

# Assessment of Households Food Security Situation in Ethiopia: An Empirical Synthesis

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## Abstract

This article synthesized households food security situation, its determinants and coping mechanism against food insecurity in Ethiopia. Accordingly, empirical findings asserted that the incidence of food insecurity is high in the country. But, the incidence of food insecurity was severe in western, some parts of southern and drought prone areas of the country. Furthermore, empirical studies confirmed that having access to different kinds of livelihood assets (such as human capital, social capital, physical capital, financial capital and natural capital) as well as different institutional factors and policies more likely to improve households food security. Moreover, literatures argued that along with the role of government households adopted different coping mechanisms to reduce the prevalence of food insecurity. To cope up with the food insecurity situation households adopted selling asset (livestock), reducing frequency and quality of meal, buying food grains, engaging in off-farm and non-farm activities, borrowing money or grains from different sources, etc. as their main coping mechanisms. Therefore, to improve the food security situation future policy should focus on investment strategies that promote households access to different kinds of livelihood assets to eradicate food insecurity.

**Keywords:** Food security, Food insecurity, coping mechanisms, Ethiopia

## 1. INTRODUCTION

Food is both a need and a human right. Enough food in terms of quantity and quality for all people is an important factor for a healthy and productive life as well as for a nation to sustain its development (GAO, 2011). In addition, food is useful for maintaining political stability, and insuring peace among people (Idrisa *et al.*, 2008). Lack of food in long terms will lead to hunger and starvation that can cause death. So that enough food is a necessity condition to be well nourished. However, according to IFAD (2011) finding about 1.4 billion people in the world were living on less than US\$1.25 a day. Out of this, about one billion of them live in rural areas where agriculture is their primary source of livelihood, especially sub-Saharan Africa and Southern Asia. Furthermore, about 805 million people are estimated to be chronically food undernourished in 2012-2014, but it also figured out that reduction in more than 100 million over the last decade and 209 million lower than 1990-1992 (FAO, 2014). The same study conveyed that in the same period, the prevalence of undernourishment has fallen from 18.7 to 11.3% globally and from 23.4 to 13.5% for developing countries. Moreover, 791 million people in developing countries were estimated to be chronically hungry in 2012-14, down by 203 million since 1990-1992 (FAO, 2014). As to AFSH (2014) finding, Sub-Saharan Africa has the highest prevalence of undernourishment and the prevalence of under nourishment declining from 32.7% to 24.8% over the last two decades. According to the same finding Ethiopia was ranked first in terms of number of people in a state of hunger/under nourishment (32.1 million people), followed by Tanzania (15.7 million); Nigeria (12.1 million); Kenya (11 million) and Uganda (10.7 million), respectively, among sub-Saharan African countries.

Particularly, poverty and food insecurity are crucial and pertinent problems facing the majority of Ethiopians as the economy is mainly dependent on agriculture which is vulnerable to different shocks, seasonality and trends (Bedemo *et al.*, 2014). In the country about 26% of the population lives below the poverty line (UNDP, 2014) and many people died of drought than other problems particularly in the periods of the registered and documented recurrent drought epidemics. The country has been facing challenging problems ranging from those induced by environmental crisis to those caused by demographic and socioeconomic constraints that adversely affect people's production system (World Bank, 2008). Moreover, as to FAO (2012) finding the majority of food insecure people in the country resides in the rural areas. About 52% of the rural population and 36% of the urban population consume under the minimum recommended daily intake of 2100 kcal/ person /day. To reverse this problem, the government has been and is formulating and implementing various strategies as well as programs like productive safety net program, ADLI and GTP phase 1 and 2 in which food security strategy is a key component of these programs. In addition, to reduce the incidence of food insecurity households use different kinds of coping mechanisms so as to improve their livelihood. Due to improvement in different kinds of livelihood assets as well as investment strategies and policies there is improvement in households food security status and there is still room for improvement, but it should be supported by location specific empirical evidence (Gemetchu *et al.*, 2015). Therefore, synthesizing households' food security status and its determinants along with the coping strategies against food insecurity provides important information to policy makers, planners and other concerned bodies to intervene and improve the food security status of the households in the country. Thus, this review synthesizes

empirical findings on households' food security status in Ethiopia and the determinants of households' food security along with the coping mechanisms practiced by households against food insecurity.

