A scoping study on Ethiopia's food security challenges and potential way outs

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Abstract

The purpose of this study is to document the challenges of food security and way outs to food insecurity in Ethiopia. It is based on multiple electronic databases, including PubMed, Scopus, Web of Science, and Google Scholar which are commonly used for studies of this nature. The criteria used were to identify studies conducted internationally and in Ethiopia that are relevant to the subject under this study. Accordingly, the main issues with food security in Ethiopia are socioeconomic, biophysical, technological, policy, and institutional, including inadequate infrastructure, land degradation, conflict and displacement, and limited access to markets, credit, and technology. However, family planning, climate-resilient farming methods and enhanced water management systems are some possible solutions to Ethiopia's food insecurity problems. Furthermore, diversification of sources of income, bolstering rural-urban connections, gaining access to agricultural supplies, market and finance services, offering social protection, strengthening extension services, and implementing laws and regulations through appropriate institutions are also potential way outs. Thus, it is imperative for policy makers and the public to pay attention to the identified challenges and remedies and design appropriate interventions to alleviate the food insecurity problems in Ethiopia.

Keywords*:* food security; family planning; land degradation; climate resilient; conflict

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1.Introduction

The availability, accessibility, use, and stability of food supply are all components of the complex problem of food security. It is clear that a number of ecological, social, political, and economic factors are contributing to Ethiopia's food insecurity. Using existing academic and gray literature as a guide, this report examines the main obstacles to Ethiopia's food security and suggests possible solutions.

Historical Context of Global Food Security

The issue of food problems was first brought into the international forum in the early part of the 1930s by one of the members of the League of Nations, namely, Yugoslavia. Yugoslavia emphasized the importance of food for well-being and urged the Health Division of the League of Nations to gather and disseminate evidence about the food situation in representative nations of the world (Shaw 2007). Accordingly, the Health Division of the League of Nations conducted a survey and submitted a report on "nutrition and public health" in 1935. The report revealed that there is an acute food shortage in poor countries, which, for the first time, revealed the scope of hunger and malnourishment in the world. After the report was published, the League of Nations debated human nourishment and the necessity for harmonized nutrition policies in different nations (Simon 2012). The League of Nations, then, decided to increase food production through improvements in agriculture, which would also serve as an input to industry and expand the world economy through the integration of health and agriculture (Orr 1966, Shaw 2007).

Immediately after the Second World War, the Food and Agriculture Organization (FAO) of the United Nations was established in 1943 at a Food and Agriculture Conference held at Hot-Spring, Virginia, in the USA. The FAO organized its first World Food Survey in 1946, and in 1946/1947, the FAO was invited again to investigate the likely consequences of an overrun of agricultural harvests, a phenomenon that soon became worrisome for several nations. Given that there was excess food production in the United States of America, food aid worth 3 billion US dollars was sent from the US to Europe between 1948 and 1953 within the agenda of the Marshall Plan. On

October 27, 1960, the United Nations General Assembly voted for a resolution on the delivery of Food Excesses to Food-Deficit people through the United Nations Schemes (UN 1960), essentially launching the World Food Program (WFP). It was predicted that the eventual resolution to the problem of hunger can be addressed using the large volume of surplus food, which can be used for joint progress worldwide. Thus, WFP principally uses excess food supplies for humanitarian and development interventions.

By the early 1960s, world cereal marketplaces had sustained suffering from significant excesses as a result of the increase in the world food production by more than 50 percent and the increase in production per capita by more than 20 percent throughout the 1950s and the 1960s. There was an increase of approximately 2 percent or more than 25 million tons of cereal in the world market each year until the end of the sixties (Simon 2012).

The subsequent decline of world food stocks in the late 1960s and the growth of a request for food supplies by the Indian subcontinent gave rise to the reduced availability of food surpluses, and the increase in the prices of food supplies became evident worldwide. In the meantime, the International Wheat Agreement and the Food Aid Conventions were combined to form the International Grains Agreement, which was approved by the International Wheat Council and the United Nations Conference on Trade and Development (UNCTAD) in Rome at a conference held in 1967. Along with this agreement, there were several additional food aid conventions; however, it was the only one signed in 1999 that was effective and officially documented that the goal of the agreement was to back World Food Security (International Grains Council 1999).

In 1972, dramatic decreases in cereal production were reported in numerous areas of the world because of poor climatic conditions. The reduction in cereal production was approximately 55 million tons less than expected, which was an approximately 3% decrease. Countries such as the USSR and a few others became food importers due to climate change. Accordingly, the US exported 66 percent more cereals in 1974 than in 1973, which is much higher than the amount exported in 1972. For example, cereal leftover stocks, worldwide,

decreased from more than 200 million tons in 1970 to approximately 100 million tons in 1974. On the other hand, OPEC (the Organization of Petroleum Exporting Countries) decided to increase the price of petroleum to extraordinary record levels. This situation further created an unfavorable situation and increased both the cost of fertilizers and the transport of cereals. This resulted in an increase in the price of cereal crops (Simon 2012).

