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Determinants of Household Food Security in Doyogena woreda, Kambata Tembaro Zone, South Nation Nationalities and People Regional State, Ethiopia

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Currently food security issues become one of the serious concern and top priority areafor developing countries. Having clear picture on food security status and its majordeterminants helps policy makers and planners to devise new policies that enhance foodsecurity. Hence, this study was conducted to determine the status of food security in thestudy area, to identify the major determinants of food security among the rural household, and to identify different food security status groups to copewith food insecurity. Farm householdsreported to have employed different coping strategies including consuming less preferredfood staples, selling productive equipment and livestock, and migrating to other places insearch of food and job. The finding of this study ensured that rural household are highly diverse and Policy-makers need to reflect on the mostsuitable ways of supporting this diversity. Any attempt to intervene the community need totarget specific groups of societies such as female headed households, wage workers, pettytraders, food insecure and the poor.
Keywords: House hold, food security, Doyogena, Ethiopia.

Introduction

1.1. Background

There are 854 million undernourished people worldwide: 820 in developing counties, 25 million in transition countries and 9 million in industrialized countries. Sub Saharan Africa accounts for 13% of the population and 25% of the malnourished. It is developing region with the highest proportion–one third-of people suffering from chronic hunger. Hunger in sub Saharan Africa is persistent and wide spread.Between 1990-92 and 2001-03, the number of undernourished people increased from 169 million to 206 million [17].

Food security and insecurity are terms used to describe whether or not people have access to sufficient quality and quantity of food. They are affected by factors such as poverty, health, food production,political stability, infrastructure, access to markets, and natural hazards. Improved food security is important for global reduction of hunger and poverty, and for economic development [30].

In 2000, world leaders committed themselves to the Millennium Development Goals (MDGs) and its aim is to eradicate poverty and hunger.Africa and Southern Asia [17]. It is predicted that many people will not reach their MDG targets particularly in Sub-Saharan Africa where a third of the population is food insecure and there is an actual increase in the number of hungry people due to rapid population [31]. The region's per capita consumption is projected to decline by 0.5 percent per year through the next decade. By 2008, Sub-Saharan Africa is projected to account for 61 percent of the total gap to maintain consumption and constitutes 79 percent of the total nutritional gap [32].

Ethiopia is one of the poorest countries, within Sub-Sahara, with indicators suggesting low levels of development. Some scholars believes that famine incidences caused by drought in Ethiopia goes back to the 11th century and some even refer as far back as 253 B.C. Between 1900 and now about 18 famine periods were registered in the country's history [22]. In most instances famine and hunger are both rooted in food insecurity. It is usual to witness seasonal hunger usually in the months just before the coming harvest. On the surface it appears that erratic weather conditions have repeatedly triggered large-scale cattle and crop failures for the subsistence farmers including our survey area.

Food security is the condition of all people, at all times, has physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life[39]. Dimensions of food security are, Food availability: The availability of food is sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).

Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Utilization of food is adequate diet, clean water, sanitation and health care to reach a state of nutritional well-

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being where all physiological needs are met. This brings out the importance of non-food inputs in food security. Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

The determinant factors are land size, fertility of soil, income, farming technologies, extension services, labor, credit service, owning oxen,dependency ratio, social and infrastructural situation are determinants of food security. Hence, a combination of negative effect of these determinants have resulted in serious and growing problem of food insecurity in Ethiopia .Coping strategies are skipping adults to feed children, limiting size and frequency of food, borrowing and gifts from relative and friends, mutual support mechanism, selling of livestock and fire wood, cash for work and relief assistance. The copping strategies policies mainly focused both production and social security activities like safety net.

1.3Objective of case study

- To assess the determinants of households food security in Doyogena woreda;
- To assess indicators of food securityin Doyogena woreda and
- To assess coping mechanism and Policy options to improve food security in Doyogena woreda.

2 .Literature review

2.1 The Development of Food Security Concepts

Food security concept originated in the mid-1970s during the international discussion on global food crisis. The initial focus of food security attention was primarily on food supply problems of assuring the availability and to some degree the price stability of basic food stuffs at the international and national level [16]. Thus, in the 1970s the issue of food security referred to the national food supply's capacity to meet the population's energy and nutrient needs. The concept of household food security has been understood by many development workers as the availability of food in the world market place and on the food production systems of developing countries [5].

