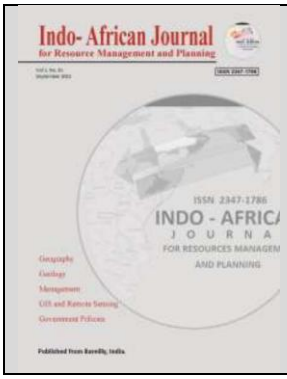

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ARTICLE REVIEW ON GLOBAL FOOD SECURITY SITUATION AND TRENDS: POLICY OPTIONS TO PREVENT FOOD INSECURITY AND HUNGER

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Executive summary

This article review the global food security situation and trends, exploring policy options to prevent food insecurity and hunger. It synthesizes findings from various authoritative sources to provide a comprehensive overview of the multifaceted challenges and potential solutions. The paper highlights the persistent nature of food insecurity, exacerbated by factors such as climate change, geopolitical conflicts, economic instability, and population growth. It examines the current state of global food systems, identifying vulnerabilities and areas requiring urgent intervention. This review explores various policy options aimed at enhancing global food security. These include strengthening sustainable agricultural practices, such as agroecology and climate-smart agriculture, to build resilience against environmental shocks. Investment in research and development for drought-resistant crops and improved farming techniques is also emphasized. Policies promoting fair trade practices and reducing food waste are discussed as essential components of a more equitable and efficient food system. Furthermore, the abstract highlights the importance of social safety nets, such as food assistance programs and cash transfers, to protect the most vulnerable during crises. International cooperation and multilateral agreements are presented as critical for coordinating efforts, sharing resources, and addressing transboundary challenges related to food security. The role of governance and institutional frameworks in ensuring effective policy implementation and accountability is also underscored. Finally, the abstract concludes by stressing the need for a holistic and integrated approach that addresses the root causes of food insecurity, fostering long-term resilience and sustainable development.

1. Introduction

"Hunger remains an everyday challenge for almost 795 million people worldwide, of which 780 million in developing regions. Thus, hunger eradication should remain a key commitment of decision-makers at all levels. "IFAD: 2015

The term "food security" is widely used in publications, articles, statements, and the media and so on. However, its meaning varies considerably: for many, the concepts surrounding hunger, famine and food security are blurred and these words are often used interchangeably. Thomas Malthus, in 1798, predicted that the population growth would unavoidably surpass the food production. Still, during the lasts decades the agricultural production worldwide has grown more rapidly than the population did. Still, the number of people suffering food insecurity is reported to be increasing and so is, since a few years, the proportion of the overall population suffering from insufficient food. Therefore, this term paper discusses on global food security situation, trends and key factors.

2. Concepts and Definitions

Food security: "Food security exists when all people, at all times, have physical, [social] and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life", World Food summit (1996). WFP offers the following definition: "Food security is a condition that exists when all people, at all times, and are free from hunger" (WFP, 2009, p. 170). According to FAO (2008): Food Security Information for Action: Practical Guide, there are four main dimensions of food security:

- *The physical availability of food:* Food availability addresses the "supply side" of food security and is determined by the level of food production, stock levels and net trade.
- *Economic and physical access to food:* An adequate supply of food at the national or international level does not in itself guarantee household level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives.
- *Food utilization:* Utilization is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals is the result of good care and feeding practices, food preparation, and diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals.
- *Stability of the of the other three dimensions over time:* Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status.

Food insecurity: there are two types of food insecurity, *chronic and transitory* food insecurity**.**
Chronic food insecurity: it is long term or persistent food insecurity. It occurs when people are unable to meet their minimum food requirements over a sustained period of time. It results from extended periods of poverty, lack of assets and inadequate access to productive or financial resources. It can be overcome with typical long term development measures also used to address poverty, such as education or access to productive resources, such as credit. They may also need more direct access to food to enable them to raise their productive capacity.

Transitory food insecurity: It is short-term insecurity. It occurs when here is a sudden drop in the ability to produce or access enough food to maintain a good nutritional status. It results from short-term shocks and fluctuations in food availability and food access, including year-to-year variations in domestic food production, food prices and household incomes. It can be overcome transitory food insecurity is relatively unpredictable and can emerge suddenly. This makes planning and

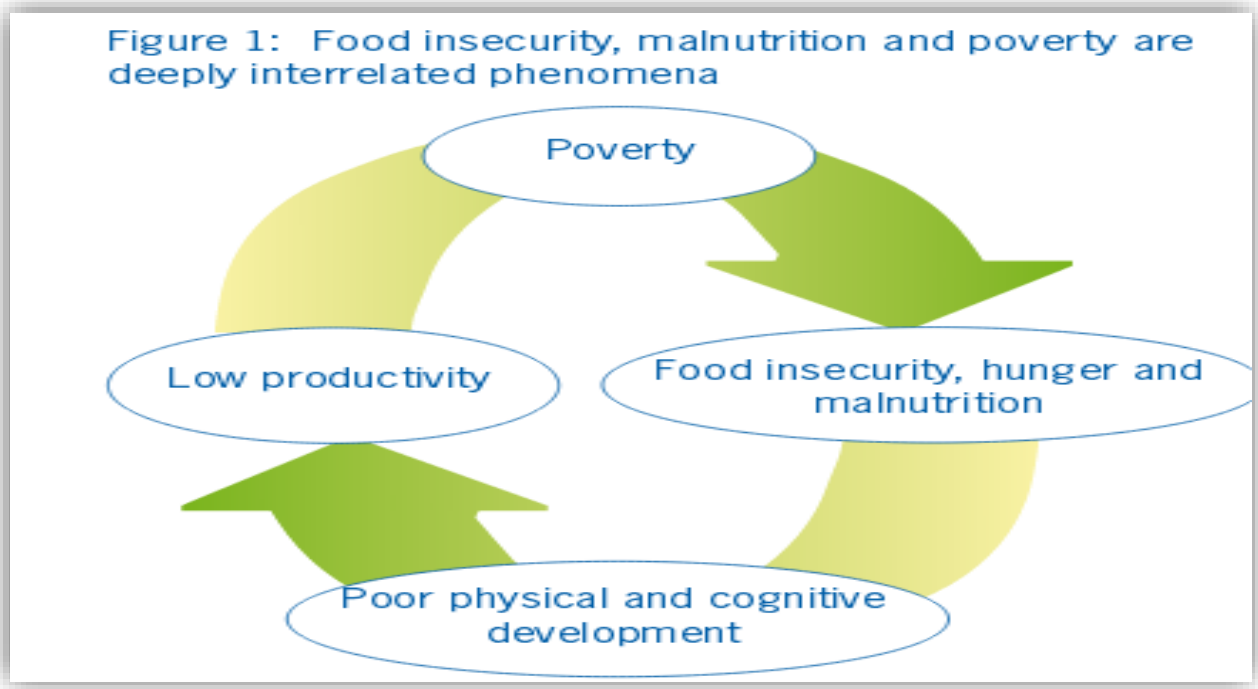
programming more difficult and requires different capacities and types of intervention, including early warning capacity and safety net programs.