According to Simon (2012), although the output of agriculture in many developing countries improved by approximately 2 percent per year from 1960 to 1970, they are still dependent on imports in the form of either commercial dealings or food aid. Food aid accounts for approximately 40-60% of the total imports of developing countries. In fact, food aid fell from approximately 17 million tons of cereals per year in the late 1960s to approximately 7 million tons in the early 1970s. The international food crisis was a concern for many countries. As a result, at the United Nations World Food Conference, which was held in November 1974 in Rome, the goal of ensuring that no one would suffer from food insecurity within a decade agreed on many endorsements dealing with food security. The Conference accepted an international responsibility for World Food Security, which for the first time accepted that food security was a shared worry of the entire world. Significant advancements were made in 1996 in the history of food security in the event of the World Food Summit, which was organized in Rome by the FAO. The conference agreed with a plan of action that each country is obliged to implement a plan unswerving of its possessions and sizes to attain its distinct objectives and collaborate regionally and globally to shape shared solutions to worldwide problems of food security (FAO 1996). By 2002, as a result of the endorsements of the 1996 World Food Summit, emerging and transitioning nations designed their countrywide food security approaches. Moreover, the United Nations Millennium Summit met in New York in September 2000 as a distinct gathering of the UN General Assembly permitted the 8 Millennium Development Goals (MDGs), the first of which was to Eradicate Extreme Poverty and Hunger by 2015. Furthermore, the follow-up plan, The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provided a shared blueprint for peace and prosperity for people and the planet now and into the future,

comprising the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries—developed and developing—in a global partnership. It was recognized that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth, while tackling climate change and working to preserve our oceans and forests. The Sustainable Development Goal (SDG), Goal-1: No poverty (End poverty in all its forms everywhere) and Goal-2: Zero hunger (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) are among the significant endeavors by the international community toward attaining food security worldwide (UN 2015).

Definition and pillars of food security

During the 1974 conference, food security was, for the first time, defined on an international forum as *the availability of an acceptable food supply at all times*. In 1983, the FAO Meeting approved a determination on World Food Security (FAO 1983), which specified that the eventual goal of world food security should be to guarantee that all people at all times have access to the food they require.

The 1992 Global Meeting on Nutrition, cooperatively prepared by the FAO and WHO, was carried out in Rome and was a vital milestone in the existing advancement of food security. By the 1990s, there were more than 200 definitions of food security, although the definition of food security was established in 1996 at the World Food High-level meeting in Rome. The access dimension of food security, which was underscored by Sen in 1981, was formally accepted in 1996 by the World Food Summit in Rome and was executed after the 2005 Niger famine and the 2008 food prices increase in the world. Henceforth, there is a broader agreement on the definition food security in that, *food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and when their food preferences are met for an active and healthy life*. This definition continues to be the most frequently used meaning of food security internationally and a further analysis of this definition

brought together the four pillars of food security (food availability, access, utilization and stability).

Then, in 2002, the term "social" was added to the 1996 definition of food security, in the FAO modified definition, which was stated as *when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life* (FAO 2003).

Informed by ongoing developments in the evaluation of the concept of food security, the FAO again modified and publicized the latest definition of food security in 2009. *Food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.* This working definition of food security of the FAO (2009) comprises four core dimensions: availability, access, utilization, and stability. where availability addresses the supply side of food security and refers to the term "sufficient". Meanwhile, WFP defined food availability as the amount of food that is present in a country or area through all forms of domestic production, imports, food stocks and food aid (WFP 2009). The access dimension comprises the economic level of the household to afford the food needed (Benedict 2011). It refers to having physical, economic and social access. Food access is related to household's ability to acquire an adequate amount of food regularly through a combination of purchases, barters, borrowings, food assistance or gifts (WFP 2009). In fact, there are three elements in access to food: physical, financial and sociocultural. In agreement with Sens' (1981) thesis, Young et al. (2001) stated that the root cause of food insecurity is the inability of people to gain access to food due to poverty. The other dimension, utilization, is understood as the quality of food that meets the nutritional requirements of the household (Wiggins & Leturque 2010). It refers to "safe and nutritious food which meets their dietary needs". It is not sufficient that food be available and accessible to households to ensure that people will have a "safe and nutritious" diet. A number of elements intervene here, such as the selection of food commodities, their conservation and preparation, and the absorption of nutrients. Food must be

of good quality and safe. Food utilization is also related to clean water, sanitation and health care. This dimension refers not only to nutrition but also to other elements that are related to use, conservation, processing and preparation of food commodities (Simon 2012). Moreover, stability denotes the ability of a household to have continuous access to a food source with minimal risk or the stability of all other dimensions of food security over time (Moltedo et al. 2014). It refers to: *at all times*. This stability applies in the first instance to the previously mentioned three dimensions of food security. Food security is *a situation* that does not have to occur a moment, a day or a season only but on a permanent basis with sustainability. Given the stability dimension of food security, one speaks about chronic and transitory food insecurity: chronic food insecurity is a long-term or persistent inability to meet minimum food requirements, whereas transitory food insecurity is a short-term or temporary food deficit. There is also cyclical food insecurity, such as seasonality (Devereux 2006). According to the 1996 World Food Summit definition of food security, the element that is not included in the four dimensions of food security described above is *food preferences for an active and healthy life*. The elements related to *food preferences* could be the object of further research, which, at the household and individual levels, could be comparable to what food sovereignty is at the country level.