## 2. DISCUSSION

### 2.1. Concepts and Definitions of Food Insecurity

Food insecurity is a growing global concern. In today's world, attaining food security for all people at all time becomes a key challenge for developing countries in general, and in Ethiopia in particular. According to the FAO (2005), a state of food insecurity exist when the people lacks access to adequate and safe supply of food on stable basis. Also, food insecurity occurs when the people faces lack of access for food at all times to enough food (nutritionally a good quality) for an active and healthy life. Food security, therefore, mainly includes non-availability of food, lack of access to food and improper utilization of food. Therefore, the determinants of household food security in effect integrate the factors that determine each component of food security. In general, the determinants of household's food security status are different at different levels i.e., global, national, regional, household and individual levels (Khan *et al.*, 2015).

Food insecurity at the household level may take two types: chronic and transitory food insecurity. Chronic food insecurity is persistent in that it can be considered to be a continuous state of affairs (Hart, 2009). Chronic food insecurity will be translated into a high degree of vulnerability to famine and hunger (Ayalew and Melaku, 2013). The same study stated that transitory food insecurity is a temporary and short periods of decline in a household's availability and access to needed food. According to FAO (2010), nearly one billion people are estimated to be under-nourished, of which developing nations account for 98%. It also showed that, about 790 million people in developing countries and 34 million in developed countries currently suffer from food insecurity. In line with this, about thirty million people were estimated to live below the poverty line in Ethiopia and about fifty two percent of the rural population was unable to attain their minimum nutritional requirement (FAO, 2012).

### 2.2. Food Security Status of Households in Ethiopia

Different studies were carried out in rural as well as urban part of the country and these studies concluded that the food security status of the households is different from region to region and from district to district. Empirical evidences argued that the majority of households in the central part of the country are food insecure. For example, Beyene and Muche (2010) pointed out that about 64% of the households were food insecure and the rest 36% were food secure. It also revealed that average value of the energy available for food insecure and secure households was 1,822 Kcal/AE/day and 2,908 Kcal/AE/day, respectively. The minimum and maximum energy available for food insecure households was 1,043 Kcal and 2,098 Kcal, respectively. Whereas the minimum and maximum energy intakes of food secure households were 2,203 Kcal and 3,492 Kcal, respectively. Furthermore, another study conveyed that 58.16 % of the total households in the area were food insecure with food insecurity gap and severity being 20 % and 9.4 %, respectively (Girma, 2012).

Different findings in the northern part of Ethiopia showed that there is high incidence of food insecurity. As to Mesfin (2014) finding, 48% of the households in the area were vulnerable to food insecure. In addition, the incidence of food insecurity in west and east Gojjam zones of Amhara region was 51.3% and 59.2%, respectively (Motbainor *et al.* 2016). A study conducted in drought prone areas of northern part of the country also indicated that the majority (74%) of households were experiencing food insecurity (Arega, 2013). Unlike to this, Tsegay (2009) figured out that the incidence of food security rural households in Tigray region was 42% which lower relative to other drought prone areas while 58% of rural households being food secure.

Many empirical evidences in eastern Ethiopia argued that the majority of households were food secure. For example, Lemma and Wondimagegn (2014) revealed that the majority (62.7%) of households were food secure and about 37.3% were food insecure. Furthermore, Hussein and Janekarnkij (2013) pointed out that 63% of the households in Somali region were food secure, while 37% were found to be food insecure. As opposed to this, another study confirmed that about 56.5% of households in the area were food insecure (Abdirahman, 2015). In addition to this, Gemechu *et al* (2015) conveyed that the majority (67.1%) of households in West hararghe were food insecure whereas 32.9% households were food secure. Moreover, about 75% of households in Dire dawa were food insecure (Bogale and Shimelis, 2009).