World Food Conference in 1974 due to food crises and major famines in the world, the term Food Security was introduced, evolved, developed and diversified by different researchers. Food security and insecurity are terms used to describe whether or not households have access to sufficient quality and quantity of food. Food security issues gained prominence in the 1970s and have since been given considerable attention. It is perceived at the global, national, household and individual levels. Food security at global level does not guarantee food security at the national level. Moreover, food security at the national level does not guarantee food security at the household or even the individual level [13].

Concepts of food security have evolved in the last thirty years to reflect changes in official policy thinking [10]. The term first originated in the mid-1970s, when the World Food Conference (1974) defined food security in terms of food supply - assuring the availability and price stability of basic foodstuffs at the international and national level: Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices.

In 1983, FAO analysis focused on food access, leading to a definition based on the balance between the demand and supply side of the food security equation: Ensuring that all people at all times have both physical and economic access to the basic food that they need. The definition was revised to include the individual and household level, in addition to the regional and national level of aggregation; the widely accepted [39] definition reinforces the multidimensional nature of food security and includes food access, availability, food use and stability. It has enabled policy responses focused on the promotion and recovery of livelihood options. In short, as the link between food security, starvation and crop failure becomes a thing of the past, the analysis of food insecurity as a social and political construct has emerged [11].

More recently, the ethical and human rights dimension of food security has come into focus. The Right to Food is not a new concept, and was first recognized in the UN Declaration of Human Rights in 1948.[25] a set of voluntary guidelines supporting the progressive realization of the right to adequate food in the context of national food security were elaborated by an Intergovernmental Working Group under the auspices of the FAO Council.Success in production and distribution plays an important role in influencing the food security status of an individual, a household or a society at large [24].

Food security is dependent on the ability of a population to access food in quantities and qualities that satisfy the dietary needs of individuals and households throughout the year. These are demographic conditions create vulnerability when size of population exceeds the carrying capacity of a particular area, and there is limited opportunity for out-migration or for development of physical, social and economic infrastructure so as to provide more productive alternatives to the dominant livelihood systems in the area[24].

High share of rural population in the total may indicate the presence of this kind of vulnerability, particularly if it occurs together with a low level of economic development in rural areas. A high proportion of dependent persons within a family, community, locality or nation also increase the risk of under-nourishment for these persons. Environmental conditions: According to [12] can create chronic vulnerability in several ways. People living in areas where the natural resource base is poor or deteriorating often have limited opportunities for earning their livelihood. Their situation is

worsened if acts of man lead to pollution and environmental degradation. Variable climatic and geophysical conditions and biological threats create additional risk.Availability of arable land per capital usually declines with economic development, as more and more land is dedicated to non-agricultural use, and high-technology, high-yielding agricultural practices are introduced on the remainder.

Economic conditions can be monitored and assessed at various levels - national, sector al, or zonal. The degree to which an economy is or is not diversified will often determine whether or not employment and income-generating opportunities exist that would provide sufficient purchasing power to meet basic food needs to all segments of the population. Also, the level of development and the dynamism of economic activities in rural areas often have a strong influence on the level of under-nourishment nationwide [35].

Political conditions can affect food security positively or negatively. Political structures that encourage people's participation tend to reduce vulnerability. But, the presence of civil conflict is a vulnerability factor which can restrict employment and market opportunities, and may lead to loss of assets, destruction of social and physical infrastructure, and even displacement from their homes for affected households. Armed conflict and civil strife were major sources of food insecurity in the 1990s and will continue to be this century. Social conditions including both the state of social services and prevailing social attitudes have a very important influence on vulnerability and food insecurity. Traditional knowledge offers possibilities for finding innovative solutions to local problems but traditional attitudes may also create a stumbling block in certain circumstances [4].

2.2 Determinants of food security in Ethiopia

The study of [6] conducted in Ethiopia, identified different factors that cause food insecurity. These are deterioration of food production capacity (due to drought and land degradation), population pressure and instability and armed conflict. Similarly,[34] conducted in Amhara region identified the following factors that cause food insecurity. These are drought (rainfall pattern, farmland due to population pressure, soil erosion, and number of oxen, sheep and goat price, soil nature. Fertility of soil, income, farming technologies, extension services, labor, social and infrastructural situation are determinants of food security. Hence, a combination of negative effect of these determinants has resulted in serious and growing problem of food insecurity in Ethiopia. These will have cumulative effects on household level food security status.

