

Food insecurity and the relative importance of various household assets

– The case of farm households in Southern Ethiopia

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Credits: 30 HEC

Level: Second cycle, A2E,

Course title: Master's thesis in Rural Development and Natural Resource Management

Course code: EX0681

Programme/Education: Rural Development and Natural Resource Management – Master's Programme

Place of publication: Uppsala

Year of publication: 2014

Cover picture: Maize field, Boloso Sore. Photo: Kebebew Fisseha

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Online publication: <http://stud.epsilon.slu.se>

Keywords: Assets, food security, household, livelihood, livestock and Productive Safety Net Program

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Acknowledgement

I would like to express my deep gratitude to my main supervisor Assoc. Prof. Eva Poluha, I greatly appreciate her excellent supervision and unwavering effort to help me write this thesis. Without her support my thesis would not be completed by now. I express my sincere gratitude to my co-supervisor Prof. Mikael Anderson, for his patient guidance, enthusiastic encouragement, and useful critiques of the quantitative part of this research work.

I would like to thank the Swedish government and people for providing me generous free education.

I would also like to acknowledge and thank Prof. Yemane Birhane Director of Addis Continental Institute of Public Health and Prof. Eva-Charlotte Ekström head of International Maternal and Child Health Department at Uppsala University, who accepted me as an intern student and gave me the opportunity to take part in their joint research project and access to cross sectional data for this thesis work.

My grateful thanks are extended to Dr. Amare Worku, W/o Elazar Tadesse, W/o Tenange Bassa, Ato Tibebu, Ato Muluken and W/t Mintwab who were colleagues and willing to give their best suggestions. Tarekeng Hantalo, Ato Kibru and Ato Engidawork and his family for their hospitality and help while I was in wolaita for fieldwork.

I would like also to extend my greater appreciation to teachers and staffs of Rural Development and Natural Resources Management Department for their unreserved cooperation.

Finally, I would like to thank my wife Bereket Engida, my child Edlawit kebebew and family members for their understanding of my absence from family occasions, and friends who always cheering me up and stood by me through the good and bad times.

God, I have no words for your good did! As usual I just say "Praise Lord"!

Abstract

Food insecurity as a consequence of drought is the most common environmental risk threatening farmers in South East Asia and Sub Saharan African. Ethiopia is one of the most food insecure countries in Sub Saharan Africa, mainly due to shortage of rainfall, plant diseases, pests and poor governances. Currently, food security is one of the Ethiopian government economic priority areas. This study has tried to identify the relatively most important assets physical, natural, financial as well as human required to obtain economic sustainability for poor rural households. The study has also attempted to take a deeper look into the Productive Safety Net Program and has examined whether the program is successful in promoting food security. The empirical evidence was collected from households living in the area of some densely populated and chronically food insecure districts of Wolaita Zone, Southern Ethiopia. The study is based in a combination of two methods namely Sustainable Livelihood Framework Analysis and Rasch method (households' food security measuring method). By using a combination of the two methods the data are analyzed at two levels. At the first level the responses of households to food insecurity and hunger experiences are quantified and scaled by using Rasch model. The purpose of scaling is to measure and understand households' food security status. From the analysis, three major distinct groups of households were obtained namely **food secure, food insecure with hunger and food insecure without hunger**. At the second level with the support of the sustainable livelihood framework analysis the major assets important to food security were identified and their distribution across the groups was analyzed with Statistical Package for the Social Sciences (SPSS) software. The study identified farm land as natural asset and livestock especially oxen, cows and /horses/ donkey /mule as financial assets are key determinant assets to improve the study households' food security. Finally, the study found that the Productive Safety Net Program is still targeting the right eligible beneficiaries' but few of them are allowed to participate in the program because of inadequate financial resources.

Key words: Asset, food security, household, livelihood, livestock, and Productive Safety Net Program

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Acronyms

ADLI	Agricultural development led industrialization
CADU	Chilalo Agricultural Development Unit
CCI	Complementary Community Investment Program
CPSC	Central Planning Supreme Council
CSA	Central Statistical Agency
DFID	Department for International Development
DHS	Demographic and Health Survey
EPID	Extension Project Implementation Department
EPRDF	Ethiopian People's Revolutionary Democratic Front
FAO	Food and Agriculture Organization of United Nation
GO	Government Organization
HABP	Household Assets Building Program
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
INGO	International Non-Governmental Organization
MoRAD	Ministry of Rural Development and Agricultural Development
NGO	Non-Governmental organization
OECD	Organization for Economic Co-operation and Development
PADEP	Peasant Agricultural Development Extension Program
PSNP	Productive Safety Net Program
SAM	Sevier acute malnutrition
SLA	Sustainable Livelihood Approach
SNNPR	Southern Nations and Nationalities

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1. Introduction

The overall aim of the study is to elaborate on a major research question in developing countries, namely how to improve economic sustainability for poor rural households.

Two distinct research questions have been formulated to obtain the information necessary to reach the aim:

1. Which are the most important assets among natural, physical, financial, and human assets, required to improve household food security in this part of Ethiopia?
2. Does the government's Productive Safety Net Program (PSNP) promote food security and if yes, how?

Emphasis in the study will be on the relative importance of the various assets held by households and on those households who, due to lack of assets are not able to survive all year round on their own production. Poor rural households in Ethiopia are characterized by having repeated as well as periodic problems of not being able to produce enough for their own survival. Predominantly drought, pests, animal and human diseases are cited as major reasons for their inability to survive on their own (Dercon et al, 2005). The Ethiopian government along with the World Bank and consortium NGOs established PSNP as a means to alleviate food insecurity and promote of building the household assets. The explicit aim of the project was based on the assumption that improving community and household assets and regulating food consumption over the seasons would lead to improved food security. Overall, the program hoped to bridge the production deficit in chronically food insecure areas.

1.1. The Productive Safety Net Program in Ethiopia (PSNP)

The PSNP was launched in 2005 by the Ethiopian government and a consortium of I/NGOs with the objective of protecting 5 million people from predictable chronic food insecurity in 2009 (Bishop and Hilhorst, 2010, Gilligan, 2009). Predictable chronic food insecurity refers to households who are exposed to annual food deficits caused by agricultural failure or poverty. Poverty in this context is defined as an economic problem defined as inability to buy agricultural inputs and a lack of tools of production (Devereux et al., 2006). In PSNP, households or individuals where the head or primary income earners were too old for labor-intensive work or physically disabled to participate in public work activities have access to direct support offered to households (Anderson et al., 2009). In contrast, other vulnerable households are supported in cash or in kind

indirectly but only after having engaged in one or more of the various public activities. The aim of the program is to protect poor households from selling and depleting their productive assets during the short shock seasons such as drought, flood, and harvest failure etc. another aim is to allow poor households to build assets and to empower them to increase their productivity.

The study will take a closer look at households, in the Productive Safety Net Program (PSNP) in Ethiopia, to find out if and how government institutions play a role in food security. The sample households are selected from four different districts with similar living conditions. All the study sites are situated in the common agro ecological zone and Productive Safety Net Program implementation sites.

1.2. Relevance

According to IFAD, (2011) 70 % of the world's poor reside in rural areas. The livelihoods of these poor rural households are diverse across regions and countries. They subsist to different degrees, from smallholder farming, wage, or self-employment in the rural non-farm economy, remittances and migration. A majority of rural households fall into poverty because of shocks such as ill health, poor harvests, sudden social expenses, or conflict and disasters (IFAD, 2011). In Ethiopia a population of about 68 million, out of 83 million, resides in rural areas. Out of these approximately 27 million can be categorized as rural poor (IFAD, 2010). The Majority of those people depend on rain-fed agriculture for their subsistence. Between 1994 and 2003, emergency food aid was mobilized for more than five million people every year. A large portion of those who received this aid live under "chronic" rather than "transitory" food insecurity (Wheeler and Devereux, 2010). "Chronic food insecurity" is defined as a consequence of extended poverty, lack of assets or inadequate access to productive or financial resources. "Transitory food insecurity" on the other hand is the result of short-term shock caused by lack of availability or inaccessibility to food due to seasonal variations in domestic food production, in food prices or household income" (FAO, 2008). According to Ellis (2000) farming alone is not a sufficient means of survival in a country which is densely populated and agricultural land is fragmented. Thus, rural households need to diversify their sources of income in order to withstand shocks. Households' access to productive assets is basic in order to diversify livelihood and to engage in economic reproductive activities that helps them out of poverty. According to Ellis (2000, p28) it is not only up to the households' effort but also up to a government's poverty policy to protect, improve and increase the assets of the poor households as well as to enable idle or underemployed assets to become productive.

However, despite the fact that the Ethiopian government has different policies and programs which focus on obtaining poverty reduction, food security and improved living conditions people still suffer from hunger and those most affected are children and women.

Considering these facts the present study is relevant

- since there are still millions of food insecure sufferings from malnutrition and it is important to try to identify the reasons why?
- since understanding about key assets and livelihood is important to promote sustainable livelihood (s).
- since the number of people suffering from hunger is still increasing despite Government and NGOs' exerted effort to promote food security

The rural households who were part of the study live in Boloso Sore, Boloso Bombay, Damot Pulasa and Damot Gale districts and strive for survival through a number of strategies. For instance, many households are involved on farm, off farm and non-farm activities in order to be able cover their daily food demand. However, food insecurity, malnutrition, and being destitute are still the common characteristics of the rural poor in those districts.

1.3. Background of the study

Geographically Ethiopia is located in the northeastern horn of Africa with 84.73 million-population (World Bank, 2010). The climate varies with topography, from as high as 47 degrees Celsius in the Afar depression to as low as 10 degrees Celsius in the highlands. Ethiopia's total surface area is about 1.1 million square kilometers. The country shares borders with Djibouti and Somalia to the east, Eritrea to the north, the Republic of Sudan and the Republic of the Southern Sudan to the west and Kenya to the south. The general distribution of annual rainfall is seasonal and varies in amount, area, and time as it moves from the southwest to the northeast (DHS, 2011). Despite the fact that the economy is growing by 11 % per annum the rapid population growth with an average rate 2.8 % retard the real GDP growth rate into 8.4 average per capita incomes (DHS, 2011). More than 80 percent of the country's total population lives in the regional states of Amhara, Oromia, and Southern Nations and Nationalities People Region (SNNPR) (DHS, 2011).

This study was conducted in one of the most densely populated SNNPR regions with an estimated population of 15 million and population density of 142 people per square kilometer. Economically agriculture is the major contributor to the region. Subsistent rain fed agriculture and pastoralism are the means of livelihood for about 90 % of the population in the region (CSA 2007).

Wolaita zone is one of the 13 zones, divided by ethnic and linguistic identity in the SNNPR region. It covers a total of 4,208.64 square kilometers with an estimated population of 1.5 million and population density 356.67 people per square kilometer (CSA, 2007).

Agriculture is the major source of livelihood. Based on geographical areas within which people share the same patterns of access to food (i.e. people grow the same crops, keep the same types of livestock, etc.) and have the same access to markets, the zone is classified into three different major zones. The barley and wheat livelihood zone (Sodo zuria), the ginger and coffee livelihood zone (Bolos sore, Boloso Bombey), the maize and root crop livelihood zone (Damot Gale and Damot Pulasa and partially Boloso Sore) (USAID, 2005).

1.3.1. General characteristics of the study area

This section provides an overview of the population characteristics including educational status, age, sex, primary sources of income of the head of the households. The respondents were the ones who identified the head of their respective households.

In terms of population and population density Boloso Sore is the highest of all the sample districts with population and population density 232, 641 and 767, 6 per square kilometer respectively. To compare based on population density, Damot Pulasa with 734, 2 is the second highest and Damot Gale with 694, 99 third and Boloso Bombey with 369,6 is the fourth (CSA, 2007). The sample households are chosen with a proportional random sampling technique using SPSS software. However, because of incomplete data the number of sample households used for analysis is lower than that of actually randomized and interviewed households.

Table 1: Back ground of the study districts

<i>Household characteristics</i>	<i>Boloso Bombey</i>	<i>Boloso Sore</i>	<i>Damot Gale</i>	<i>Damot Pulasa</i>
<i>Area in Square kilometer</i>	272,22	303,07	255,54	165,03
<i>Sample population in (n)</i>	332	1309	975	746
<i>Age of HH (mean)</i>	40.32	37.95	38.09	39.14
<i>Family size (mean)</i>	6.43	6.09	6.23	6.33
<i>Educational status of head of hh in (mean year)</i>	1.45	1.26	1.34	1.7
<i>Land owned per hectare</i>	0.35	0.39	0.38	0.41
<i>Land cultivated per hectare</i>	0.41	0.34	0.44	0.48
<i>Ox (Mean)</i>	0.83	0.61	0.64	0.86
<i>Sheep (Mean)</i>	0.51	0.41	0.8	0.56
<i>Horse (Mean)</i>	1.26	0.81	0.82	1.07
<i>Chicken (Mean)</i>	0.18	0.11	0.19	0.09
<i>Cow (Mean)</i>	1.23	1.14	1.06	1.29

2. Development Programs in a Historical Perspective

2.1. International trends in rural development research

2.1.1. Community development

The purpose of community development programs has been to provide a structured community intervention to help a community's ability to control conditions and get along with their day-to-day life. The aim is not only to solve many of the problems faced by a local community, but also to build up confidence among members to enable them to tackle their problems effectively.