Hunger is a term which has three meanings (Oxford English Dictionary 1971): *the uneasy or painful sensation caused by want of food; scarcity of food in a country a strong desire for food.*
It is usually understood as an uncomfortable or painful sensation caused by insufficient food energy consumption. It is referred to as food deprivation. World hunger refers to both malnutrition and under nutrition refers to the effects on people of not having enough food. Simply put, all hungry people are food insecure, but not all food insecure people are hungry, as there are other causes of food insecurity, including those due to poor intake of micro-nutrients.

Malnutrition: results from food insecurity, deficiencies, excesses or imbalances in the consumption of macro-and/or micro-nutrients. Malnutrition may be an outcome of food insecurity, or it may relate to non-food factors, such as inadequate care practices for children, insufficient health services; and an unhealthy environment (UNICEF, WHO, The World Bank. 2014a)
Poverty: is a cause of hunger, lack of adequate and proper nutrition itself is an underlying cause of poverty. A current and widely used definition of poverty is: "Poverty encompasses different dimensions of deprivation that relate to human capabilities including consumption and food security, health, education, rights, voice, security, dignity and decent work."- (OECD).

It is argued that a strategy for attacking poverty in conjunction with policies to ensure food security offers the best hope of swiftly reducing mass poverty and hunger. However, recent studies show that economic growth alone will not take care of the problem of food security. What is needed is a combination of: *income growth; supported by direct nutrition interventions; and investment in health, water and education*.

Figure 1: Food insecurity, malnutrition and poverty are deeply interrelated phenomena



Source: FAO (2008)

Famine: is a widespread scarcity of food, caused by several factors including crop failure, population imbalance, or government policies. This phenomenon is usually accompanied or followed by regional malnutrition, starvation, epidemic, and increased mortality (Global concern, 2013)

Starvation: is a severe deficiency in caloric energy intake needed to maintain human life. It is the most extreme form of malnutrition. In humans, prolonged starvation can cause permanent organ damage and eventually, death. The term *inanition* refers to the symptoms and effects of starvation (World Bank, 2015).
Under nutrition: A condition resulting from an inadequate consumption of calories, protein, and nutrients to meet the basic physical requirements for an active and healthy life (WHO, 2016).

3. Contending Theories of Food Entitlement

3.1. Malthusians and anti-malthusian contentions

Malthusians contend that food insecurity is due to the presence of too many people compared to the amount of food produced. He argued that Population when unchecked increases in a geometrical ratio while subsistence food production increases only in an arithmetical ratio. Food production increases only in an arithmetical ratio. The core principle of Malthus was that food is necessary for human existence even if human population tends to grow faster than the power on the earth to produce subsistence. Malthus was specific on the negative impact of population growth on food production. Classic Malthusianism was the dominant thinking about the relationship between population growth and food security until the early 1960s.

In the late 1960s, Classic Malthusianism became less popular after Ester Boserup, a Danish Economist, argued successfully that technological development could boost food production enough to keep up with population growth for many years. She was mainly reacting against Malthus's model of the relationship between population growth and food security. Contrary to Malthus, she argued that population growth is a major factor determining agricultural development hence food security.Boserup's arguments are shared by other anti-Malthusians, for example, Julian Simon (cited by Dyson, 1996) who argues: The ultimate resource is people; skilled, spirited, and hopeful people who will exert their will and imaginations for their own benefit, and so inevitably, for the benefit of us all.

3.2.The Entitlement to Food Security Theory

Unlike the above pessimistic (Malthusian) and optimistic (anti-Malthusian) theories that focus almost exclusively on food supply, the entitlement to food theory focuses more on possession of wealth materials which can be exchanged for food or can be used to get food through other means. The Entitlement approach concentrates on each person's entitlement to commodity bundles, including food, and views starvation as resulting from failure to entitlement to a bundle including enough food. Entitlements are defined as "the set of alternative commodity bundles that a person can command in a society using the totality of rights and opportunities that he or she faces" (Sen, 1984, cited by Leach *et al.,* 1999).

The pessimistic and optimistic contentions about the relations between population growth and food security reviewed above have been challenged by Sen (1981) who argues as follows: People do not usually starve because of insufficient supply of food at local, national or international level, but

because of insufficient resources, including money 'entitlements' to acquire it. Sen classified entitlements into three categories: (i) endowments, which are all legal resources that can be used to obtain food, including money, land, machinery and animals, but also more abstract resources such as labor power, know-how, kinship and citizenship; (ii) entitlement mapping, which includes terms of trade between endowments and food, goods, and the ratio between money wages and the price of food, or the input-output ratios in farm production; and (iii) entitlement-set, which represents the basket of food, goods, and services that a person can obtain using his/her endowments. Food security is more pronounced when some or all of the above entitlement categories are attainable to the individual or household.