Food insecurity emerged as a key problem and development challenge in Ethiopia in the early 1970s and became pervasive in the subsequent decades. More importantly, since the mid-1980s the images of severe drought and large-scale starvation have become inexorably linked to Ethiopia. Combinations of natural and man-made factors have resulted in this serious and growing food insecurity problem in many parts of the country. The immediate causes of food insecurity include frequently recurring droughts and erratic rainfall patterns, ecosystems degradation, rapid population growth, the low levels of technology employed in agriculture and the resulting low productivity of the sector, poor rural infrastructure and legacies of the past policy constraints are also considered as basic causes of food insecurity and widespread poverty in the country [29].

Several studies in the past have indicated that people of Ethiopia have experienced long periods of food insecurity which may be ascribed to several factors which include occasional droughts and also degradation of farm lands. These factors have limited the "physical, social and economic access to sufficient, safe and nutritious food necessary to meet the dietary needs and food preferences for leading an active and healthy life" for majority of the residents [21].

The study conducted by [36] in rural Gedeo indicated that population growth and scarcity of resources, small landholding, farmers skills and low level of education, inappropriate production systems and marketing services, drought and variability of rainfall, urban expansion, in-and off-farm unemployment and traditional, social and cultural factors were major causes of food insecurity in the study area.In this regard, different researchers agree that the causes of the existing food insecurity problem in Ethiopia are numerous and interrelated. These includes rainfall variability, soil degradation, inappropriate storage facility, pre and post-harvest crop loss, inability of the households to purchase food, small and fragmented land size, lack of off-farm income opportunity, the under development of livestock sub- sector, inadequate credit and extension services and tenure insecurity [7]. Similarly, land degradation coupled with unpredictable rainfall and drought cause a serious threat on household's food security in Ethiopia. Besides, overgrazing, improper cultivation practices, disgorgement of land resource are the main causes for food insecurity [3].

The majority of the severest food crises after the second half of the 20th century were caused by a combination of several factors. The most common causes of food insecurity in African and other third world countries were; drought and other extreme weather events, pests, livestock diseases and other agricultural problems, climate change, military conflicts, lack of emergency plans, corruption and political instability, cash crops dependence, aids and rapid population growth [2]. Government Policy: Whenever food shortage or famine occurred in a given country, the government is responsible for failing to prevent the crises. Some researchers claim that government policy failures or inappropriate development strategies are responsible for the recurrence of food shortage and famine or for underdevelopment in a broader context [8].

A food secure person today may not be a food secure person tomorrow .This implies that the number of food insecure population changes from time to time and from location to

location. Similarly, national or regional food security does not imply household food security. A particular community may consider food secure in general at a given time.

2.3The Four Dimensions of Food Security

Food availability

The availability dimension captures not only the quantity, but also the quality and diversity of food. Data are drawn mainly from [18]. Food Security Indicators, and calculated by the author. Accessed October 15, 2014.
www.fao.org/economic/ess/ess-fs/fs-data/en/.

An indicator that measures adequacy of food supply in terms of calories and helps in understanding whether undernourishment is mainly due to insufficient food supply or bad distribution ECA/RITD/CRIT/2014/044.

Alongside this increase in food supply at continental and national levels, in general, there has been improvement in food diversity, resulting in a slight decrease of the share of dietary energy supply derived from cereals, roots and tubers and increased supply of proteins and increased per capita availability of fruits and vegetables, livestock products and vegetable oils [18]. Overall, the analysis of food availability trends in Africa indicates improvement, though quite modest, the matter that suggests that observed food insecurity is primarily caused by the other dimensions of food security.

Table: Classification of Households by Food Availability

Category	State of household food in security	Food availability(kcal per person per day)
1	High food security	2800^{+}
2	Moderate food security	1680-2799
3	Moderate food deficiency	1000-1679
4	Extreme food deficiency	<1000

Source: [9]

Access to food

With respect to the access dimension, which assesses both the physical and economic access to food, the situation in Africa, but in particular Africa south to Sahara, has continued to be the greatest challenge in terms of achieving food security. Physical access to food in Africa south to Sahara is complicated due to weak or inappropriate infrastructures such as poor roads, ports, communication, food storage facilities and other installations that facilitate the functioning of markets, particularly in rural areas. In some rural areas in Africa south to Sahara, only 30% of the populations live within 2 kilometers of an all-season road, which is just over half the shares for Latin America and the Caribbean, 54% and South Asia, 58% [27].