Food Security in Ethiopia

Ethiopia's socioeconomic and environmental circumstances have a significant role in the country's history of food insecurity. Famines have occurred frequently in the nation (de Waal, 1991). Droughts frequently caused these famines, but insufficient infrastructure, violence, and poor governance made them even more severe. With programs like the Productive Safety Net Programme (PSNP), which provide food and cash transfers to households at risk, Ethiopia has made an effort to improve food security and reduce poverty during the last two decades (Berhane et al., 2014). With an estimated 20 million people in need of food aid each year, food insecurity is still a serious problem (WFP, 2022).

Approximately 10% of the Ethiopian population is chronically food insecure (Endalew et al. 2015). Landless, oxen less, female-headed, elderly, poor

nonagricultural households and newly established settlers are largely food insecure. Thus, their chronic food insecurity is attributed mainly to the low return of the livelihood system (Weldarufael 2014). Moreover, food security needs to be analyzed within the broader spectrum of the livelihood of the study population. According to Dereje and Abeje (2018), ensuring sustainable livelihoods in rural communities (inclusive policies and strategies) is necessary to integrate rural nonfarm activities into subsistence farming. Thus, treating household food security without considering the livelihood security of household members is inadequate for making feasible policy recommendations (Burchi & De Muro 2012). Thus, food insecurity is a situation in which a household runs a continually high risk of inability to meet the food needs of household members due to a lack of assets. Thus, food insecurity is the result of unacceptable livelihood strategies (ACF 2010).

When we consider food security in Ethiopia, it is imperative to look into the food security situation of the world at large. Ethiopia remains an underprivileged country with some serious encounters to meet the food security challenge, particularly with the variable rainfall created by climate change, and agricultural productivity has also remained relatively low because of the lack of investment and the need to modernize farming practices. While there have been some improvements to the business enabling environment and prospects for developing a dynamic industrial country, Ethiopia needs to undertake additional measures to create many of the conditions for a competitive private sector (African Development Bank Group 2015).

Indeed, 80 percent of the world's hungry people are engaged in food production: 50 percent are small-scale farmers, 20 percent are agricultural workers, and 10 percent are forest dwellers, pastoralists and fishermen. The remaining 20 percent are the urban poor (Glopolis 2010). Furthermore, it is established long before that, a household is said to be food insecure when its consumption falls to less than 80 percent of the daily minimum recommended allowance of caloric intake for an individual to be active and healthy (Devereux 2000).

Reports indicate that the daily energy intake of average Ethiopia is lower than the WFP minimum standard (2100 calories per day) (FAO 1985, National Academy Press 1995, FAO 1998, UNICEF 1999). The most important documented forms of malnutrition in Ethiopia are protein-energy malnutrition and vitamin A, iodine and zinc deficiencies (Dorit et al. 2001). It is apparent that Ethiopia is one of the food insecure nations in the world and is most vulnerable to climate change, particularly in shifts in rainfall, as the majority of smallholder farmers rely upon rain-fed agricultural practices. Furthermore, a number of studies have been conducted on food security in Ethiopia, particularly since the introduction of the PSNP in 2005, the launch of the PSNP is a marker for expanding food security research in Ethiopia. Devereux (2009) analyzed pre-PSNP period research findings and reported three key factors contributing to extreme food insecurity situations in Ethiopia: production failure, exchange failure, and response failure. In addition, there is a growing consensus that food insecurity and poverty problems are closely related in Ethiopia (MoARD 2009). *Livestock and land holding, oxen ownership, livestock feed, access to veterinary and extension services, fertilizer usage, credit access, annual income, remittances, and access to employment are contributors to food security in Ethiopia* (Dagnaygebaw 2019). The availability of household labor, farm size and access to draught power are critical factors of relative wealth and family food security as per the food economy baseline valuations carried out in rural Ethiopia by Save the Children (Boudreau 1998; Chapman and Haile Kiros 1999; Haile Kiros et al. 2000).

According to Jemal and Kim's (2014) study, household food security was positively and significantly correlated with the age and education of the head of the household, the amount of rainfall, the ownership of livestock, off-farm activities, soil conservation techniques, and per capita consumption expenditure. Conversely, household food security was negatively correlated with access to credit and remittance. Additionally, the study indicates that household food security may be improved by a prudent combination of interventions that increase opportunities for income diversification in rural areas by encouraging off-farm activities, education, training, and extension services, as well as by raising livestock productivity. In rural regions,

emphasis should be placed on raising awareness about the more efficient and effective use of resources like credit.