4. Global Food Security Situation, Trends and Key Factors

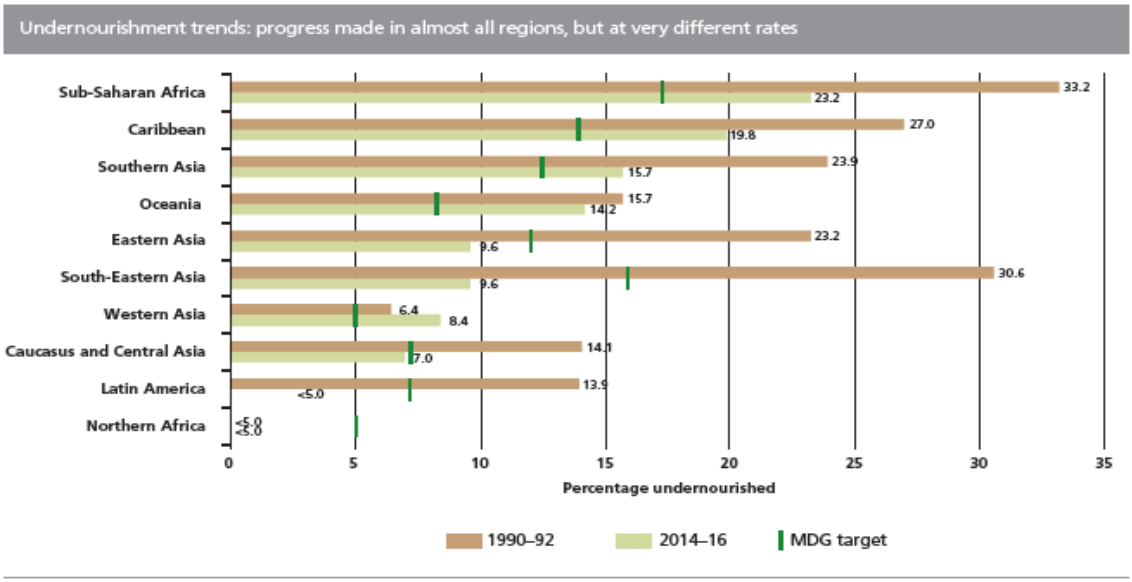
4.1. Brief background of global food security

In 1930s, global food security began to be a concern at worldwide level. The origin of modern World Food Security was traced back to the League of Nations when the health division of the League disseminated information about the food position in representative countries of the world. This was the first introduction to the world food problem into the international political arena (D. John Shaw, 2007, p.6). The League of Nations recognized that there was an acute food shortage in the poor countries, the first account of the extent of hunger and malnutrition in the world. The Assembly of the League of Nations held discussions on nutrition and nutrition policies and the need for co-ordinate nutrition policies in a number of countries (Shaw, D. John, (2007).

The League of Nations agreed that increasing food production to meet human needs would bring prosperity to agriculture, which would overflow into industry and bring the needed expansion of the world economy (Boyd Orr, 1966) and (D. John Shaw, 2007). Finally, in 1943, Nations of the World decided to establish the Food and Agriculture Organization of the United Nations at a Conference on Food and Agriculture convened by President Franklin D. Roosevelt at Hot-Spring, Virginia in the USA (D. John Shaw, 2007).

4.2.The world Food Security Situations and Major Trends

According to the Global Food Security Index (GFSI, 2015), food security has improved around the globe over the past five years, but hunger and food insecurity still persist. Governments, multilaterals and the private sector should remain proactive in addressing food-security challenges around the world. Despite all these efforts, however, the world is not food secure today. Food insecurity, hunger, and malnutrition are widespread, particularly in South Asia and Sub-Saharan Africa. Global undernurtionmnet has continued to decline over the last ten years (IFAD, 2015).



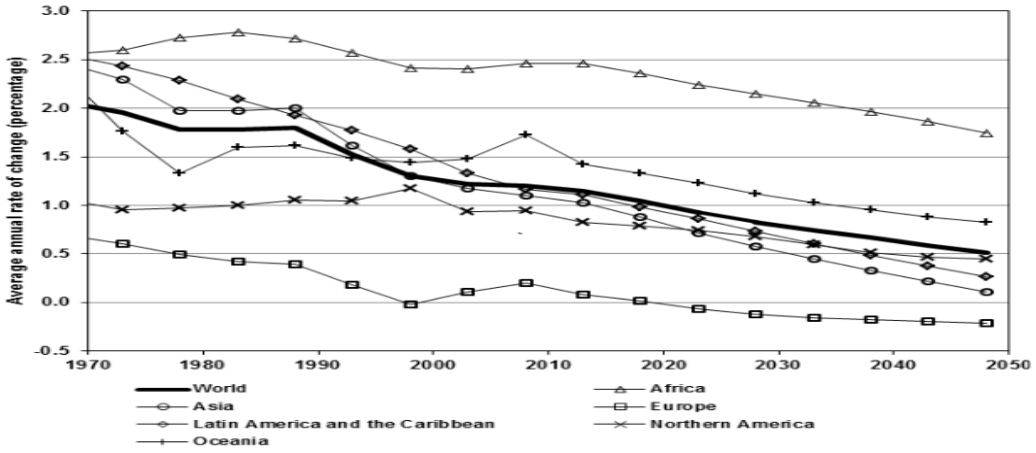
Note: Data for 2014–16 refer to provisional estimates.
Source: FAO.

About 20% (nearly, 800 million) people in the developing world are food insecure; nearly, 185 million preschool children are underweight; and many hundreds of millions of people suffered from diseases of hunger and malnutrition (UN, 1992). An estimated 1.1 billion people live in households that earn a dollar a day/less per person. 50% of these absolutely poor people live in South Asia, 19 % in Sub-Saharan Africa, 15 % in East Asia, and 10 % in Latin America and the Caribbean. Almost 1/2 of the population of South Asia and Sub-Saharan Africa, and 1/3 of the Middle East and North Africa, live in poverty (IFAD, 2000).

Indeed, world food production increased impressively. During the period 1961-93, cereal production worldwide more than doubled from 877 million tons to 1.894 billion tons; in developing countries it almost tripled from 396 million tons to 1.089 billion tons (FAO, 1994). In developing countries, food production increased 49 percent, with particularly large increases of 689 percent in China. This implies that food production performance varied widely among regions; for instance, per capita food production increased by 42 percent in China and by 25 percent in Asian developing countries, less food was produced per person in developing African countries. However, growth in food production did not keep pace with population growth in many developing countries (World Bank, 1992).

In most developing countries, population growth is common. However, in Africa, population growth rates significantly higher and lowest in Europe compared with other regions. Between 2014 and 2050, all major areas are expected to experience further reductions in their population growth rates (UN, population division, 2014).