As regard to economic access, the Domestic Food Price indicator is assessed in order to monitor regional food security. As indicated by the Domestic Food Price indicator, relative food prices have increased, on average, in Africa by 19.1 per cent over the period 1990-2013 as compared to 15.3 as an average in developing countries. The Domestic Food Price Level Index is an indicator of the relative price of food in a country. It is widely used for global monitoring of food security because it compares the relative price of food across countries and over time. ECA/RITD/CRIT/2014/04 5

High level of poverty coupled with high basic food price, poor physical access, low human development, high level of inequalities and inefficient preventive social protection mechanisms

have strongly affected production and/or purchase of food at household level, therefore contributing to reduce access to food [38].

Food utilization

This dimension is assessed by the percentage of population that has access to essential services such as improved water sources and sanitation facilities and electricity. Proper food utilization implies that the food is handled, prepared, stored and eaten in a healthy environment. Albeit, the proportion of population in Africa with no access to improved water and sanitation, estimated at 68.6% and 39.4% in 2012 [18], respectively, is well below those in developing countries, 87.3% and 57.4%, respectively. It is well noted that the progress achieved masks significant variation among sub regions and countries.

2.4 Coping strategies

Coping strategies practiced in Ethiopia: [23] classified household responses to food insecurity into two: Coping strategies are responses made by households to improve the declining situation of households food security while adaptive strategies involve a permanent change in the mix of ways in which food is required, irrespective of the year in question and it refer to long term adjustment. The most commonly practiced coping strategies during abnormal season include short term dietary change, changing intra-household food distribution like skipping adults to feed children, limiting size and frequency of food, borrowing and gifts from relative and friends, mutual support mechanism, selling of livestock and fire wood, cash for work and relief assistance, etc., while the commonly used adaptive strategies include risk minimization, food and income diversification mechanism, planting damage resistance crop, cultivating marginal soils, etc.

Stability

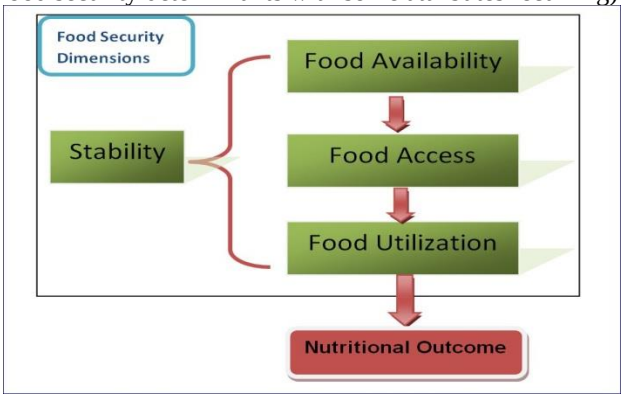
It is extremely important that the three food security dimensions discussed above and their related indicators are stable over time, in order to ensure sustainable food security. Risks, including even short-lived crises, under these circumstances, could drive vicious cycle including food insecurity. The current Africa's shares of food imports in total merchandise and the cereal import dependency ratio are substantially, alarmingly high compared with 5% and 15.7% for the developing countries, respectively, over the same period of analysis [18]. Price and production variability have

severe impacts in Africa whereby the 60 per cent of population are classified as poor whose expenditure on food amounts to around 60-70 per cent of total income [18]; and [33].