The concept of community development was applied for the first time by the Indian government as part of its national rural development effort. The idea originally came from the Ford foundation specialists as a response to the 1966, Indian famine. The argument was that intensive integrated efforts may stimulate the Indian agricultural sector (Cohen, 1987 pp13, Vernon, 1984). The project was successful in implementing a self-help approach to maximize agricultural production and strengthen rural infrastructure in Etawah District. Later the concept was introduced to over 60 countries in Africa, Asia and Latin America. However, in the new areas the approach was less successful. This was attributed to the top down approach used and the failure of the participatory administrative structure. Finally, around 1965 the self-help approach was replaced by new initiatives of integrated rural development (Korten, 1980; Cohen, 1987).

2.2.2. Integrated rural development

The concept of integrated rural development appeared with the rise of "system analysis" perspective. According to this perspective, the root cause of rural poverty was believed to be the lack of integration of rural areas with the national and international socio-political and economic system (Kuhnen, 1998). In other words rural people who do not involve themselves in the development process actively as producers or as consumers of goods and services become trapped in poverty.

The motive behind the integrated rural development concept is to integrate social, economic and political dimensions of development, all of which are important to address poverty in the rural context. It is a goal oriented and methodological approach where the goal is to involve the neglected masses of the rural poor in the process of increasing the well-being of humankind. Methodologically it is an application of taking into account different economic, social, political and technical factors, to attain the goal of alleviating rural poverty (Cohen, 1987; Kuhnen, 1998).

Ethiopia is one of the countries that implemented an integrated rural development projects namely the Chilalo Agricultural Development Unit (CADU project 1968), This was done along with the Puebla Project in Mexico (1967), and the Vihega Project in Kenya (1970) and the Lilongwe Project in Malawi (1968). Gradually the approach was criticized “as being too costly to justify the limited gains, too complex to be administered and politically powerless to be effectively coordinated” (Cohen, 1987). Finally, in the early 1980s major bilateral and multilateral donors purposely distanced themselves from this approach by asserting integrated rural development an unworkable approach to promote rural progress (Cohen, 1987, Ellis and Stephen, 2001). The Ethiopian experience in rural development will be elaborated below.

2.1.3. People’s participation

Integrated rural development was followed by an emphasis on people’s participation. According to the OECD (2011), a vision for development needs to be agreed upon and enjoy the support of the society as well as the participation of individuals and communities include technical expertise. White, (1996) also argued that participation may be seen as politics, because it has the potential to challenge existing power relations. Whites’ argument about the politics of participation has two dimensions. The first is the question of *who* participates which refers to the heterogeneity of the community. In a community with differences in social and economic status, bringing relatively disadvantaged groups in participation requires good planning, skill and knowledge. The second dimension, regards the limits of community participation which also determine the meaning of participation. If the participation of a community is limited to the implementation stage or to the planning stage, this is not sufficient to be characterized as meaningful of community participation. Community participation is extended, not only at the planning stage but also it has to involve the community in management and decision making process to be called people’s participation (White, 1996).

Admassie, (1995) also emphasizes the concept of participation as a means of involvement of rural people in the decision-making process. Unless people are involved in the major activities including in planning, the term participation does not go further than consultation.

The concept of participatory development did not originate from the realities of rural life in developing countries rather it emerged from theories of participation in democracy and the workplace of others, others referring to the developed countries (Admasie, 1995). As a result, the implementation of the participatory concept in the communities of developing countries faces

different challenges. For instance, there was less attention paid to low-income families who may not participate because of family and work priorities. Particularly remote people who face difficult geographical conditions like crossing mountainous roads, insecure forests, long distances and high traffic problems are the most difficult obstacles for regular face-to-face meetings or activities for the rural people. On the other hand, if the community does not recognize the issues as a problem it could be a challenge to mobilize the community for participation. Therefore, participatory development implementers must consider a few of the mentioned challenges that could be an obstacle in the implementation of effective community participation (Irvin and Stansbury, 1996). In addition, for success and real change to take place empowering the community is fundamental. In other words, empowerment is accessing scarce resources and political institutions by the community, which is a necessary condition for actors' effective participation (Admassie, 1995 p 54).

Community participation could be applied in different ways, like bottom up or top- down approach. However, the purpose of both approaches is to use it as a means to structure and allow a community to participate in development programs. Both approaches share a common set of stated and implied goals in terms of organizing and bringing the community together. However, the approaches are applied in different ways.

A top down approach is a structured means of using professional leadership provided by external resources usually government bureaucracy and professional staff who plan, execute and evaluate development programs (OECD, 2001). The model anticipates that the community will change gradually through the process of external leadership and services provided by the project. The change will come to their perception, behavior and living standard (Larsson, 2000 p68). However, this approach has a challenge in development program and implementation, because central planners may use it as a tool to impose their political interest irrespective of the local actual situation and interest of the community.

A bottom-up approach is the process of creating a partnership between the community and professionals who provide technical support rather than leadership. Like the top down approach, it requires that the community acknowledges the existence of problems and must have shown a willingness to participate in the community development program (Larsson, 2000). The possibility of domination of a few from the local elite and the exclusion of the most disadvantaged groups is one of the main drawbacks of this approach. It is important to note that top-down approaches not

always are synonymous with failure, nor are bottom-up approaches always successful so to follow the right approach depends on the type of project, its complexity and knowledge requirement.

In some countries, a combination of the two participatory approaches has been applied. For instance, in Tanzania Rungwe district the local bank rate decisions such as the rate of interest on the loan and interest in saving are decided upon by government officials at the top level implying application of top down approach. On the other hand, the profit earned by the bank and priorities for development activities such as construction of schools, roads, health facilities etc. is decided by stakeholders at lower levels which also implies a bottom up approach (OECD, 2001). In conclusion, the application of a participatory approach has to meet the needed goal of a majority of the community and avoid exclusion of disadvantaged groups so one cannot use a single approach because sometimes combining the approaches may be better.

In line with the above, participation as a process can empower the rural poor and strengthen their capacity to take independent action and to change their situation (Pimbert and Pretty, 1994). Therefore, if the participation of the poor households can change their situation, then their access to social assets which determines their ability of participation in the community is one of an important element to improve the life of poor rural households.

2.2. Ethiopian experiences of rural development approaches (1957-2012)

2.2.1. Rural development in Ethiopia during Emperor Haile Selassie (1930-1974)

Under Emperor Haile Selassie some attempts to improve the situation of farmers were made. Emphasis was on various agricultural extension package programs in specific parts of the country. The experiences of these were later spread nationwide through the Extension Project Implementation Department (EPID) as minimum package (Stahl 1974). Still change was slow and increasing differences between rich and poor led to uprisings and revolts against the emperor Haile Selassie who lost power in September 1974.

2.2.2. Rural development during the DERG regime and the role of Peasant associations (PA) (1974-1989)

Following the imprisonment of the emperor in September 1974, the newly formed provisional government started to rule the country. In March 1975, the military junta proclaimed public ownership of rural lands and brought to an end the exploitative relationship between tenants and

landlords. Under the new reform transfer of land was prohibited with the exception of to close family members such as between husband and wife or children (Poluha, 1989; Cohen, 1987)

The alignment of the provisional government with the Soviet Union has played a role in the expansion of the socialist ideology, which according to Cohen (1987) led to the establishment of peasant associations and local revolutionary development committees. According to the new proclamation any tenants or landholders who reside in the rural area automatically became members of the peasant association. The system was strictly hierarchical and linked with the highest administrative body (Poluha 1989).

Peasant associations were responsible for developing their area, protecting public resources and collecting taxes from peasants. Peasant associations were used as a tool to organize producers and form marketing and credit cooperatives in order to expand socialist production. In line with this, the Central Planning Supreme Council (CPSC) applied six annual development plans for 1978-1984. The goal behind the plans was to introduce socialism among the peasants and to promote collectivization through cooperatives, resettlement and villagization (Poluha, 1989; Cohen, 1987). Support to subsistence farmers was as previously mainly mediated through a minimum package program with similar messages all over the country.

The 1983/84 drought forced the DERG government to develop and implement a new program called PADEP (Peasant Agricultural Development Extension Program). PADEP was a ten-year plan to achieve self-sufficiency in food production focusing on increasing both grain production and the income of the peasants. PADEP contributed to the build-up of agricultural support units, the construction of farmer training centers, the provision of training to farmers, extension workers and ministry of agriculture staff and the supply of fertilizer to farmers (World Bank, 1997). Like many other projects, PADEP was designed and based on foreign aid. The DERG government was much criticized for its agricultural policy, which implied favoring state and collective farms rather than giving more emphasis to small-scale farmers and to liberalize the agricultural market.

2.2.3. Rural development under the EPRDF (1991-2011)

After the overthrow of the DERG (1991) a new government, the so called Ethiopian People's Revolutionary Democratic Front (EPRDF) adopted what they call agricultural development lead industrialization (ADLI) as development strategy which mainly focuses on intensification of agriculture and a free market economic policy. The EPRDF government kept state control of land stating that "land is a common property of the nations and nationality peoples of Ethiopia and shall

not be subject to sale or other means of transfer” (Ethiopia, 1994). Even though land was redistributed the right of access to land is still an important issue in Ethiopia. More recently, the EPRDF has tried to solve the issue of land right by providing certificates of the right to use the land. However, this does not guarantee people from government confiscation of their land. For instance in Gambella region Abobo woreda and Orommia region Bako woreda the communities were disposed from their land without any consultation and their consent (Rahmato, 2011).

2.2.3.1. Food security policy

The Ethiopian agriculture policy is still following ADLI, however, from 2006 - 2010 under the Plan for Accelerated Sustainable Development to end Poverty (PASDEP). Emphasis has been on market oriented crop production through promoting foreign and domestic private agribusiness to engage in export oriented agricultural production. The Ministry of Rural Development and Agricultural Development (MoRAD, 2010) launched programs in 2010 to improve food security. The main emphasis of the programs has been on stabilizing and accumulating assets to enable chronic and transitory rural poor households first to become food sufficient and then food secure. Some of the government programs to reach the goal are the Productive Safety Net Program (PSNP), the Household Assets Building Program (HABP), Complementary Community Investment Program (CCI) and Resettlement (FAO, 2010). In this study, the PSNP is in focus for further analysis because it is the oldest program existing since 2005 and the largest in the amount of budget and number of beneficiaries. Also the aim of the program is to protect poor households from selling and depleting their productive assets during the short shock seasons such as drought, flood, and harvest failure etc. Furthermore the aim is to allow poor households to build their assets and empower them to increase their productivity. Since PSNP also works in the buildup of household assets it is important to identify the gains obtained by the households from participation in PSNP and access to different assets.

2.2.3.2. Farm land size in Ethiopia

In relation to rapid population growth and high demand for farmland the government has tried to solve the shortage of land with redistribution of existing areas. However; the further decrease of the size of farmland has become a challenge to productivity. Studies have shown like (Nega et al, 2003), per capita food production and farm income declined simultaneously with land size. According to Nega et al, 2003 when farm land size is extremely small it is difficult to obtain the optimum level of production output, as a result in such situation to address rural poverty with intensive technology become more difficult. Most farmers with very small plots are vulnerable to

food insecurity and income shortage. Mainly the harvest obtained from the very small plots is not sufficient to cover the annual household food demand. Even, those who produce relatively more, sell their residue products or exchange these for other products for home consumption, rather than reinvest them on the farm. Therefore the income obtained from very small land is no longer reliable. According to Nega et al (2003) in the area where enset (false banana) is used as staple food the land size needed for cereal production is 0.56 hectares to meet the minimum level of food needs for an average household

“A recent study carried out by IFPRI has found that the major constraint to food security especially in food deficit areas, where more than Ethiopia’s 25 million people reside, is extremely small farmland (0.57 ha compared to 1.38 in food surplus areas). Of the 184 woredas (districts) constituting the food deficit area, per household farmland is less than 0.4 hectare in half of them and less than 0.3 hectare in one-third of them” (Diao and Nin Pratt, 2005 as cited as in Gebreselasse, March, 2006, p 8).

2.2.4. Emergence of the Productive Safety Net Program (PSNP)

The PSNP was established by the EPRDF government as a social assistance program for poor people who are not able to survive on their own for the whole or parts of a year. Their difficulties to sustain themselves might be affected by processes such as trade liberalization, economic austerity, stagnation policies, economic transitions and living under chronic or transient poverty. Irrespective of the causes for the problem the program assists poor people by allowing them to participate in different public activities. The concept of public work started in 1930 in western countries during the Great depression (Subbarao *et al* 1997: 676-678). Currently public works like road construction, tree planting, construction of irrigation canals, infrastructure development, and environmental protections play an important role in developing countries where they create employment opportunities and /or stabilization benefits to the poor. Safety Nets act as a means of poverty alleviation and were developed by the World Bank to protect the poor against harmful coping mechanisms in other words to protect from the decision taken by the poor households to cope which means to with stand the changing circumstances which lead them in to further destitution and poverty trap like permanent migration, prostitution, the sale of productive assets (farm tools) or to take children out of school to save money for food (Bishop and Hilhorst, 2010). Safety Nets have been implemented in the former Soviet Union, the Ukraine and Poland as a permanent feature of social policy in the form of cash transfer, subsidies in kind, public work etc. this is different from

Ethiopia where Safety Nets have been used as a temporary response to food crises (Bishop and Hilhorst, 2010; Subbarao *et al* 1997: 3-5)

Why does the Ethiopian government prefer public works as a means of poverty alleviation? According to the World Bank (2011), there has been an appeal for humanitarian assistance from the Ethiopian government every year since the 1984 famine. Predominantly the food shortage caused by drought, human and livestock diseases as well as resource-based conflicts have been exacerbating factors for the food insecurity situation in Ethiopia (FAO, 2012). Even the recent two rainy season failures in 2011 have resulted in drought both in the south and the southwest of the country. As a result, food availability has been reduced and the food security status of the poorest households has become endangered. The Ethiopian government officially declared in July 2011 that an estimated 4.5 million people were in need of emergency food aid. According to Devereux *et al.*, (2006) and FAO, (20 12) the consequences of natural and man-made phenomena has made the country dependent on the emergency aid intervention for a long time.