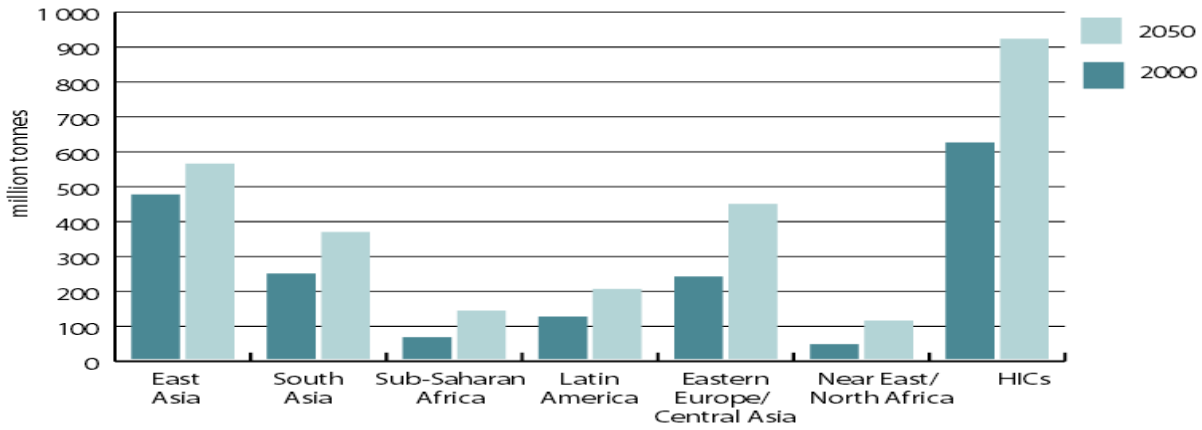
Figure I
Average annual rate of population change, for the world and major areas, 1970-2050



UN population division: 2014

The total cereal production: The trend of cereal production indicates steady growth of output growth to 2050. Cereal production is projected to grow steadily across all seven regions.

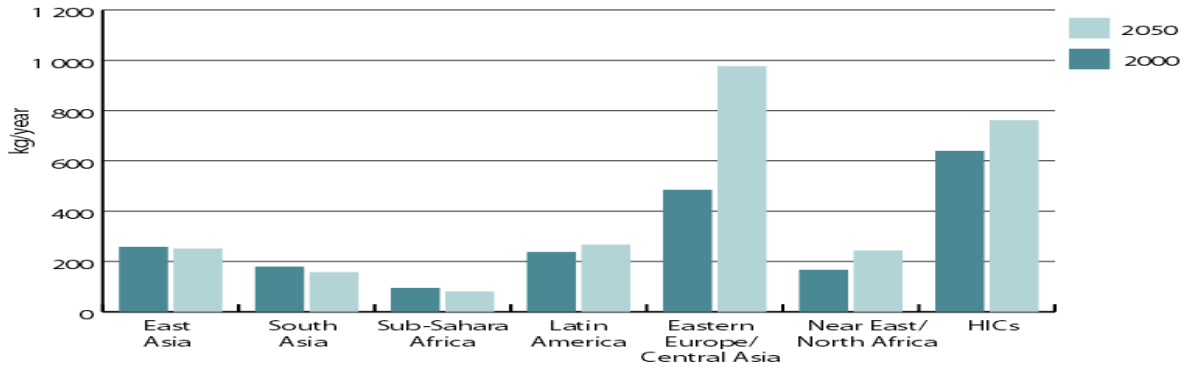
Figure 2.3
Total cereal production to 2050



HIC = high-income country.
Source: Projections from von Braun, 2008.

Per capita Cereal production: the North American, European and Central Asian regions make significant increases in production relative to their own population growth, and are able to provide the surpluses needed to supply the food and feed needs of the rest of the world. The Near East and North African region is able to increase its per capita production levels over the production period, as is Latin America and the Caribbean. In contrast, the South, East Asian and sub-Saharan Africa regions decrease their per capita production over time (FAO, 2000).

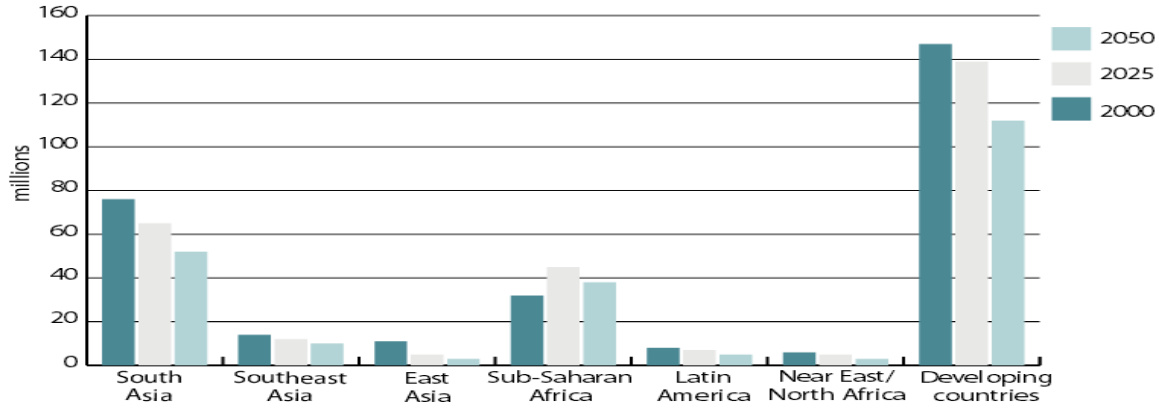
Figure 2.4
Per capita cereal production to 2050



Source: Projections from von Braun, 2008.

Malnutrition Situation: The trends for malnutrition preschool children show that there are variations in the rates of change in malnutrition. The Asian region as a whole to be the most aggressive in reducing its overall levels of malnutrition. However, the count of malnourished children in sub-Saharan Africa remains nearly the same in 2050 as in 2000.

Figure 2.8
Total numbers of malnourished preschool children in the developing world (children aged 0 to 5 years)



Source: Projections from von Braun, 2008.