Type of indicator	Source	Coverage
Availability		
Average dietary energy supply adequacy	FAO	1990-2016
Average value of food production	FAO	1990-2013
Share of dietary energy supply derived from cereals, roots and tubers	FAO	1990-2011
Average protein supply	FAO	1990-2011
Average supply of protein of animal origin	FAO	1990-2011
Access		
Percent of paved roads over total roads	WB	1990-2011
Road density	International Road Federation, World Road Statistics and electronic	1990-2011
Rail lines density	WB	1990-2012
Gross domestic product per capita (in purchasing power equivalent)	WB	1990-2013
Domestic food price index	FAO/ILO/WB	2000-2014
Prevalence of undernourishment	FAO	1990-2016
Share of food expenditure of the poor	FAO	partial
Depth of the food deficit	FAO	1990-2016
Stability		
Cereal import dependency ratio	FAO	1990-2011
Percent of arable land equipped for irrigation	FAO	1990-2012
Value of food imports over total merchandise exports	FAO	1990-2011
Political stability and absence of violence/terrorism	WB/WWGI	1990-2013
Domestic food price volatility	FAO/ILO/WB	2000-2014
Per capita food production variability	FAO	1990-2013
Per capita food supply variability	FAO	1990-2011
Utilization		
Access to improved water sources	WHO/UNICEF	1990-2012
Access to improved sanitation facilities	WHO/UNICEF	1990-2012
Percentage of children under 5 years of age affected by wasting	WHO/UNICEF	1990-2014
Percentage of children under 5 years of age who are stunted	WHO/UNICEF	1990-2014
Percentage of children under 5 years of age who are underweight	WHO/UNICEF	1990-2014
Percentage of adults who are underweight	WHO	partial
Prevalence of anaemia among pregnant women	WHO/WB	1990-2011
Prevalence of anaemia among children under 5 years of age	WHO/WB	1990-2011
Prevalence of vitamin A deficiency in the population	WHO	partial
Prevalence of school-age children (6-12 years) with insufficient iodine intake	WHO	partial

Source: [19]

Factors that affect household food security in various developing countries especially in Africa have been documented in some literature and these factors or determinants are most often than not location-specific (i.e. different study areas were found to have variant attributes as food security determinants with some attributes recurring) [1].



Source:[18].

Coping mechanisms used by farm households in rural Ethiopia include livestock sales, agricultural employment and certain types of off-farm employment and migration to other areas, requesting grain loans, sale of wood or charcoal, small scale trading, selling cow dung (in central Ethiopia) and crop residues, reduction of food consumption, consumption of meat from their livestock, consumption of wild plants, reliance on relief assistance, relying on remittance from relatives, selling of clothes and dismantling of parts of their houses for sale. Some of them are likely to be implemented only after the possibilities of certain other options have been pursued. In addition, households who have diversified source of income are often able to cope with crisis than others as cited in [20].

Coping strategies practiced by food insecure households are different depending on the degree of food shortage. Coping strategies practiced at the moderate stage of food shortage include, sale small ruminants and buy grain, sale fire wood

and buy grain, engage in wage labor, cultivate and sale vegetable crops, sale chicken and eggs and buy grain, engage in petty trading, sale oxen/cows and buy grain, sale wool and carpets and buy grain, reduce the number, amount and type of meals and borrow some money or grain from acquaintances (relatives, neighbors); whereas, eat wild foods, sale property, eat crops reserved for seed, borrow some money or grain from acquaintances (relatives, neighbors), request for food aid, reduce the number of meals, go hungry for up to two days, sale cattle, move to other places in search of temporary employment, migrate to other area permanently and temporarily were practiced at the severe stage [34].

Farm households respond to the problems caused by seasonal and disaster related food insecurity in different ways. Food availability can be affected by climatic fluctuations, depletion of soil fertility, or the loss of household productive assets or some other related problems. In that case farmers try to reduce this problem by taking actions that result in trade-offs between current and future consumption. The range of coping and adaptive strategies is large and differs according to the particular conditions. It includes expansion of production and improving productivity, food grain purchase through sales of livestock and institutional and societal income transfer systems such as gift and relief food distribution [20].

2.5. Policy Implications

The analysis of the current food security situation and evaluations of the food aid program practices discussed in the previous sections have several policy implications. First and foremost, it is important to understand the state should play a significant role in mitigating famine. The responsibility of freeing starving people from hunger lies with the state and not with the private sector. The private sector can contribute to food security through food production, marketing and storage if well-developed. But maintaining emergency national grain reserves, providing famine early warnings, stabilizing prices when vulnerable groups are unable to acquire enough food, developing infrastructure such as roads needed to distribute relief food aid in remote areas, maintaining security in areas where relief, recovery and development activities take place are all responsibilities of the state.

