poverty is a condition in which a person or community is deprived of or lacks the essentials for a minimum standard of wellbeing and life, or it is a consumption measure that refers the inability to secure the minimum basic needs for human survival. It is equated with food poverty line. Otherwise the food hunger below which human survival would be compromized. Basic needs can only be meaningfully defined relative to the standards of the society being studied.

Anchored to nutritional requirements for good health and composition of local food diets, CBN typically settles on a bundle of food stuffs as the food component of a CBN poverty line. The advantage of CBN approach captures all food and non food consumption expenditures starting with establishing and identifying a 'basket' of food items typically consumed by the poor to be determined for the purpose of calculating consistent poverty lines (Ravalion and Bidani 1994).

Constructing a measure of absolute poverty as indicated under the methodology, the CBN method is adopted in estimating the poverty lines for this study. This method is also commonly used in Ethiopia poverty analysis, among others Mekonen et.al (1997), MEDAC (1999), Tassew and Tekie (2002), Fitsum (2003) and Ayalneh et.al (2003) applied the CBN method.

As indicated under the methodology section the food basket is determined by procedures adopted from Ravalion and Bidani (1994). The food basket developed is based on the food consumption patterns of the lowest half of the poorest sample households. In doing so I identified the poorest 50 percent of the population (sample households) as the reference group. The consumption behavior of the reference group is used to determine the quantities of the basic food items that will make up the reference food basket. The data set collected to construct a welfare measure using consumption includes information on food and non-food expenditures as well as quantities of food items consumed. The minimum consumption basket in the Tabias is constructed to provide the food poverty line which satisfies the minimum daily nutritional requirement per adult. In this case, the 'basket' is made up of the mean consumption per adult levels (purchased, transfer and own) of 28 food items consumed by the poorest 50 percent of the population in adult equivalent terms. This is estimated to be the Tabias reference food basket. All food items for which information on expenditure, quantity and estimated calorie value are selected. The estimation has been done to the total calories received by an individual who consumes this average basket based on the information on the calorie content of each of the 28 food items (See USAID and EDPPA 2007; Encarta reference library, 2005). Next the aggregates of food expenditures and calorie intakes in the reference group are calculated. As seen in Table 4.1, column four these quantities of food items contribution to calories of this diet provide 1470.2 calorie per person per day, for one year being the departure for food poverty. Thus to calculate the food

poverty line one needs prices for all of the food items shown in column eight. Quantities of each food item necessary to reach 2200 calorie were then valued using arithmetic unit mean of local current prices collected during the survey*.

Source: Author's computation from own survey data

Table 4.1 Typical Food Basket Per Adult Per Year of the Study Area.

Food item Kg/Lt Per Adult Per Year	Actual Food Quantities Consumed	Calorie Per Kg of Food	Actual Calorie Consumed	Scaling rate	Adjusted Food Quantities	Adjusted Calorie	Mean Price Per Kg Birr	Food Cost Birr	Calorie Share %	Share of Expenditure %
Taff	0.16	3450.00	567.87	1.50	0.25	849.75	4.32	1.06	0.11	0.16
Wheat	82.99	3480.00	288819.12	1.50	124.19	432184.96	2.39	296.32	53.82	45.71
Barley	22.41	3390.00	75964.82	1.50	33.53	113672.71	2.11	70.62	14.16	10.89
Maize	24.73	3600.00	89040.60	1.50	37.01	133239.13	1.99	73.50	16.59	11.34
Sorghum	0.13	3530.00	473.02	1.50	0.20	707.82	1.57	0.32	0.09	0.05
Finger millet	1.47	3650.00	5369.88	1.50	2.20	8035.41	3.19	7.02	1.00	1.08
Millet	6.38	3650.00	23276.05	1.50	9.54	34829.96	1.75	16.68	4.34	2.57
Bean per	0.66	3390.00	2244.86	1.50	0.99	3359.17	2.93	2.90	0.42	0.45
Chickpea	0.00	3400.00	10.52	1.50	0.00	15.74	5.00	0.02	0.00	0.00
Pea	5.64	3400.00	19167.84	1.50	8.44	28682.49	3.69	31.15	3.57	4.80
Haricot bean	0.77	3390.00	2606.91	1.50	1.15	3900.94	1.31	1.50	0.49	0.23
Lathyrus	0.02	3390.00	75.05	1.50	0.03	112.31	3.25	0.11	0.01	0.02
Lentil	0.03	3390.00	105.63	1.50	0.05	158.07	3.50	0.16	0.02	0.03
Linseed	0.77	3820.00	2947.13	1.50	1.15	4410.04	3.38	3.90	0.55	0.60
Cabage	0.69	230.00	157.99	1.50	1.03	236.41	2.10	2.16	0.03	0.33
Letuce/S.chard	0.09	280.00	25.15	1.50	0.13	37.63	0.72	0.10	0.00	0.01
Tomato	1.60	200.00	320.50	1.50	2.40	479.59	1.93	4.62	0.06	0.71
Potato	0.18	750.00	133.73	1.50	0.27	200.10	2.23	0.59	0.02	0.09
Onion	1.36	480.00	652.46	1.50	2.03	976.34	3.37	6.85	0.12	1.06
Beef	1.32	2020.00	2671.85	1.50	1.98	3998.13	9.01	17.83	0.50	2.75
Sheep meat	0.54	1450.00	777.93	1.50	0.80	1164.08	14.66	11.77	0.14	1.82
Goat meat	0.40	1450.00	577.97	1.50	0.60	864.87	14.71	8.77	0.11	1.35
Chicken	0.39	1450.00	559.85	1.50	0.58	837.74	31.11	17.97	0.10	2.77
Egg	0.10	1580.00	152.31	1.50	0.14	227.92	14.75	2.13	0.03	0.33
Milk	6.62	340.00	2249.24	1.50	9.90	3365.73	2.23	22.09	0.42	3.41
Butter	0.17	7450.00	1267.99	1.50	0.25	1897.40	24.00	6.11	0.24	0.94
Sugar	1.29	4000.00	5164.40	1.50	1.93	7727.94	8.66	16.73	0.96	2.58
Edible oil	1.25	9000.00	11245.50	1.50	1.87	16827.61	13.62	25.47	2.10	3.93
Total			536626.15			803000		648.45	100	100

*Depend on scale and objective of the study there are two ways of estimating per unit food calorie consumption expenditures: 1) Evaluating poverty lines and consumption expenditures at area specific prices. 2) Evaluating poverty lines and consumption expenditures at national prices. The first method is used in this study.

Based on the basic needs or minimum calorie requirement, I constructed this typical diet using the consumption pattern of the lower half of the distribution of consumption in the expenditure survey.

The minimum food poverty line was determined using the minimum level of calorie consumption which is chosen to be 2200 calories per adult per day. The reference food basket estimated does not sum to this amount, so I scale up the consumption levels by a constant rate (2200/1470.2) to attain a basket of food items with the same consumption pattern yielding 2200 calories per adult per day. Therefore I defined an absolute food poverty line on the basis of the cost to obtain minimum food to give 2200 calorie per adult per day, taking in to account the typical diet of households in the study area. These adjusted "quantities" are shown in the sixth column of Table 4.1. This is the food basket that is used to calculate the food poverty line of the Tabias. Given the food basket shown in the seventh column, the food poverty line is defined as the annual cost of this basket of food items. Accordingly the estimated food poverty line that provides the minimum food requirement is Birr 648.45 per adult per annum.

The food poverty line obtained has to be translated into a poverty line that also incorporates the expenditure require to attain basic non-food needs. Deriving the non-food component of the poverty line is less straightforward than deriving the food poverty line, since it is not clear what level of non-food expenditures should be defined basic needs. Given several arguments in the literature against non-food poverty line, even it is the most contentious the selection of the mean expenditure of the reference group is justifiable (Ravalion and Bidani, 1994).

The total poverty line is therefore obtained after adjusting for the non-food consumption expenditure using the average food share of the lowest (50%) of the sample households. The arithmetic mean of the poor households as a share of total consumption devoted to essentials collected during the survey are an

additional allowance for the consumption level of poverty consistent with the spending pattern of the poor. In doing so the estimated non-food poverty is defined at Birr 456.35 per adult per year could be added to the food poverty line. This method yields a representative poverty line as it provides a monetary value of a poverty line that accounts for both food and non-food components. Accordingly the estimated absolute poverty line implies by this minimum non-food expenditure to the minimum cost of the food consumption basket is estimated Birr 1104.80 or Birr 3.03 per adult on daily basis to escape the absolute poverty*. This means if an adult is able to raise Birr 90.9 per month he/she has the capability of escaping absolute basic consumption poverty.

The income/expenditure data of the study area used in this poverty analysis shows that the inverse food share constitutes highest proportion expenditure accounts 58 and 60.46 percent of the total and the lower half of the household's total expenditure is spent on food+.

Moreover the table represents the annual calorie intake of a typical person depend heavily on cereals constituting 90 percent of the total calorie requirement. Pulses and oil crops account for 5 percent and others constitute 5 percent of the calorie sources for the lowest income group of the population. The highest share of the food basket expenditure (71.71%) is also devoted to cereal food crops.

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*People living below a given poverty line are deemed as poor. Fitsum (2003) from a panel data have estimated Tigray total poverty line as Birr 1,033.45. The national food poverty lines were Birr 647.81for the year 1995/96 and Birr 686.26 and 695.83 per adult per annum at prices 1999 and 2000 respectively (Tassew and Tekie, 2002).

+ The inverse food share is the total budget devoted to food from the total income. During the 1999/00 HICE Tigray records the highest inverse food share (70%) Tassew and Tekie (2002). Noted that developed countries household spent 20% (at most) of their total consumption expenditure of food (Wolday, 2001).

Table 4.2 Absolute total, food and non-food consumption poverty lines and food poverty indices of the study area

Total poverty line	1104.80
Food Poverty line	648.45
Non-food poverty line	456.35
Extreme food poverty line	433.34
Food poverty incidence (P0)	0.5269
Food poverty gap (P1)	0.1438
Food poverty severity (P2)	0.0552
Mean food expenditure of the poor	475.72
Mean income gap of the food poor	172.73
Crude income gap of the food poor	93.25

Source: Author's computation from own survey data

According to the investigation of these indices following the food poverty line 52.69 percent of the population in the selected Tabias are not meet their daily minimum calorie requirements and live below the food poverty line. The incidence of food poverty is relatively lower than the total head count ratio as indicated in Table 4.3, while the food poverty gap and severity is higher than the total poverty gap and poverty severity. The mean income gap of food poverty indicates the income shortfall of individual adult equivalents to meet their daily minimum calorie requirement, while the crude income gap represents the average shortfall of both households those who fall below the food poverty line.

The food poverty gap reflects only the crude deviation of the income shortfall from the poverty line. Therefore to formulate effective anti-poverty plans mean

income gap can better address to the poor and policy makers*. Details of those issues are discussed in section 4.2.3.

4.2.2 Absolute Poverty Indices

This section examines the extent of poverty among the households employing the three most common indices, namely: the incidence of poverty, the depth of poverty and severity of poverty.

An absolute poverty measure; the head count ratio (Po) measures the proportion of population whose basic consumption (income) is less than the poverty line. Accordingly using both per adult household calorie consumption and per adult household basic consumption expenditure to meet the cost of basic needs criteria is presented in Table 4. 3. The results indicate that 52.69 percent and 53.53 percent of the sample households are deemed poor not meeting the minimum food and basic consumption requirements underlining the level of poverty in the Tabias+.

Table 4.3 Total poverty indices of the study area.

Total poverty Incidence (P0)	0.5353
Total poverty Gap (P_1)	0.1336
Total poverty Severity (P_2)	0.0478
Total food poverty incidence (P0)	0.5269
Total food poverty gap (P1)	0.1438
Total food poverty severity (P3)	0.0552

Source: Own calculation from own survey data

* The mean income gap the difference between the poverty line and the mean income of the adult poor individual can help policy makers to design effective projects addressing the poor and for budgetary allocations for the purpose.

+ Basic consumption in this study, refers to the total consumption expenditure on both food and non-food items.

The head count ratio is accorded the same weight when calculating the proportion of the population of those that lie below the poverty line*. Therefore, attempt made to calculate a poverty gap that measures the total income shortfall necessary to raise individuals living below poverty line up to the defined minimum income standards. The poverty gap (P1) of the Tabias which measures the depth of poverty or the mean distance separating the population from the poverty line and the extent to which the income of the poor fall below the poverty line is 13.36 percent indicating the existence of acute vulnerability. In other words, the mean proportionate deviation of the poor individual from the poverty line is Birr 147.60. The poverty gap reflects the total deficit of all the poor households relative to the poverty line (Ravalion and Bidani, 1994). Poverty gap is therefore, a much more powerful measure than the head count ratio because it takes into account the distribution of the poor below the poverty line. The percentage of total consumption needed to bring the entire population of the poor at least to the poverty line is the summation of the deficit.

Generally an overall poverty depth of 0.1336 reflects the per capita cost of eliminating poverty. The region/Wereda for example could mobilize resource equal to 13.36 percent of the poverty line for every individual that falls below the poverty line and target the resource poor to obtain the amount needed so as to bring each individual up to the poverty line. However, poverty gap measure of poverty does not reflect the severity of poverty among the group. It does not take into account the income disparity among the poor.

The severity of poverty or squared poverty gap (P2) takes into account not only the distance separating the poor from the poverty line (the poverty gap), but also

*For example they are same households (Male headed=25 and Female headed=17) prevailing under both food and basic consumption poverty incidences designate the same weight with those falling under one poverty line.

the inequality among the poor where by higher weights are placed on those poorer households further away from the poverty line. Accordingly the severity of poverty in the study Tabias is 4.78 percent. Obviously there is high level of discrepancy in the level of income within the absolutely impoverished communities. This may call for differentiated policy intervention to address this poor portion of the population.

In order to advise policy makers and development practitioners' poverty reports could be explicitly fixed at a specific welfare level to design poverty reduction programs and to target the ultimate beneficiaries. Consequently since poverty is multi-dimensional and context specific, it is necessary to understand why alternative poverty lines are selected is critically important to set specific targets for specific people for effective and eligible interventions. Alternative poverty address better on how policy makers could design long, medium and short term program interventions addressing the society based on their level of vulnerability. Establishing alternative poverty lines are also indicators of the accuracy of level of absolute poverty lines. The major alternative monetary poverty lines of the study area are presented in Table 4.4.

Table 4.4 Alternative poverty lines of the study area.

Description	Food poverty line in Birr per adult per year	Calorie per adult per day	Total poverty line in Birr per adult per year
Absolute Poverty line	648.45	2200	1104.80
Moderate poverty line	810.57	2750	1381.01
Lower poverty line	486.35	1650	828.62
Extreme poverty line	433.34	1470.20	738.31

Source: Author's computation based on own survey data.

As indicated in Table 4.5, the majority of the sample population living below the moderate food poverty line is considerably high 75.72 percent. The sample

population living below poverty line is also as high as 74.40 percent. As can be see from the same table one can simply derive that about 26 percent of the population are living above the moderate total poverty line, while more than 50 percent of the sample households are living in the space of lower total poverty and moderate total poverty lines. Five percent are living in the area of lower and extreme poverty lines. The rest 19.05 percent of the households are living under extreme total poverty line.