Undernourishment: According to the FAO (2015), undernourishment is the measure of food deprivation. An individual is considered undernourished if he or she doesn't receive enough dietary energy to maintain a healthy and active life. 854 million people are undernourished worldwide; 820 million in developing countries.

In Sub-Saharan Africa, 32% of the population is undernourished. Although sub-Saharan Africa accounts for only 13% of the population in the developing world, it accounts for 25% of its undernourished. The next highest regional concentration of undernourishment is South Asia, where 22% of the population is undernourished. In Bangladesh, 30% are undernourished and India has a rate of 20%. The absolute number of undernourished people is highest in India: India has 212 million undernourished people, the largest in the world. In Latin America, 10% of the population is undernourished. In Peru, the rate is 12% and in Bolivia, the rate is 23 %(WFP, 2010).

World food production is increasing and yields of major cereals have more than doubled in the past three decades. Yet, more than 700 million people in the developing world do not have access to sufficient food to lead healthy and productive lives. Besides meeting the food needs of these chronically hungry people world will be challenged to provide food at affordable prices (IFPRI, 1995).

The capacity exists to produce sufficient food for all people in the world. However, this requires an increase in food production, particularly in low-income, food-deficit countries. Sufficient food production alone will not guarantee food security, however, unless action is also taken to ensure access to food by all people. Progress in attaining food security has been slow and uneven up to the present time. This situation is likely to continue well into the 21st century unless concerted efforts are made to remove the obstacles to food security and promote overall rural development and poverty eradication, especially in the countries most affected by food insecurity. Overall, there are better prospects for growth in the developing countries, with significant exceptions. By the year 2010, it is predicted that most developing countries will have been able to increase per caput food supplies and decrease malnutrition. Much of sub-Saharan Africa, however, is likely to continue to suffer from food insecurity and parts of South Asia and Latin America and the Caribbean will still be in a difficult position (FAO, 2011b).

The lack of adequate incomes and purchasing power of large parts of the population is expected to slow down world agricultural growth. Predictions are that the world production of cereals will not grow in per caput terms, due to the slow growth of demand from countries and population groups with low levels of food consumption (FAO, 2011a). There has been a shift in the general trend of giving low priority to agriculture as compared to industrialization. A new recognition is growing in many parts of the world of the crucial role of the agricultural sector for increasing export earnings, generating employment and improving food security. This has been combined with economic liberalization and privatization.

The trends towards economic and trade liberalization and privatization which are intended to boost agricultural production and the economy may well result in increasing food insecurity among poor farmers and other vulnerable population groups, unless measures are taken to ensure equitable access to food by all (FAO,2011a).

4.3.The Key Factors of Global Food Security

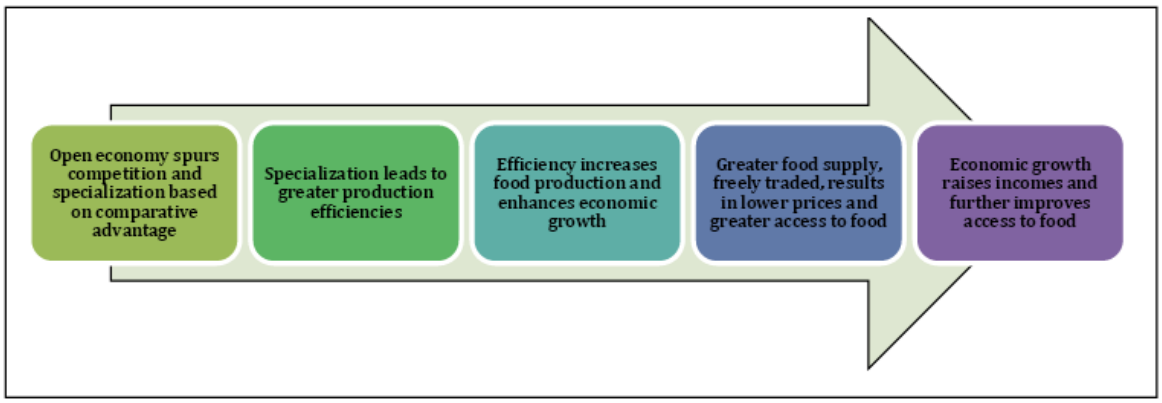
4.3.1. International trade and global food security

International trade plays a crucial in ensuring food security. Trade barriers can restrict food availability in regions experiencing food deficits, leading to higher prices and reduced access to food (FAO, 2014a). There are many arguments that international trade can increase food supply. Most economists today generally support freer trade, including trade in food and agriculture (Schumacher, 2013).

The theory of comparative advantage is often referenced by those who argue that trade liberalization enhances food security (Lamy, 2013). The idea is that efficiency gains from specialization and trade should improve both food availability and food access. Common steps to the argument are as follows: removal of trade barriers encourage market competition and specialization based on comparative advantage; efficiency of food production is enhanced as crops are grown in countries that have the least opportunity costs in producing them; more efficient agricultural production results

in greater food supply on a global scale (from efficiency gains), as well as higher economic growth and job creation within countries, enabling technological development to further enhance production; a greater supply of food, freely traded, should result in more availability and lower food prices in all countries, as dictated by the forces of supply and demand, resulting in greater access to a wider variety of food, improving food security; and economic growth resulting from more efficient economic activity raises incomes and creates jobs, also improving access to food and enhancing food security.

Figure 2: Pro-trade perspective on comparative advantage, trade, and food security



Source: based on FAO, 2003; Lamy, 2013.

International trade boosts imports and increases both the quantity and variety of food available. The macroeconomic benefits of trade openness, such as export growth and the inflow of foreign direct investment, support growth and employment, which in turn boosts incomes. A greater variety of available foods may promote more balanced diets and accommodate different preferences and tastes. Food safety and quality may improve if exporters have more advanced national control systems in place or if international standards are applied more rigorously. Imports reduce the seasonal effect on food availability and consumer prices. Imports mitigate local production risks. Global markets are less prone to policy- or weather-related shocks..

However, international trade may have negative effect on food security. For net food-exporting countries, higher prices in international markets can divert part of production previously available for domestic consumption to exports, potentially reducing domestic availability of staple foods. For net food-importing countries, domestic producers unable to compete with imports are likely to curtail production, reducing domestic supplies and foregoing important multiplier effects of agricultural activities in rural economies.