Different findings in the southern part of Ethiopia showed that the incidence of food insecurity is lower relative to other parts of the country. As to Mitiku *et al.* (2012) finding, about 64% of households in Shashemene district were found to be food secure while 36% were food insecure. In addition, Mequanent *et al* (2014) revealed that 42.9% households were food insecure; whereas, 57.1% of them were food secure. Despite this, Nigatu (2011) depicted that about 54% of the households in some parts of southern Ethiopia have been facing mild to severe food insecurity. Ahmed (2015) also supported this by figuring out that about 77% of households in bule hora as food insecure households. Moreover, the majority (84.91%) of rural households in guraghe zone were food insecure (Zelalem, 2014). A study conducted by (Buom, 2013) in Gambella region revealed that 80.8% of rural households were food insecure, whereas 19.2% of sampled rural household was food secure.

Generally, there is high incidence of food insecurity in different parts of the country but, it is more pronounced in the western and drought prone areas relative to other parts of the country. Because in this parts of the country agricultural production and productivity highly vulnerable to climate variables.

### 2.3. Empirical studies on Determinants of Households' Food Security

Different studies regarding household food security and their determinants were carried out in different parts of Ethiopia. In the following section review of the most important empirical studies are presented.

Many Studies indicated that being male headed household positively determines households' food security (Tsegaye, 2009; Van der Veen & Tagel, 2011; Zerihun & Getachew, 2012; Sisay, 2012; Abdujalil, 2015; Ahmed, 2015). This is due to the fact that mostly male headed households have better access to different types of resources. Unlike to this other studies revealed that being female headed household increases food security status (Goshu et al., 2012; Mesfin, 2014). In addition, literatures conveyed that age of household head decreases the probability of being food secure as young household heads are stronger and have the courage to cultivate larger-size farm than old heads (Indris, 2012; Sisay, 2012; Nugusse et al., 2013; Girma, 2012). Others such as Zelalem (2014), Shishay & Messay (2014), Okyere et al. (2013), Jemal & Kim (2014), however, found that age is significantly and positively related to household's food security status. As depicted by these studies older peoples have relatively richer experiences of the social and physical environments, greater experience of farming activities, they accumulate wealth and use better planning they have better chances to become food secure.

Various studies confirmed that literacy status of households is found to increase the likelihood of being food secure (Tsegaye, 2009; Girma, 2012; Nugusse et al., 2013; Arega, 2013; Jemal & Kim, 2014; Mequanent et al., 2014; Mesfin, 2014; Abdujalil, 2015). This is because literate households have more knowledge and information about agronomic practices and earn more income which helps them to purchase food for their family. Furthermore, due to their educational background they can engage in alternative off-farm and non-farm employment and investment activities to improve their food security. In addition, more years of farming experience increases household's food security status as it serves as an important source of information and skills to improve their production as well as their engagement in off-farm and non-farm activities (Beyene & Muche, 2010).

Empirical studies conducted in different parts of the country revealed that larger family size positive determines household's food security status (Van der Veen & Tagel, 2011; Mitiku et al., 2012; Arega, 2013; Abdujalil, 2015). It is because larger family size is associated with household labor force which helps them to intensify in agriculture and engage in alternative off-farm and non-farm activities to generate more income. As opposed to this other studies argued that larger family size found to decrease the likelihood of households food security due to its imposition on family consumption requirement (Zelalem, 2014; Gemechu et al., 2015; Mequanent et al., 2014; Buom, 2013; Amsalu & Beyene, 2012; Indris, 2012; Sisay, 2012; Mesfin, 2014; Nugusse et al., 2013; Goshu et al., 2012; Girma, 2012). Furthermore, dependency ratio also found to have negative impact on households food security which implies high number of dependent on the family member that imposes consumption pressure (Indris, 2012; Abdirahman, 2015; Buom, 2013). Moreover, more number of active family labors found to increase the likelihood of households' food security (Buom, 2013).