Following the moderate, lower and extreme food poverty lines one can estimate that more than 24 percent of the populations are living above moderate food poverty line. Nearly 49 percent of the sample households are living in between lower and moderate food poverty lines. About 9.5 percent are living between the area of lower and extreme food poverty lines.

Allocating enough resource to all poor people is impossible in resource poor countries. Therefore furnishing policy makers with alternative poverty lines is useful to mainstream policies at any level of intervention areas designed to poverty reduction programs. The analytical description of those poverty lines can go further beyond the existing phenomenon. For example one could design food security programs that help households to move a step from their existing food poverty lines and escape to the next level. The budgetary allocation for those food security programs can be generated from the mean poverty gap and mean income of individual households required to escape from their respective threshold poverty lines.

Table 4.5 Poverty indices of the alternative poverty lines.

Poverty lines	P0	P1	P2
Moderate total poverty line	0.7440	0.2340	0.0969
Moderate food poverty line	0.7572	0.2467	0.1061
Lower total poverty line	0.2415	0.0499	0.0145
Lower food poverty line	0.2704	0.0568	0.0196
Extreme total poverty line	0.1905	0.0296	0.0079
Extreme food poverty line	0.1758	0.0355	0.0128

Source: Author's computation from own survey data

A considerable percentage 19.05 percent of the population also falls below the extreme poverty line. Surprisingly 17.58 percent of the population is living below the extreme food poverty line*. This indicates at least the villages do not achieved self-sufficiency in food consumption.

4 .2.3 Consumption Gap and Mean Expenditures of the Households

The difference among measures of poverty indices is not only to inform the number of poor people and extent of poverty depth, but also to show how much income or budget is needed for the poor to escape poverty. This information is useful for policy makers to allocate resources supporting the poor and/or to plan income generating activities to narrow the existing poverty gap.

The poverty line as discussed at section 4.2.1 above is Birr 1104.8 and the poverty gap as indicated in section 4.2.2 Table 4.3 is 0.1336 which implies that households are deviating by Birr 147.57 from the absolute poverty line. However, such analysis is in crude terms indicating a mean deviation, otherwise does not address the poor individuals those fall below the poverty line and may lead to

* The extreme food poverty line is the average calorie intake of the poorest 50% of the population and ultimately yields monetary value of extreme food poverty line.

inappropriate policy interventions to the poor, because poverty gap implies uniform concern about the depth of poverty, it weights the various income gaps of the poor equally. As indicated earlier, poverty gap index measures the mean distance below the poverty line where the mean is taken over the whole population, counting the non-poor as having zero poverty gap.

The mean income and the mean poverty gap of the poor can better address budget requirement of government and other development actors to bring poor people out of poverty.

Accordingly the mean income per adult of the poor is Birr 826.2 while the mean poverty gap (income gap) of the poor people is Birr 278.6 per adult. The mean poverty gap indicating in Table 4.6 row 12 represents the poverty deficit of the entire sample population in which the notion of "poverty deficit" captures the resources that would be needed to lift all the poor out of poverty through perfectly targeted cash transfers Birr 278.6 per adult equivalents. This is a useful statistic to policy makers and/or development actors to design appropriate poverty reduction strategies.

Table 4.6 Mean consumption expenditures.

Food consumption per capita	657.87
Non-food consumption per capita	464.74
Total consumption per capita	1122.61
Food consumption per adult	809.18
Non-food consumption per adult	565.62
Total consumption per adult	1384.24
Inverse food share of total budget	0.58
Household family size	5.12
Household adult equivalent size	4.25
Absolute poverty line	1104.8
Mean income of the adult poor	826.2
Mean poverty gap of the adult poor	278.6
Crude income gap of the adult poor	147.60
Household sample size	119

Source: Author's computation from own survey data

Data analysis made on households consumption expenditure results in Table 4 .6 row 3 and 6 shows that the level of mean annual consumption expenditure per capita and per adult equivalent in the Tabias is estimated to be Birr 1122.61 and 1384.24 correspondingly.

4 .2.4 Calorie Consumption

Level of calorie intake is an important welfare indicator in countries like Ethiopia where food shortage is a common phenomenon (Wolday, 2001). Household food consumption level approximates welfare situation, however, only when considered in terms of the size of the household associated with age and sex creates differences in per capita requirements. Hence the need to adjust household sizes into household adult equivalents to express consumption

expenditure per adult equivalent. This involves taking care of the differences in the magnitude of household consumption that arise due to age and sex differences among members of households. The variations in activity differences among household members are assumed to be captured by age and sex differences.

Based on those parameters, since quantity data are also collected, the statistical analysis made for this purpose indicated that the average calorie intake of the extreme poorest households of the Tabias is 1470.20 usually a bench mark to develop the food poverty line, and the average estimate of calorie intake per adult per day is 2003.3; 33.17 and 9 percent below the recommended norm of 2200 calorie intake per day per adult respectively. As discussed in the next sections this result is consistent with high levels of malnutrition for children in the villages.

4 .2.5 Relative Poverty

The concept of relative poverty as such is primarily concerned with size distribution of income and, hence, inequality in living conditions among a population.

The relative method takes a proportion of mean income as the poverty line-for example one-third and two-thirds of mean income have been popular; the former defines the core (main) poverty line and the latter the moderate poverty line.

The relative ways of measuring poverty therefore refers mainly situation of a relative deprivation, and/or standard of living that is below a certain proportion of a given society average. Therefore, relative poverty level is an area specific measuring the degree of inequality amongst the household groups or

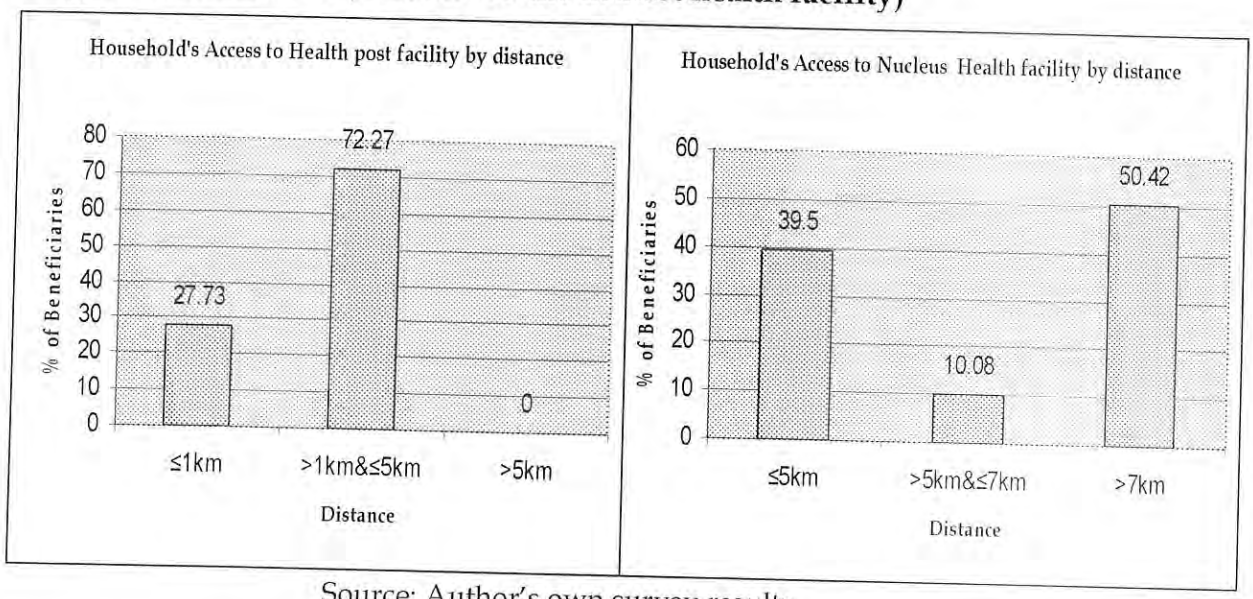
Not only does a large proportion of the population lives far away from a basic health clinic, but the quality and efficiency of health services is inadequate as the health service given to the population is determines by the quality and availability of health personnel. Therefore access to important utilities in terms of distance does not tell us much about the quality of services delivered to the household communities.

The incidence of illness in the Tabias is high. Nearly 50 percent of the sample households have reported illness. The common reason given for not using the nearest health facilities when a household member is ill and needs treatment is the unreliability of the health workers.

The access to public service is the distance between the residences of households and the facility at hand. The study characterizes access as physical and medical access, based on this concept following the health post 33.61 percent of the households have not access to medical services of which only has physical access to the nearest health facility considered as population without sustainable access to health services. The survey data finds not only that the people who have physical access to health centers but also the people accessed to a minimum health service facility is severely constrained by shortage of qualified health personnel and this affects the uptake of public health services adversely. The number of nurse per capita for example for Tabias Kilate and Haben is 1:7232 and 0:4640 respectively. The policy implication from those findings is that the health status of the people in the Tabias would be positively enhanced by providing qualified health personnel and upgrading the health facilities. Such investments could have a direct beneficial impact in terms of reducing poverty and protecting the poor against health shocks.

Poor health due to inadequate nutrition, hygiene and health services further limits their prospects for work and from realizing their mental and physical potential. Therefore, the availability of social services and distance to the nearest health facility also is not enough, its functional adequacy and problems associated with the services could be the main criteria to asses the accessibility of social services to community members.

Fig.4.1 Health access (Distance to the nearest health facility)



Source: Author's own survey results

4.3.1.2 Nutritional Deprivation

Malnutrition results in a high incidence of stunting amongst children and low life expectancies. Lack of food in right quantity and quality affects people of all ages; the capacity of an adult to withstand periods of inadequate food intake is far greater than that of young children, or very elderly people. For many reasons women and children are vulnerable to health and nutritional problems. The health and nutritional status of women and children are thus best indicators of the wellbeing of a society. In most cases this is why the nutritional status of

children under five years is often used us a proxy indicator for the nutrition of the whole population group.

Therefore, by employing child malnutrition through anthropometry measurements, it is possible to understand dietary energy availability information and food poverty situations of the study area. Hence anthropometric indicators are used to assess the nutritional status at an individual and at the level of overall population. The growth failure is due to low calorie intake and may show up as a stunting (inadequate food intake for a long time) or wasting (acute starvation or illness) and this is seen by UNICEF to be the principal indicators of human development.

Nutritional status of children is therefore utilized in this research as a proxy indicator for the nutrition of the whole population group through the application of anthropometric measurements of height, weight and age used to compute three summary indices of long and short run nutritional status of the society. The nutritional status of children reflects the extent to which the welfare, situation of these children has been affected and the degree of their vulnerability.

Malnutrition is almost always a consequence of poor food accesses, poor health; and education also can play a role. In areas where food shortage prevails children, women, and elderly people are the most likely to exposed to infectious diseases. Particularly interesting to children, if they do not provide with food adequacy will not have appropriate weight and height commensurate with their age and are susceptible to collapse their growth rate.

From the indicators, wide spread malnutrition may occur in the rural areas. The major causes of malnutrition in the Tabias is poor socioeconomic status from the initials and can be production short falls during draught and ultimately,

improving household food security is essential in order to decrease the vulnerability of families and communities to seasonal or recurrent malnutrition.

The second cause of malnutrition might be environmental factors, such as water supply and sanitary provision, have a strong influence on the incidence of infections especially diarrhea diseases; while poor housing and over-crowding may increase the incidence of respiratory infections and contagious diseases.

The other cause of malnutrition can also be the health service and health care whether people receive health care depends on the coverage and extent of the services available, and how well these are taken up in practice. Social and cultural factors mainly the intra household food distribution can also cause malnutrition.

Generally child malnutrition determined by health and care as well as food security; all three determinants may act independently and interact synergistically in influencing child malnutrition. It is clear enough if children are not properly taken care of they easily become vulnerable to various contagious and infectious diseases accelerated to nutritional deficiency. Moreover child malnutrition is universally recognized as a robust indicator not only of health status but also of poverty and general deprivation. Child under-nutrition can be chronic (measured by stunting), acute (measured by wasting) or both (measured by under-weight children).

The discussions on wasting, stunting and underweight are based on results obtained from primary data collected during the household survey. All children they are 79 of which 37 girls and 42 boys between the ages of 6-59.99 months found in the sample households are estimated in this study. Table 4.7 presents the result of nutritional status of the Tabias.

Table 4.7 Children nutritional indices by percentage.

Status of Children	Total	Boys	Girls
1. Weight/Height			
▪ Prevalence of wasting	5.2	7.3	2.8
▪ Prevalence of moderate wasting	3.9	7.3	0.0
▪ Prevalence of severely wasting	1.3	0.0	2.8
2. Height/Age			
▪ Prevalence of stunting	48.1	46.3	50.0
▪ Prevalence of moderate stunting	27.3	17.1	38.9
▪ Prevalence of severe stunting	20.8	29.3	11.1
3. Weight/Age			
▪ Prevalence of underweight	31.2	34.1	27.8
▪ Prevalence of moderate underweight	27.3	26.8	27.8
▪ Prevalence of severely underweight	3.9	7.3	0.0

Source: Own calculation from own survey data.

Wasting takes height for weight and indicator of recent malnutrition which may be caused by acute food shortages and serious infection indicating short-term malnutrition since the weight of children can easily fluctuates with immediate changes in nutrient intakes.

The prevalence of wasting (low weight-for-height) at Tabia level is 5.2 percent and gender disaggregated results indicated that proportion of wasted children is found to be higher in boys than girls and the reverse holds true for severely wasting. In 2004 the regional wasting rate is stood at 12.8 percent (TBFED, 2006). This is just to show the trend of the region informed by the Tabias, other wise the research time of children measurement is taken during Jan, 2007 and this is relatively a good month and a continual of the best months of the year for the Tabias*.

* In relative terms the best months of the year in terms of food sufficiency for the Tabias are Oct-Jan.

Stunting height for age is used as a measure of long run and/or chronic malnutrition not just influenced by current circumstances but by cumulative circumstances over many years. The prevalence of stunting (low-height-for-age) in the Tabias is 48.1 percent while severe stunting stood at 20.8 reflecting an indicator of a long-term cumulative nutritional deficiency. Thus long run child malnutrition is prevalent in both girls and boys but is more pronounced in the former.

The percentage of severely stunted boys is much worse 29.3 as compared to their gender counterparts' girls 11.1 percent. The scale of deprivation of the Tabias in terms of stunting indicates 1 child out of 2 children appears stunted.

The degree of stunting is high by any parameter, it is not acceptable and it is not related to current economic circumstances indicating longer experience of poverty resulted from poor long term socio-economic outcomes. The harder it is to emerge from such extreme poverty. Stunting in childhood also leads to reduce adult size and reduce work capacity. This in turn may have an implication on long term economic productivity. Or this impairs human capital, physical labour power, cognitive development and skills acquisition. This calls to insure the future economic growth through designing appropriate interventions towards nutritional sufficiency and related services in the study area.