For net food-exporting countries, the domestic prices of exportable products may increase. Employment and incomes in sensitive, import-competing sectors may decline. Greater reliance on imported foods has been associated with increased consumption of cheaper and more readily available high calorie/low-nutritional-value foods. Prioritization of commodity exports can divert land and resources from traditional indigenous foods that are often superior from a nutrition point of view. For net food-importing countries, relying primarily on global markets for food supplies and open trade policies reduces the policy space to deal with shocks. Net food-importing countries may be vulnerable to changes in trade policy by exporters, such as export bans. Sectors at earlier stages of development may become more susceptible to price shocks and/or import surges (FAO, 2015).

4.3.2. Economic Growth and Global Food Security

"Global Food Insecurity has global foreign policy and national security implications... Economic and political development in poor countries will continually be frustrated if populations are unable to feed themselves."FAO: 2010.

Economic growth is also central to the fight against hunger. However, while, governments in rapidly growing economies have more resources to dedicate to the improvement of food security and nutrition, this may not necessarily translate into food for all (FAO, 2014).

The key factor is inclusive growth that promotes access for everyone to food, assets and resources, particularly for poor people and women so they can develop their potential. Therefore, economic growth, while a necessary condition for progress in poverty and hunger reduction especially in the face of an expanding population, is not sufficient. Across the developing world, the majority of the poor and most of the hungry live in rural areas, where family farming and smallholder agriculture are the main farming system. Family farming and smallholder agriculture's growth, through labor and land productivity increases, has significant positive effects on the livelihoods of the poor through increases in food availability and incomes (N.Kabeer. 2014).

Countries' economic development and rising personal incomes improve the structural avenues to support food availability and affordability and strengthen governance. However, the most vulnerable populations in upper-middle-income and high-income countries remain food-insecure. As a country crosses the threshold to developed-nation status, the gap between its food-secure and food-insecure populations widens (GFSI, 2015).

Economic growth should be inclusive because it provides opportunities for those with meager assets, skills and opportunities, improves the incomes and livelihoods of the poor, and is effective in the fight against hunger and malnutrition. Rural people make up a high percentage of the hungry and malnourished in developing countries, and efforts to promote growth in agriculture and the rural sector can be an important component of a strategy for promoting inclusive growth and improving food security and nutrition.

4.3.3. Nature and Status of Smallholder Food Production

There is no universally accepted definition of a small farm. Farm size is the criterion to describe small farm. The most common measure is farm size: many sources define small farms as those with less than hectare of household's consumption of staple foods (Hazell et al., 2007). Smallholder farming is often referred to as family farming, subsistence farming and low-income farming. Smallholder farming is the backbone of African agriculture and food security. Of the two-thirds of sub-Saharan Africa's population that resides in the rural areas, the majority can be considered as smallholder farmers (Ibid,pp.34).

There are about half a billion smallholder farms worldwide. In many developing countries, the overwhelming majority of farms are small and family-run, and they produce most of the food consumed locally. Smallholders are also by far the main investors in agriculture in most of the developing world. Smallholder farmers can significantly contribute to economic growth, as well as to reducing poverty and ensuring food and nutrition security (Nagayets, O. (2005).

However, smallholder farmers need more secure access to land and water, and better access to financial services to pay for seed, tools and fertilizer. They need better functioning markets that

provide incentives to invest in improving production, with less risk; roads and transportation to get their products to market; and access to technology for up-to-date and reliable market information. They need agricultural research and technology to raise productivity and to improve their resilience to natural resource degradation and climate change. And they need stronger organizations to pool their resources, better manage risk, have greater bargaining power in the marketplace, and influence agricultural policies and public investments (Wiggins, S. 2008).

More than 90 percent of the 570 million farms worldwide are managed by an individual or a family, relying predominately on family labor. These farms produce more than 80 percent of the world's food, in terms of value. Globally, 84 percent of family farms are smaller than 2 hectares and manage only 12 percent of all agricultural land. While small farms tend to have higher yields than larger farms, labor productivity is less and most small family farmers are poor and food-insecure (FAO, 2010). However, the future food security of these farms may be threatened by intensive resource use. With increased productivity, farmers grow more food, become more competitive and receive higher incomes. Productivity growth in small family farms contributes to more inclusive growth, not only by reducing the prices of staple foods but also by improving access to food. With well-functioning rural labor markets, such productivity growth increases the demand for labor in rural areas, generating jobs for the poor and raising the unskilled labor wage rate. Rural household members diversify their income sources by obtaining better-paid off-farm work, which helps poverty and hunger to decline (IFAD. 2011b). In spite of overall progress, marked regional differences persist. In the early 1990s, average value added per worker in agriculture was lowest in sub-Saharan Africa, compared with other regions, such as Eastern Asia and Latin America.

4.3.3.1. Contributions of Smallholder Production to Food Security

There are 1.4 billion poor people living on less than US$1.25 a day. One billion of them live in rural areas where agriculture is their main source of livelihood. Approximately 2.5 billion people live directly from agricultural production systems, either as full- or part-time farmers, or as members of farming households that support farming activities (FAO 2008a).Many of the productivity gains accrued to smallholder farmers, supported through research and extension services. However, those achievements came with environmental externalities, leaving soils degraded and groundwater depleted, undermining the very resource base that made the revolution possible (Reardon et al. 1998). Overall, smallholder farmers are characterized by marginalization, in terms of accessibility, resources, information, technology, capital and assets, but there is great variation in the degree to which each of these applies (Murphy, 2010).

The vast majority of smallholders live in rural areas are an increasingly important source of supply for developing urban areas (IFAD 2011a). Women play a crucial role within the smallholder system and are commonly responsible for the production of food crops, especially where the farming system includes both food and cash crops (IFAD, 2009). Smallholders include some 350 million indigenous peoples, who conserve many different crop varieties and livestock breeds. Their agricultural practices and techniques offer an important source of knowledge for the transition to sustainable agricultural intensification.