Studies also argued that households with more units of landholding (farm size) are more likely to be food secure as it serves as a proxy to wealth of households (Abdujalil, 2015; Beyene & Muche, 2010; Nugusse et al., 2013; Okyere et al., 2013; Ahmed, 2015; Shishay & Messay, 2014; Van der Veen & Tagel, 2011; Zelalem, 2014). In addition, households having large cultivated land size found to be food secure (Mitiku et al., 2012; Goshu et al., 2012; Sisay, 2012; Amsalu & Beyene, 2012; Abdirahman, 2015; Buom, 2013). Larger farms are associated with greater wealth and income and increased availability of capital, which increase the probability of investment in purchase of farm inputs that increase food production and insuring food security. Higher number of farm plots also increase households likelihood of being food secure (Arega, 2013). Furthermore, larger total land allocated to stable crops found to be negatively associated with households food security status (Goshu et al., 2012). Production of cash crops also found to negatively determine households food security status (Gemechu et al., 2015). Moreover, soil fertility status positively affects households' food security status because better land quality increases the production level (Ahmed, 2015). Moreover, empirical studies pointed out that using soil and water conservation practices in their farm found to enhance the food security position of rural households (Beyene & Muche, 2010; Jemal & Kim, 2014).

Empirical findings pointed out that total income of the households increases their likelihood of being food secure (Mitiku et al., 2012; Goshu et al., 2012; Hussein & Janekarnkij, 2013; Ahmed, 2015). Households with more income can easily purchase food items that are required by the farm family. In addition, farm income of rural households also found to improve their food security because higher farm income helps the farmers to purchase food items as well as to invest in demand pull activities to improve their food security status (Amsalu & Beyene, 2012; Buom, 2013). Having more off-farm and non-farm income increases households' probability of food security status (Mitiku et al., 2012; Beyene & Muche, 2010; Van der Veen & Tagel, 2011; Zelalem, 2014; Abdirahman, 2015; Amsalu & Beyene, 2012). As opposed to this, Indris (2012) revealed that non-farm income decreases the

likelihood of households' food security. Having access to off-farm and non-farm employment activities also found to have positive effect on households food security (Jemal & Kim, 2014; Gemechu et al., 2015). Different studies also have shown that access to credit, borrowing and credit worthiness of households increases the likelihood of households' food security (Okyere et al., 2013; Girma, 2012; Zelalem, 2014; Abdujalil, 2015). Having better access to credit helps the farmers to produce more through purchase and use of agricultural inputs as well as help urban and rural households to engage in other income generating activities so that the income from these activities position households on a better status to escape vulnerability to food insecurity. As opposed to this, Jemal & Kim (2014) found that access to credit decrease the likelihood of households' food security. Moreover, many studies indicated that remittance, gifts and food aids found to increases the likelihood of household's food security status (Abdirahman, 2015; Sisay, 2012; Okyere et al., 2013; Mesfin, 2014). Because receiving remittance, gifts and food aids helps the households in compensating and smoothing the loss of household income from disaster risks. Furthermore, empirical findings figured out that Per capita consumption of households found to positively determine households' food security as it directly related with the consumption of the households (Jemal & Kim, 2014; Mesfin, 2014).

As to Zelalem (2014), Gemechu et al. (2015), Shishay & Messay (2014), Ahmed (2015), Buom (2013), Abdirahman (2015), Amsalu & Beyene (2012), Okyere et al. (2013), Nugusse et al. (2013), Beyene & Muche (2010), Jemal & Kim (2014) and Mitiku et al. (2012) findings, owning more livestock excluding oxen increases households likelihood of being food secure. Livestock provides direct contribution to subsistence need and nutritional requirement as well as it is vital input for crop production by providing manure and serves to accumulate wealth that can be disposed during times of need. In addition, owning more number of oxen increases households probability of being food secure (Zelalem, 2014; Mequanent et al., 2014; Van der Veen & Tagel, 2011; Arega, 2013; Abdirahman, 2015; Sisay, 2012; Nugusse et al., 2013, Mequanent et al., 2014). Having higher number of milking cow also increases households' likelihood of food security (Buom, 2013).