Despite the fact that emergency food aid has not resulted in a sustainable solution it is still used as a temporary emergency response in Ethiopia (Andersson *et al.*, 2009). As different studies have pointed out the provision of emergency aid is characterized by different uncertainties. These uncertainties have been manifested in different ways. For instance, food aid might be delayed or the amount of emergency food aid delivered less than the actual needed. On top of that reliability of food aid depends on other interrelated factors such as the political relations between donor and receiver countries, transportation, donors' willingness to provide aid etc. (Devereux *et al.*, 2006).

To mitigate the above-mentioned aid and other related food security problems, International NGOs (non-governmental organizations) and the Ethiopian government agreed to find a means to support poor households' efforts to obtain sustainable production and food security. As a result, they developed an integrated food security program, which includes the Productive Safety Net Program (PSNP) (Bishop and Hilhorst, 2010). Structurally the Ethiopian rural development policy has different strategies to reduce poverty. Among those strategies, integrated food security strategy aims at increasing domestic food production to ensure access to food for food deficit households and at strengthening emergency response capabilities (Ethiopia, 2004).

2.3. Major lessons learned

The history of rural development tells us that two major development approaches were used historically namely Community Development and Integrated Rural Development. These two can be

seen as the basis for current rural development approaches. However, overtime, these approaches failed to meet their objectives. Partly because rapid political, economic and social change in the rural areas greatly influenced both methods and results (Cohen 1987 pp 14). For instance, one important reason why community development failed was that although it was initially designed as a bottom-up or participatory approach it changed over time and was used as a political instrument to impose the political interest of government on the people (Vernon, 1984, Cohen, 1987). In other words, the approach was misused and resources were unfairly controlled by the elites. On the other hand, Integrated Rural Development came up as a new approach. Its aim was to include the neglected masses of the rural people as development partners and to integrate political, social, and economic dimensions of rural development which had not been given emphasis in the previous approach. Nevertheless, the Integrated Rural Development approach focused on the expansion and strengthening of mechanized and large scale farms, over time this approach also failed due to administrative complexity and high operational costs, shortage of skilled managers, lack of machinery spare parts and high material import and maintenance costs and that it underemphasized the importance of small-scale farms.

The lessons learned from the support to small scale producers in Ethiopia are several and various. A key issue has been the insecurity of farmers with regard to the land. As tenants during Haile Selassie they had to pay high fees to the landholders. Under the DERG they had no right to lease, mortgage or sell their land. Today lease is possible but not the sale or mortgaging of the land .Furthermore most programs have been top down and the farmers have not been involved in their design. Again the minimum package programs have been very general and often did not fit in with the situation of individual farm households, especially not to those who are very poor.

3. Theoretical review

3.1. Assets, livelihood, and food security

As we could see in the historical background, different approaches have been tried to protect and improve the life of poor rural people from food shortage and hunger. However, despite these attempts food insecurity and poverty persist especially in Sub Saharan African and South East Asian countries.

In this section, before discussing the analytical framework of this study, which is the Sustainable Livelihood framework Approach (SLA), I shall discuss the major events that led to the emergence of the SLA approach.

In the 1970s, the issue of food security was believed to be the problem of production failure or lack of availability of food at the national level. Therefore, development practitioners and concerned international bodies made an effort to put more resources to increase food supplies and ensure national level food self-sufficiency. As a result, through crop research a significant rise of food supplies was observed.

In the 1980s, an influential work by Amartya Sen (1981) showed that despite significant surplus at the national level many households were not able to access sufficient food. In his findings he realized that many of the households had no resources or income to exchange for food locally. This new empirical evidence obtained from the famine of the Bengal 1943, the Ethiopian famine 1973 and the Bangladeshi famine 1974, had a great impact on the overall thinking about food security; previously emphasis had been on “availability ” now it was on “accessibility”. In other words, the concern about food security had shifted, from food availability at national level to access to food at the household or individual level (Maxwell, 1996)

In addition, one of the prominent changes observed with regard to food security was a paradigm shift from “*food first*” to “*livelihood.*” The next paragraph shall discuss why it was important to widen the scope of food security from food first to livelihood.

According to Frankenberger, et al., (1998 p30) “it is misleading to treat food security as a fundamental need, independent of wider livelihood consideration”. Their study which covered various analysis of food insecurity showed that food security at the household level is necessary but not sufficient for a household’s prospect of survival. Another study conducted into the livelihood of people living in Darfur showed that fear of future uncertainties such as absolute

poverty or irreversible situations of livelihood and to expect the worst led households to prefer to go to hungry (De Waal,2005 pp 236-237) The latter study emphasized that households are willing or ready to protect their future livelihood by deliberately getting hungrier rather than selling their main assets such as livestock, stock plants, or farm tools. Of course, to choose to go hungry is not a simple decision practiced for health or religious purposes. Rather it is a case of choosing between two evils. When people can not cope with the hazards of food shortage, they start to reduce their food consumption,next they spend the whole day and night without eating and finally they migrate usually for a season and seldom permanently. This gradual process of deterioration comes with hope and patience until they are forced to move in order to maintain or rather perpetuate their previous livelihood. This scenario showed that people give priority to their livelihood rather than to their immediate needs for food.

3.1.1. Relevance of the livelihood approach

In this study Sustainable Livelihood Approach is used as an analytical framework to investigate into which assets that are closely related to food security and related to this which strategies that are used by food secure households to maintain economic sustainability . The livelihood approach is a helpful tool to collect basic information about household food insecurity. It is useful because it provides information about the distribution of food insecurity, information generated from analysis of disaggregated data such as geographic spread (agro ecological zone) or by categories of vulnerable group (female-headed household, landless etc.) (Devereux et al, 2004). In addition, the livelihood approach is helpful when exploring the interconnection between livelihood strategy and households' food security status. For instance, if certain social groups are identified as having a better food security status, we also need to understand why? Certain groups are highly vulnerable. At present the approach is widely used as an analytical framework to analyze poverty and food insecurity (Krantz, 2001, Scoon, 1998 and Carney, 1999).

Nowadays influential scholars such as Ian Scoones, Robert Chambers, Gordon R. Conway and Frank Ellis, have suggested in different papers that the issue of rural poverty and food security has to be dealt with by focusing on assets, vulnerability and livelihood perspective. In other words they argue that emphasis has to be given to the assets accessed by the households.

There is also researcher who suggests that the problem of food security must be seen from political, social and institutional aspects (Joseph, 2004) with which I agree. However, because of time, resources and other constraining factors, it has not been possible to cover these aspects in the

present essay. This study instead focuses on key measurable assets such as natural, financial, physical and human assets' as well as on one of the government's food security programs. The purpose is also to use as well as test the SLA to see if, and if yes how the approach helps us to identify and understand the relative importance of the listed household assets to improve food security.

3.1.2. The Sustainable livelihood framework approach (SLA)

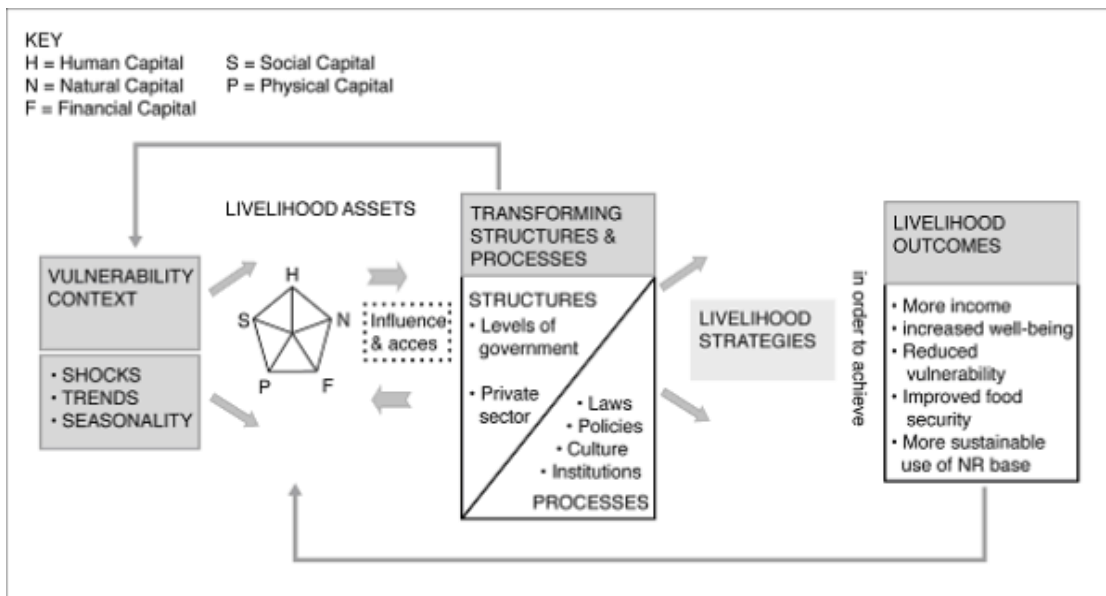


Figure 1: SLA

Source: DFID (2001)

In this section, I shall discuss the concept of a sustainable livelihood framework approach in relation to poverty, food security, assets and its relevance as methodology.

What does sustainable livelihood mean? The most widely used definition of sustainable livelihood is the following, “A livelihood comprises the capabilities, assets (stores, resources and claims and access) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its abilities and assets while not undermining the natural resource base” (Chambers and Conway, 1992 page 7). The definition of sustainability is closely related to the interaction between human being, environment and natural resources. In this context it refers to the capacity to improve the life of the poor so that they do not have to exploit or destruct the resources and environment. In other words the pattern of use and consumption of resources to gain a living must take into to consideration the future generation.

The sustainable livelihood approach is a framework developed to identify the key factors that have an influence on people's livelihood in order to create an entry point to support poor people (Scoones 1998). As an analytical framework, the sustainable livelihood departs from the assets accessed by poor people and on the livelihood strategies they follow for survival. Specifically the framework considers the household as the main economic unit of analysis to which the framework is applied.

In fig. 1, we can see the different components of the sustainable livelihood framework. The primary goal of SLA is to investigate into how an individual or a community in a given socio – economic and environmental situation, and within given institutional rules and norms manages a range of resources to achieve sustainable livelihood (DFID, 1999).

Vulnerability is defined by the degree to which households are exposed to various contingencies like disaster, misfortune, calamity, shock and being prone to food insecurity (Scoones 19989). Vulnerability or contingencies can result in changing the household livelihood both internally and externally. Internally the ability of households to resist or bounce back after stress will be determined by their access to assets, stored food, social and community support (Chambers and Conway, 1992). Externally, the risk of sudden changes of circumstances like market failure, flood and drought could threaten their ability to secure food and livelihood. Therefore, the direct impact of vulnerability on households' assets, and on the option to their livelihood motivates households to livelihood diversification (Chambers, 2006, Ellis, 2000). As a result households attempt to mix different portfolio activities in order to gain a living according to their asset position and to mitigate the changing circumstances that confront their survival. This is called livelihood strategy (Joseph, 2006: Ellis, 2000: DFID, 1999). The claim or control of assets by a household or individual usually determines its adaptation to different livelihood strategies (Joseph, 2006). Transforming structures (institutions) and the processes (policy, norms, and rule) have an impact on access to different types of assets. Institutional rules and societal norms tend to be major determinant factors when accessing various types of assets (DFID, 1999). In addition to the vulnerability context and the institutions, the amount of capital or the type of capital they own and their position in the social structure determines the portfolio of activities in the making of a livelihood (Joseph, 2006).

In this way, households pursue their livelihood strategies to obtain a positive outcome eg a better income, more well-being, improved food security and thereby reduce their vulnerability. However, the livelihood outcomes are not always positive or sustainable since conditions are not static but there is a continuous change in social and political factors which affect the livelihood outcome and strategies prioritized by the households (Joseph, 2006: DFID, 1999)

Like other methods, theories, and approaches the SLA is not free from criticism. For instance Scoones, (2010) has summarized the criticism against SLA into four major points. First, the approach is narrow focusing on the micro level and has difficulty to scale up to national and international levels. Second, even though, laws, policies and institutions are identified in the framework, politics and power are still underemphasized. The third criticism is that since livelihoods are dynamic, the method only informs about short-term coping or adaptation solutions rather than about sustainable solutions. In other words it is restricted to the present mode of production and does not deal with future change. To summarize, from historical perspective of food security the problem of food security cannot be addressed at the national and regional levels where there may be an abundance of food while people still starve in various places. That's why the concept of food security has changed from "availability" into "accessibility" at the household and individual level with a focus on the micro level .The argument is that if there is a change at the micro level it should be possible to see the cumulative effect of food security at national and international levels.

3.1.3. Food security

The current working definition of food security is as follows according to FAO, "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO, 2003 p 29). "Food insecurity exists when people do not have adequate physical, social and economic access to food as defined above" (FAO 2003, p29).

The definition of food security is broad and interrelated with different factors such as agro-physical, socioeconomic and biological factors. Since the term by itself is broad and vague to understand, social scientists have identified four major, distinct dimensions of food security. These dimensions are availability, accessibility, utilization and stability (FAO, 2008).