According to a study done in East Hararghe, Ethiopia, factors that significantly influenced a person's susceptibility to food insecurity included the size of the cultivated land, the age of the household head, the size of the family, access to irrigation, adoption of soil and water conservation, and the amount of credit received (Million et al. 2019). Food insecurity is a significant issue in Ethiopia that has an impact on rural inhabitants' quality of life. Planting early maturing crops, switching to lower-quality and less expensive foodstuff, altering cropping patterns, selling livestock, and buying food with cash are the primary coping mechanisms, according to a study done in the Central and North Gondar Zones to examine the causes and coping mechanisms of food insecurity (Wondim et al. 2022).

Rural households were found to be severely food insecure, according to a study on the situation of food insecurity in Tigray, drought-prone rural districts, Ethiopia (Tewelde et al. 2024). Moreover, a recent study carried out in Addis Ababa, Ethiopia, found that low-income households in the city experienced a high rate of household food insecurity. In addition, it was noted that households were compelled to lower the quantity and quality of their food in order to deal with the food crisis (Tefera et al. 2024).

Furthermore, Henok & Elsa's research from 2024 gave a thorough grasp of the fundamental causes of Ethiopia's food insecurity, such as poverty, policy shortfalls, and agricultural problems. Their findings highlight the critical need for focused policy initiatives that tackle the underlying causes of malnutrition and food insecurity, stressing the significance of empowering women, assisting smallholder farmers, and giving nutrition-sensitive agriculture priority in Ethiopia.

As a whole, this scoping study is designed to address the need for regular reviews and syntheses of the literature on the food security situation in Ethiopia to update policy makers and practitioners with the current developments. Although there are many research reports related to food

security, there are no well-organized reviews or synthesis documents clearly showing food security problems and their remedies in Ethiopia. Thus, this work aims to address the gap of a comprehensive review of the challenges and way outs to food security in Ethiopia, with the belief that the presence of such comprehensive literature can serve as a basis for academic purposes, further research and policy formulation.

2. Materials and Methods

2.1 Search Strategy

The purpose of this scoping study was to summarize and disseminate relevant research findings in Ethiopia and other countries that pertain to food security. In order to map the body of research on Ethiopia's food security issues and solutions, this study used a scoping review methodology. Scoping reviews are especially helpful for revealing gaps in the literature, finding important themes, and synthesizing information over a wide topic (Arksey & O'Malley, 2005; Levac et al., 2010). The scoping study's ability to offer a thorough and open approach to mapping research areas is one of its main advantages. within a comparatively little period of time (Oliver, 2001).

The approach adhered to the framework proposed by Arksey and O'Malley (2005) and expanded by Levac et al. (2010). This framework comprises the following steps: (1) formulating the research question; (2) locating pertinent studies; (3) choosing studies; (4) charting the data; and (5) compiling, summarizing, and presenting the findings. This scoping study was guided by the following main research question: What are the main obstacles to Ethiopian food security, and what strategies have been put forth or put into practice to overcome these obstacles? The role of climate change and the efficacy of policy interventions were among the sub-questions.

To find peer-reviewed papers, reports, and grey literature published, a thorough search was carried out across several electronic databases, including PubMed, Scopus, Web of Science, and Google Scholar. Combinations of the following keywords were listed in the search terms: "food security," "global," "Ethiopia," "challenges," "solutions," "climate change," "agriculture," "policy interventions," and "vulnerability." To narrow down the search, boolean

operators (AND, OR) were applied. In order to find more pertinent material, the reference lists of the included research were also manually searched.
Regarding the search criteria: the literature survey was conducted from March 2024 to February 2025 with the following inclusion criteria:

Study area: Studies conducted in the concerned country (Ethiopia) were considered.
Design: All relevant studies (longitudinal and cross-sectional) that assessed food security and food insecurity in Ethiopia were included;
Language: articles written in English language are reviewed; and
Volume of documents: 1205 publications were downloaded, and after going through the abstracts and summaries, one hundred and twelve related documents were identified. Furthermore, after a thorough reading of the contents of the papers, information from ninety-three documents was used for this scoping study.

This methodology offers a strong foundation for mapping the present level of knowledge regarding Ethiopia's food security issues and solutions for policymakers, researchers, and practitioners.

3.Results and Discussion

3.1 Challenges of food security in Ethiopia

Ethiopia's complex food security issues are examined in this review of the literature. In Ethiopia, poverty contributes to food insecurity. Due to limited access to chances for earning income, a sizable share of the population lives below the poverty line (World Bank, 2020). Ethiopia's food security is seriously threatened by climate change, and since more than 85% of its agricultural output is rain-fed, the nation is extremely susceptible to unpredictable rainfall patterns, protracted droughts, and floods (World Bank, 2020, and 2021). Additionally, the country's ability to become food self-sufficient has been limited by environmental deterioration, which includes deforestation, soil erosion, and land degradation. These factors have further reduced agricultural output (Gebreselassie et al., 2016).