Underweight takes weight for age of children under five. A child with an expected low weight for his or her age is an indicator of either chronic or acute malnutrition. The prevalence of underweight (low weight-for-age) children is 31.2 percent, while severely underweight is sever in boys in favor of girls as indicated in Table 4.7 is 7.3 and 0.0 respectively. The scale of deprivation of the study area is 1 out of more than 3 children are found to be underweight.

The weight to age ratio selected to use as a fraction to measure the HPI-1 is highly influenced by wasting and stunting indices. If stunting and wasting have shown remarkable improvements, ultimately it is obvious to indicate considerable or consistent improvements for weight to age indices. However in this study stunting is found to be the higher contributor to the deprivation of underweight.

4 .3.2 Educational Deprivation

Education is an input in welfare and wellbeing since it provides a measure of earning a higher income via enhancing one's earning capabilities and allows individuals to participate in decision making that determines the well being of societies in which he or she lives including him or her self.

Achieving higher rate of literacy level is a long term indicator, the highest level of education attained (primary completion rate) and gross enrollment ratio can be used to measure relative achievements in both adult literacy and enrollment rates in the human development indices.

The gross enrolment rate of the Wereda at lower and higher primary schools in 2006 is 86.48 percent. The regional gross enrolment at the lower primary level by 2006 is 99.77 percent of which 98.6 and 99.93 percent are male and female students respectively. However the drop out rate is extremely high and gross enrolment decreases as we go from the lower and higher primary to the lower and higher secondary levels. For example, TBFED (2006) witnessed that the regional gross enrolment rate in lower secondary school in 2006 is 43.53 and 33.84 percent of male and female students respectively, in higher secondary schools the total enrolment is averaged to 6.6 percent. While in Gulomekheda Wereda is below the regional average that is 4.9 percent.

It is not difficult to imagine that the drop out of students would be higher to rural parts of the region as all students that are registered in the primary level do not continue up to higher levels. This calls for a policy focus on the expansion of lower and higher secondary schools in the rural areas of the region.

Due to the above reasons, in most cases literacy rate is selected as a good measure of educational achievements as it reflects successful completion of a minimum level of schooling. Exploring literacy status of a given society therefore reveals the degree of educational service expansion in that certain area and similarly the people involvement to educational opportunities. It is also an important indicator to show the level of socio-economic improvement as it fundamentally plays a role in the enhancement of the labor forces creativity and productivity. Evaluating the literacy status in the study area is required as a development indicator, while illiteracy rate is required to measure the educational deprivation of the society.

Table 4.8 Literacy rate of household heads

HH Heads by Gender	Frequency	%	Literate	%	Illiterate	%	Range of Literacy(Grade) Level
Male	75	63	36	48	39	52	Traditional to grade 11
Female	44	37	8	18.2	36	81.8	Grade 2 to 8
Total	119	100	44	37	75	63	Traditional to grade 11

Table 4.8.1 Household member's literacy level

Status	Frequency	%	Male%	Female%
Literate	306	50.2	51.3	48.7
Illiterate	157	25.7	33	67
Kids under 10	147	24.1		
Total	610	100.0	47.9	52.1

Table 4.8.2 Household member's educational level

Status	Frequency	%
Illiterate	172	28.2
Grade 1-4	100	16.4
Grade 5-8	142	23.3
Grade 9-10	49	8.0
Grade ≥ to 11	3	0.5
Traditional	15	2.5
Kids under 7	129	21.1
Total	610	100.0

Source: Tables 4.8 to 4.8.2 are own survey results.

The literacy rate of the study area as indicated in Table 4.8.1 is 50.2 percent. The literacy rates are given for persons aged ten years and above and therefore an illiterate in this study is defined as an individual who is ten year old or more and can not read and write. Moreover, the intension of the research is to measure deprivation; the illiteracy rate which is an important variable to this research, is 25.7 percent which is used as one component in defining the dimensions of human deprivation indices, while the rest are kids under ten years old.

The proportions of females being literate are substantially less than those of males. Table 4.8.1 presents the literacy rate of the study area categorized by sex.

Females have attained relatively a less level of literacy (48.7 percent) as compared to their male counter parts (51.3 percent), and of course the illiteracy level is much higher for female (67 percent) as compared to male (33 percent).

Similarly the female headed households are the most disadvantaged segment of society in terms of illiteracy; as indicated in Table 4.8 only 18.2 percent of this category of the household heads is able to read and write, while male headed households account 48 percent. Generally illiteracy rate of household heads of the study area is 63 percent.

4 .3.3 Water Deprivation

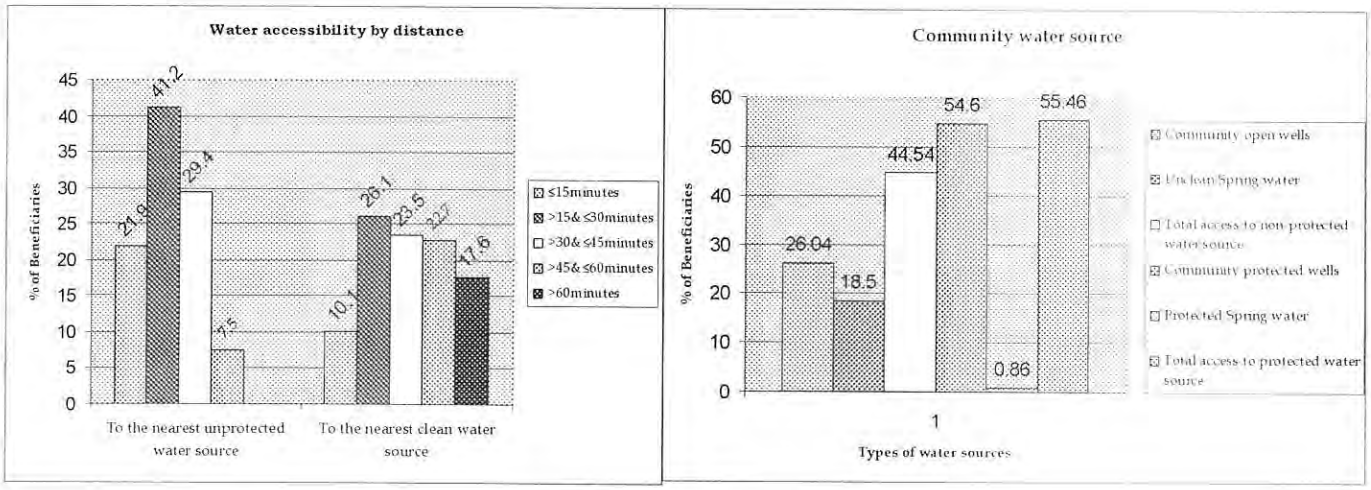
Improved water sources can make the population safer and healthier for all its children. Of course the importance of water in poor people's lives goes far beyond the significant health-related out come to broader issues of livelihoods and wellbeing.

Quoted in Deborah and Susane (1995), the minimum recommended daily water requirement for drinking and cooking is 3-5 liters per person. In addition WHO recommends a domestic supply of at least 15-20 liters per day for all uses including hand-washing, bathing, clothes-washing and domestic hygiene. However, many poor households of the study area currently survive with a daily water supply of less than 7 liters in summer and 11 liters in winter per head, due to less accessible potable water supply. Despite the risk associated with drinking unprotected water sources like open wells and springs, though the protected water sources by it self requires some chemical treatments. According to the Tabia health office water related diseases such as diarrhea accounts second from the top ten diseases occurring in the Tabia. Therefore, whether programs should emphasize improvements in water quality or in the quantity available; or in the

accessibility of sources in related to health factors has to be an important policy consideration.

Distance to water source might provide important insights about the welfare of the household members. Despite at what ever the quality and distance of the protected water source from households residence if households are travel and consume protected water is considered as that household has access to safe water; while those who have not are treated as safe water deprived households usually it is maintained as a fraction of variable into measures of deprivation index.

Fig. 4.2 Households time travel to the nearest water source and source of drinking water



Source: Author's own survey results

In spite of the distance drinking water from protected sources (protected community wells and springs) as presented in Fig 4.2 is accessed only for 55.46 percent of the population, while the rest remain without access to improved sources of water.

4.4 The Human Poverty Index (HPI-1).

The non-income indicators of social deprivation need to combine into a single deprivation index to have a meaningful insight as indicated in the research frame work and methodology. Details of the formula see under literature review last page of section 2.2.

The HPI-1 $= [1/3 (P_1^{\alpha} + P_2^{\alpha} + P_3^{\alpha})]^{1/\alpha}$

An unweighted average (P3) =1/2(percentage of population without sustainable accesses to improved water source+1/2(percentage of children under weight for age) +1/2(population with out accessed to health services) illustrated as:

P3= ½(44.54) +1/2(31.2) +1/2(33.61) ≈54.7%

Note- P1- is taking from the local people discussions.

Then HPI-1 = $[1/3 (43.7^3 + 25.7^3 + 54.7^3)]^{1/3}$

HPI -1≈ 44.5%

The HPI-1 is an important measure of welfare and living standard for example David, et.al, (2003 p.10) illustrates a low standard of living is often measured by using deprivation indicators (high deprivation equals a low standard of living) or by consumption expenditure (low consumption expenditure equals a low standard of living). Of these two methods, deprivation indices are more accurate since consumption expenditure is often only measured over a brief period and is obviously not independent of income currently available. Deprivation indices are broader measures because they reflect different aspects of living standards,

including personal, physical and mental conditions, local and environmental facilities, social activities and customs.

The illiteracy rate of 10 years age and above contributes the lowest rate (25.7 percent) for the HPI indices, indicating high achievements towards universal primary education. Unlike education; health and nutrition outcomes has been higher for instance the share of population without access to health services and malnutrition indicators to the deprivation of decent living standard level is significant 33.61 and 31.2 percent respectively. Moreover the contribution of population without sustainable access to improved water source to the deprivation in a decent standard of living is the highest fraction among others (44.54 percent). These in turns can have an impact on child mortality and therefore low life expectancies because malnutrition and inadequate provision of safe water and sanitation are most likely believed a cause of low life expectancy in developing countries.

For instance taking an issue of the global agenda; millennium development goal number 4 is reducing child mortality by two thirds among children under five by 2015. Among others; strategies implied for this goal are improving nutritional adequacy of children, provision of safe drinking water and sanitation and access to health services. While the opposite exacerbates child and infant mortality are the most important indicators determining life expectancy. Providing of those services to the study area is an important policy consideration.

In general the decent standard of living (P3) resulting from water, health and underweight accounts the highest 54.7 percent of the human deprivation indices. Moreover in any parameter the HPI-1 result is unacceptable; nearly 45 percent of the population in the Tabias is absolutely suffering from three or more forms of

basic human need deprivations indicating the society is vulnerable to social welfare deprivations.

HPI eradication is basically the cumulative and some times long-term outcome of those non-monetary dimensions of poverty. Social deprivations are measured separately and attempted to report on summary measure hence the HPI index tells us where policy makers to emphasize or to specific targeting for the eradication of human deprivations.

4.5 Who are the Absolute Poor?

Both income and non-income dimensions of poverty might interact with and reinforce each other. Education and health could interact with material deprivation. Low level of education and health could lead to low level of income and hence might lead to material deprivation. In order to recognize the interaction of various dimensions of poverty, decomposition of the income dimensions of poverty by various household characteristics such as land ownership, agricultural extension package, sex (gender headship), education and family size dealt with stochastic dominance tests.

Having defined groups of the sample households, unable to meet their food consumption and total basic consumption (food and non-food) needs 63 and 64 households in the sample of 119 households that meet both criteria, to establish in which ways they differ systematically from households that are (relatively) better off. Data from the survey are summarized on 5 major characteristics and 10 sub-characteristics of the sample households; gender of household head, household family size/adult size, household head education, household head agricultural-extension (either beneficiary or not) and household head arable land (either an arable land has or not). Based on the food and basic consumption

poverty lines developed for this purpose households are explicitly characterized into four specific categories; absolute food poor, absolute poverty poor, relatively food rich and relatively absolute poverty free. Policy makers are interested in comparison of poverty on such characteristics helps to understand the associated characteristics of poverty and policy actions towards its solution.

In addition to the poverty decomposition results for simplicity and make easily understandable for all either the people are falling or meeting their food requirement and basic consumption is also sorted in ratio forms under each category out of their corresponding number of household heads*.

4.5.1 Poverty and Gender Headship

Both female and male headed are nearly one in two households are more likely to be absolute food consumption poor; however, the incidence is slightly inclined to male headed households. But for the absolute basic consumption poverty male headed households nearly one in two is likely to be absolute basic consumption poor, while women headed are relatively higher poverty incidence than their counter parts. This indicates that incidence of total poverty is relatively higher among female headed households than male headed households. Moreover when we consider the relatively food well-off and absolute poverty free one can drive as from the given indices in the following table one in over two persons and one in about two persons of male and female headed are respectively food affluent, in terms of basic consumption poverty is the reverse that inclination of poverty incidence to female headed households is higher than male headed households, contributes one in more than two persons while their counterparts contributes one in about two persons are relatively affluent.

*The classification of the ratio is based on; Absolute food poor are households fall below the poverty line. Absolute consumption poor are households fall below the basic consumption poverty line (food +non-food), Food consumption affluent are households found above food poverty line, while Total consumption affluent are households found above basic consumption poverty line.

Table 4.9 Poverty indices by gender headship

Explanatory Variables	Food Poverty Indices			Basic Consumption Poverty Indices		
	P0	P1	P2	P0	P1	P2
Male headed households	0.5299	0.1398	0.0492	0.5249	0.1196	0.0390
Female headed households	0.5179	0.1558	0.0730	0.5660	0.1724	0.0725

Source: Author's computation from own survey data

	Female headed (44)	*Male headed (75)*
Absolute food poor	*1:1.91*	*1:1.88*
Absolute consumption poor	*1:1.76*	*1:1.92*
Food consumption affluent	*1:2.09*	*1:2.14*
Total consumption affluent	*1:2.31*	*1:2.08*

Besides the incidence one can derive the ratio of the heads probability of falling to absolute food poverty and absolute basic consumption poverty is relatively higher for male and female headed households respectively.

4.5.2 Poverty and Education

The result of poverty analysis shown in the following Table 4.10 point out that the head count index for the basic consumption poverty is generally higher for illiterate households (above 60 percent) than literate households (44.45 percent), and this is significant at first order stochastic dominance test. Following the food poverty lines in the incidence of poverty for illiterate heads is reduced to 56.03 percent while for literate households raised to 48.11 percent. In other words 43.97 and 51.89 percent of the illiterate and literate household heads respectively and relatively are food sufficient meets the minimum nutritional requirement. As represented in the following table one can possible estimate in the relatively basic consumption affluent illiterate households' drops to 39.85 percent while

literate households rose to 55.55 percent of the heads are relatively rich that meets the minimum basic consumption needs. Similarly the depth of poverty for both food and basic consumption poverty is higher for illiterate household heads. This tells us that literacy of household head is a robust indicator for poverty eradication.