Availability – means physical availability of sufficient, safe and nutritious food sources that an individual can access from her /his own production, from aid or from food stock and net trade.

Accessibility – Access is related to physical resources, such as market places, roads and transport. Access also has an economic implication such as possible sources of income, employment opportunities, expenditure and prices which can constrain the acquisition of food.

Utilization - Utilization of food refers to the adequacy of the consumed food whether it meets all physiological needs or not. This is determined by the diet, sanitation, access to clean water and healthcare in order to reach a state of nutritional wellbeing.

Stability – It is about access to adequate food at all times. People should not risk access to food as a consequence of human or natural hazards (FAO, 2006).

3.1.4. Assets

Assets are defined as the stocks of capital or resources that households can convert directly or indirectly into means of survival to be able to sustain their material well-being at different levels even beyond survival (Ellis, 2000; McKernan *et al.* 2011). Assets either exist in the form of intangible assets like human capital (health and education) or tangible assets like a house, vehicle, land and trees. Assets can also be financial like cash or access to micro credit, savings etc. There are also other kinds of assets brought into being when a surplus is generated between production and consumption which enables households to invest in future productive capacity (Ellis, 2000). Assets can be used as a backup or as a means to cope or adapt to risks or sudden changes. For instance, unemployment or disabilities are unforeseen risks that can suddenly reduce all income. However, so long as assets are available as a cushion households might not need to reduce consumption suddenly to the same degree (McKernan *et al.* 2011). Assets have a meaning especially in developing countries where there is no access to a credit market, and where insurance or loans are very difficult to obtain for the rural poor households. Thus, depending on the convertibility of the assets into food and food related products households can rely on available assets to smoothen consumption in times of stress and shock (Muyanga *et al.* 2010).

Natural assets: Biological and environmental resources like land, water and forests are important assets that people can use to generate a means of livelihood. Since the majority of the studied households rely for their subsistence on agriculture, land is in this thesis treated as a natural asset.

Financial assets or substitutes: the availability of cash or equivalent that enables people to adopt different livelihood strategies. Especially in rural areas where there are no financial institutions people save their money in the form of fungibles or items easily convertible into cash such as livestock and gold. In this study livestock, mainly cows, are used as a source of livelihood by making cash from the sale of milk and milk products.

Physical assets are assets otherwise seen as nonproductive like houses, refrigerators, sewing machines etc. which in certain circumstances can be used to generate an income. Thus, in the study

areas households share their houses with livestock and use them to process milk and milk products to generate an income. They also use them to protect their livestock; therefore, houses are used both as a home and a means of livelihood.

Human assets the main asset held by the poor households is their labor. In this regard the health, educational status, skills and family size can be considered as possible assets. In this study it is mainly the head of the household who can influence the food security and the head is therefore considered as the most important human asset.

4. Method

4.1. Data Collection Methods

The discussion below covers the procedure and the analytical approach used to attain the research aim and to answer the two distinct research questions. In order to respond to the questions mentioned in the aim the following methods were used. The SLA has been used to assess if it is a relevant method to identify the major forms of livelihood and assets in this study area. Foremost the method has been used to see if it yields information about the various kinds of assets owned by the farmers, the relative importance of each specific asset, or lack of it, and how the assets in their respective ways contribute to food security or insecurity.

In addition, I have used Participant Observation to identify local people's perceptions of the relevance of various assets and have used a combination of questionnaires and participant observation to facilitate verification of data through triangulation. Most of the times that I have engaged to participant observations were in the farm while the farmers were doing their routine farm activities and sometimes at their home while they were drinking coffee and discussing social affairs. About data recording, most of the information obtained through interview recorded during the interview time and sometimes immediately after I have left those particular places for instances some of my impressions, observations, and additional information not recorded during the discussion time added later. Also I have used a range of secondary sources to compare data, methods, and theories. These come from different countries and regard livelihoods and specific assets. In addition, I have used the statistical method, the "Rasch model", to weight each food security question and generate relevant variables, which allow categorizing households in relation to their food security status.

The data yielded by the SLA were also tested against the PSNP approach to see if the latter described where can be a solution to food security. There is a need to know the present and initial food status of members and non-members alike to compare them and see if initial members were in the insecure status or already secure when joining the program and if the measures have helped them become secure. Furthermore, the asset distribution across the groups was compared in percentage, mean and standard deviation to understand if there is a connection between asset distribution and the level of food security status.

4.1.1. Participants

The cross-sectional data used in this study were obtained from the COMSAM research project held in Wolaita, Ethiopia. The Uppsala University Department of International Maternal and Child Health and Addis Continental Institute of Public Health conducted the research together. The primary objective of the broader research was to assess the effectiveness of malnutrition management at community level.

The project selected sample households from four districts situated in southern Ethiopia in Wolaita Zone. To find sufficient study cases, the sample districts were purposely selected based on the Wolaita zone health office malnutrition case reports. These are districts from which more than 50 % of severely acute malnourished (SAM) children were reported. This sample selection has affected the study in the sense that majority of the study samples were vulnerable to food insecurity. Next to districts the sample villages and households were selected with proportional random sampling techniques. The total randomly selected households' are 1309 from Boloso Sore, 975 from Damot Gale, 746 Damot Pulasa, and 332 from Boloso Bombay. However, because of few questionnaires were incomplete and other factors the number of sample households used for analysis is lower than the actual randomized and interviewed households.

The data were collected from households with children under the age of five s through face-to-face interviews using standardized questionnaires. Only few questions were contributed by the author, these related to households' access to livestock and their participation in the Productive Safety Net Program. The rest of the questionnaire was developed by the principal investigators from COMSAM. The questionnaire was prepared in English and then translated into Amharic. Some of the questions were translated into the local language (Wolitinga) and were written by the side. The translation of the questionnaire was conducted carefully with the principal investigator, the zonal health office staff, supervisors and data collectors. In the course of translation to avoid jargon and inconsistency of words serious attention has been given to frequent words commonly used and mutually understood by data collectors and respondents. Twenty-five local language speaking nurses were recruited and trained for two weeks on data collection procedures and anthropometric measurements. Before the real data collection, the questionnaire was pretested in a population living under similar conditions outside the study area. Based on feedback obtained from the pretest minor corrections were made to the questionnaire. At the same time, the competency of the data collectors was evaluated and some of the data collectors who had major problems were terminated from the

project; the major problems were for example, inefficiency to fill the questionnaires correctly, careless work and technically incapable to take anthropometric measurements.

4.1.2. Challenges of data collection

Ethical approval from Uppsala University, Addis Continental Institute Review Board and legal supportive letters were obtained from the concerned bodies of regional, zonal and district level health offices and from the Kebeles (the smallest administrative unit). As a result, we haven't faced any significant challenges from administrative bodies and the community in the process of data collection. However, to identify or to interview exactly the same households a randomly selected household has been a challenge. Some households had temporarily or permanently moved to other places, and other households did not have under-five children. In such cases, the research coordinator was informed and could replace these households with new systematically randomized households. However, the poor connection of mobile telephone network has been a challenge. Also in some cases the respondents' working conditions have made it difficult to meet them in the day time. Working late in the evening at 7.00 pm and starting early at 6.00 am before household members left for work and working Saturdays also became a great challenge. Heavy rain and mud further complicated the undertaking of data collection. The data collection time was in a rainy season from August to January. The first three months (July, August and September) are the rainy season in Ethiopia and commonly known as a peak season of food shortage. From the author's experience in those areas, it is a time when the households have finished the food from their last harvest and the new harvest is not yet ready. These months are a great challenge to households who have not stored enough food.

4.2. Categorizing households based on food security status

In order to understand and compare the households' food security status, the households were categorized into three distinct groups. As different studies have showed, there are different methods used to measure the food security status of households. The methods vary depending on the purpose of the data and the requirements of the methods. In other words to target vulnerable groups or to conduct census on households' food security status or to measure malnutrition status in the community, different interested groups use different methods.

Each method also has its own drawbacks. For example, Maxwell, (1995) mentioned that the method used by economists to measure households' food security status which is based on their income or consumption level has several drawbacks. His argument is that it is difficult to estimate the gross

production or purchases used for the household's purposes when comparing households. In addition, it is wrong to assume that households consume the entire disappeared production or purchased food for the household purposes.

Another method is used by nutritionists to measure household food security. Nutritionists use twenty four hours back recall of a variety of food consumed by the individual and converting each kind of food into kilocalorie content. This method however also has different shortcomings linked with lapses of memory, unrepresentative recall period, fatigue, large amount of data collection cost, etc.

Considering these drawbacks this study relied on an alternative method, which is based on the respondents' perceptions and experiences of hunger. As described in the definition of food security, the concept of food security is multidimensional and broad. Therefore, it is difficult to capture all the necessary food security information with a single measurement (Bickel et al. 2000). Thus, as described earlier this study has used a range of variables related to food security to classify households into three distinct categories based on their experiences of hunger and food insecurity.

The household food security measuring method was developed to address the "access" aspect of food security, which is usually missed when food security is measured indirectly based on income or consumption level. In other words the method addresses the question of a particular household's access to food. Also the method is used as an alternative low cost method to measure households' food security status. As compared to proxy (indirect) food security measuring methods which require bulky data it is straightforward and preferable. In addition, the method is an attempt to quantify and understand the food security status of the households through straightforward questions (Coats et al 2006 and Bickel et al. 2000). The guiding principle of this method was developed and used to measure household food security status in the United States by the Central statistics for the census (Coats et al 2006 and Bickel et al. 2000). The United States Development agency used the Rasch statistical model to quantify and scale the food security items. The principle of the method is to weigh each food security question according to its severity. I shall discuss the principle of Rasch scaling in the following paragraph.

This study has used the method developed by the US Food and Nutrition Service. The USDA (United States Development Agency) has developed a guideline that is used as a reference manual to categorize households based on their food security status (Coats et al 2006 and Bickel et al. 2000).

4.3. Data processing

In the course of data analysis, two main issues were addressed. First, the food security and hunger experience items were calibrated and then based on the results households were categorized into three major groups.

The process of calibrating was conducted with the help of the Rasch model¹ accessed from free online R statistical software. The 12 food security items used were selected mainly based on the guideline to measure households' food security status 2000 (Coats et al 2006 and Bickel et al. 2000).

Based on the results obtained from the software, the households were categorized into three distinct groups namely *food secure*, *food insecure without hunger*, and *food insecure with hunger*. Secondly, the households' accesses to four major assets which are defined based on SLA were compared in percentage, mean, and standard deviation by using SPSS version 20.

4.3.1. How was the food security status determined?

In this, study the status of households was categorized as follows:

Food secure-households responded that they have no worries about food or showed minimal food insecurity.

Food insecure without hunger – households showed the concerns about the adequacy of the food supply and made adjustments to inferior quality of food or were forced to take the same kind /variety of food for a long time.

Foods insecure with hunger - Adult household members or children have reduced the amount of food intake. In the worst case, these households experience a physical sensation of hunger.

4.3.2 .Rasch bases and software item calibration values

According to the guide for measuring household food security 2000, "Assumption, the probability of a household affirming a specific item depends on the relative severity of the household and the severity of the item. Thus the probability that a household at severity level "h" will affirm an item at severity level "i" is $p_h = \frac{e^{(h-i)}}{1+e^{(h-i)}}$ where e is the base of the natural logarithms" (see Bickel et al. 2000 . (Guide to measure household food security 2000.)

¹ For further reading see Bickel et al. (2000).

A household was classified as food secure if they scored 1 on all (practically all) items. Since the first four items in the survey were connected to food insecure without hunger the threshold between food insecurity without hunger and food insecure with hunger is calculated by taking out a corresponding family that would score 4 on the first four items (FSIWORY, FSIKIND FSIVAR, FSIWANT) and 1 on the remaining eight items. This gives a total Rasch score of 2.74 and produces a category "*Food secure*" with 479 families (13 %), a category "*Food insecure without hunger*" with 692 families (18 %) and a category "*Food insecure with hunger*" with 2645 families (69 %). When R² estimates the weight in the Rasch scaling the normalization is completely arbitrary. Therefore, it is important to make suitable normalization. Following the method developed by the Americans guide to measure household food security (Bickel et al 2000), The normalization was simply made by dividing the Rasch scores with the sum of the maximum Rasch scores for the twelve items and multiplying by 12 so that the sum of the maximum scores equals 12 and, consequently, the average score per item becomes one then the overall sum becomes 12 i.e the average scores per item becomes 1. The weighted result obtained from the software normalized and ranged from (0) representing *food secure* to (12) *food insecure with hunger*. This magnitude generated from the Rasch software tested with the histogram, and the distribution of food insecurity is normal. Also after categorizing the households based on the generated results the households' asset status, food security situation and other related factors were observed and no contradictions have been identified.

² R refers to statistical software used.