The Horn of Africa, especially Ethiopia, is seeing an increase in the frequency and severity of droughts, which has a direct effect on livestock production and crop yields, according to the Intergovernmental Panel on Climate Change (IPCC, 2021). Furthermore, a population that is expected to grow at a rate of 2.6% per year and reach 150 million by 2050 (UN DESA, 2019 and 2022) puts a great deal of strain on the finite natural resources, resulting in overgrazing, deforestation, and soil erosion. Limited access to improved seeds, fertilizers, and irrigation systems—all crucial for raising agricultural productivity—complicates these environmental issues.

According to Spielman et al. (2011), despite Ethiopia's enormous agricultural potential, a number of problems, such as poor infrastructure, limited access to modern inputs, and insufficient extension services, contribute to the country's low productivity. Furthermore, one of the biggest obstacles to Ethiopia's attainment of food security is the lack of suitable infrastructure, especially in rural areas. Inadequate market accessibility, inadequate storage facilities, and poor road networks raise the cost of moving agricultural goods and lower farmers' profits (Dorosh et al., 2012).

Recurrent conflicts in Ethiopia have caused millions of people to be displaced, agricultural activity to be interrupted, and food insecurity to

worsen (IPC, 2021). The Productive Safety Net Program (PSNP) and the Agricultural Growth Program (AGP) are among the programs Ethiopia has emphasize to combat food insecurity, but their efficacy has been constrained by implementation and coordination issues. The effective implementation of these programs has been hampered by a lack of monitoring and evaluation systems, corruption, and weak institutional capacity (Gilligan et al., 2009). Although Ethiopia is attempting to reduce malnutrition, there are a considerable number of cases of stunted and underweight children. In 2013, approximately 7 million people were chronically food insecure, and an additional 2.7 million people were dependent on emergency food aid (African Development Bank Group 2015).

According to Birara, et al. (2015) and Dagnaygebaw (2019) population pressure, family size, age of the household head, lack of employment opportunities, dependency ratio, environmental degradation, diminishing land holdings, poor soil fertility, climate change (drought, flood, frost attack), lack of oxen, deterioration of food production capacity, outbreak of plant and animal disease and pest, shortage of cash income, poor farming technologies and innovations, weak extension services, poor social and infrastructural facility, pre- and postharvest crop loss, distance to market, limited household assets, instability and armed conflicts, corruption and political instability, and lack of appropriate policies and institutions are the triggers of the food insecurity situation in Ethiopia. On the other hand, 80% of the food harvested in Ethiopia is used for household consumption on farms, and market supplies are insufficient and, consequently, prices are high (Devereux, 2000).

Mulugeta et al. (2018), reported that, in many parts of Ethiopia, a combination of natural and man-made factors has led to serious and mounting food insecurity problems. According to their report, the instantaneous reasons for food insecurity include repeated droughts and irregular rainfall patterns, environmental deprivation, fast population growth, weak rural infrastructure, and legacies of previous policy constrictions, which are considered rudimentary grounds of food insecurity. They further claimed that poverty and food insecurity go together and continue to be key encounters in apprehending economic progress in Ethiopia.

Similarly, Tariku (2021) stated that there are many details and origins of food insecurity in Ethiopia, including household characteristics, demographic pressure, limited asset ownership and access to institutional services, poor agricultural technology adoption, low participation in extension and other programs, environmental degradation, drought risk, rural urban migration, and conflict. Similarly, Setiye and Teshome (2019) reported that population pressure, land dilapidation, political uncertainty, climate shocks, etc., are the most prolonged negative causes of food insecurity in Ethiopia.

Furthermore, Abduselam (2017) indicated that population burden, land degradation and drought, volatility and armed struggle are core causes of food security glitches in Ethiopia. The report of the FAO (2008) implies that adverse climate circumstances, political volatility, or economic issues (joblessness, mounting food prices) may affect the food security situation in Ethiopia.

According to Asefa and Zegaye (2003), the reasons for food insecurity in Ethiopia are population growth, production instability, low nonfarm engagement, low income, regional disintegration of markets, high natural dilapidation, low farm technology, illiteracy and low-quality basic education, poor health and sanitation, poor governance and interstate, intrastate armed conflicts and wars, all of which hamper the attainment of food security and sustainable economic development.

Continuing food insecurity is the result of lengthy periods of poverty and a lack of assets. Chronic food insecurity distresses households that obstinately lack the ability to either buy or produce adequate food on their own. Whereas temporary food insecurity is a momentary man-made and/or natural prodigy that results in instability in food production, household incomes and food prices, in the worst case, it may result in famine (FAO,1996).