Table 4.10 Poverty indices by education status of household heads

Explanatory Variables	Food Poverty Indices			Basic Consumption Poverty Indices		
	P0	P1	P2	P0	P1	P2
Illiterate household heads	0.5603	0.1777	0.0755	0.6015	0.1668	0.0633
Literate household heads	0.4811	0.0974	0.0275	0.4445	0.0650	0.0258

Source: Authors computation from own survey data

	***Literate** (44)*	*Illiterate (75)*
Absolute food poor	*1:2.00*	*1:1.79*
Absolute consumption poor	*1:2.20*	*1:1.67*
Food consumption affluent	*1:1.92*	*1:2.27*
Total consumption affluent	*1:1.83*	*1:2.50*

In other words the ratio of probability of falling in to absolute food poverty (1 in 1.79 person) and absolute consumption poor (1 in 1.67 people) is higher for illiterate household heads. Similarly in the case of relative food prosperous (1:1.92) and absolute poverty free/total consumption affluent (1:1.83) literate households are affluent, while for the illiterate the reverse holds true. This tells us literate households are relatively rarely appearing under absolute poverty lines than their counter parts. This implies household heads with limited education tend to be more subject to either low income or less able to manage his/her household livelihoods. Education has therefore an important impact in

the effort towards poverty reduction strategies as widely discussed under the literature survey.

Specifically the literate female headed are explicitly 8 in number while the literate male headed are 36 in number, but the contribution to food poverty and head count index is the highest for literate male headed. For example only one literate female headed and twenty literate male headed are appearing in the food poverty incidence. Similarly twenty literate male headed and no literate female headed are shown in the basic consumption poverty.

Generally the study found that the incidence of poverty is higher among illiterate household headed than literate headed. In particular the literate female heads are not often found under both poverty incidences. This has a strong policy implication that encouraging education to all girls would have significant impact than male on poverty reduction programs and hence "girl's education benefits all" might be far more effective.

4.5.3 Poverty and Agricultural Extension Package

Expansion of agricultural extension is one of the primarily regional strategies to enhance agricultural productivity through the provision of inputs and innovation adoption strategy to ensure food security.

Table 4.11 Poverty indices by agricultural package

Explanatory Variables	Food Poverty Indices			Basic Consumption Poverty Indices		
	P0	P1	P2	P0	P1	P2
Agricultural-extension package beneficiaries	0.6018	0.1625	0.0621	0.5252	0.1275	0.0474
Agricultural-extension package non-beneficiaries	0.3933	0.1106	0.0429	0.5534	0.1427	0.0476

Source: Own calculations from own survey data.

	Beneficiaries (65)	*Non-beneficiaries (54)*
Absolute food poor	*1:1.67*	*1:2.57*
Absolute consumption poor	*1:1.91*	*1:1.80*
Food consumption affluent	*1:2.50*	*1:1.64*
Total consumption affluent	*1:2.10*	*1:2.25*

Poverty among beneficiaries and non-beneficiaries of agricultural extension package is not found as expected. The contribution of the agricultural package beneficiaries to the food poverty is as much as 60.18 percent (nearly one in less than two persons) out of 65 beneficiaries, but only 39.33 percent (one in more than two persons) out of 54 non-beneficiaries. This might be the reason that the number of farmers included in the package has decreased in the region in 2006 (TBFED, 2006) from the previous ones. However, evidences of all stochastic dominance tests do not support this finding.

From the farmers point of view this implies mainly weak access (transport and market), weak linkage that the demand of the market not grow according to the demand of the agriculture extension service and/or the reverse, while the extension workers opinion is the program is mainly targeting the land owners and the sector is dependent on erratic rain fed agriculture the failure is also too and not to be wondering having high poverty incidences. There might be also

most probably imply either weak adoption of agricultural innovations or poor approach of targeting beneficiaries because the succession of agricultural extension is highly dependent on the environmental assets and agro ecological zones.

The regional government has designed to raise the annual per household income to Birr 18250 in the second strategic plan of the coming five years (2006-2011). However, the regional government as well the Wereda's has to be realized the need of farmers, inadequate support of agricultural research and market inconveniences coupled to dependence on rain fed agriculture were the main problems experienced in the Wereda/region.

4.5.4 Poverty, Family size and Dependence Ratio

Household characteristics such as large family size reduces consumption expenditure and food intake. In other words poverty tends to increase with household family size. As shown in Table 4.12 households with large family size and/or adult size have an inverse relationship to the poverty incidence of both food and basic consumption poverty lines. The relatively rich households are more likely to be smaller household size (both capita and adult levels), and the poor households are likely to be larger household sizes than the average 5.12 and 4.25 of capita and adult equivalent household members respectively.

Table 4.12 Poverty indices by family size

Explanatory Variables	Food Poverty Indices			Basic Consumption Poverty Indices		
	P0	P1	P2	P0	P1	P2
Household ≤ 4.25 adult size	0.2872	0.0739	0.0338	0.3630	0.0846	0.0303
Household > than 4.25 adult size	0.6362	0.1757	0.0650	0.6139	0.1550	0.0553

Source: Own calculations from own survey data

Beside the indices the ratio of poor people in both food and total consumption is worse for the large family size. As indicated in the ratio households with less than 4.25 adults are found to be 1 poor out of 3.5 persons while in the case of greater than 4.25 adults 1 in 1.56. Both ratios have shown in favor of less household members are to be relative affluent. Therefore, public interventions targeting the poor households can therefore be inadequate. Household size based poverty reduction targets might be crucial.

	Household size ≤ 4.25adults (63)	Household > than 4.25 adults (56)
Absolute food poor	*1:3.50*	*1:1.56*
Absolute consumption poor	*1:2.74*	*1:1.65*
Food consumption affluent	*1:1.40*	*1:2.80*
Total consumption affluent	*1:1.58*	*1:2.55*

In practice children in rural areas even below ten years old contribute to the household labour force and so to its production capacity. Looking after livestock, vegetable watering, fetching water and fuel wood gathering as well as participating in weeding are among the traditional responsibilities of children in the study area. But the study found that household characteristics such as household size and composition have not found to be significant. In other words the larger the family sizes the lowest in living standard. This might be in related

to the political dispute with Eritrea which blocks movement of people results the absence of non-farm activities and opportunities. The household family size and poverty is further characterized by income quintiles in the following ways.

The dependency ratio for youth in Ethiopia is commonly calculated as the number of people aged less than or equal to 15 years old per the number of people aged 16 to 65 years old of household members. This study has determined the working age ratio of the sample households as the number of people with in the age group of 16 to 65 per number of household heads 16 to 65 years old in each income quintile, while dependency ratio is calculated as people to 15 years old and higher to 65 years old per number of household members in the age group of 16 to 65 in each income quintile. Further the youth dependency ratio in particular is calculated as the number of people to 15 years old per the number of household heads greater than 16 and less than 65 years old per its corresponding income quintiles. Based on those ideas size distribution and dependency ratio of the households are reported by income quintiles as following in Table 4.13.

Table 4.13 Size distribution and dependency ratio of rural households by income quintile.

characteristics	1 (poorest)	2	3	4	5	Food poverty poor	Food affluent	Absolute poverty poor	Absolute poverty free
Income share %	6.77	13.67	18.99	25.73	34.84				
Household mean family size	5.63	5.42	6.38	4.25	3.91	5.81	4.58	5.59	4.59
Household mean adult size	4.97	4.48	5.25	3.48	3.03	5.03	3.62	4.83	3.37
Household maximum adult size	9.31	7.96	8.82	8.16	8.02	9.34	8.16	9.34	8.16
Household minimum adult size	0.74	1.34	0.74	0.74	1.19	0.74	0.74	0.74	0.74
Household maximum family size	11	10	10	10	10	11	10	11	10
Household minimum family size	1	2	1	1	2	1	1	1	1
Working age ratio	1.62	1.44	1.74	1.47	1.33				
Household dependence ratio	1.27	1.33	1.03	0.89	0.83				
Youth dependency ratio	1.98	1.69	1.70	1.22	1.00				
Male headed	15	16	19	12	13				
Female headed	9	8	5	12	10				

Source: Author's computation from own survey data

The inverse relationship of household size and poverty is also significant at first order stochastic dominance test. The increase in household size and household

adult equivalent worsens the poverty status of households. For example the mean household size (count of the number of individuals) and mean adult equivalents in the food poor households are more likely to be higher 5.81 and 5.03 while the relatively food rich households are likely to be smaller 4.58 household size and 3.62 adult equivalents per household. Similarly taking the head count ratio the larger households are generally poorer. As indicated in the table the mean household size and adult equivalent of the absolute poor is 5.59 and 4.83 respectively, while their counterpart those who are relatively absolute poverty free (above the poverty line) have smaller household size 4.59 and 3.37 adult equivalents per household. According to these data, the 20 percent of households at the bottom of the income distribution have an average size of 5.63 people, compared to only 3.91 in the richest 20 percent.

Most of the working ages (16-65 years age) are employed to develop working and dependence ratio but poor households have both a higher ratio of working and non-working members than the reach quintile households. Similarly following the income share 38.64% and 41.33% female and male headed households respectively are classified as the lowest income quintiles (female 17*100/44 & male 31*100/75), while 33.33% and 50% (25*100/75 & 22*100/44) of male and female headed households respectively are categorized as the highest income quintiles and the rest are falling under the middle income quintiles*.

4.5.5 Poverty and Arable Land

Owing arable land is expected as a determinant factor in food sufficiency. From the total sample households 14.29 percent are landless. The land owners one in less than two while the landless one in more than two are food poor, in other words 57.36 percent of the landless and only nearly 46.12 percent of the land

* Lowest quintile has the lowest twenty percent of the persons, when the households are arranged in the ascending their per capita (per adult) total consumption expenditure.

owner are relatively food rich. Though the stochastic test is significant at first order it seemingly hard to compare poverty incidence 17 landless farmers with those 102 land owners.

This result might have a direct relation ship with the recurrent droughts because the agricultural activity of the Wereda in particular of crop production is mainly rain-fed; its vulnerability to drought is great and targeting agricultural extension towards rain-fed could led to failure that is generally lack of appropriate extension to semi arid areas coupled to lack of attention of the post governments causes a long run environmental devastation in the region. To mitigate the recurrent droughts of the region solutions must be taken in the expansion of surface and under ground water irrigation infrastructures.

Table 4.14 Poverty indices and land

Explanatory Variables	Food Poverty Indices			Basic Consumption Poverty Indices		
	P0	P1	P2	P0	P1	P2
Arable land owns	0.5388	0.1480	0.0579	0.5481	0.1342	0.0478
Arable landless	0.4264	0.1085	0.0331	0.4273	0.1225	0.0447

Source: Own calculations from own survey data

In all poverty parameter as point out below the ratio of poor people are higher in the land owners than their counterparts.

	Land owns (102)	*Landless (17)*
Absolute food poor	*1:1.85*	*1:2.43*
Absolute consumption poor	*1:1.70*	*1:2.43*
Food consumption affluent	*1:2.17*	*1:1.70*
Total consumption affluent	*1:2.43*	*1:1.70*

CHAPTER FIVE

5. CONCLUSIONS, SUMMARY AND RECOMMENDATIONS

5.1 Conclusion

Poverty reduction is now seen by many as at the centre of development efforts. The UN Millennium Development Goals (MDG's) pledged by world leaders in September 2000, include the overarching goal of halving world poverty by 2015 with respect to the 1990 level. Ethiopian poverty reduction strategies are embarked from this global perspective to make health and healing the economic welfare of the country. All regional and grass root level poverty reduction programs are stemmed from the national perspective.

Poverty reduction is a fundamental objective of economic development and reducing poverty is a major focus of both national and regional government. The success of policies, programs and development is increasingly judged in terms of poverty reduction. Poverty reduction is long-term process and requires consistent growth. All socioeconomic development efforts normally face challenges, especially in resource poor countries.

There is no defined absolute definition of poverty. Poverty is a complex human phenomenon associated with unacceptable low standard of living. It has multiple dimensions, manifestations and causes. Poverty is an unacceptable human condition which does not have to be inevitable. Poverty is wide encompassing the overall denial of choices and opportunities and violation of human dignity. Poverty goes beyond lack of income. It encompasses economic, social and governance. Measuring poverty is also complex as its manifestation. Income or GNP alone is not an adequate measure of poverty. Both income and social welfare indicators are involved in this study.

Poverty measurements are inherently quantitative issues, in the sense that they require being addressed using numerical information derived from representative population samples. Among the various methods of quantifying, the FGT formula is the most widely used in providing quantitative distribution of the spread, the depth and severity of income poverty in populations and indicates changes in a populations the standard of living over time. Quantitative methods help provide answers to particular questions about poverty. Although qualitative (non-numerical) can also be used to supplement the work of poverty measurement, they are not the main focus in this type of poverty analysis. No single approach no one universally accepted single measure of poverty, which captures all the essential aspects of poverty. Because of the complexity of the poverty phenomenon choice of methods of poverty analysis is dictated by issue of interest to a researcher and his research skills.

There are a number of different approaches existing among; the research is focused on the CBN approach and FGT class of poverty measure for the income dimensions of poverty while the UNDP HPI-1 is used for the non-income poverty.

In order to formulate a program aimed at combating poverty, information and identifying on the number of the poor in terms of their poverty and deprivation level is crucial for any poverty reduction development strategies.

Expenditure based disposable income welfare indicator is used to measure poverty since household income may fluctuate during the year, while expenditure tends to be more constant. After collecting disposal income of households, estimating threshold poverty line is therefore the first step in development of poverty measures to identify the vulnerable groups. Since properly targeting the poor is the most difficult part in poverty alleviation, policy

makers need to have the accurate location of the poor where they are located in attempts aimed combating poverty measures. Therefore, the absolute measure is developed to identify the vulnerable groups of the society relative to the standard of the society being studied.

A poverty measurement assumes that there is a predetermined and well-defined level of standard of living called "poverty lines" below which a person is deemed to be under absolute poverty. The first and foremost to draw a poverty line is based on the basic needs or minimum caloric requirement. Level of calorie intake is an important welfare indicator in countries like Ethiopia where food shortage is a common phenomenon. Individuals who consumed below a predetermined minimum level of calorie intake are deemed to be under food poverty otherwise food hunger below which human survival would be in jeopardy.

Absolute poverty line is developed by estimating the cost of a certain fixed bundle of goods necessary to attain basic consumption needs (this is called basic need approach). The most important component of basic need is a recommended energy intake, supplemented by essential non-food goods. This method does not take into account shifts in the average standard of living in society. It is a fixed money value that is only updated to take account of inflation. While relative poverty is in contrast, is set in relation to changing standard of living. To construct a measure of absolute poverty as already mentioned CBN approach is adopted because it captures all food and non-food consumption expenditures starting with identifying a basket of food items typically consumed by the poor for the purpose of calculating consistent poverty line.

The minimum food poverty line was determined based on the minimum level of recommended calorie consumption. Calorie requirement difference is addressed

by scale of adult equivalence fitted to be 2200 calorie per adult per day. Each food items calorie content of the food basket is estimated and valued at local prices collected during the survey. Therefore absolute food poverty line is defined as the annual cost 2200 calories per adult per day below which people are deemed absolute food poor. After estimating the cost of minimum basket of goods that would satisfy the necessary daily energy requirement; the food poverty line has to be translated into a threshold poverty line that incorporates the expenditure require to attain basic non-food needs. Ultimately a poverty line is developed consistent with the behavior of poor people in the specific study area. The total poverty line is therefore obtained after adjusting for the non-food expenditure. This method yields a representative monetary poverty line, below people are said to be living under absolute poverty.