More should be done to break the link between drought and famine and to end dependence of food aid as soon as possible. It is imperative that conquering drought and famine in Ethiopia takes time and requires a commitment from donors, government and the local people. Conquering famine may take longer as far as agricultural production depends on rain. To combat drought, well-studied and carefully planned projects such as dams, irrigation schemes, reforestation, pasture development, and land conservation measures are needed. Such investments will be costly for a poor country like Ethiopia but will have a high payoff in the future by transforming the present low potential areas into high potential areas.

Tackling chronic food security and vulnerability is a long process that requires alleviating poverty in both rural and urban areas [37]. Without poverty alleviation famines may recur at any time. Creating off-farm employment opportunities and developing labor-intensive public projects may help reducing food insecurity for the landless, resources-poor, and jobless. Food Security Strategy without adequate regional analysis of food insecurity and vulnerability mapping.

2.5.1 Government agricultural development, food security and poverty reduction strategies

The Ethiopian government has been devising and implementing various economies wide and sector-al policies and strategies. During the last one and half decade, the government has identified agriculture as a priory sector for development, and hence, devised the Agriculture Development Led Industrialization (ADLI) strategy. In the interest of improving food security, major emphasis has been in increasing food-grains production. Poverty reduction strategy: the government's Poverty Reduction Agenda has the central goal of building a free-market economic system which will enable the economy to develop rapidly, come out of dependence on food aid and ensure that the poor are the main beneficiaries of economic growth.

The first cycle of the country's poverty reduction strategy (PRSP) or the sustainable development and poverty reduction program (SDPRP) has advanced to a second generation program termed Plan for Sustainable Development and Poverty Eradication (PASDEP). Also the Millennium Development Goals (MDGs) take agricultural development as a central and strategic direction for poverty reduction in Ethiopia. Although there is a strong rationale for Ethiopia to follow agricultural development led industrialization (ADLI) strategy, many critics including some CSOs comment that the strategy is biased against the development of the industrial and other non-agricultural sectors. These sectors are vital to providing livelihoods for those leaving the land. They argue that without strong linkage between agriculture and the non-agricultural sector and equal support for the later development will not be realized.

Food security strategies: one of the features of the Ethiopian agriculture and the national economy at large is the inability to produce sufficient food to feed the population. Hence, dependence on foreign food aid both for emergency assistance following drought and famine and to feed the chronically food insecure population has been a practice for three decades now. In order to improve the food security situation of the country, successive national Food Security Strategies have been designed in 1996, 2002 and 2003/04. Following the recent famine of 2002/03, donors and the government have designed an ambitious national food security program called the New Collation for Food Security [28]. The government has launched the Productive Safety Net

Program based on the urgent need to address the basic food needs of food insecure households via a productive safety net system financed through multi-year predictable resources, rather than through a system dominated by emergency humanitarian aid.

3. Methodology

3.1. Description of the Study Area

Doyogena woreda is one of the seventh woreda of Kambata Tembaro Zone in SNNPRS. The woreda is divided into 17 *kebeles* for administrative purpose. The woreda is bounded by Angacha woreda in Eastern direction, Hadiya Zone in North West direction, Kachabira woreda and partially Hadiya Zone in Northern direction. The woreda is located 171 km in South West of Hawassa, the capital city of the region of SNNP and 258 km South of Addis Ababa. Geographically, it is located between 7018'25"N-7021'49"N latitude and 37045'33"E-37048'51" E longitude. The total population of the Woreda is 116,048 [15].

The total area of the woreda is 18,091.34 hectare which comprises cultivated land (12,248.6 ha), forest land (3573 ha), grazing land (1110 ha), degraded land (435 ha), swampy land (358.33 ha), potentially cultivable land 202.4 hectare and others 162.4 hectare [14].

Dominant crops cultivated in the areas are Ensete, potato, cabbage, barley, wheat, bean and pea. Next to Ensete, potato is the most important staple food crop for the farmers, and the major annual food crop traditionally cultivated during the Belg season [26].Doyogena woreda has focused on agricultural development. The households purchase cereals from the market through the income they generated from sale of crop produce. This implies that those perennial crops encourage farm households to be food secured.

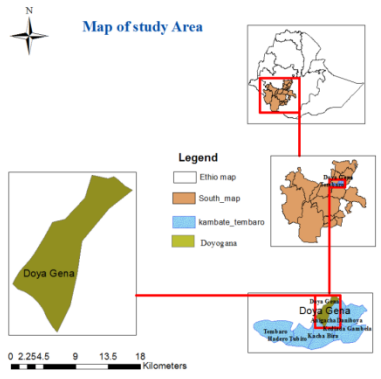


Figure 1: Map of Study area.