	Rasch score food security scale value				
Households' with children					
Item Description	Once or twice a month	Once or twice every week	Almost every day		Category
In the past one month how often, did you worry that your household would not have enough food? (FSIWORY)	0,11	0,38	0,63		
In the past one month how often were you or any household member not able to eat the kind of food you preferred because of lack of resources? (FSIKIND)	0,06	0,39	0,66		
In the past one month how often, did you or any household member have to eat a limited variety of foods due to lack of resources? (FSIVAR)	0,03	0,30	0,60		
In the past one month did you or any household member have to eat some foods that you really did not want to eat because of lack of resources to obtain other types of foods?(FSIWANT)	0,31	0,53	0,85	2,74	Food insecure without hunger
In the past one month how often did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food (FSISMALL)	0,11	0,40	0,68		

In the past month how often did you or any household member have to eat fewer meals in a day because there was not enough food? (FSIFEW)	0,21	0,47	0,79		
In the past month, how often did you or any household member go to sleep at night hungry because there was not enough food? (FSISLEEP)	0,72	0,86	1,45		
In the past month how often did you or any household member go a whole day and night without eating anything at all because there was not enough food (FSINOEAT)	0,94	1,06	1,73		
In the past month how often did you or any household member have to eat wild food such as fruit of wild tree, because there was not enough food (FSWILDFD)	0,95	1,03	1,45		
In the past month how often, did you or any household member have to borrow food because there was not enough food? (FSBORRW)	0,46	0,64	1,23		
In the past month how often did you or any household member have to leave the household for more than a day because there was not enough food?(FSIMGRT)	0,78	0,92	1,03		
In the past month how often did you or any household member have to sell assets because there was not enough food (FSSELAST)	0,64	0,75	0,88	12	Food insecure with hunger

Table 2: Food security items used and the scale generated from Rasch software.

4.3.3. Explanation of the figures in the table

As explained in the earlier paragraphs. The Rasch model yields joint estimates of the severity of each alternative and the severity of the food insecurity of each household. Questions that are sensitive to food security get higher weights whereas less important questions get lower weights.

So, based on the result households who responded “did not happen” to the first food security item (FSIWORY) scored the value zero (0) and these households are considered as *food secure*. Because, in this particular study these households were categorized as not experiencing any sign of problems with regard to access to food.

The second category is *household food insecure without hunger* which replied to food security questions FSIWORY, FSIKIND, FSIVARITY and FSIWANT and in this context these households did not experience any physical sensation of hunger but they encountered different degrees of limitations to meet their need of food. Specifically, their differences from the third group are the limitations they had in accessing the right quality of food. However they did not show any experiences of the physical sensation of hunger.

The third category of households is *food insecure with hunger*. These households responded to the rest of hunger questions FSISMAALL, FSIFEW, FSINOEAT, FSWILDFD, FSBORRW, FSIMIGRT and FSSELAST and have experienced the physical sensation of hunger with their households’ member. Specifically this category experienced a scarcity of food both qualitatively and quantitatively. Their food deprivations started with eating smaller amounts of food than they needed to the worst situation when household members had nothing at all to eat.

4.3.4. Application of the method and cultural and geographic differences

Looking at the economic, cultural, social, political, and other factors in the study area and comparing them with the situation in the USA it is obvious that the two countries were not comparable. However, looking at the literature criticizing the method an ethnographic study conducted in 15 different countries reveals that it is not possible to have a universal cutoff point for measuring food insecurity. The same perceptions and behavior obtained from households do not necessarily indicate the same degree of severity in food insecurity from culture to culture (Coates et al., 2006). Instead, it is argued that cut off points could be possible to develop within the context of the given area and culture. Therefore, due to the above, in this study “the guide to measure households’ food insecurity manual” has been used with minor adjustments. The USDA household food security measuring method has used 18 items (questions) for households with children, and 10

items for households without children (Bickel *et al.* 2000). In a similar way, since this study collected data only from households with children aged less than five years. Therefore, this study has used the 18 items approach with some adjustments. It means we combined 18 yes/no items into 9 and omitted redundant items and added five coping strategies items thus the number of items was downsized into twelve without changing the items related to food security.

4.3.5. Limitations of the method

This self-reported food security data collection method has been exposed to some biases. Thus in chronic food insecure areas where aid has been distributed, some respondents with expectation of aid, underreport their actual assets status and overstate their hunger situation.

Furthermore, since the data were collected only from households with children under the age of five years there might be limitation of diversity in social group. Thus, the sample may not represent the multiple social groups such as older families, families with children over the age of five years, etc.

4.4. Sustainable Livelihood Approach (SLA)

In the earlier section, I have discussed the method we have used to categorize households into three groups with respect to their food security status. Now, in order to understand these households' asset positions and to select assets in relation to their importance for the food security I have used the SLA approach.

According to the guideline for using the SLA approach DFID (Department for International Development) has suggested five major categories of assets that are important to livelihood. From these categories, four, namely natural, physical, human, and financial assets are measurable and used in the analysis of this study. The social asset is more difficult to measure and requires more time and financial resources and is therefore not included in this study. Therefore, based on the mentioned categories, land is used as a natural asset; head of the household and family size are included in human assets; livestock as financial assets; and housing facility and access to electricity are included under physical assets. Finally, the households' access to those assets has been statistically measured with percentage, mean and standard deviation.

4.5. How I worked within the project

In this project, I started participating as part of the broader research intern staff in the capacity of research assistant. My duty started with the process of developing parts of the questionnaire

specifically with food security and Productive Safety Net Program questions. I was also doing field work in the form of house-to-house supervision of data collection from June 2011 to mid-September 2011. The study has been conducted in four neighboring and socially, economically and agro-ecologically similar districts. The districts are Boloso Sore, Boloso Bombey, Damot Pulasa and Damot Gale. As research assistant, I have supervised the data collectors who have been working in the first two districts on a daily basis.

The involvement in the field supervision gave me an opportunity to closely observe, informally discuss and understand much of how people in the community lived and reasoned about food security, assets etc. The fieldwork thus helped me to understand and analyze my preconceived idea of food security. When confronted with the poor people in the rural areas I realized how very poor people were. Media had presented positive pictures of increased production and improved livelihood but the reality on the ground was deplorable. It is undeniable, there are some improvements in agricultural productivity at individual level, but compared to the proportion of poor and less productive rural farmers, it is difficult to say the progress of the agriculture sector is satisfactory and courageous.

5. Data Presentation

5.1. Results

This chapter will present the distribution of assets across the three major categories of households namely the “*food insecure with hunger*”, almost 70 %, the *food insecure without hunger*, almost 18%, and the *food secure*, almost 13 %. The results of the households’ productivity, their sources of income to purchase food, and their participation in the PSNP will also be described. The presentation will start with the results of human assets, which were obtained with the help of an analysis of the SPSS software version 20.

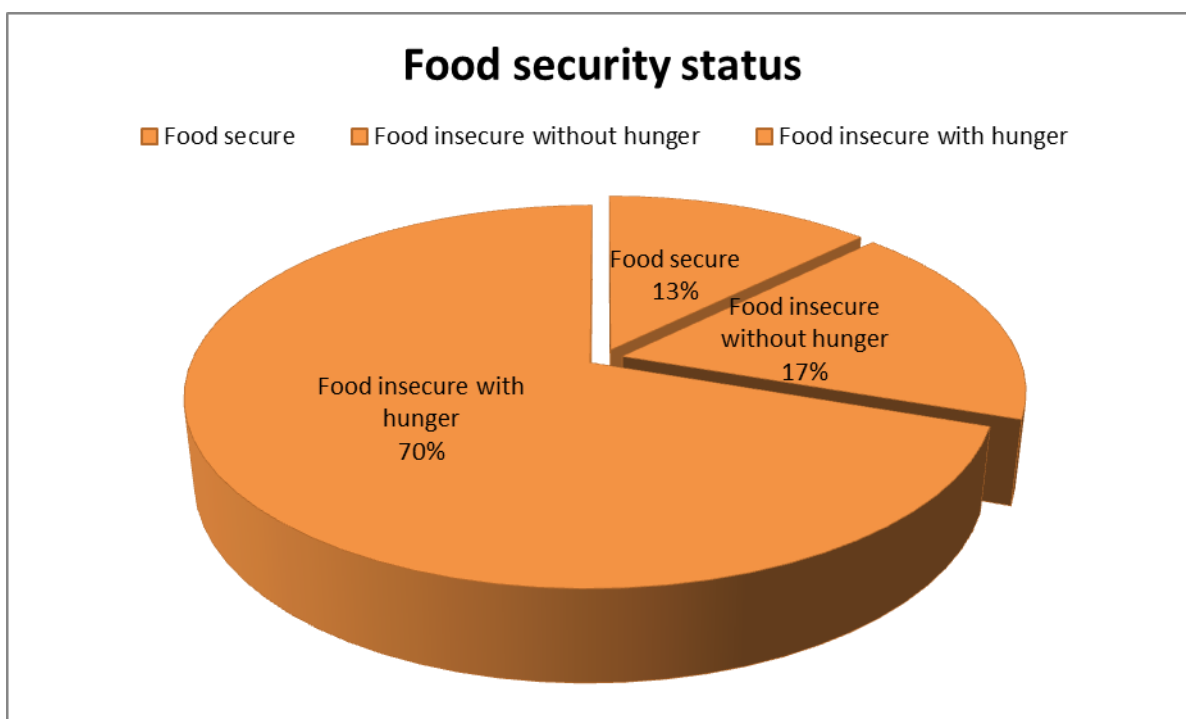


Figure 2: Households by food security status

5.2. Cross tabulation

5.2.1. Human assets

The proportion of men to women headed households is 88.5 % men and 11.5 % women and the food security distribution by gender did not show relevant results. Therefore, since the overwhelming majority of the households are male headed I decided to discuss the households in aggregate form despite the fact that a separate discussion of each category might have yielded interesting results.

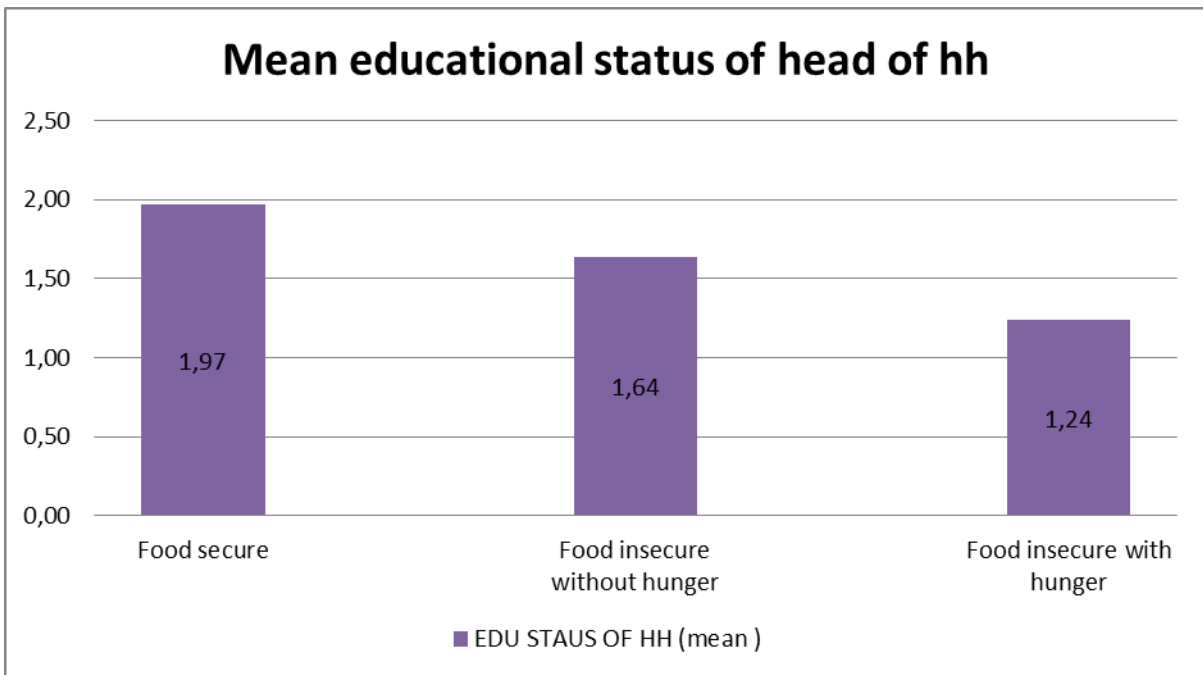
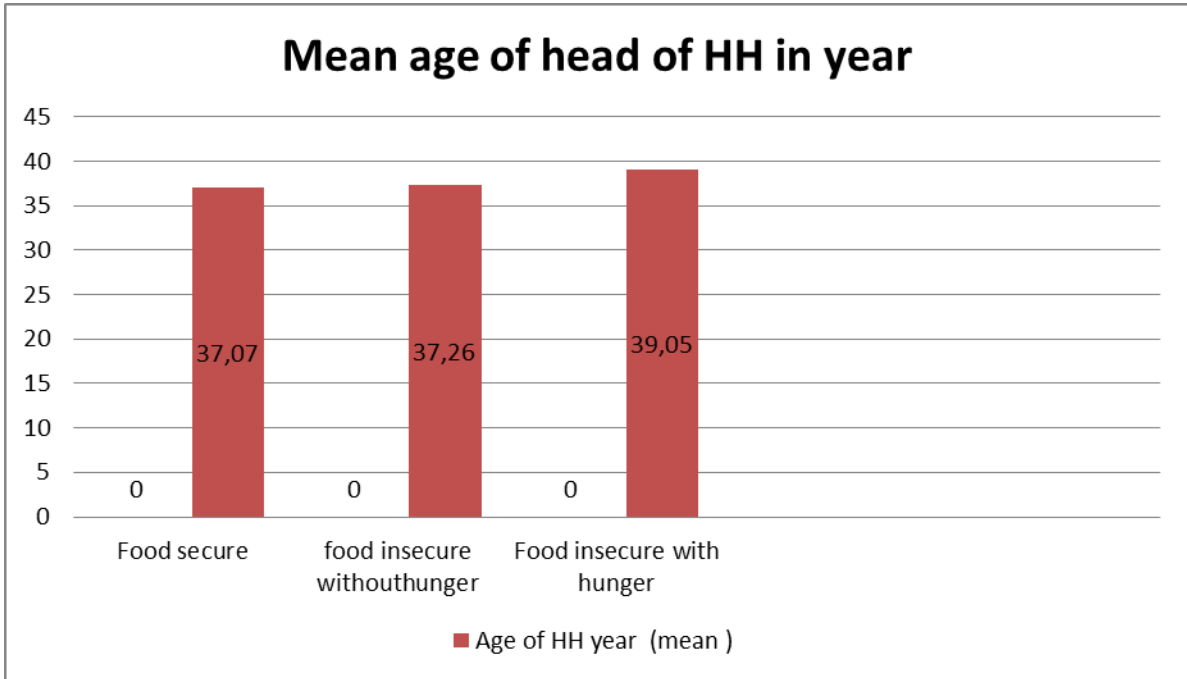
Results of age and educational status of the head of the households and the corresponding household family size are presented in table 3. The mean age of the heads of the *food insecure with hunger* households is 39.05. Compared to the other two groups they are slightly older. The mean age of the *food secure* and the *food insecure without hunger* heads of households is 37.07 and 37.26 respectively. The educational status of the head of households in terms of mean years of school enrolment is for the *food secure* 1, 97 years for the *food insecure without hunger* it is 1.64 years for the *food insecure with hunger* it is the least 1.24 years. Also the mean family size distribution of *food secure* household is 6.16 members, for the *food insecure without hunger* it is 6.14, members and for the *food insecure with hunger* is 6.25.