Two additional alternative thresholds below and above the absolute poverty line is developed as indicators of extreme poverty and of broader level of household income adequacy. Alternative poverty lines are useful in resource poor countries on how policy makers could design for long, medium and short term program interventions addressing the poor based on their level of vulnerability. The study therefore identifies areas of long, medium and short duration intervention based on the locations of alternative poverty lines of the study.

This study founds the highest proportion expenditure of the households income is spent on food.

The most widely used measure of absolute poverty is the head count index (P0) measures spread of poverty; poverty gap (P1) measures an income gap and poverty severity (P2) concerns the poorest of the poor.

Measuring poverty indices is not only to characterize peoples living below and above poverty line. The findings indicate high difference between median incomes of the poor and the poverty threshold. Policy makers need to have an explicit budget demand to design anti poverty programs required bringing the poor people escaping poverty. Poverty gap addresses this issue, but implies uniform concern with distribution of the people falling below poverty line, because it measures the mean distance below the poverty line. In reality there are disparities of income among the absolute poor. Therefore the mean income and the mean poverty gap of the poor can better address government budget requirement and other development actors involving in poverty reduction programs.

Indeed absolute poverty is a condition characterized by severe deprivation of basic human needs, or the inability to secure the minimum basic needs for human survival. Poverty and deprivation are tightly linked; the concept deprivation covers the various conditions independent of income while the concept of poverty refers to the lack of income and other resources which make those conditions inescapable experienced by people who are poor. Absolute poor are proportion of population with a standard of living below the absolute poverty lines, while relative poor are those living below a certain proportion of their group however the primarily concern of the region is eradicating absolute poverty and the former is not the concern of this study.

The concept of poverty and deprivation measurement is commonly applied to consumption (income) and non-income welfare indicators respectively.

Traditionally one can understood poverty is primarily as material deprivation, as living with low income and low consumption, characterized primarily by poor nutrition and poor living conditions. However, poverty goes beyond monetary

yardstick, it is easy to observe that income poverty in most cases is associated with human poverty-the low health and education levels that are either the cause or the result of the low income.

Social indicators of poverty have more dimensions than those income indicators. Among others health deprivation (physical and medical access, life expectancy), nutritional deprivation (anthropometry of children-wasting, stunting and underweight under 5 years old), education (illiteracy rate) and water (potable water deprivation) were employed in this study.

The concept of social deprivation displays its greatest illustrative power only when the dimensions are considered separately but it will also be attempted to report on some summary measure (HPI-1). Human Poverty Index-HPI is an important measure of welfare and living standards since deprivation indices are more accurate than income indicators often only measured over a brief period and are obviously not independent of income currently available. Deprivation indices also reflect different aspects of living standards, including personal, physical and mental conditions, local and environmental facilities, social activities and customs.

To in-depth the study poverty decomposition to selected socio-economic variables has been used. Because policy makers are interesting in comparison of poverty on such characteristics helps to understand the associated characteristics of poverty and policy actions towards its solution.

During analysis SMART, SPSS, STATA and EXELL soft wares were applied. To ensure the robust of the poverty line Stochastic Dominance was applied.

5.2 Findings Summary

The study involves a combination of income and non-income approaches. One of the background arguments for using such a combined poverty measure is its policy relevance need holistic approach of poverty eradication.

The report has shown the true extent of poverty of the Tabias by using up to date poverty measurement approaches; namely, Cost of Basic Need (CBN) approach and Foster Greer Thorbeck (FGT) were applied to accurately determine and define the degree of poverty in two local settings, by doing so results indicate that the absolute poverty line is Birr 1104.80 and over 53 percent of the population are deemed poor living under this poverty line. The absolute food poverty line, which determines the minimum food requirement, (2200 calorie per day per adult) is Birr 648.45 per adult per annum and an estimated 53 percent of the population is absolute food poor and can not meet this minimum daily food requirement. The inverse food share of the total and lower half of the households is 58 and 60.46 percent respectively, while the relative poverty line is Birr 922.82 based on this investigation almost 38 percent of the households are relative poor.

The annual per capita cost of eliminating absolute food and basic consumption poverty is 0.1438 (Birr93.25) and 0.1336 (Birr 86.63) respectively. However, mean income gap (Birr 172.73 and 278.6) respectively can better address the poverty deficit of food and basic consumption.

Alternative poverty lines are superior to design specific projects to specific people based on their scale of vulnerability. The moderate food poverty line utilized in Ethiopia is 2750 calorie per day per adult and its annual monetary value in this study is estimated Birr 810.57. An estimated 75.72 percent of the sample households are additionally living below moderate food poverty line at Birr 810.57. Similarly the study found that the moderate poverty line is Birr

1381.01 and 74.40 percent of the population is living below this poverty line. Respectively only 24.28 and 25.6 percent of the households are exceeding these poverty lines.

The lower food poverty (1650 calorie) costs Birr 486.35 and its corresponding basic consumption poverty line is Birr 828.62. Accordingly 27.04 and 24.15 percent of the population are respectively living beneath of these lower poverty lines. The poverty deficit (P1) for calories 2750 and 1650 is o.2467 and 0.0568 respectively, where as for their respective basic consumption poverty lines are 0.2340 and 0.0499.

The established average calorie intake among the lower half poor households sampled is 1470.20, while the average calorie intake of the total population is 2003.3 which are found to be 33.17 and 9 percent respectively below the recommended norm of 2200 calorie intake per day per adult. Shockingly 19.05 and 17.58 percent of the population are living below extreme basic consumption (Birr 738.31) and extreme food poverty lines (Birr 433.34) respectively.

The average household size is 5.12 while the average adult equivalent size is 4.25. Accordingly the mean annual basic consumption expenditure per capita and per adult equivalent is estimated Birr 1122.61 and 1348.24, while the mean food consumption per capita and per adult is respectively Birr 657.87 and 809.18. The mean income and the mean poverty gap of the adult poor are Birr 826.20 and 278.60 respectively.

Welfare situation indicators need to move beyond the bounds of income to social deprivations. Poverty is not simply about having a low income it is about multidimensional deprivation huger-under nutrition, dirty drinking water,

illiteracy, having no or weak access to health services. But poverty can be chronic when these factors come in combination.

Inadequate nutritional security is evident. The major donate to under weight; Stunting and severe stunting rates are alarmingly high at 48.1 and 29.3 percent respectively and over 31 percent of children are severely malnourished (either chronic or acute) pointing to socio-economic decline and deprivation caused over time. Over 44 percent are potable water deprived, about 34 percent are health access deprived, and even those with accessible are highly constrained by lack of qualified health personnel. Illiteracy affects 25.7 percent of the population and impedes the adoption of new technologies and innovations needed to raise people out of poverty. In general social deprivations contribution to Human Poverty Index (HPI-1) are: The decent standard of living constitutes the highest percentage (54.7), life expectancy is second constitutes 43.7 percent and the third is illiteracy rate 25.7 percent.

The HPI-1 for the Tabias is generally found to be unacceptable 44.50 percent of the population suffering from three or more forms of basic human need deprivations. This social deprivation index tells us explicitly where to target for its eradication.

The study attempts to map out poverty situations explicitly among the households of the two Tabias by characterizing in to different groups. The intent is to answer the question, who are the poor based on the calculation of absolute food and basic consumption poverty lines. Based on the findings recommendations will be draw to assist and inform policy makers designed to lift rural populations out of poverty.

5.4 Recommendations.

As most poverty literatures argue the causes and possible remedies of poverty are diverse and combating poverty requires multidimensional approach ranges from daily basic needs to broader aspects of economic, social and governance dimensions or from trickle down to bottom up, from state to market and from growth per set to socially balanced growth. Therefore, recommendations of this research are not considered as policy recommendations rather suggestions.

To design poverty reduction strategies, as a starting point aggregate poverty measures are needed. To do so it is necessary to go down to grass root levels, to obtain a statistically sound Poverty Index in a small geographical area, so that poverty pockets could be identified properly and target the poor more effectively. This will be extremely useful to planners and policy makers. So policy makers and donors could encourage such micro level research approach to obtain first hand inputs and enable evaluations to be grounded at the grass root level and reflect local conditions.

In order to apply timely and sufficient information about the poverty situation at grass root levels it is a necessary to establish a system aiming to monitor and evaluate frequently and order to provide reliable information used for planning policies of poverty eradication programs. This might be solved by establishing regional social development research and information institute providing periodic updates on progress and identifying key intervention areas of poverty reduction evolving over time.

Poor people's own perceptions of the causes and cures of poverty must be integrated in to the poverty assessment studies on which program and intervention designs are to be based. This ensures development planning coupled to quantitative analysis could be made more participatory and

responsive to local agendas and the extent to which such methods can contribute to pro-poor development. The initial for poverty reduction could be therefore centered and start with resources and assets at the hand of farmers have paramount importance for resource poor government.

The poverty reduction programs and strategies are absolutely paramount. In view of short and medium term that serves as an immediate poverty reduction packages timely measurement of changes in specific programs of poverty eradication is an important input to for effective policy making and immediate revising towards poverty reduction. So development actors need to advise policy makers on the on going process.

The combination of poor market access and poor transportation facilities coupled to the political disputes with Eritrea lowers the production prices received by the farmers. This might be the cause of zero economic returns to the household economy among the higher family size of the sample households. At least there is a need to improve the road and market networks to accelerate poverty reduction programs.

Though education is the key to development primary school enrolment or literacy alone might not be enough for poverty reduction requires extensive education and skill development as well as improvement of health for people whose knowledge and ability to improve their livelihoods would be enhanced. This requires strengthening of Tabia level integrated rural development training centers.

Considerable numbers of the households are living below the minimum set of living standard. This calls designing and intervene a sustainable income generating schemes in the study area.

Incidence of poverty on both food and basic consumption literate households are found to be relatively better living standard than their counterparts. The literate women headed households in particular have found to be less contribution to consumption poverty incidences. Girls' education might be far more effective towards poverty alleviation. Generally this study therefore suggests attaining a higher rate level.

As the study witnessed and from the perception of the people education is believed to be the core instrument as a means of escaping poverty. The regional government progress of school-building and promotion of primary enrolment are therefore widely appreciated, although there remains a huge amount to do in this sector. Effort would be made to continue the progress enrolment achieved at lower primary schools of the study area at least to the lower high schools.

The increase in households' size worsens the poverty status. This calls to design family size based income generating schemes.

This research used severe anthropometric failure that is children less than - 3 SD as major of long term chronic food deprivation. This study recommends food supplements targeting children's and mothers as well as regular growth monitoring and surveillance are important to success the reduction of child malnutrition. For the long run malnutrition indicator of long-term poor socioeconomic status of the population requires to ensure health and nutritional adequacy.

Water related gastro intestinal diseases mainly diarrhea is common in the study area ultimately accelerates malnutrition. Communities need to have access to safe water near to be located to where people live.

The inter link of arable land owners and agricultural extension package to poverty reduction is not as expected. This calls for public intervention to reduce the entire dependence on rain fed agriculture. Following specialization of family based diversification of packages as required might better capture the problems

associated with agricultural extension approaches. Agricultural research centers could emphasize to problems facing in semi arid areas.

Generally, poverty and deprivation in the area is wide spread. This requires holistic approach, but explicitly targeting the poor deals with the real problems faces by individual household. This needs where to aim at the root or the fruit?

Confronting these challenges and reducing poverty in the study area in addition to government efforts this paper calls the involvement of donors (NGO's) to remove such debilitating poverty in the study area.

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ANNEX 1 Questionnaire in Tigrina

ሽም ተመራማራይ: **ገብረሂወት መዝገቦ ደስታ ወልደኣብዝጊ**

ኣብ ብሄራዊ ክልላዊ መንግስቲ ትግራይ ኣብ ወረዳ ጉሎመኸዳ ካብዝርከባ ጣቢያታት ቅልዓትን ሓበንን መፅናዕቲ ማሕበራዊን ኢኮኖሚያዊን ስድራ ቤት ተኮር ዝተዳለወ መጠይቕ::

ርእሰ ምርምር: ቦኽራታት ድኽነትን ብርኪ በተኽነትን ብደረጃ ስድራ ቤት ኣብ ትግራይ

ኣብነታዊ መፅናዕቲ: ወረዳ ጉሎ መኸዳ

ዝያዳ መፅናዕቲ: ጣቢያታት ቅልዓትን ሓበንን

ዝተሳቀነ ምርምር: ንብረኪ ማስተር ኣፍ ኣርትስ

ሽም ላዕለዋይ ትካል ትምህርቲ: ዩኒቨርሲቲ ኣዲስ ኣበባ/ትካል ምዕባለን ምርምርን

ዝያዳ ኽእለት: መነባብሮ ህዝብታት ገጠርን ምዕባለን

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ሕዳር 1999 ዓ.ም.
ኣዲስ ኣበባ

መሰረታዊ መረዳእታ ማሕበረ ኢኮኖሚያዊ መፅናዕት

ክፍሊ 1 - ማሕበረ ቤተሰባዊ ኩነታት ስድራ\

ተራ ቁፅሪ	ዝርዝር ሽም ኣባላት ስድራ	ዖታ	ዕድመ		ክነታት ሓዳር	ኩነታት ትምህርቲ	
	ዝርዝር ሽም ኣባላት ስድራ ቤት ካብ ተባዕታይ መራሒ ስድራ ብምጅማር ቀሊሉ ኣንስተይቲ መራሒት ስድራ (ትሕቲ 60 ኣዋርሐ ዕድመ ዘለዎም ህፃውንቲ እንተልዮም ኣብቲ ተራ ቀፅሮም ይከበቡሎም)	ዖታ ተጠቃሲ 1. ተባዕታይ 2.ኣንስተይቲ	ዕድመ ተጠቃሲ 5 ዓመትን ንላዕለን እነተኽይኑብዓመት ይጠቀስ	ዕድመ ሽም ተጠቃሲ ትሕቲ 5ተ ዓመት እነተኽይኑ ብኣዋርሕ ይጠቀስ	ክነታት ሓዳር እንታይ ይመስል? (እዚ ሕቶ ዕድሚኣም 10ን ልዕሊኡን ንዘለዉ ኣባላት ስድራ ቤት ጥራይ ዝሕተት ይኽውን ትሕቲ 9 ዓመት ንዘለዉ ኮድ 9 ይምላእ?	ምንባብን ምፅሓፍን ይኽእልዶ? 0=ኣይኽእልን 1=እወ	ልዕል ዝበሊ ደረጃ ዘጠናቀቀ
(101)	(102)	(103)	(104)	(105)	(106)	(107)	(108)
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							

ዕድመ

5ተን ልዕለኡን ዕድመ ንዘለዎ ኣብ 104 ብዓመት ይምላእ 105 ድማ ይዘለል:: ትሕቲ 5ተ ዓመት እነተኽይኑ ኣብ 106 ብኣዋርሕ ይምላእ 104 ድማ ይዘለል::