Better access to extension services seems to have a strong positive influence on the probability of households' food security (Hussein & Janekarnkij, 2013; Nugusse et al., 2013). Farmers who have access to extension services are more likely to have knowledge of the various production and management practices that they can use to produce different types of products and to improve their production which helps them to earn more income and attain food security. Moreover, household's access to different types of infrastructures (pure water, electricity, transport, veterinary, etc) increases households food security status (Nugusse et al., 2013; Hussein & Janekarnkij, 2013). In addition, Jemal & Kim (2014) indicated that adequacy of rainfall for agricultural production and land allocated to stable crops found to improve households' food security.

Accesses to employment opportunities also determine households' food security positively as it affects their access to food through its income effect (Girma, 2012; Gemechu et al., 2015). Households' access to non-farm activity improves their use of modern agricultural inputs to produce more and enables household to fulfill his/her family consumption through purchasing from market. In addition, households' engagement in non-farm activities, especially in urban areas, improves the status of households' food security (Van der Veen and Tagel, 2011; Jemal & Kim, 2014).

Many empirical studies pointed out that access to fertilizer as well as intensity of fertilizer use increases the likelihood of households' food security status (Tsegaye, 2009; Mequanent et al., 2014; Beyene & Muche, 2010; Goshu et al., 2012; Hussein & Janekarnkij, 2013; Van der Veen and Tagel, 2011, Zelalem, 2014). Furthermore, studies conveyed that rural households' use of improved seed also found to increase their likelihood food security (Mequanent et al., 2014; Ahmed, 2015; Shishay & Mesfin, 2014; Van der Veen and Tagel, 2011). Moreover, other studies argued that access to irrigation to have positive impact on households' food security status (Van der Veen and Tagel, 2011). This because usage of the inputs improves households' agricultural production and with more yield at hand households can become food secure. Despite this others indicate that using farm inputs found to have negative influence on households food security as it forces households to decrease their expenditure on food (Mequanent et al., 2014, Goshu et al., 2012).

Different empirical findings in different parts of Ethiopia revealed that market access positively influence households food security status (Mesfin, 2014; Nugusse et al., 2013). Others conveyed that, distance from the market center found to negatively affect the food security status of households (Abdirahman, 2015; Gemechu et al., 2014; Tsegaye, 2009). This is because as households become far from the market center the transaction cost of obtaining different kinds of products for consumption and inputs will become high as well as the chance of their access for off-farm and non-farm activities will become low. In addition, household's participation in cooperatives increases their food security status (Abdujalil, 2015; Nugusse et al., 2013). Moreover, households' involvement in domestic violence found to deteriorate their food security status (Okyere et al., 2013).

#### **2.4. Households Coping Mechanisms against Food Insecurity**

Empirical evidences conveyed that, due to the economy's dependence on weather sensitive agriculture sector, the incidence of food insecurity was high. To reduce the prevalence of food insecurity the government has been and



is formulating and implementing different programs as well as policies. In addition to the role of government, to cope up with the food insecurity situation households in the country used different coping mechanisms.

Different findings in Ethiopia revealed that farm households in rural parts of Ethiopia apply different coping mechanisms which includes sales of a livestock, agricultural and certain types of off-farm employment and migration to other areas, taking a loan for the purchase of grains, gathering and selling fire wood and charcoal burning for energy, conducting petty trade, daily wage labor, and handicrafts (Birara *et al.*, 2015; Woldeamanuel, 2009).

Studies conducted in the Central parts of Ethiopia argued that farmers applied diverse coping mechanisms in order to attain food security which includes selling animal dung and crop residues, reducing meat consumption from their livestock, minimizing the level of food consumption, consuming wild plant species, reliance on remittance from their relatives, depending on relief assistance, selling their cloths and offering part of their houses for sale (Birara *et al.*, 2015; Frehiwot, 2007). Furthermore, Lemma and Wondimagegn (2014) indicated that rural households in Eastern part of the country use accumulating livestock or other assets, investing their asset on social capital and seeking alternative sources of food or income than farming and engaging in off/nonfarm activities as a coping mechanism to cope up with food deficit in the area.