As a whole except family size we can therefore say that with respect to the variables age and educational status of the head of the households statistically have significant effect on their food security status.

<i>Characteristics</i>	<i>Food secure</i>		<i>Food insecure without hunger</i>		<i>Food insecure with hunger</i>	
Sample population in (n)	428		593		2353	
	Mean	Sd	Mean	Sd	Mean	Sd
Age of HH year	37.07	8,447	37.26	9,652	39.05	9,811
Edu status of hh	1.97	1,507	1.64	1,437	1.24	1,02
Family size	6.16	1,996	6.14	2,074	6.25	1,939

Table 3: Human assets

HIYEAR $F(2,3371) = 13.415$, $P<0,001$, **HEDU** Welch F ratio $F(2,877.848)=58.388$, $P<0.001$, **Family size**, Welch F ratio $(2,879.9)=,867,P=.420$,



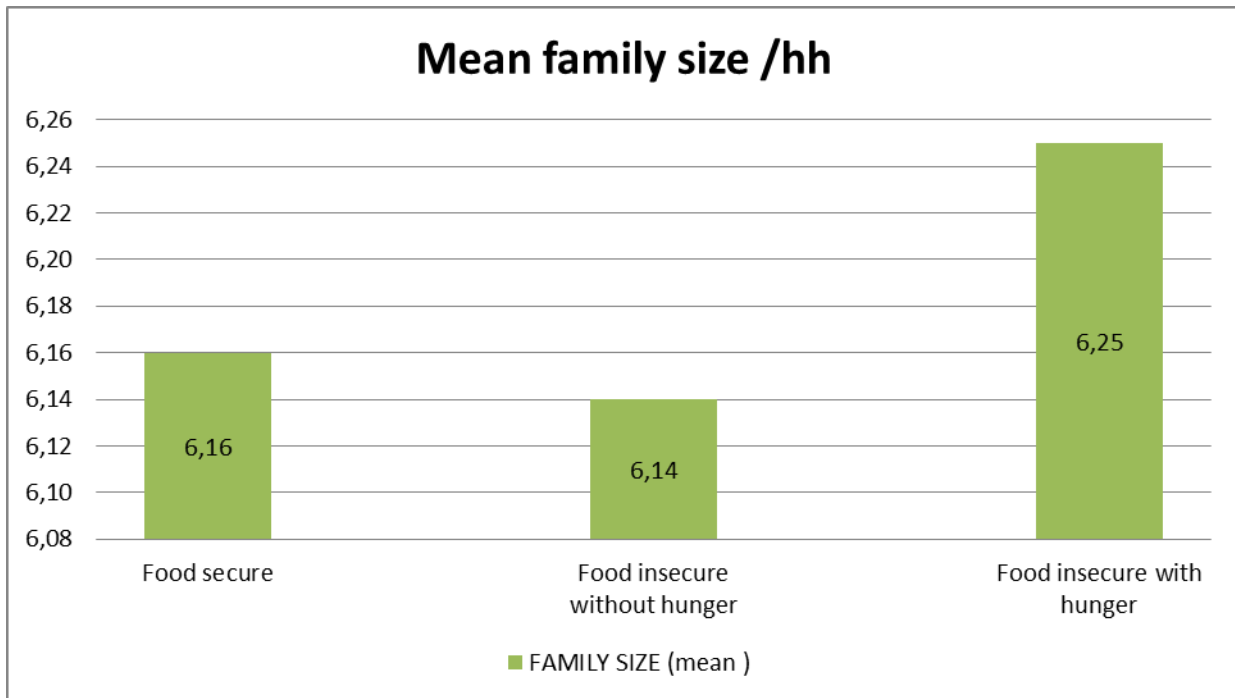


Figure 3: Human assets

5.2.2. Physical assets

5.2.2.1. Housing facilities

Housing facilities such as roofing material, walls and access to electricity are proxy indicators of the households' economic status in Ethiopian rural contexts. The percentage of households with corrugated iron sheet are as follows (table 4), Out of the *food insecure with hunger households* only 35 % have iron sheets, compared to 53 % of the *food insecure without hunger* and 59 % of the *food secure households*. On the other hand out of the total households whose houses were covered with grass the food insecure with hunger households are the highest 65 %, the food insecure without hunger households follow with 46.9% and the food secure households are the fewest with 40 %.

5.2.2.2. Households' access to a separate room for livestock

In the context of the Ethiopian rural setup, to protect livestock from theft living with domestic animals in the same room is widely observed. (Table 4) However, very few households have access to a separate room for the livestock. Out of the *food secure households*, 1.4 % has such access, out of the *food insecure without hunger* 0.67 %, have access and out of the *food insecure with hunger* only 0.17%, have access to a separate room for livestock.

5.2.2.3. Households' access to electricity

From table 4, we can see the number of households with access to electric power. The *food insecure with hunger* households are the fewest of all with 0.3%, compared to 3% for the *food secure* and 3.2% for the *food insecure without hunger* respectively slightly better than *food secure households* in terms of access to electricity a somewhat surprising result because with the rest of studied characteristics *food secure* households have better position .

<i>Characteristics</i>	<i>Food secure</i>	<i>Food insecure without hunger</i>	<i>Food insecure with hunger</i>
Sample population in (n)	428	593	2353
Houses with corrugated iron sheet %	58,9	52,8	34,8
Houses with grass cover %	40,2	46,9	64,6
Access to separate room for animal%	1,4	0,67	0,17
Access to electric power %	3	3,2	0,3

Table 4: Physical assets

5.2.3. Financial assets / access to livestock

The three categories of households are different in their average ox, cow, and horse holding capacity. In terms of variety and quantity with regard to access to livestock (table 5) the *food secure* households are the better off.

The average ownership of oxen is highest in the *food secure* households with 1.1 oxen per household, which is followed by the *food insecure without hunger* households who owns 0.82 and the *food insecure with hunger* who own 0.63 oxen. In addition, the average horse holding capacity is also the highest for the *food secure* households with 1.68. They are followed by the *food insecure without hunger* households who have 1.2 and the *food insecure with hunger* 0.71 Cows seem to be more fairly distributed across the three categories. Comparing to the types of livestock the distribution of cows is fair across the three entire categories *food secure*, *food insecure without hunger*, and *food insecure with hunger* have an average of 1.58, 1.29, and 1, 09 respectively.

<i>Characteristics</i>	<i>Food secure</i>		<i>Food insecure without hunger</i>		<i>Food insecure with hunger</i>	
Sample population in (n)	428		593		2353	
	Mean	Sd	Mean	Sd	Mean	Sd
Oxen	1,10	0,880	0,82	0,731	0,63	1,919
Cows	1,58	1,294	1,29	0,905	1,09	1,961
Sheep /Goats	0,81	1,152	0,68	1,053	0,05	1,919
Horses	1,68	2,410	1,20	2,024	0,71	1,429
Chicken	0,15	,423	0,16	0,398	0,13	1,842

Table 5: Financial assets

Ox $F(2,33.69) = 103.557 P < 0.001$, Cows $F(2,33.69) = 71.557 < 0.001$, Horses $F(2,33.69) = 69.803 P < 0.001$
 Sheep $F(2,3369) = 34.19 P < 0.001$ Chicken $F(2,3368) = 11.607 P < 0.001$

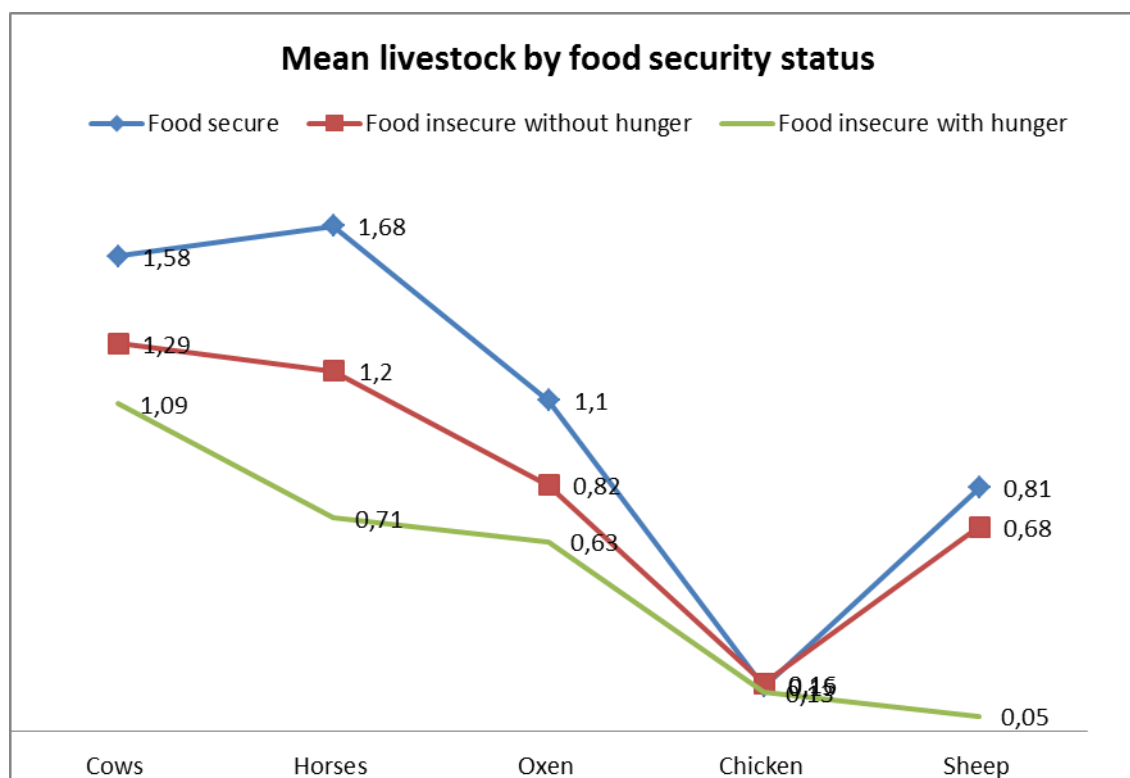


Figure 4: Financial assets

5.2.4. Natural assets / access to farm land

The average cultivated farming land (table 6) per household in the year 2011 across the categories was as follows: the *food secure* households cultivated on average 0.6 hectare (2.4 timad), the *food insecure without hunger* 0.5hectare (2 timad) and the poorest the *food insecure with hunger* 0.38 hectare (1, 5 timad). The distribution of average farmland owned by the households was for food secure 0.5 hectare (2 timad), for food *insecure without hunger* 0.425 hectare (1.7 timad) and *food insecure with hunger* 0.325 hectare (1.3 timad.). The difference between the three categories appears small but the impact on their economy is big. (For ANOVA test result refer annex 6)

Conversion 1 timad = 1/4 hectare

N=3372

CATEGORY		Statistics			
		Produced(cultivate) Last year?	Measurements of land cultivated in Timad	Measurement of the ploughed (cultivated) own land in Timad	
Food secure	N	Valid	427	414	416
		Missing	1	14	12
		Mean	1,97	2,4142	1,9947
		Std. Deviation	,341	1,48533	1,29119
		Minimum	0	,10	,10
		Maximum	3	9,00	9,00
Food insecure without hunger	N	Valid	593	588	588
		Missing	0	5	3
		Mean	1,92	2,0564	1,7240
		Std. Deviation	,363	1,32181	1,06415
		Minimum	0	,10	,00
		Maximum	3	9,00	8,88
Food insecure with hunger	N	Valid	2352	2309	2305
		Missing	1	44	48
		Mean	1,76	1,4754	1,3096
		Std. Deviation	,510	,96778	,83064
		Minimum	0	,05	,00
		Maximum	3	10,00	10,00

Table 6: Natural assets

Land cultivated $F(2, 3308) = 62.097, P < 0.001$, Own farm land $F(2, 3308) = 60.891, P < 0.001$

5.2.5. Production

With regard to the issue of production the households were asked “*how much of your annual food demand was covered from your own production?*” (Figure 6) Among households who covered less

than half of their annual demand from their own production the *food secure households* were 12.1 %, the *food insecure without hunger* 28 % and the *food insecure with hunger* households are 51%. Also among households who were able to cover about half of their annual demand. Statistically there was no significant difference between 45.6 % of *food secure* households and 50.6 % the *food insecure without hunger* households. However 40 % *food insecure with hunger households* were significantly lower compared to the first two categories. On the other hand, from household who were able to cover their annual food demand from their production the *food insecure with hunger* households are the fewest with 5.2 % comparing to 19 % of *food insecure without hunger* and 35% of *food secure*.