ክነታት ሓዳር

1 ሓዳር ዘለዎ
2 ሓዳር ዘይገበረ
3 ዝተፋተሐ
4 ሰበይቱ/ሰብኣየ ዝሞተቶ/ታ
5 ተፋላሊዮም ዝነብሩ
6 ካሊእ (ይጠቐስ)
9 መልሲ የለን /ክሕተት ዘይብሉ

ደረጃ ትምህርቲ

- ላዕለዋይ ክፍሊ ጠናቒቑ ብቁፅሪ ይጠቐስ
- 20 ባህላዊ ወይ ድማ ሃይማኖታዊ ትምህርቲ ዝተምሃረ/ዘጠናቐቐ
- 00 ምንም ዓይነት ትምህርቲ ኣይተምሃረን

ክፍሊ 2 ማሕበረ-ቁጠባ ስድራ ቤት

ፍልፍልን መዓልታዊ መጠን ዝስተ ማይ ስድራ ቤት
(ናይ እንስሳ ኣይሓውስን)

ፍልፍል ዝስተ ማይ			ፅሩይ ማይ ዝርከቡሉ ርሕቐት		እዋን	ኮድ መትሓዚ ማይ	በዝሒ መትሓዚ ማይ በቁፅሪ
ማይ ዝረኽብሉ ብዝህብዎ ረብሓ ብቅደም ሰዓብ ይፃሓፍ	ዝኋዓዘሉ ግዜ ንሓደ ግዘ		ዝኋዓዘሉ ግዜ ንሓደ ግዜ				
	ስዓት	ደቂቓ	ስዓት	ደቂቓ			
(201)	(202)	(203)	(204)	(205)	(206)	(207)	(208)
					ትማሊ		
					እዋን ክረምቲ		
					እዋን ሓጋይ		

ፍልፍል ዝስተ ማይ

1. ካብ ኣብ ገዛ/መረባ ዝርከብ ዘይተኸደነ ማይ ጉድጊድ
2. ካብ ኣብ ገዛ/መረባ ዝርከብ ዝተኸደነ ማይ ጉድጊድ
3. ካብ ናይ ህዝቢ ዘይተኸደነ ጉድጊድ ማይ
4. ካብ ናይ ህዝቢ ዝተኸደነ ጉድጊድ ማይ
5. ፅሬቱ ዝተሓለወ ፍልፍል
6. ፅሬቱ ዘይተሓለወ ፍልፍል
7. ሆረየ / ራህያ
8. ሩባ
9. ካሊእ (ይጠቀስ)

ኮድ መትሓዚ ማይ

1. ጀሪካን/ዕትሮ 30 ሊትሮ
2. ጀሪካን/ዕትሮ 20 ሊተሮ
3. ጀሪካን/ዕትሮ 15 ሊትሮ
4. ጀሪካን/ ዕትሮ 10 ሊትሮ
5. ጀሪካ/ዕትሮ 5 ሊትሮ
6. ካልእ /ይገለፅ/

ክፍሊ 3 ክብደት ቁመትን ቆልዑ ትሕቲ 5 ዓመት
(6 - 60 ኣዋርሕ)

ታ/ቑ	ሽም ህፃን	ፆታ	ዕድመ	ቁመት	ክብደት
	301	302	303	304	305
		1.ተባዕታይ 2.ኣንስተይቲ	ብኣዋርሕ	ሳ.ሜ	ኪሎግራም
1		☐	☐☐	☐☐☐☐	☐☐ ☐
2		☐	☐☐	☐☐☐☐	☐☐ ☐
3		☐	☐☐	☐☐☐☐	☐☐ ☐

መዘኻኸሪ:- ቆልዑት ዕድሚኦም ትሕቲ 24 ኣዋርሕ ቁመቶም ደቂሶም ይልክዑ ልዕሊ 24 ኣዋርሕ ድማ ደው (ጠጠው) ኢሎም ይልክዑ::

ክፍሊ 4 ትሕዝቶ መሬት

401	ዝሕረስ መሬት ኣለኩም ’ዶ?	0 የብልናን 1 እወ ኣለና ☐
402	ክንደይ ፅምዲ መሬት ኣለኩም?	ሄክታር ዝናብ ሕርሻ ☐ ሄክታር መስኖ ሕርሻ ☐
403	ኣብ ሕርሻ ኤክስቴንሽን /ምግቢ ውሕስና ዝተሓቕፍኩም ዲኹም?	0 ኣይኮንኩን ☐ 1. እወ ☐
404	ካብ ሕርሻኹም ትረኽብዎ ምሕርቲ ንምግቢ ዓመት ይኣኽለኩም ዶ?	0 ኣያእክልን ☐ 1. እወ ያኣክል ☐
405	ዘጋጥመኩም ፀገም ምግቢ ብምንታይ ትመልእዎ፣	1. ካብ ኣዝማድ 2. ካብ ብምግቢ ንስራሕ 3. ካብ ሓገዝ /ርዳእታ/ 4. ካብ ዕለታዊ ሸቕሊ 5. ካብ ስደት 6. ካብ ልቓሕ 7. ካብ መሸጣ እንስሳት 8. ካልእ ይትሓበር

ክፍሊ 5 ኣብ 1998 ኣብ መነባብሮ ሕብረተሰብ (ስድራ) ዝተኸፍሉ ዝተገዝኡ ወፃእታት

5.1 ኣብ ሕርሻ ናውቲ ዝተገበረ ወፃኢታት (1998 ዓ.ም.)

ዓይነት	መለክዒ (500)	ዓቕን (በዝሒ) (501)	ባዕሎም ዘፍረይም /ዘጥረይም/ (502)	ዝሸመትም (ዝዓደግም) (503)	ዋጋ ሓደ (ብነፀላ) (504)	ዋጋ ናይ ባዕሎም ፍርያት (505)	ዋጋ ዝተሸመተ (506)	ጠቕላላ ዋጋ /507/
1. ዘራእቲ								
ጣፍ ዘርኢ	ኪ ግራም							
ስርናይ ዘርኢ	ኪ ግራም							
ዒልቦ ዘርኢ	ኪ ግራም							
ስገም ዘርኢ	ኪ ግራም							
መሸላ ዘርኢ	ኪ ግራም							
ብርሸን ዘርኢ	ኪ ግራም							
ዳጉሻ ዘርኢ	ኪ ግራም							
ለይቃ ዘርኢ	ኪ ግራም							
ዓልቂይ ዘርኢ	ኪ ግራም							
ዓይኒዓተር (ዓተር ሸዋ) ዘርኢ	ኪ ግራም							
ሽምብራ ዘርኢ	ኪ ግራም							
እንጣጢዕ ዘርኢ	ኪ ግራም							
ካልኦት ዘራእቲ ይገለፁ	ኪ ግራም							
2. ኣሕምልቲ								
ኮሚደረ (ዘርኢ፣ፈልሲ)	ኪግ/ቁፅሪ							
በርበረ (ዘርኢ፣ፈልሲ)	ኪግ/ቁፅሪ							
ድንሽ (ዘርኢ፣ ፈልሲ)	ኪግ/ቁፅሪ							
ሽጉርቲ (ዘርኢ፣ ፈልሲ)	ኪግ/ቁፅሪ							
ቐስጣ /ዘርኢ ፣ፈልሲ/	ኪግ/ቁፅሪ							
ስላጣ /ዘርኢ ፣ፈልሲ/	ኪግ/ቁፅሪ							
ካውሎ /ዘርኢ / ፈልሲ/	ኪግ/ቁፅሪ							
ካልኦት ዘርኢ ኣሕምልቲ	ኪግ/ቁፅሪ							
3. ፍራምሬ	ኪግ/ቁፅሪ							
ኣራንሺ /ዘርኢ፣ ፈልሲ/	ኪግ/ቁፅሪ							
ለሚን /ዘርኢ፣ ፈልሲ/	ኪግ/ቁፅሪ							
ባናና /ዘርኢ ፣ ፈልሲ/	ኪግ/ቁፅሪ							
ፓፓየ /ዘርኢ ፣ ፈልሲ/	ኪግ/ቁፅሪ							
ዘይቱሁና /ዘርኢ፣ፈልሲ/	ኪግ/ቁፅሪ							
ካልኦት ተኽሊታት ይገለፁ	ኪግ/ቁፅሪ							
4. ናውቲ ሕርሻ								
ባዕዳ መዳበሪያ (ዩርያ)	ኪ ግራም							
ፀሊም መዳበሪያ (ዳፕ)	ኪ ግራም							
ንፀረ ባልዕ	ሌትሮ							
ንፀረ ፃህያይ	ሌትሮ							
ንመሳርሒ ሕርሻ								
ንቐለብ ክፍቲ	ብያር							
ንመድሓኒት ክፍቲ								
ዝተገዝኡ እንስሳ	ብቁፅሪ							
ንኽራይ ብዕራይን ሰብን								
ካልእ ወፃኢ ይገለፅ								

መዘኻኸሪ፣

መለክዒ: ኪሎ ግራም = 1
ሊትሮ = 2
ቁፅሪ = 3
ብያር = 4
ካልእ = 5

5.2 ኣብ በላይን ተወደኣይን ከምኡውን ኣብ ቋሚ ኣቑሑት ዝተገብረ ወፃኢ

ንብረት (ኣቕሓ)	መለክዒ (508)	ንሶሙን ንወርሒ ንወቕቲ ንዓመት (509)	በዝሒ (ዓቕን)		ዋጋ ብቕርሺ		ናይ ሓደ ዋጋ /514/	ጠቕላላ ዋጋ (515)
			ባዕሎም ዘፍረይዎ (ዘጥረይዎ) 1998 (510)	ዝሸመትዎ (ዝዓደግዎ) ወይከዓ ካብ ዝሸነ ፍልፍል ተረኽበ 1998 (511)	ናይ ባዕሎም ፍርያት 1998 (512)	ዝሸመትዎ (ዝዓደግዎ) ወይከዓ ካብ ዝሸነ ፍልፍል ተረኽበ 1998 (513)		
ጣፍ ንቕለብ	ኪ ግራም	ንዓመት						
ስርናይ ንቕለብ	ኪ ግራም	ንዓመት						
ስገም ንቕለብ	ኪ ግራም	ንዓመት						
ዒልቦ ንቕለብ	ኪ ግራም	ንዓመት						
መሸላ ንቕለብ	ኪ ግራም	ንዓመት						
ዳጉሻ ንቕለብ	ኪ ግራም	ንዓመት						
ለይቋ ንቕለብ	ኪ ግራም	ንዓመት						
ዓልቋይ ንቕለብ	ኪ ግራም	ንዓመት						
ሽምብራ ንቕለብ	ኪ ግራም	ንዓመት						
ዓይኒዓተር (ዓተር ሸዋ)	ኪ ግራም	ንዓመት						
ኣዳጉራ ንቕለብ	ኪ ግራም	ንዓመት						
ሰበረ ንቕለብ	ኪ ግራም	ንዓመት						
ብርሸን ንቕለብ	ኪ ግራም	ንዓመት						
እንጣጢዕ ንቕለብ	ኪ ግራም	ንዓመት						
ካልእ ዘራእቲ ይገለፁ	ኪ ግራም	ንዓመት						
በርበረ ንቕለብ	ኪ ግራም	ብወርሒ						
ካሮት ንቕለብ	ኪ ግራም	ንወርሒ						
ካውሎ ንቕለብ	ኪ ግራም	ንወርሒ						
ሰላጣ ንቕለብ	ኪ ግራም	ንወርሒ						
ኮሚደረ ንቕለብ	ኪ ግራም	ንወርሒ						
ድንሽ ንቕለብ	ኪ ግራም	ንወርሒ						
ሽጉርቲ ንቕለብ	ኪ ግራም	ንወርሒ						
ካልኦት ኣሕምልቲ ይገለፁ	ኪ ግራም	ንወርሒ						
ስጋ /ጉዚ፣ቅርጫ ንቕለብ	ኪ ግራም	ንዓመት						
በጊዕ ንቕለብ	ኪ ግራም	ንዓመት						
ጤል ንቕለብ	ኪ ግራም	ንዓመት						
ዶርሆ ንቕለብ	ኪ ግራም	ንዓመት						
እንቁቁሐ ንቕለብ	ኪ ግራም	ብወርሒ						
ፀባ (ሩግኡ፣ ኣጅቦ)	ኪ ግራም	ብማዓል						
ጠስሚ ንቕለብ	ኪ ግራም	ብወርሒ						
ማዓር	ኪ ግራም	ንዓመት						
ሽኮር ንቕለብ	ኪ ግራም	ብወርሒ						
ዘይቲ ብልዒ ንቕለብ	ኪ ግራም	ብወርሒ						
ጨው ንቕለብ	ኪ ግራም	ብወርሒ						
ቡን ንቕለብ	ኪ ግራም	ብወርሒ						
ዕሹግ መስተ ዝተሓንሸሸ		ብወርሒ						
ስዋ ዝተሓንሸሸ		ብወርሒ						
ኣልኮል ዝተሓንሸሸ		ብወርሒ						

ንብረት (ኣቐሓ)	መለክዒ (508)	ንሶሙን ንወርሒ ንወቐቲ ንዓመት (509)	በዝሒ (ዓቐን)		ዋጋ ብቐርሺ		ናይ ሓደ ዋጋ (514)	ጠቕላላ ዋጋ (515)
			ባዕሉም ዘፍረይዎ (ዘጥረይዎ) 1998 (510)	ዝሸመትዎ (ዝዓደግዎ) ወይከዓ ካብ ዝኾነ ፍልፍል ተረኽበ 1998 (511)	ናይ ባዕሉም ፍርያት 1998 (512)	ዝሸመትዎ (ዝዓደግዎ) ወይከዓ ካብ ዝኾነ ፍልፍል ተረኽበ 1998 (513)		
ቐብኣት ጨጉሪ		ንወርሒ						
ንኽዳውንቲ		ብዓመተ						
ንጫማ (ሳእኒ)		ብዓመተ						
ኾቦርታን ኣንሶላን		ብዓመት						
ንፅላል	ብቁፅሪ	ብዓመት						
ሳሙና (ኦሞ)		ብወርሒ						
ላምባ ቡታጋዝ	ብሊትሮ	ብወርሒ						
ዕንፀይቲ	ብያር	ብወርሒ						
ፈሓም	ብኩንታል	ብወርሒ						
ባትሪ	ብቁፅሪ	ብወርሒ						
ራድዮ	ብቁፅሪ	ብዓምተ						
ስዓት	ብቁፅሪ	ብዓመት						
ንመጋየፂ /ወርቂ፣ብሩር/	ብግራም	ብዓመት						
ንዚንጎ (ቆርቆሮ)	ብቁፅሪ	ብዓመት						
ንመሳርሒ ህንፃ		ብዓመት						
ናይገዛ ኣቁሑ		ብዓመት						
ንመንግዝያን ኣብ ጉዕዞ		ብዓመት						
ንመራኸቢ ኣብነት ስልኪ		ብዓመት						
ክፍሊት ቤት ት/ቲ		ብዓመት						
ክፍሊት መፃሕፍቲ		ብዓመት						
መሳርሒ ፅሕፈት ደፍተር		ብዓመት						
ንድቪዛ		ብዓመት						
ንሕክምና		ብዓመት						
ንግብሪ መሬት		ብዓመት						
ንልምዓት ዓዲ		ብዓመት						
ንመርዓ		ብዓመት						
ንቤተክርስቲያን		ብዓመት						
ንማሕበር		ብዓመት						
ንተስካር		ብዓመት						
ንህያብ ንኣዝማድ ጎረቤት		ብዓመት						
ንመንደቐ ገዛ		ብዓመት						
ንቐፅዓት		ብዓመት						
ንካልኦ ይተሓበር		ብዓመት						

መዚኻኸሪ፣

ዓቐን፡ ጥማር፣ ሕድሕድ

ኒ፡ ሰሙን፣ ወርሒ፣ ዓመት

መለክዒ፡ ኪሎ ግራም፣ ኩርምራም፣ ነፀላ

ጥሙር ወፃኢ (ዋጋ)፡ ናይ ባዕሉም ፍርያትን ዝሸመትዎ ወይከዓ ዝረኽብዎን ጥማር እዩ 512 ተ 513

5.3 ስድራቤት ፍልፍል እቶት

1. ኩነታት መነባብሮኺ እንታይ እዩ ኢልካ ትግምት?
ኮድ 1 = ሃብታም, 2 = ማእኸላይ, 3 = ድኻ, 4 = ካልእ ይገለፅ
2. በይዞኦም እቶቶምን ፍልፍል እቶቶምን ዶ ክንፁሩልና?