4.3.3.2.Contribution to global food production

Smallholder farming systems are very diverse and contribute considerably to global agricultural output of a variety of crops. They produce the bulk of food in developing countries, and in many instances their contribution is growing (Koohafkan, 2011). They produce 70 per cent of Africa's food supply (IAASTD, 2009a) and an estimated 80 per cent of the food consumed in Asia and sub-Saharan Africa together (IFAD 2011b). In Latin America, smallholder farmers occupy almost 35 per cent of total cultivated land (Altieri and Koohafkan 2008). There is substantial variation among smallholders according to livelihood assets and strategies, e.g. the share of crops produced for subsistence and for local and export markets (Nagayets 2005; Murphy 2010).

Smallholders form a vital part of the global agricultural community, yet they are often neglected. They manage over 80 per cent of the world's estimated 500 million small farms and provide over 80 per cent of the food consumed in a large part of the developing world, contributing significantly to poverty reduction and food security. However, increasing fragmentation of landholdings, coupled with reduced investment support and marginalization of small farms in economic and development policy, threaten this contribution, leaving many smallholders vulnerable (IFAD 2011b).
The green revolution in agriculture swept through large parts of the developing world during the 1960s and 1970s. Through advances such as high-yielding crop varieties, irrigation, agrochemicals and improved management techniques, farmers' grain production increased from 800 million to more than 2.2 billion tons from 1961 to 2000.The green revolution, particularly in Asia, showed that the potential of smallholder farming(World Bank 2007; FAO 2011a). However, those achievements came at a cost**.** In some countries, certain practices introduced through the green revolution led to land degradation, groundwater depletion, pollution of soil and water, pest upsurges and loss of biodiversity (Hazell, 2003).

Potentially, smallholder agriculture can improve food security by making food available through production; reducing the real cost of food by increasing supply; generating incomes for farmers and those working the land as laborers, as well as to others in the rural economy from linkages in production and consumption that create additional activity and jobs . However, the households of smallholder agriculture are still vulnerable to hunger and food insecurity (FAO, 2008a).

4.3.3.3. The contribution of smallholder agricultural on food and nutrition

Smallholder agricultural development can have a greater impact on food security and nutrition in the three ways (IFAD, 2015).

Empowering women farmers: allow women more control over income and household spending which usually leads to more being spent on the feeding and care of young children, as well as to correct for unequal access to labor and inputs that means that women's plots often achieve lower yields than men's, when all other factors are held constant.

Promote home gardens and small-scale livestock rearing: for increased diversity of production and consumption. Since gardens and small-scale livestock are often carried out by women being close to the house can make them more compatible with women's time, they tend as well to , as well as to empower women giving them more incomes and status. Complement agricultural programs with education, health services, water and sanitation. Smallholder agriculture cannot achieve food security and nutrition alone unless combined with complementary rural services, the outcomes are powerful.

However, there are several challenges of smallholders, often originating at global level, to achieve the desired production. Increasing competition for land and water, increased influence of and changing markets, rising fuel and fertilizer prices, and climate change. This changing context poses difficult challenges for smallholders, who are more directly dependent on ecosystem services and have less capacity to adapt to changing contexts, compared with larger, more resource-endowed farmers. Until recently, international investments in agricultural development and policy had been lagging behind other sectors. Moreover, smallholders have often been neglected in debates on the future of agriculture, and left out of policymaking at numerous levels (Bioversity et al. 2012, Wiggins 2011).

4.4.Ethiopia's Position on Global Food Security Situation

Ethiopia is a country of smallholder agriculture. In the 2000 cropping season, 87.4 % of rural households operated less than 2 hectares; whereas 64.5 % of them cultivated farms less than one hectare; while 40.6% operated land sizes of 0.5 hectare and less (Negatu, 2006). Like many other African countries Ethiopian agriculture is also dominated by smallholder farmers who occupy the majority of land and produce most of the crop which includes cereals, pulses and oilseeds. In Ethiopia, about 11.7 million smallholder farmers cultivate on approximately 95 percent of the total farmland area and produce more than 95 percent of the total agricultural output (Mahlet, 2007; S.Tafesse et al., 2007; MoARD, 2010). This confirms the dominant contribution of smallholder farmers to the overall agricultural growth in the country.

A study conducted by Brhanu. et al (2003) shows that landholding is one of the factors that constrains farm income and the level of household food security. As landholding declines, per capita food production and farm income also decline. The increasing decline of farm size also leads to a reduction of fallowing practice and shows declining of soil quality and fertility. The average farm size is considered by many to be small to allow sustainable intensification of smallholder agriculture (Brhanu,et al,2003).

A study conducted by Desalegn R.(2003) indicated that the small-scale farmers are taken as primary responsible actors for the intended growth and development. Nonetheless, they themselves are inflicted with destitution and food insecurity. They are also burdened with insecure holdings, tiny plots and undemocratic extension services. For him, it is impossible to attain food self-sufficiency on the strength of domestic agriculture. He stresses that only a few countries were proven to be successful in feeding their population from domestic production; most countries rely on international markets. As a result, he argues for other alternatives like opening up employment opportunities for the rural households, diversifying their sources of income, and expanding people's capabilities (Desalegn, 2003: 1-13).

4.4.1. Major Constraints of smallholder farmers to ensure Food Security in Ethiopia

Rapid population growth and climate change negatively impact food security. Despite its importance in the livelihood of the people and the smallholder agricultural sector in Ethiopia has been challenging by low level of productivity, low input-low output, rain-fed farming system and unable to adequately feed its own population sufficiently and the country is not self-sufficient in food production and prevailing both chronic and transitory food security (MoARD, 2010, and Degefa, 2002).

The key long–standing challenge of the smallholder farmers are mainly related to poor agricultural practice stemming from lack of access to modern agricultural technology, agricultural inputs, lack of access to better agricultural markets and credits, high population pressure, agricultural land fragmentations, low level of education among smallholder farmers and poor infrastructure (AfDB,2010).

In Ethiopia the agricultural productivity of smallholder farmers are low and their farms are often fragmented, produce mostly for farmers own consumption and generate only very small marketed surplus(Alemayehu,2012). The majority of these farmers do not generate sufficient income from agriculture to provide basic nutrition, health or living condition of their families almost throughout the year.