The challenge of food insecurity is a worldwide concern; 30% of the world's population (2.37 billion) was food insecure in 2020, and more than one-third of them (799 million) were on the continent of Africa (FAO. IFAD, UNICEF W and W., 2021). In 2016, there were 26 million food insecure people in

Ethiopia, which was equivalent to one-fourth of its population, and among the urban households, one in seven were food insecure (CSA, 2019). Urban areas are generally less susceptible to food insecurity; however, this assumption is not working, since urban areas are stricken by deep disparities among socioeconomic groups. Thus, urban food insecurity is a growing issue of concern (IFPRI, 2017).

In 2020, the percentage of children under five years of age stunted was reduced to 35.3% from what was reported as 58% in 2000 in Ethiopia. However, there are reports that approximately 5.8 million under five children are stunted in the country (CSA, 2019). In addition, Sahlu et al. (2020) reported that food insecure mothers were four times more likely to give a low-birth-weight child owing to a deficiency of nutrients in the mothers' diet, which is vital for the growth and development of the fetus at the time of gestation. Consequently, the child may suffer from poor health, weakened cognitive development, poor growth, low learning potential, and less adult work accomplishment and productivity (Moench-Pfanner, et al., 2016). Likewise, the USAID (2020) report indicated that more than 50% of infant and child deaths in Ethiopia are due to malnutrition. On the other hand, in urban Ethiopia, the origins of food insecurity are unsystematic rural–urban population movement, low employment prospects, poor markets, weak services, a poor working atmosphere, a lack of social protection, etc. (PIM, 2016).

Devereux (2000) listed the problems of food insecurity in Ethiopia as follows: land tenure; population increase; fragile natural resources; declining soil fertility; inadequate inputs; recurrent droughts; low yields; inadequate off-farm employment; limited diversification and migration options; and unfeasible agriculture. Moreover, as a result of unreliable weather, food production in Ethiopia is highly variable and volatile. In Ethiopia, national food production decreases by 4.4% if rainfall is reduced by 10% below its long-term average (von Braun 1991). As climate change is linked to challenges of land dilapidation, population increases, backward technology and a decrease in food security (Setiye and Teshome, 2019). The Horn of Africa, where Ethiopia is located, is the most susceptible region, and it is

projected that the global warming will increase by 1–3°C by 2030. Such an increase in mean temperature may result in consequent decreases in staple cereal yields of up to 30% (Parry 1990).

The low level of human capital in Ethiopia is considered a reason for and a consequence of food insecurity as a result of the combined effects of poor education, health, nutritional status, and labor productivity. It is apparent that illiteracy is considered a constraint to access skilled and semiskilled off-farm employment (CSA 1999:91).

According to Dorit et al. (2001), land size and soil fertility, poor crop productivity, and lack of livelihood diversification are famine indicators in households in Ethiopia. If these situations are prompted by conflict, drought, disease, pest infestation, etc., the households will be in menace.

3.2 Way outs to food insecurity in Ethiopia

Millions of Ethiopians are impacted by food insecurity, which also jeopardizes the nation's development initiatives. Ethiopia has enormous agricultural potential, but food shortages still occur often. Using scholarly research, policy documents, and case studies, this literature review investigates possible approaches and solutions to solve food insecurity in Ethiopia.

It is commonly acknowledged that agricultural development is essential to tackling Ethiopia's food insecurity. Agriculture, which employs more than 70% of the workforce and accounts for over 34% of GDP, is a major contributor to the nation's economy (World Bank, 2020). But because of antiquated farming methods, restricted access to inputs, and inadequate infrastructure, the sector is still primarily subsistence-based and has low productivity.

Building climate change resilience requires the adoption of climate-smart farming practices. According to Lipper et al. (2014), these methods include conservation agriculture, the adoption of drought-resistant crop types, and enhanced water management strategies. Furthermore, reforestation and

sustainable land management can improve ecosystem services and lessen environmental damage. Therefore, securing long-term food security requires increasing resilience to climate change.

Social safety net initiatives like the PSNP can be expanded and improved to give vulnerable households much-needed assistance. To lessen reliance on food assistance, these programs must be supplemented by measures that encourage livelihood diversification, like access to finance and vocational training (Gilligan et al., 2009). Investing in rural infrastructure, such as roads, storage facilities, and market accessibility, is another crucial sector. Post-harvest losses, which can make up as much as 30% of Ethiopia's total agricultural output, can be decreased with improved infrastructure (FAO, 2017).

Enhancing productivity and tackling the issues of land scarcity and climate change require more funding for agricultural research and development. This involves creating and distributing better farming methods, fertilizers, and seed varieties (Spielman et al., 2010). These advances, including better seeds, fertilizers, and irrigation systems, can also be adopted more readily if extension services and farmer education are strengthened. According to Minten et al. (2016) using sustainable farming methods and high-yield crop types can greatly boost agricultural production.