ተ.ቁ	ፍልፍል እቶት	ካብ 1998		
		መለክዒ	በዝሒ	ዋጋኡ ብቕርሺ
	ካብ ሕርሻ			
1	ካብ ሕርሻ ግራት			
2	ካብ ከፍቲ			
3	ካብ ኣትኽልቲን ፍራምረን			
4	ካብ ደርሁ			
5	ካብ ጠለ በጊዕ			
6	ካብ ኣድጊ ምፅዓኛ			
7	ካብ ንህቢን ማዓርን			
8	ካብ ቃላሚንጦስ			
9	ካብ ሳዕሪ ድርቂ ሓሰር			
10	ካልእ ይታሓበር			
	ካብ ስራሕ			
11	ምግቢ ንስራሕ			
12	ቕርሺ ንስራሕ			
13	ጉልበት ስራሕ			
14	ብዕራይ ክራይ			
15	ካልእ ይተሓበር			
	ካብ ምትሕግጋዝ			
16	ካብ ስደት			
17	ተቓራጭ			
18	ርዳእታ ምግቢ			
19	ካብ መንግስቲ ጥሮታ፣ ካሕሳ			
20	ካልእ ይጠቕስ			
	ካብ ዓርሰ ሽቕሊ			
21	መሸጣ ዕንፀይቲ			
22	መሸጣ ኢድ ስራሕቲ			
23	መሸጣ መስተ			
24	ሸቕጣመቕጥ			
25	ገጠር ሹቕ			
26	መሸጣ እምኒ			
27	መሸጣ ሑፃ			
28	ካብ ልቓሕ			
	ካብ ልቓሕ			
29	ካልእ ይታሓበር			

ክፍሊ 6 ኩነታት ጥዕና ስድራ ቤት ዝምልከት

601	ኣብ ዝሓለፈ ዓመት 1998 ዓ.ም. ዝሓመመ ኣባል ስድራ ነይሩዶ ? እነተዘይነይሩ ናብ 604 ስገር	0. ኣይነበረን 1. ዝሓመመ ነይሩና 9. መልስ የብሉን/ኣይፈልጥን ☐

እወ ዝሓመመ ነይሩና እነተኾይኑ ቀሚሉ ኣብ ዘሎ ሰደቓ ናብ ሕክምና ምኻዱን ኣብ ዝሓለፈ ዓመት 1998 ዓ.ም. ብዝሒ ዝኸደሉ ግዜን እቲ ሕማም እንታይ ምኻኑን ናይቲ ሕማም መንቀሊ እንታይ ምኻኑን ይመዝገብ

ሕቶ 601 እወ እነተኾይኑ ኢቲ ሕሙም ታሓከመሉ ዓይነት ናይቲ ጥዕና ትካል ይነፀር	ሕቶ 601 ኣይኸደን እነተኾይኑንምንታይ?
(602)	(603)

ዝኸደሉ ዓይነት ትካል

00 ምንም የለን
01 ሆስፒታል
02 ጥዒና ጣብያ
03 ናይ ግሊ ክሊኒክ
04 ናይ ህዝቢ ክሊኒክ
05 ጥዒና ኬላ
06 ናይ ቀዊት ፋና ጥዒና/መፍረይ ሓኪም)
07 ዝሰልጠነት መዋልዳ
08 ፋርማሲ (ቤት መድሓኒት)
09 ካልእ ዝሰልጠነ ጥዕና በዓል ሞያ (ይጠቀስ)
10 ዘይሰልጠነት መዋልዳ
11 ዝተረጋገፀሉ ባህላዊ ህክምና
12 ዘይተረጋገፀሉ ባህላዊ ህክምና
13 ሹቅ / ዕደጋ
14 ማይ ፀሎት
15 ካልእ ትካል ባህላዊ ሕክምና(ይጠቀስ)

ምኽንያት ሕክምና ዘይምጥቃም

1 ስለዝሞተ
2 እቲ ጥዕና ግልጋሎት ዝረከበሉ ርሑቅ ስለዝኾነ
3 ክባር ስለዝኾነ
4 ብቁዕ ሞያተኛ ስለዘይየለ
5 እቲ ሞያተኛ ብዕቡቅ ስለዘይቀባበል
6 ካሊእ
7 ኣይፈልጥን

604	ኣብ ስድራኹም ፀገም ጥዕና እንተጓጉፍ ናበይ ትኸዱ? ኩሎም ዝጥቀሙሎም ዓይነት ትካላት ይከበብ	00 ምንም የለን 01 ሆስፒታል 02 ጥዒና ጣብያ 03 ናይ ግሊ ክሊኒክ 04 ናይ ህዝቢ ክሊኒክ 05 ጥዒና ኬላ 06 ናይ ቀዊት ፋና ጥዒና/መፍረይ ሓኪም) 07 ዝሰልጠነት መዋልዳ 08 ፋርማሲ (ቤት መድሓኒት) 09 ካልእ ዝሰልጠነ ጥዕና በዓል ሞያ (ይጠቀስ) 10 ዘይሰልጠነት መዋልዳ 11 ዝተረጋገፀሉ ባህላዊ ህክምና 12 ዘይተረጋገፀሉ ባህላዊ ህክምና 13 ሹቅ / ዕደጋ 14 ማይ ፀሎት 15 ካልእ ትካል ባህላዊ ሕክምና(ይጠቀስ)
605	ርሕቀት ጥዕና ትካላት ካብ ዝኾኹም (ብእግሪ ብምኻድ) ንሓደ ጉዕዞ ጥራይ	ስዓት / ደቂቃ / ኪሎ ሜትር 01 ሆስፒታል 01 ☐ ☐ ☐ 02 ጥዒና ጣብያ 02 ☐ ☐ ☐ 03 ክሊኒክ 03 ☐ ☐ ☐ 04 ጥዕና ኬላ 04 ☐ ☐ ☐
606	ኣብ 1998 ዓ.ም. ካብ ዝሓመሙ ይኹን ዘይሓመሙ ሰባት ዘጋጠመ ናይ ሞት ሓደጋ ኣሎ ዶ? የለን?	1 እወ 2 ኣይፋሉ
607	ሕቶ 606 እወ እንተኾይኑ	ዕድመ / ዓታ ተባ ኣን ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

608	ንስድራኹም መብዛሕቲኡ ጊዜ ዘጉንፍ ዓይነት ሕማም እንታይ እዩ? ኩሉ ዝተወሃበ መ ልሲ ይህበሉ	1. ረስኒ 2. ሕማም መሳናጡ (ተቅማጥ/ውዕአት) 3. ናይ ምስትንፋስ ረኽሲ 4. ዓሶ 5. ሕማም ዓባይ ሰዓል 6. ክፉእ ጉድኣት/ቀዪሲ 7. ናይ ዓይኒ ሕማም 8. ንፍዮ 9. ሰዓል 10. ካሊእ ይጠቀስ

ANNEX 2 Questionnaire in English

MODULE 1: SOCIO DEMOGRAPHY OF THE HOUSEHOLD INFORMATION ON ALL THE PEOPLE

LINE #	PERSON'S NAME	SEX	ÂGE		STATUS	EDUCATION	
	Name of the people that are part of the family, even if they live elsewhere, starting with the head of household; and next, the female head (Circle line # of all children < 60 mo)	Sex of <NAME> 1=Male 2=Female	Age of <NAME> in years if ≥ 5 years	Age of <NAME> in months if < 5 years	What is the civil status of <NAME> (ask only of hh member who is ≥ 9 years; if hh member is <9 years, code 9 (NA).	Literate 0=No; 1=Yes	Highest grade level completed
(101)	(102)	(104)	(105)	(106)	(107)	(108)	(109)
01	Male household head						
02	Female household head						
03							
04							
05							
06							
07							
08							
09							
10							

THAT LIVE WITH IN THIS HOUSEHOLD

Age

If ≥ 5 years, enter Age in years in column 105 and nothing in column 106. If < 5 years, enter Age in months in column 107 and nothing in column 106.

Civil status

1. Married
2. Single
3. Divorced
4. Widowed
5. Separated
6. Other(specify)
9. No answer/not applicable

Education

Enter # for highest grade completed or

20. If only traditional or religious schooling completed

or

00. If no schooling completed (neither formal nor traditional/religious schooling)

MODULE 2: HOUSEHOLD SOCIO-ECONOMY

(Note: In the Tables below, Potable water refers to water used for drinking, cooking and cleaning etc. (Excluding water for livestock)

Sources of potable water for the household

Source of drinking water			Distance to potable water	
Source (in order of importance)	Travel time, one way		Travel time, one way	
	Hours	Minutes	Hours	Minutes
(201)	(202)	(203)	(204)	(205)

Daily consumption by HH (not animals)

Time of the year	Container code	Number of containers
(206)	(207)	(208)
Yesterday		
Rainy season		
Dry season		

Source code:

1. Open home/yard well
2. Protected home/yard well
3. Public/ open well
4. Public/protected well
5. Protected spring water
6. Non protected spring water
7. River
8. pond
9. Other specify

Container code:

1. Jar/Jerrican (30 ltrs)
2. Jar/Jerrican (20 ltrs)
3. Jar/Jerrican (15 ltrs)
4. Jar/Jerrican (10 ltrs)
5. Jar/Jerican (5 ltrs)
6. Others specify

MODULE 3: ANTHROPOMETRY: HEIGHT AND WEIGHT MEASUREMENTS (6-60 MONTHS)

SN	Child name	Sex	Age	Height	Weight
	301	302	303	304	305
		1.Male 2.Female	Months	Centimeter	Kilogram
1		☐	☐☐	☐☐☐☐	☐☐ ☐
2		☐	☐☐	☐☐☐☐	☐☐ ☐
3		☐	☐☐	☐☐☐☐	☐☐ ☐

NOTE: MEASURE ALL CHILDREN < 24 MONTHS LYING DOWN & MEASURE ALL CHILDREN ≥ 24 MONTHS STANDING.

MODULE 4 LAND HOLDING AND FOOD GAP

401	DO you have arable land	0 No 1 Yes ☐
402	Land size in Tsmdi	Rain fed Agri. (ha) ☐ Irrigable Agri.(ha) ☐
403	"Are you beneficiary of Agricultural extension package/food security package ?	0 "No ☐ 1. Yes ☐
404	Is the annual agricultural production enough for your annual household food requirement?	0 "No ☐ 1. Yes ☐
405	What are the coping strategies you use when there is food gap/deficit is occurring in your household?	1. From reletives 2. From food for work 3. From food aid 4. Self employment 5. Migration 6. loan/credit 7. From livestock sale 8. Others (specify)

MODULE 5 HOUSEHOLD EXPENDITURE

5.1 Expenditure on farm inputs/investment (1998 E.C)

Item	Unit (500)	Quantity (501)	Own Prod. (502)	Purchased (503)	Price Per Unit (504)	Value of Own Production (505)	Value of Purchased (506)	Total Value (507)
1. Grain (Seed)								
Teff								
Wheat								
Maize								
Barley								
Sorghum								
Lentil								
Millet								
Finger millet								
Bean								
Pea								
Chick Pea								
Linseed								
Others, specify								
2. Vegetables								
Tomato								
Pepper (seed)								
Potato (Seed)								
Onion								
Swiss chard								
Lettuce								
Cabbage								
Others, specify								
3. Fruits								
Orange								
Lemon								
Banana								
Papaya								
Guava								
Others, specify								
4. Farm inputs								
Fertilizer, UREA								
Fertilizer, DAP								
Herbicide								
Pesticide								
Tools/Equipment								
Animal feed								
Animal Medicine								
Animals bought								
Ox rent and labour cost								
Others, specify								

Code Unit: Kg = 1, Litter = 2, Number = 3, Bale = 4 Others =5.

5.2 Household Consumption Expenditures (1998 E.C.)

Commodity	Quantity (508)	Per Week/Month Season/Year (509)	Quantity		Total value		Unit Value (514)	Total Expenditure (515)
			Own Prod. (510)	Purchased (511)	Value of Own Production (512)	Value of Purchased (513)		
Teff								
Wheat								
Barley								
Maize								
Sorghum								
Millet								
Finger millet								
Bean								
Chick Pea								
Field Pea								
Harricot bean								
Lathyrus								
Lentil								
Linseed								
Others, specify								
Pepper								
Carrot								
Cabbage								
Letus/Selata								
Tomato								
Potato								
Onion								
Other, specify								
Beef								
Sheep meat								
Goat meat								
Chicken								
Eggs								
Milk/Yoghurt								
Butter								
Honey								
Sugar								
Edible oil								
Salt								
Coffee								
Cold beverages								
Local beer (Suwa)								
Alcohol								

Commodity	Quantity (508)	Per Week/Month Season/Year (509)	Quantity		Total value		Unit Value (514)	Total Expenditure (515)
			Own Prod. (510)	Purchased (511)	Value of Own Production (512)	Value of Purchased (513)		
Hair food								
Clothing								
Foot wear								
Blanket/bed sheet								
Umbrella								
Soap/Washing								
Lamp oil/Kerosene								
Fuel wood								
Charcoal								
Batteries								
Radio								
Watch								
Decorations/Gold,								
Corrugated iron								
Construction								
House Furniture								
Travel expense								
Communication								
School fee								
School Books Fee								
Stationary								
School Uniform								
Medical Expense								
Land tax								
Community								
Marrage expense								
Chrch Contribution								
Social								
Teskar'								
Gift to Relatives								
Massonary Fee								
Penalities								
Others, specify								

Code: **Quantity:** Number of Units
Per: Week, month, season, year, etc
Unit: Kg, pieces, Sheets, etc.