4.4.2. The Major Causes for Food Insecurity in Ethiopia

Recurring Drought: Agricultural development in Ethiopia heavily depends on rainfall where the pattern is of erratic and unpredictable nature. For most smallholder farming and pastoral system, rainfall is the major source of moisture for crop and livestock production. However, the frequency of drought has sharply increased its occurrence.

Limited source of alternative incomes: Limited sources of alternative income options have left the majority of Ethiopian households susceptible to ill developed copping mechanism. Since rural poverty is wide spread and very few government resources are available, emergency response capability is limited. However, even with such limited relief intervention a serious dependency syndrome is created among the beneficiaries.

Population pressure: Uncontrolled growth rate of rural population has brought about significant pressure on land. Food production and productivity has not increased significantly to cope up with increased population resulting in the average aggregate household consumption level not to exceed six months.

Limitations in technology: Agricultural intervention had followed the same pattern of service deployment in the areas of fertilizer, improved seed and pesticides provision, lacking comprehensive package of interventions at household level orientation. Provision of new technologies are at rudimentary stage, moreover, the capacity of technology multiplication centers are limited to disseminate the existing technologies.

Lack of product diversification and market integration: Diversification in the production pattern is limited mainly focusing on food crops. Less attention is given to cash crops, livestock and livestock products. Markets are not integrated, as a result, price differentials between farm gate and terminal markets vary significantly in favor of the later; consequently, sustainable adoption of technology could not be observed. The agricultural output marketing indicates that production is challenged by low market prices including inadequate market information system and inadequate rural road net- work.

Limited capacity in planning and implementation: Implementation capacity is limited by the virtue of lack of technical skilled manpower and appropriate incentive mechanisms. The Provision of extension services too has not been adequate in terms of coverage and quality of service. Development agents (DAs) to farmer's ratio to deploy appropriate service and monitoring are far

from adequate. Moreover, the problem is aggravated by resource constraints and lack of appropriate incentive mechanisms.

Environmental degradation: Natural resources are the basis for accelerated agricultural development and for meeting the food security and other basic necessities of its people. Environmental degradation is one of the most severe problems affecting food security in Ethiopia. Deforestation and encroachment are responsible for severe loss of precious biodiversity and heavily and negatively impacting on water resources, infrastructure stability (roads, etc.) and ultimately on the overall economy.

Limited access to credit: Credit stimulates supports and accelerates the use of technological innovations, which will increase production and productivity. Furthermore, improvement of marketing system and promotion of micro-enterprises and other income generating activities can be facilitated efficiently only if they are backed up with sound credit system. Poor development of rural infrastructure such rural roads, inadequate and poor conditions of market facilities for agricultural production, poor development of rural credit services and financial institutions were also among major challenges for the smallholder farmers agricultural practices in Ethiopia.

4.5.Conclusion and recommendation

4.5.1. Conclusion

Food security has improved around the globe over the past five years, but hunger and food insecurity still persist. Such positive changes have been observed because governments, multilaterals and the private sector should remain proactive in addressing food-security challenges around the world. Besides, these positive developments have largely been driven by rising incomes in most countries and general improvements in the global economy. However, an influx of refugees into cities across the region could strain food safety nets and climate change related risks, as well as market-distorting government food policies, pose risks to food prices and food availability.
International trade openness has an important potential for improving food security and nutrition by increasing food availability and for promoting investment and growth. International trade agreements should provide for effective safeguards and greater policy space for developing countries to avoid detrimental effects on domestic food security and nutrition.

Strong economic growth, particularly in developing countries is a main driver of a changing world food demand. Growth should be inclusive because it provides opportunities for those with meager assets, skills and opportunities, improves the incomes and livelihoods of the poor, and is effective in the fight against hunger and malnutrition. A number of countries, including countries in Africa, have made good progress in reducing hunger and child malnutrition. But many of the poorest and hungry are still being left behind despite policies that aim to cut poverty and hunger in half by 2015 under the Millennium Development Goals.

Smallholder agricultural development usually leads to higher farm incomes; smallholders who focus on production of crops for sale can also increase their food security and nutrition; smallholder agricultural development can support food security and nutrition outcomes while being environmentally sustainable; empower women farmers; promote home gardens and small-scale livestock rearing for increased diversity of production and consumption; complement agricultural

programs with education and communication, health services, water and sanitation. Smallholder agriculture cannot achieve better nutrition alone (IFAR, 2015).

4.5.2. Recommendation

In accordance with the discussion made in the above topics, the group has forwarded the following possible recommendations.

Population growth, particularlty, in the developing countries, has been one of the driving forces for high demand for food. Developing countries should rapidly increase investment in rural infrastructure and market institutions in order to reduce agricultural-input access constraints, since these are hindering a stronger production response.
Investment in agricultural science and technology on International Agricultural Research and national research systems could play a key role in facilitating a stronger global production response to the rise in prices.

Social protection directly contributes to the reduction of hunger and malnutrition by promoting income security and access to better nutrition, healthcare and education. By increasing human capacities and mitigating the impact of shocks, social protection fosters the ability of the very poor to participate in the growth process through better access to decent employment. Strong political commitment is necessary to address the root causes of protracted crises situations. Action should focus on addressing vulnerability, respecting basic human rights and integrating humanitarian and development assistance.

Improving the productivity of resources held by family farmers and smallholders is, in most cases, an essential element of inclusive growth and has broad implications for the livelihoods of the rural poor and for the rural economy in general. Well functioning markets for food, inputs and labor can help to integrate family farmers and smallholders in the rural economy and enable the rural poor to diversify their livelihoods, which is critical for managing risk, and reducing hunger and malnutrition.

Public policies should provide incentives for the adoption of sustainable agricultural intensification practices and techniques, sustainable land management, soil conservation, improved water management, diversified agricultural systems and agro-forestry, in order to produce more outputs from the same area of land while reducing negative environmental impacts. More conventional yield-enhancing technologies, such as improved seed varieties and mineral fertilizers, are also valuable options, especially when combined with greater attention to using these inputs efficiently.

Empowering women farmers and promote home gardens and small-scale livestock rearing for increased diversity of production and consumption. Finally, a comprehensive policy and investment agenda for achieving sustainable food security is needed to: improve smallholder productivity and market access; keep trade open; promote productive social safety nets; integrate climate change into strategies at all levels; and harmonize food security and sustainability policy.

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