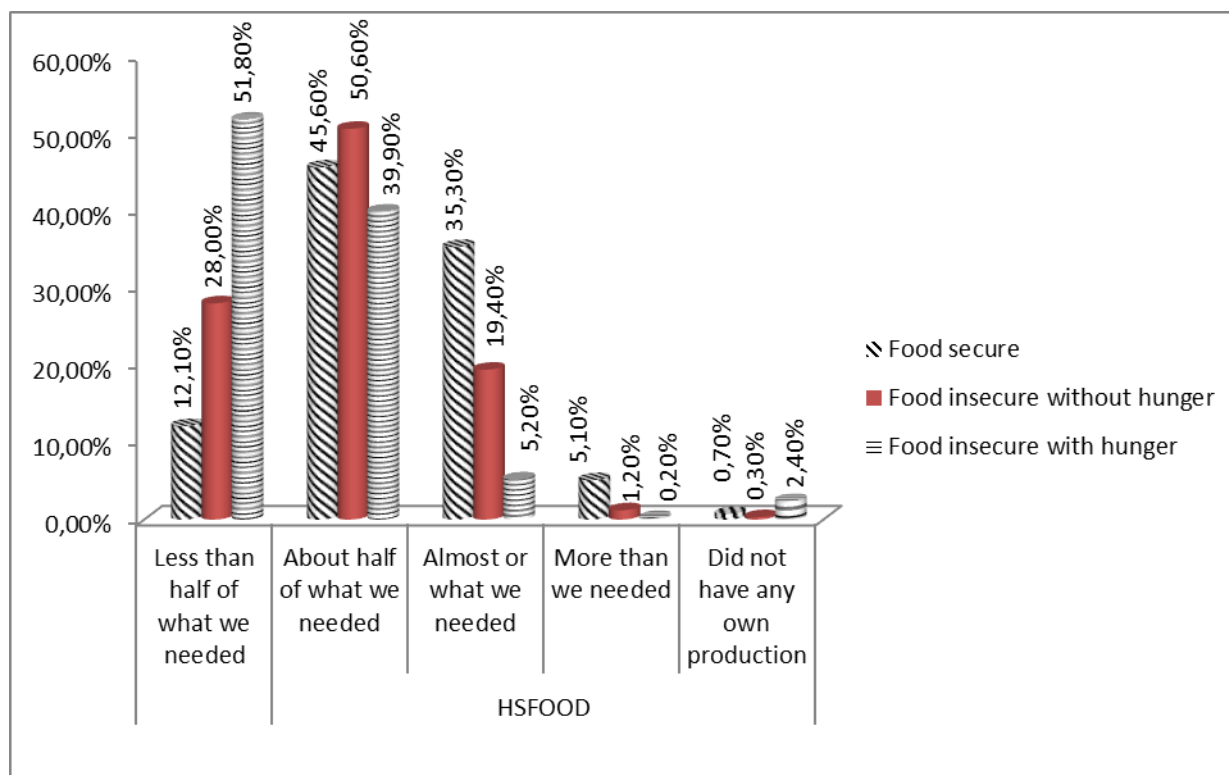


Figure 5: Households by annual food production

5.2.6. Livelihood (sources of income for food)

In figure 7 we find households who were asked about their sources of income for food purchase. Out of the households who responded that they do not buy food from the market or “No purchase of food” *food insecure with hunger households* were the smallest category with 3.6 %, followed by the *food insecure without hunger* 17% and 43.7 % of the *food secure*. In general, we can see that the *food secure households are the least dependent on external food sources*.

Out of the total households, those who used income from their own business for the purchase of food we find that the “*food insecure with hunger* “ households were the most frequent with 52%, the *food insecure without hunger* 45.5 % came next and the ”*food secure households* were the smallest category with 35%. On the other hand, out of the households who used income from their wages or salary from formal employments, the *food secure* households did this most frequently with 6.3% and *food insecure without hunger* 5.4% and *food insecure with hunger* were the smallest category of all with 3.4%.

From households who use income from the sale of agricultural products to purchase food the *food insecure with hunger* households were 23 %, *food insecure without hunger* households were 21% and *food secure* households were the smallest category with 11 %. Finally, from households who use income from sale of livestock to purchase food the *food insecure with hunger* households were the highest with 10 %, the *food insecure without hunger* were 4.6 % and the *food secure* households were 2.6 %.

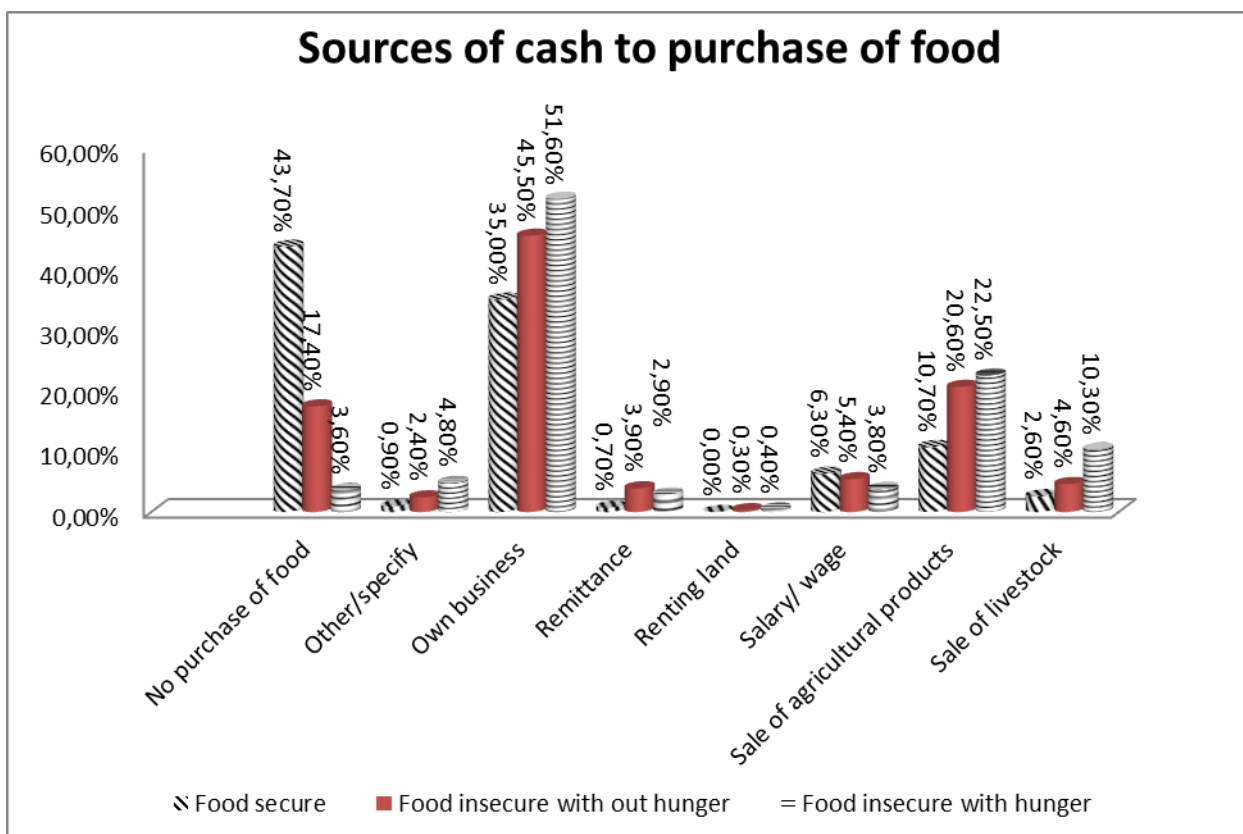


Figure 6: Households by sources of income

5.2.7. The Productive Safety Net, (PSNP)

(See table 7) 90% of the total *Food secure* households are currently not participating in PSNP. 1.4 % started participating less than a year ago, 7.7 % started participating more than a year ago, and only less than 1 % of the households participated in and graduated from the program. From the *Food insecure without hunger* households 85.8 % are currently do not participate in PSNP, 1.2 % joined the program less than a year ago, 10.3 % started participating more than a year ago, and 2.7 % of the households participated in and graduated from the program . Also from *food insecure with hunger* households 74.8% are currently not participating in the program, 2.4 % joined the program less than a year ago, 20.5 % have started participating in the program more than a year ago and 2.3 % of the households participated in and graduated from the program.

Table 7: Households participation in PSNP

		NPSN_C * CATEGORY Cross tabulation				
		CATEGORY			Total	
		Food secure	Food insecure without hunger	Food insecure with hunger		
+NPSNC	Do not currently participate	Count	385 _a	509 _b	1761 _c	2655
		% within CATEGORY	90,0%	85,8%	74,8%	78,7%
		% of Total	11,4%	15,1%	52,2%	78,7%
	participated since less than a year	Count	6 _a	7 _a	56 _a	69
		% within CATEGORY	1,4%	1,2%	2,4%	2,0%
		% of Total	0,2%	0,2%	1,7%	2,0%
	participated since more than a year	Count	33 _a	61 _a	483 _b	577
		% within CATEGORY	7,7%	10,3%	20,5%	17,1%
		% of Total	1,0%	1,8%	14,3%	17,1%
	participated but has graduated	Count	<5 _a	16 _b	53 _{a, b}	73
		% within CATEGORY	n<5	2,7%	2,3%	2,2%
		% of Total	n<5	0,5%	1,6%	2,2%
Total	Count	428	593	2353	3374	
	% within CATEGORY	100,0%	100,0%	100,0%	100,0%	
	% of Total	12,7%	17,6%	69,7%	100,0%	

Each subscript letter denotes a subset of CATEGORY categories whose column proportions do not differ significantly from each other at the, 05 level.

5.2.8. Results of discussions with farmers on PSNP

In order to understand the PSNP participants' opinions and to enable people to give their own views about the Productive Safety Net Program and the assets held by PSNP participants interviews were held with randomly selected farmers. The discussion held with the farmers in one of the study areas (Gara Godo kebele) gives us hints about the selection procedure for membership in the PSNP and the community's participation in the process.

Case-1 *"I interviewed two brothers who were farmers. The younger was a member of the PSNP and the older was not. I asked why both of them were not members of PSNP. They explained that to be a member of PSNP you must meet up with their selection criteria. The elder brother complained that he was not selected because the selection criteria were not good. He explained that the selection criteria were wrong and that the local food security task force committee members were unfair.... After a long discussion with the two brothers a third farmer joined the discussion. His views on the selection criteria were that the younger brother was selected because he was poor he only had small plots of farmland while his elder brother was better off because he had a cow, oxen, and larger pieces of land.*

Case -2 - Farmers from Gara Godo kebele, the benefits of participating in PSNP.

Another farmer was interviewed and he explained about PSNP "Three years ago we were 600 who started to participate in PSNP. Surprisingly it is only one person who refused to become a member. Personally, I appreciate the safety net program because people will lend us money by considering PSNP as a guarantee for more loans. Most lenders believed that we are able to pay the loan back from the money which comes from PSNP. In fact most of those who lend us money are local elites and program implementers. Usually we borrow a small amount of money and pay with 50 % interest. Thus those who lent us money took it back. For instance this is our third month since we have received money. I didn't have any money to celebrate my son's graduation as a teacher. Therefore I sold my cow which I had bought with PSNP money to celebrate him. Also I have 60 legs (pieces) of coffee tree but I sold the harvest last year so the harvest for this year is no longer mine. Because last year due to shortages of rainfall the coffee harvest was not good and this year also we do not know what will happen. Therefore I sold my coffee harvest in advance to a person who has money and is able to take the risk of harvest failure."

From the interviews above and from (table7) proportion of households participating in PSNP, it is possible to understand the level of community participation in PSNP and the interviewed people's

perception about the program. As we have seen the above cases farmers' in the program seem positive regarding their participation in the selection process. However, some farmers their perception of PSNP and the goal of the government to come out of poverty, do not seem match. For instance, some farmers the cow they bought with the money obtained from the PSNP, instead of reproduce it they sold it back for other purpose.

Also, some of the scenarios came up during participant observation, which may help for future researches. For instance I have observed Women's' butter and milk associations which are part of the social asset that could help households to food security, However the quantitative data I have is limited to show this effect .

Also some of the households with livestock managed their livestock in a productive way. For instance, I have observed households that are used livestock for the purpose of milk and milk products, fattening and local transportation. In addition, I have observed some households used the manure to improve the farm output by dumping the manure on their farm field. On the contrary, some of the households drying the dung and used it as a source of fuel to cook food rather than using it as manure in the farm field. These are some scenarios important for future researches.

6. Analysis and discussion

The aim of the study was to elaborate on food security and discuss conditions related to a major research question in Southern Ethiopia namely how to obtain economic sustainability for poor rural households. Emphasis in the study has been on the relative importance of various household assets and on those who due to lack of various assets be they physical, natural financial and human were not able to survive all year round on their production.