5.3 Households Income Source

1. What do you think about your status of living?

Code: 1= Rich 2= Medium 3= Poor

2. Can you please list your source and amount of income in last year (1998 E.C)

Ser. No.	Source of income	1998 E.C		
1	**Agriculture**	**Unit**	**Quantity**	**Cash value**
1.1	Beles/Cactus			
1.2	Crop farm			
1.3	Cattle			
1.4	Vegetable and Fruit			
1.5	Poultry			
1.6	Shoats/Small ruminant			
1.7	Equines			
1.8	Apiary			
1.9	Eucalyptus			
1.10	Hay			
1.11	Rent out land			
1.12	Others specify			
2	**Temporary employment**			
2.1	Food for work			
2.2	Cash for work			
2.3	Hire out labour			
2.4	Hiring out oxen			
2.5	Others specify			
3	**Transfer**			
3.1	Migrant income			
3.2	Remittance			
3.3	Food aid (disabled)			
3.4	Government transfer			
3.5	Assistance from relatives			
3.6	Others specify			
4	**Self employment**			
4.1	Sale of fire wood			
4.2	Sale of handicraft			
4.3	Sale of beverages			
4.4	Petty trade			
4.5	Village shop			
4.6	Stone mining			
4.7	Sand mining			
4.8	Grain mill			
4.9	Others specify			
5	From credit service			

Socio Economy Survey

Module 6. Health Status of the Household

601	Has any member of the household been seriously ill in the last 12 months 1998 E.C.	0 = No 1 = Yes 9 = NA/DK

If yes use the table below to list the sick person(s) whether the person(s) visited a health facility, the number of visits the person in the last 12 months 1998 E.C.

If yes Q601 type of facility conducted see next page for code	If no for Q601Why?
(602)	(603)

Type of facility/person consulted

01. None
02. Hospital
03. Health Center
04. Private health clinic
05. Public health station
06. Health post
07. Health agent
08. TTBA
09. Pharmacy
10. Other trained medical staff
11. TBA (untrained)
12. Traditional practitioner (certified)
13. Traditional practitioner (uncertified)
14. Shops/market
15. Holly water/church
16. Other traditional facilities
17. Not known

Reasons for not using health facilities

1. The person died
2. The facility too far
3. Too cost/too high
4. unreliability of the health worker
5. Others
6. D/K

604	If health problems are occurred in your family where did you go list/circle all choices	00: None 01: Hospital 02: Health centre 03: Private clinic 04: Public Health 05: Health post 06: Health agent 07: TTBA	08: Pharmacy 09: Other trained medical staff 10: TBA (Untrained) 11: Traditional (Certified) 12: Traditional (Uncertified) 13: Shops market 14: Holy water/church 15: Other traditional facility

605	Distance of the health centre from your residence		hours	minute	KM
		01 Hospital	01		
		02 Health center	02		
		03 Nucleus/clinic	03		
		04 Health post	04		

606	Was there any death accident in your household: natural /ill health problem/accident	1 Yes 2 No

607	If your answer is yes for Q 606 then	Age ☐ sex: Male ☐ Female ☐
608	What is the most preventing diseases in your households Circle all answers	01: Fever 02: Gastro intestinal 03: Respiratory infection 04: Malaria 05: TB 06: Serious hurt/injure 07: Eye disease 08: Measles 09: Coughing 10: Others

ANNEX 3 Adult Equivalence Scales

Years of age	Men	Women
0-1	0.33	0.33
1-2	0.46	0.46
2-3	0.54	0.54
3-5	0.62	0.62
5-7	0.74	0.70
7-10	0.84	0.72
10-12	0.88	0.78
12-14	0.96	0.84
14 -16	1.06	0.86
16-18	1.14	0.86
18-30	1.04	0.80
30-60	1.00	0.82
60 plus	0.84	0.74

Source: Adopted from Tassew and Tekie (2002).

ANNEX 4 Tropical livestock units (TLU) conversion factors

Species	TLU conversion factor
Cattle	0.70
Sheep/goats	0.10
Chickens	0.01

http://www.fao.org/Wairdocs/ILRI/x5443E/x5443e04.htm

Source: FAO, 1987[a] - FAO, 1986[b].

- The tropical livestock unit is commonly taken to be an animal of 250 kg live weight.
- Carcass weight varies in literature from 55 to 60%; the average of it is used.
- Weight of one local egg with out shell is taken to be 0.32 gram.

ANNEX 5 Food composition and calorie content per 1000 gram of food.

Food items	Calorie content
Cereal crops	
Barley	3390
Maize	3600
Wheat	3480
Sorghum	3530
Finger millet	3650
Millet	3650
Taff	3450
Legumes crops	
Bean	3390
Pea	3400
Chick pea	3400
Haricot bean	3390
Lathyrus	3390
Lentil	3390
Linseed	3820
Vegetables	
Leaves, dark green	480
Leaves, medium green	280
Leaves, light green	230
Onions	480
Tomatoes	200
Roots and tubers	
Irish potato	750
Sugars	
Sugar	4000
Meat, Poultry, Eggs	
Beef, lean	2020
Goat/sheep meat	1450
Eggs	1580
Milk	
Milk skimmed cow	340
Oils and fats	
Butter	7450
Sun flower	9000

Source: USAID and Government of Ethiopia DPPA 2007

ANNEX 6 STOCHASTIC DOMINACE TEST RESULTS

Figure1: First Order Stochastic Dominace Test to compare incidense poverty among Gender Headship

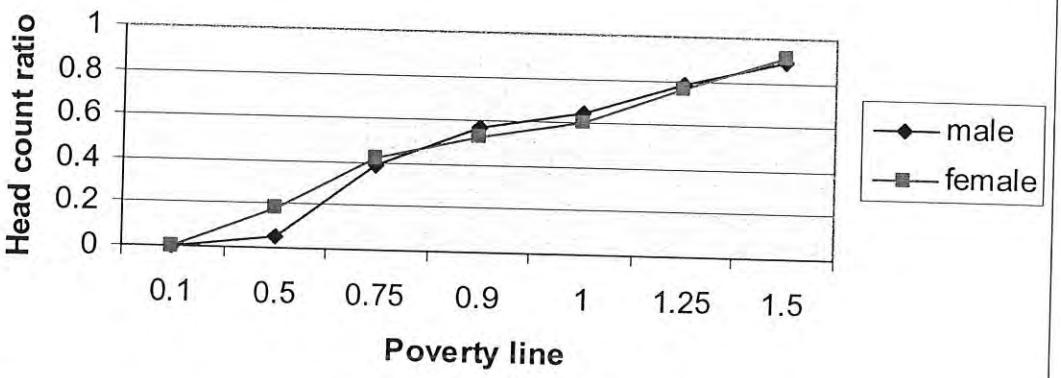


Fig 1.1 Second order stochastic dominance test to compare female and male headship

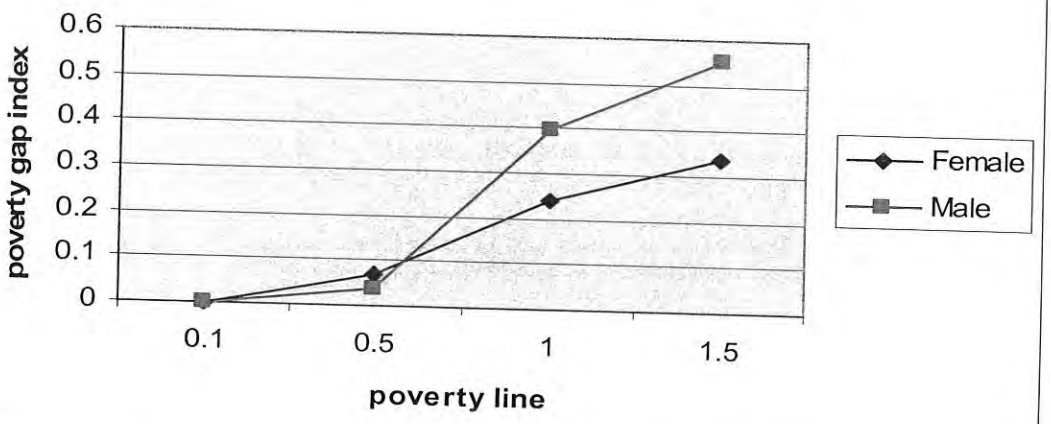


Figure2: First Order Stochastic Dominace test to compare incidense of poverty among literate and illiterate household heads

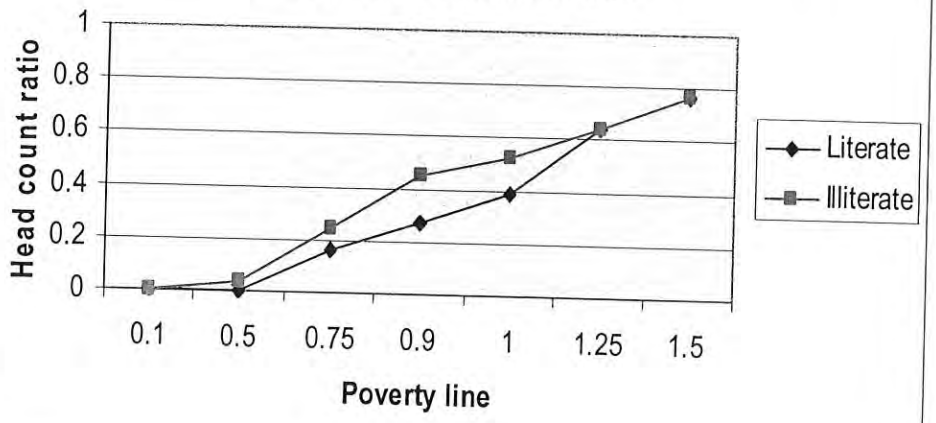


Figure3: First Order Stochastic Dominace test to compare incidense of poverty between agricultural package users and non users

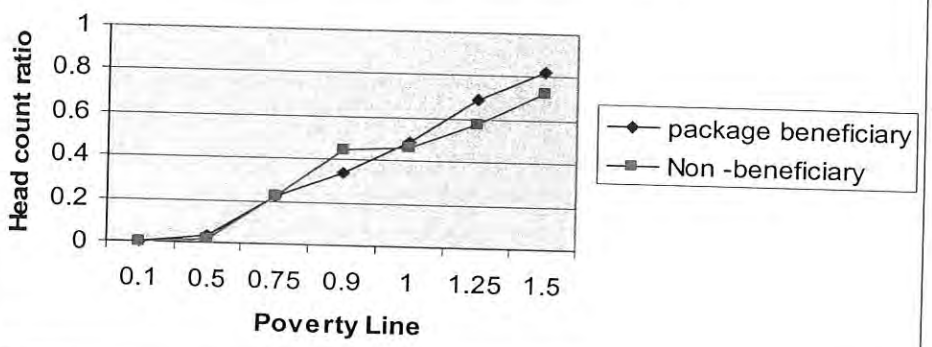


Fig 3.1Second order stochastic dominnce test to compare poverty among agricultural package users and non users

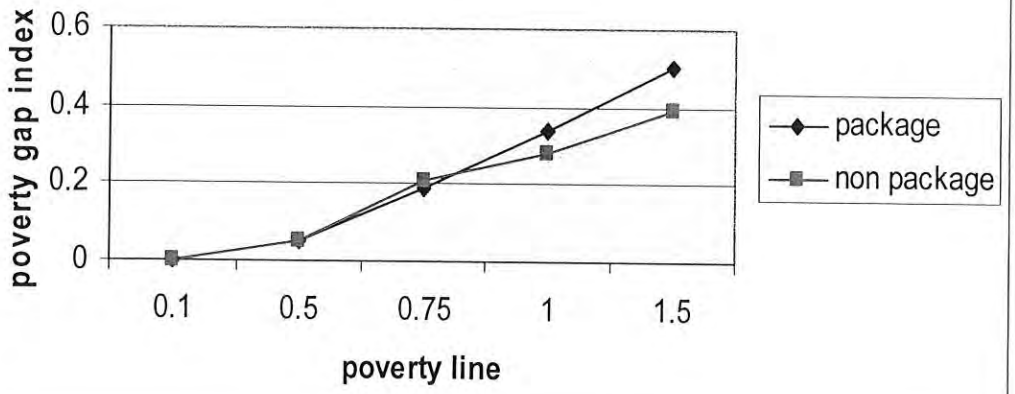


Figure 4: First Order Stochastic Dominace test to compare the incidence of poverty among household with high and less number of labour

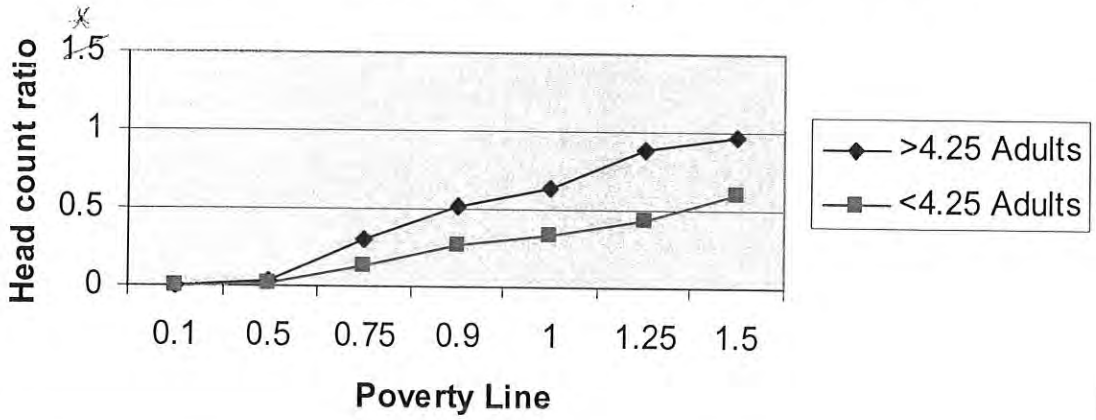
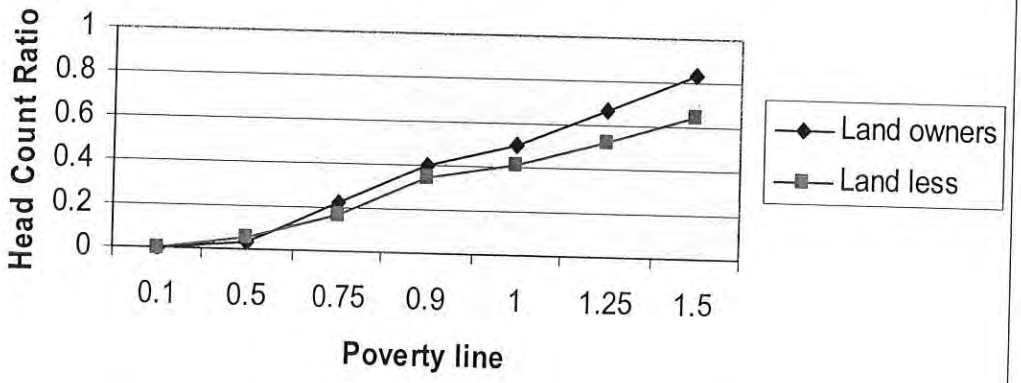


Figure5: First Order Stochastics Dominance test to compare incidence of poverty among land owners and land less households



Declaration

I, the undersigned, declare that the thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Declared by:

Gebrehiwet Mezgebo

Candidate

Confirmed by:

Advisor