3.2. Method of Data Collection

Both primary and secondary data were collected from different sources to identify important variable that may affect household food security. To generate primary data, interview schedule was used to collect qualitative data through keyinformant's discussion. Secondary data collected from journal,articles and research papers.

The key informant's discussion was conducted with six respondents selected by woreda Agriculture and Natural resource management office from department of early food security. The collected data were focused on oxen ownership, farm income, off-farm income and non-farm income, foodavailability, food access,food utilization and food stability. On the other hand, additional data institutional factors such as access to credit, use of external farm inputs were also gathered.

3.3.Data Analysis

The data that collected from the key informants were analyzed by content analysis and came up on conclusion**.**

4. Result and Discussion

Determinants like with large cultivated land produce more food for household consumption and for sale and have better chance to be food secure than those having relatively small size of cultivated land. Household which has access to credit does initiate investment in farm and non-farm activities and achieve food security. As we got the data from key informants the house hold which have large size of land produce more food and they achieve their food security than small land holders. Farm inputs are highly expensive in price; as a result, the farmers invest their income for farm input by ignoring other expenditures and sold their crop to purchase those farm inputs.The farmers in study area who have money purchase farm input like inorganic fertilizer and improved seed varieties but the farmers who have no money got farm input through credit association. The household who has oxen can generate income by cultivating their own land and others land through rent. This contributes more for household food security.

Farm land size is an important determinant of household food security. Farm size is the total area of land cultivated to food and cash crop by households, measured in hectares. Positive relationship has been established between farm size and improvement in household's income and food security. It is,

therefore, expected of a household with a larger farm size to be more food secure than a household with a smaller farm size.

Number of oxen owned: Oxen are the most important means of land cultivation and basic factors of production. Households who own more oxen have better chance to escape food shortages since the possession of oxen allows effective utilization of the land and labor resources of the household.

On farm income: This source of income is collected from sale of crop produce, and sale of livestock. The higher he/she earns income and the greater the chances of being food secure. Use of farm inputs refers to use of chemical fertilizer, improved seed, pesticide and herbicide.

A household who could have used farm inputs was hypothesized to have positive relation with food security status because he/she produce more.

Credit access: Credit serves as a means to boost production and expand income generating activities. Thus, a household which has access to credit does initiate investment in farm and non-farm activities and achieve food security. The credit access has positive relation with household food security.

5. Conclusion and Recommendation

Food security and insecurity are terms used to describe whether or not households have access to sufficient quality and quantity of food. Drought and famine have become an everyday reality in Ethiopia. With more than 90 million people, the foundation of its economic growth is agriculture, which employs 80% of the population; however, poverty is still a big obstacle to overcome in Ethiopia. Nearly one third of the population lives below the poverty line. Consequently, chronic and acute food insecurity is prevalent, especially among rural populations and smallholder farmers. About 10% of Ethiopia's citizens are chronically food insecure and this figure rises to more than 15% during frequent drought years.

Several factors were identified by different studies for the deteriorating situation of food security in Ethiopia. These are populationpressure, soil fertility, farm income, farming technologies, extension services, labor wastage and social and infrastructural facility and pre and post-harvest crop loss. The determinants of food security inserver area were similar to above but majors were farm income, owning oxen,different interactions were recommended to improve food security situation.

The household head and members of the household should engage in different income generating activities for means of living, coping mechanism and to escape from hunger and undernourishment; the government of Woreda should incorporate different research outputs to design programs for food insecurity intervention; the farmers should develop soil conservation measures to reduce soil erosion and the habit of using rain water harvesting to alleviate problems caused by shortage of rain fall and awareness creation on family planning (to limit population growth),adoption of technologies, pre and post-harvest technology and education of household heads are also crucial activities. Also, government should facilitate credit serves to low income farmers.

Generally, to insure food security the collective action should done by individual, government and private sectors.

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Interview schedule prepared for key informants discussion on Determinants of house hold food security in Doyogena woreda.

1. What are determinants of household's food security in Doyogena woreda?
2. What are the indicators/dimension of food security?
3. What are coping mechanisms and Policy options to improve food security in Doyogena woreda?