This study has tried to address two specific research objectives. (I) to identify the most important assets required to improve household food security in this part of Ethiopia and (II) to find out if, and if yes how the PSNP as a government program succeeds in promoting food security.

Methodologically the study has used a combination of different analytical methods. First of all I have spent several months in the area observing and interviewing farmers from all kinds of households about what aspects in their living conditions those are most important and most vulnerable. After collecting the household data and in order to measure the households' food security status and to categorize the households the Rasch statistical method was used. According to this method 12 selected food security items which describe households' coping strategies and experiences of hunger have been used. The method has given the following results, 69.7% of the households were *food insecure with hunger*, 17.6% of the households were *food insecure without hunger* and 12.7% of the households were *food secure*. Successively access to different assets was analyzed with the SLA method. Finally, the central tendency of the assets has been measured by using the SPSS version 20.

6.1. Household assets

6.1.1. Assets and livelihood outcome

Following Ellis (2000) who has argued that people's ability to cope with or adapt to poverty depends on their access to different assets. I have similarly observed how some households, with access to various farm related assets have been able to cope with food shortage. Even though the difference is very small, in the study it was found that the types and the amount of assets that households have access to determine their food security. In this study four major asset categories were examined namely human assets represented by age and educational status of the head of the households as well as the family size, physical assets identified as housing facilities and access to electricity, financial assets characterized by access to various domestic animals like cows, oxen,

horses etc. and natural assets represented by access to farm land. From the data analysis, two particular kinds of assets were found to be more important than the others for household food security, namely natural assets or access to land and financial assets in the form of access to various domestic animals. The reasons why these two kinds of assets were so important and had such impact on household food security and sustainability will be discussed below.

6.1.2. The relative economic importance of various assets –land size

In (table 6) on the distribution of land we could see that the *food secure* households have access to the largest size of farm land namely 0.6 hectares .The *food insecure without hunger* have access to 0.5hectares and the *food insecure with hunger* have access to the least with 0.38 hectares. Even though the difference in size does not appear to be big understanding the meaning behind those assets figure is important.

Since this study was carried out in an “enset”, false banana, production area I have compared the results with another study from a similar area namely that of Nega et al, (2003). In this study it was found that where “enset” was used as a complementary source of food an average household needed a minimum of 0.56 hectare land size for crop production to survive and lead a viable livelihood.

Despite having other livelihood portfolios such as off farm and non-farm³ activities farming is the most important mode of survival in the study area. As a result, for the majority of the households the income earned from subsistence farming covers the major share of their food expenses. Thus, the importance of access to farm land and farm inputs is indisputable.

Similarly, as the findings of this study have shown, (table 6) the relatively better off households or households categorized as *food secure* have access to the largest farm size of 0.6 hectares on average.

Comparing to the *food secure* households, the *food insecure with hunger* and the *food insecure without hunger* the *food secure* households visibly had access to more land.

The effect of access to more land is reflected in the production figures of the households. As the production results show (figure 4) out of the total *food secure* households 45.6 % of them produced half of their annual demand, 35 % produced almost all of what they needed and 5 % produced more than what they needed. Thus, households with access to more land are less

³ Off-farm refers to wage or exchange labor on other farms (i.e. within agriculture) and Non-farm activities non-agricultural income sources such as non-farm wage or salary ,rent etc.(Ellis ,2000)

dependent on external food sources, which in turn minimize their vulnerability to food and income shock.

Therefore, in order to make farmers self-sufficient in food production, access to sufficient land is important, without underestimating other factors such as land quality. However, there are other factors related to the size of farmland and to households' motivation to improve the quality of the land. The study by Negatu, (2006) has shown that the cost of farm inputs such as fertilizer and selected seeds are so high that using them is not worth the very small increase in the harvest that may result. Thus farmers are not motivated to intensify the farming and to increase production (Gebreselassie, 2006). Likewise in this study the *food insecure with hunger* households had access to the smallest size of farmland on average 0.38 hectares on average. Moreover the poorest households produced the least and suffer from hunger. In this study (figure 4) only 5.2 % of the *food insecure with hunger* households were able to produce almost all of what they needed while those in the worst situation about 51.8% produced less than half of their annual demand . As a result the *food insecure with hunger households* is highly dependent on external food sources, which in turn might lead them to food and income shock.

So as we have seen in the results households who have access to more land are more productive and less dependent on external food sources, which in turn minimize their vulnerability to food and income shock. Equally important is the fact that without land to feed the animals it is not possible to raise livestock. Land is thus a precondition for livestock rising.

- Livestock

Another important finding of this study deals with households' financial assets or how households tend to invest. Regarding financial assets (*Table 5*), the *food secure* households have access to the largest amount of livestock, on average 1.1 oxen, 1.2 cows and 1.68 horses/donkeys/mules. Similarly to access to farm land the *food secure* households also have access to a greater variety of and more livestock compared to *food insecure without hunger* and *with hunger*. However, they use the livestock in a special way. From my experience and discussion with farmers, *food secure* use their livestock to support the objective of food security in two different ways, financially as a buffer stock, and materially as a farm input to enhance productivity.

As discussed above assets can be accumulated or created, mainly when a surplus is generated. In rural areas where there are no financial institutions households prefer to invest in future income generating assets. Likewise, in this study the households had a tendency to invest the surplus

generated from farm and non-farm activities in livestock. There were three financial motives for this. The first is that there are no financial institutions in the rural area like banks and insurance services, where rural people can save their cash. Secondly livestock is fungible or easily converted into cash when households are exposed to food or income shock. Especially in this study area there is a popular livestock market where livestock can be sold to the local market easily. Thirdly, households often invest in cows because they get milk and milk products which are important to the rural households' budget and food security.

-Cows

In table 5 above we could also see that each group regardless of their food security status, had access to an average of one cow per household. This shows us that cows are more important than oxen and horses, mules and donkeys. From my experience, coming from a neighboring area, this is strongly related to the income farmers get from dairy products particularly the local butter. The "Wolaita" butter is very popular in the region and highly demanded in the market. For instance the name "Wolaita" is used as a brand name by a vegetable butter factory called "Wolaita butter". The existence of this market also motivates households to invest in cows for the purpose of milk and milk products. Furthermore, women in the area have a tradition of forming a group that consists of 5 to 6 members to collect butter or milk. This is locally called "equib". Members of the group contribute milk or butter each week, and each member in turn gets the chance to take the milk and butter of the week, sell it on the market and use the money for their own purpose. In this manner every member will benefit from the group by turn. This is a tradition purely based on trust among them. It also strengthens their social ties and is a solution to their immediate financial needs. Finally compared to small ruminants like goats, sheep and poultry, cows, oxen and horses are favored by the farmers. During the study, it was not revealed why they were not interested in small ruminants and poultry but it is a topic that has to be investigated. However, quantitative studies are limited to reveal such detail information therefore in order to find out the details the importance of qualitative studies is unquestionable.

In the study districts, livestock mainly consists of oxen which are used as traction force for farming. They are not only used by the owners, but are also rented out to other farmers. When another person's oxen are used for farming it is customary to share the production with the owner farmers. On the other hand there is also a tradition to fatten oxen and sell them on the popular local livestock market. From my observations when doing the fieldwork, I could every Tuesday see people from a

neighboring community (from Alaba) come to buy oxen and transport them to the neighboring district.

Another result from livestock rearing is the dung collected from cows, horses, and oxen, which is used as manure or organic fertilizer, to improve the quality of land and increase farm production. Thus dung gives a relief from the cost of fertilizer.

Households with very little farmland, however, or in this study context the *food insecure with hunger* households, had access to fewer livestock and with less variety. Even when this category of households has access to a cow they use the dung as a source of fuel to cook food or sell it to neighbors for fuel purposes. This behavior in turn traps poor households who remain in the worst condition of food insecurity, since they reduce the fertility of the soil and decrease production. On the other hand, access to livestock in *food secure* households creates an advantage which is not enjoyed by other households. Not only because of the manure they add to the fields but also because horses, donkeys, or mules are used as means of local transportation. In this regard, *food secure* households have an advantage because they can make a profit by buying various items from a surplus area and selling them to a high market area. In addition, by transporting agricultural inputs for their own farm they reduce their costs.

In general, to raise livestock is a very important means to improve the households' food security since the animals and their products can be used for so many purposes including as a bank deposit or an investment. The major obstacle to raise more livestock is, as earlier mentioned the lack of land.

To sum up, the most important asset required to improve household food security and economic sustainability in this area is land. Without sufficient land farmers can neither cultivate the food they need nor raise livestock to improve their living standard. The problem is that there is a shortage of land. Livestock is of key importance to those who can raise them since they are a source of immediate milk, butter or long term labor force, manure, sale of offspring.

6.2. SLA (Sustainable Livelihoods Approach)

The sustainable livelihood framework approach is a method to collect, organize and analyze assets, which are relevant to households' livelihood opportunities. The approach was developed based on the assumed relationship between households' assets and their livelihood choices. As compared to other approaches that are used to collect the information, it is more suitable and widely used in the field of rural development researches.

In this study, by using parts of the approach I have found the approach useful to identify the most important assets to which the three categories of households have access and also to understand how the assets sometimes are used in an economically productive way and sometimes not. The study has also identified some of the limits of the method, in line with what was discussed above. Thus the major problem identified which is shortage of land cannot be helped by the SLA. To solve the problems of the food insecure with hunger it seems necessary to go beyond farming as a means of survival. Such an approach is, however, not part of the SLA tool box.

6.3. The Productive Safety Net Program

Despite the fact that (Table 7) 75 % of “*Food insecure with hunger households*’ or a majority of the needy households could not join the PSNP, this category still consists the majority of the PSNP participants. For instance from households participating in the PSNP for more than a year, 21% of the households are the *food insecure with hunger*, while 10 % of the households are the *food insecure without hunger* and 8 % the *food secure*. This result shows that the program is still targeting the needy households.

Regarding the issue of participation I learned that even though, the level of participation is not satisfactory it is possible to understand that there are instances where the communities can participate e.g. in the selection of beneficiaries. However, this does not mean that there were no external influences in the recruitment of beneficiaries because there were many households who are not supposed to be part of PSNP who were still there see (table7). In other words, the participation of the households in the program is limited to the recruitments of beneficiaries and exposed to the external influences for example by local elites.

6.3.1. Targeting

(Table 7) The fact that 75 % of the *food insecure with hunger households* were *not* included in the program, despite being eligible while 8 % of the *food secure* and 10 % of the *food insecure without hunger* households still participated in the PSNP program for more than a year regardless of their eligibility is an important discrepancy from the policy. This is similar to an evaluation by Sharp et al, (2006) according to which female-headed households and old age households were included in PSNP regardless of their needs.

Maybe questions could be raised like what if these people were poor by the time when they were targeted to the program. In this regard, according to the PSNP manual, households should have to

graduate within three years of enrollment. However, by the time of the data collection a majority of them were in their fifth year.

So the existence of these households in the program has two negative consequences particularly to the program and the community. As the discussion held with the farmer from Gara Godo kebele, showed the longer households stayed in the program the more they seem reluctant to leave it, because they stayed as members even though there were people who had nothing to eat but who were excluded from the program. One farmer sold his cow just to celebrate his son's graduation and continued in the program. Such lack of commitment could be related to having stayed too long and having become dependent on the program.

Even the recent recruitment also showed that households are still included in the program regardless of their eligibility.

From the above discussion, we can understand that inclusion of people regardless of their needs or access to assets can cause a problem both to the program and to the community. To the program its track record and success rate become low, especially when compared to the stated standard and time plan. The allocated budget is sometimes spent on the wrong people. This again inflates the number of people under poverty because these people will always be counted as people under the food gap. To the community, the possibility to include other poor people in to the program will be obstructed and the time that poor people have to suffer from hunger is prolonged. Maybe it also affects resilience households, those who probably can return back into production with little assistance.

We can still ask why so many of the eligible households were excluded from the program. Findings from an independent evaluation report (Sharp et al, 2006) shows that PSNP is working with a quota system and the number of households' assigned from the federal to the community level is limited. *"For example in Enderta Woreda (Tigray), the sample kebele had requested resources for approximately 5,000 Public Works and 120 Direct Support beneficiaries for 2005, but received a quota of 2,500 Public Works and 89 Direct Support:"* (Sharp et al, 2006: p14). As a result, even though households are eligible it is difficult to include all households into the program.

Conclusion

The overall aim of the study, namely to elaborate on how to improve the economic sustainability of poor rural households has been answered by showing that households that have access to specific assets and manage them in a productive way, within the local context can be food secure .

The specific research question posed in the study as well as their answers is as follows:

1. Which are the most important assets among natural, physical, financial, and human assets, required to improve household food security in this part of Ethiopia?

Natural assets access to land and its quantity has been found to be the most important assets in this part of Ethiopia. Ownership of land does not exist since the state owns all land. Land use rights are, however important as well as the possibility to rent land. Land is important both for agricultural products in which you can plant on it and also because of the domestic animals you can raise on it. Financial assets like domestic animals are used as farm tools, to obtain milk and milk products, to rent for cash or kind as an investment and /or reproduction, for manure, for transport, including between markets.

Human assets like age, educational status of the head of the household family size as well as Physical assets like housing facilities were found to be less important for household food security.

2. Does the government's PSNP promote food security, and if yes, how?

The program promotes the food security for the food insecure with hunger households who are members of the program. However, due to financial constraints a majority of the eligible households are not members. Furthermore very few households graduated from the program and some who are not eligible are members. Still those who are members are protected from further destitution.

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