In Ethiopia, social safety nets have become an essential instrument for reducing food insecurity, especially for disadvantaged groups. One of Africa's biggest social protection initiatives is the Productive Safety Net Programme (PSNP), which was introduced in 2005. In exchange for taking part in public works projects, it gives food or cash transfers to households that experience chronic food insecurity (Berhane et al., 2014).

According to research, the PSNP has improved access to food and stabilized household incomes, which has improved food security (Gilligan et al., 2009). However, its efficacy has been restricted by issues like targeting errors, coverage gaps, and reliance on outside funding (Sabates-Wheeler & Devereux, 2010). Experts advise combining social safety nets with

complementary measures, such livelihood diversification and nutrition education, to increase their effectiveness (Hoddinott et al., 2012).

Food security results can be improved by empowering women via education, financial availability, and agricultural cooperative involvement (Quisumbing et al., 2014). Achieving food security in the meantime requires tackling gender inequality. Enhancing household food security and promoting wider economic growth can be achieved by empowering women via education, resource access, and decision-making involvement (Quisumbing et al., 2015). However, without stability and peace, sustainable food security is impossible. To create an environment that supports agricultural development and food security, efforts must be made to resolve conflicts and foster social cohesion (FAO, 2018). This entails tackling the underlying causes of violence, like ethnic conflicts and land disputes, as well as making sure that civilians are protected in times of emergency.

Furthermore, the intricate and interconnected causes of food insecurity can be addressed by a multi-sectoral strategy that combines social protection, health, education, and agriculture (Maxwell et al., 2013). Additionally, during times of scarcity, community-led projects like grain stores and seed banks can improve the availability of food (Tadesse et al., 2014). Promoting nutrition-sensitive agriculture, which combines food production with dietary variety and nutrition education, is another promising strategy. For example, by expanding access to fruits and vegetables, home gardening initiatives have been effective in enhancing household nutrition (Girma et al., 2018).

According to FAO, (2008), food stability should be sustained to ensure food security at the global, regional, national, household, and individual levels. Similarly, Setiye and Teshome (2019) reported that *Land and livestock holdings, off-farm activities, household head education, household size, household income, the use of yield-enhancing technologies such as access to irrigation, good rainfall and soil fertility status meaningfully determine the food security of households.*

In Ethiopia, people use sales of livestock, agricultural employment, and *short-term/seasonal* migration to other areas; requesting grain loans; sales of wood or charcoal; small-scale trading; limiting the size and frequency of meals; *seeking alternative or additional jobs; relying on less preferred and less expensive food; seeking relief assistance; seeking alternatives or additional jobs; becoming temporary traders; engaging in household splitting; consuming wild food; remittance; participating in cash basis projects; diversifying livelihood incomes; purchasing grains from the market; and renting out land* as major coping mechanisms (Birara, et al. 2015; Abduselam, 2017; Dagnaygebaw, 2019).

Meanwhile, the food security of poor people can be enhanced through the promotion of social justice in planning and implementing social protection interventions. In sub-Saharan Africa, there is an encouraging relationship between social protection programs and the results of food security (Devereux, 2016).

Dercon and Krishnan (1998) reported that through agricultural production and rural income, resources, such as access to land and labor, infrastructure, technologies, credit, and geographic suitability, it is possible to affect the level of food insecurity. To increase agricultural yields, there is a need for structural transformation through land tenure reform and the injection of technological inputs. Moreover, it is also necessary to consider reducing the role of agriculture in the economy by increasing growth in other sectors, as agriculture is characteristically vulnerable to conditions such as climate change (Befekadu and Berhanu 2000). Finding and investing in different engagement openings other than rain-fed agriculture are crucial for future food security in Ethiopia (Devereux, 2000).

Increasing access to financial facilities is also important for increasing the yield of rain-fed agriculture through improved land and water resource management (The African Development Bank Group, 2015). For the landless, the road to food security is creating a conducive situation for rural economic diversity, meaning, allowing active farmers to increase their land size and increase their agricultural output, for example, by employing landless

workers. Furthermore, livelihood strategies such as crop and livestock production, working in off-farm activities, engaging in food for work programs and even migration are potential paths to address the food insecurity of the landless (Scoones,1998).

According to the food security strategy of Ethiopia (FDRE, 2002), the main goals of food security in Ethiopia are to increase agricultural production countrywide, build a resource base for lingering food shortfall households, increase employment and income in rural and urban areas, and offer targeted handovers to deficit households.

In Ethiopia, pastoral and agropastoral areas constitute approximately 12% of the population and constitute more than 60% of the land mass. Given the intricate and varied nature of pastoral circumstances, improving food security situations is central to strengthening an early warning scheme that is based on outmoded survival approaches, such as the introduction of forage legumes well matched to dry areas; suitable technologies; large commercial ranches; and broadening of local economic systems where appropriate (FDRE, 20002). Dorit et al. (2001) indicated that, to advance food security in Ethiopia, interventions such as introducing diverse income creation activities, applying varied study outputs, implementing up-to-date technologies, broadening income, creating new employment prospects and using different resources (land, labor, capita/asset) managing instruments should be taken into consideration.