Coping mechanisms against food insecurity used by households in the Southern parts of Ethiopia ranges from one or more principal coping strategies to various complementary strategies during the chronic food shortage which includes: providing a main source of food and income for a household, practicing regular and reliable farming activities are categorized under principal coping strategies. As for complementary coping strategies, which are implemented when there is no principal coping strategies, includes increasing the access for food and income for a short period of time, minimizing the number of meals and amount of food consumption, diversifying the means of livelihood, crop diversification and practicing inter cropping, wage labor, seasonal migration to neighboring community during peak season, and the like (Nigatu, 2011; Ahmed, 2015). In addition to this, Ahmed (2015) also pointed out that rural household in the Southern part of Ethiopia employed buying food grains, selling livestock, conducting petty trade, working as a daily laborer and borrowing money or grains from different sources helped them to escape food deficit period.

According to some research findings, rural households were more likely food insecure than urban despite the fact that rural households were more likely to have a better chance to access agricultural products (Motbainor *et al.*, 2016). Various studies conducted in the Northern parts of Ethiopia confirmed that reducing meal consumption, postponing special festivals, selling small ruminants, harvesting food crops that are not well matured, livestock selling to purchase food, loan/gift requesting from relatives, reducing school and medical expenses, relief assistance and selling farm tools were used as a coping mechanisms to food insecurity (Guinand, 2001; Silvestri *et al.*, 2012; Arega, 2015).

Other findings also indicated that households in pastoral and agro-pastoral areas especially in Somali region used different coping mechanisms when a food crisis hits them. Their coping mechanisms include: selling livestock, agriculture employment, part time work, engaging into income generating activities and in food for work activities and other get food relief from NGOs and the government, reducing meal consumption, selling small ruminants and draft oxen, borrowing of cash and/or food from better-off neighbors and/or relatives, off-farm employment, migrating to other area, grain loan requesting, gathering and selling fire wood and charcoal, petty trading, selling animal dung and crop residues, increasing wild plant consumption, depending on relief assistance and remittances from relatives, selling their clothes and dismantling of parts of their houses for sale (Chlembo, 2004; Abdirahman, 2015). Other mechanisms but seldom applied were postponing wedding and other ceremonies, drawing children from school and eating toxic taboo foods (Yared, 2001; Eshetu, 2000; Chlembo, 2004; Abdirahman, 2015).

### 3. CONCLUSION

Ensuring food security is the main challenge that developing countries including Ethiopia have been and is facing over years and decades. Empirical evidences conveyed that, because of the economy's dependence on weather sensitive agriculture as the main means of achieving livelihood goals in which food security is one, the incidence of food insecurity in the country is high. To reduce the prevalence of food insecurity the government have been and is formulating and implementing different programs as well as policies like productive safety net program, agricultural development led industrialization, Growth and transformation plan phase 1 and 2 in which ensuring food security is the key component of these programs and plans. These programs to be effective they need to be supported by empirical evidences that provide important input on households' food security for concerned bodies. Thus, this article reviewed important empirical studies conducted on households' food security status, determinants of households' food security and coping mechanisms against food insecurity in different parts of Ethiopia. Accordingly, studies indicated that there is high incidence of food insecurity in the country but its incidence was severe in western and drought prone areas of the country. Furthermore, review of empirical studies confirmed that having access to different kinds of livelihood as well as different institutional factors and policies determine households food security. To cope up with the food insecurity situation households in the country

adopted different coping mechanisms. Accordingly, empirical findings asserted that households in different parts of the country used principal coping mechanisms along with complementary coping mechanisms in order to overcome the food insecurity and deficit situation.

Therefore, future policies, investment strategies as well as different actions directed towards improving food security situation in Ethiopia should focus on:

- Enhancing household heads and members of the household to engage in different income generating activities for means of living, to use coping mechanisms and to escape from hunger and undernourishment;
- Incorporating different research outputs to design programs for food insecurity intervention;
- Improving farmers' access and use of fertilizer, improved seed varieties, irrigation water, electricity, extension service, etc.
- Encouraging the farmers to develop and adopt soil and water conservation measures to reduce soil erosion, improve and maintain soil fertility, and to enhance the habit of using rain water harvesting to alleviate problems caused by shortage of rain fall;
- Improving households' access to financial and social capital; and
- Awareness creation on family planning, adoption of technologies, pre and post harvest management and education of household heads are also crucial activities.

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