According to the Ethiopian Food Security strategy (2002), the two most important strategies for realizing food security in Ethiopia are increasing agricultural productivity and asset building.

4. Conclusion and Recommendation

4.1 Conclusion

It is about to be one century since the world recognized the need to address the food shortage problem of the globe. The founding of organizations such as the FAO in 1943 and the commitment of the United Nations to stand behind

interventions such as the Millennium Development goal (MDG: 2000-2015) and that of the Sustainable Development Goals (SDG: 2015-2030) are clear indications of international concerns to address the challenges of food insecurity, which is driven by poverty.

Climate fluctuation, population pressure, low agricultural productivity, infrastructure constraints, and gaps in policy implementation are some of the factors contributing to Ethiopia's ongoing complex and multifaceted food security issue. A comprehensive strategy that incorporates infrastructural development, population control techniques, climate-resilient agricultural practices, and efficient policy execution is needed to address these issues. For Ethiopia to achieve long-term food security, it is imperative that institutional capacity be strengthened, sustainable land management be encouraged, and access to contemporary agricultural inputs and technologies be improved. To overcome these obstacles and guarantee a future where all Ethiopians have access to food, cooperation between the government, foreign organizations, and local communities is crucial.

Conflict, poverty, population expansion, and climate change all continue to impede efforts to ensure universal access to food. It will take consistent funding for social safety nets, agricultural research, gender equality, climate-smart agriculture, and peacebuilding to meet these problems.

It's also important to remember that food insecurity and poverty and inequality are intimately related in Ethiopia, where some people live below the poverty line and have little money to buy wholesome food. Despite these obstacles, efforts to combat food insecurity, like the Agricultural Growth Programs, which aim to increase agricultural productivity, and the Productive Safety Net Programme (PSNP), which distributes food and cash transfers to households at risk, must be expanded and combined with long-term plans to foster resilience and guarantee sustainable food security.

4.2 Recommendations

1. Strengthen Climate Resilience: Ethiopia needs to give climate-resilient agricultural practices top priority because droughts and other climate-related shocks are occurring more frequently. This entails encouraging crop types that can withstand drought, enhancing water management using small-scale irrigation systems, and putting soil conservation strategies into practice. The government ought to teach farmers in sustainable land management techniques and make investments in climate-smart agriculture (CSA) technologies in coordination with foreign partners.

2. Strengthen Agricultural Research and Development: Ethiopia should invest more in agricultural research and development (R&D) in order to solve the low adoption of contemporary agricultural technologies. This entails creating crop types that are both disease-resistant and high-yielding, expanding access to high-quality seeds and fertilizer, and encouraging mechanization. When it comes to expanding the distribution of these technologies to smallholder farmers, public-private partnerships can be quite important.

3. Enhance Market Access and Infrastructure: Improving rural infrastructure, such as roads, storage facilities, and market connections, is essential to addressing food insecurity. Improved infrastructure will guarantee the effective distribution of food, lower post-harvest losses, and improve farmers' access to markets. In order to enhance agricultural products and generate job opportunities, the government should also encourage the growth of agro-processing enterprises.

4. Encourage Social Safety Nets and Poverty Reduction: By growing social safety net initiatives like the PSNP, needy households can receive short-term assistance while gaining long-term resilience. These initiatives should be supported by initiatives to combat poverty in the areas of healthcare, education, and job creation. Achieving food security requires empowering women, who are vital to agriculture and food production.

5. Promote Peace and Stability: Conflicts and political unrest are two of Ethiopia's main causes of food insecurity. To foster a climate that is favorable to agricultural development, the government must give peacebuilding and conflict resolution top priority. This includes resolving the core causes of conflicts, such as land disputes and ethnic tensions, and assuring the protection of civilians during crises.

6. Strengthen Data Collection and Monitoring: Accurate and timely data on nutrition and food security are essential for the development and execution of effective policies. Ethiopia should make investments to improve its systems for gathering and tracking data in order to keep tabs on developments, spot gaps, and guide decision-making. This entails using technology for data analysis, performing routine household surveys, and enhancing early warning systems for disasters like droughts.

7. Encourage Regional and International Cooperation: Ensuring food security is a global issue that calls for coordinated efforts. Ethiopia should work more closely with foreign partners and regional organizations like the African Union and IGAD in order to exchange ideas, gather resources, and carry out cooperative projects. This involves taking part in regional trade agreements to improve the affordability and availability of food.

All things considered, combating food insecurity in Ethiopia necessitates a multipronged strategy that combines immediate fixes with long-term plans. Ethiopia can significantly advance its goal of providing food security for its people by boosting climatic resilience, increasing agricultural output, fortifying infrastructure, and promoting peace and stability. However, this will necessitate ongoing dedication and cooperation from local communities, development partners, and the government.

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