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Food insecurity in the world in sustainable agricultural development

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Abstract:

Findings show the necessity to establish effective strategies to face and eliminate climate effects through sustainable management of water resources and land restoration policy that tend to improve land productivity to achieve food security and minimize food gap

This study aims to provide a preliminary step towards developing a multidimensional index for the sake of food security dimensions' evaluation. Hence, food security is regarded as a big and difficult challenge in the whole world, basically in Arab countries.

Key words: Food security, sustainable agricultural development
JEL Classification Codes: I10, O10, Q01

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Introduction:

Agricultural development occupies an important role in developing the economies of developing countries, especially countries that depend on agriculture for its important role in achieving economic growth, reducing dependency on the outside and providing food. To earn a livelihood and provide social welfare.

Access to food is also one of the most important problems facing man throughout history. If his basic needs are food, shelter, and clothing, then food is the priority of needs.

The problem of Food Security Features began to emerge and assert itself at the top of the list of problems facing the third world countries in General and particularly Arabic countries more than a quarter of a century, requiring economic operators in these countries urgent and serious solutions to just about Citizens of famine and disease risks and guarantee them a minimum of food exploitation, in addition to supporting political independence, which creates a sentence of the desired economic and social development process.

It is generally recognized that food security, and therefore food insecurity, is a multidimensional phenomenon. Several indices measuring hunger and the progress in achieving hunger eradication helped to understand the issue and monitor the progress in eliminating hunger as well as providing targets for national and international political action.

The principal problem: Through all the above could put up the following key problem :

« What is the extent of the contribution of sustainable agricultural development in the disposal of the phenomenon of the lack of food security?»

The first Topic: Conceptual Framework for Food security

Food security is a central issue, of great importance, especially in light of the continuous increase in food imports in developing countries, including - the Arab countries - in order to meet the food needs of the population.

1. Definition of Food security

The common use of the word sustainable refers to the ability to maintain some activities in the face of crises, and agricultural sustainability is defined as the ability to maintain productivity, whether on the farm or at the state level, in the face of crises or shocks, which may be represented by drought or a significant increase in the prices of raw materials represented In seeds or fertilizers and others.

- definition of food insecurity is: "The ability of that country to meet the needs of its inhabitants of complete food that includes the four groups (starches, carbohydrates, sugars and oils), in a way that provides each individual with daily calories of no less

than 2,800 calories and 80 mg of animal and vegetable protein of national production. (Bakri, June 2013, p. 188)

- It can also be defined as: "The ability of a particular nation to provide food to its citizens in the required quantity and quality and to all of its citizens throughout the geographical area in which the people live, either from local sources or by providing sufficient revenues from its own resources, to recover what it needs of food that is unable to production, without external economic or political pressures, all year round (Al-Saidi, p. 72)

- **It is also defined as:** "the ability of society to provide adequate food for citizens in the long and short term, in quantity and quality, and at prices that are commensurate with their incomes. (Hamdan, 1999, p. 16)"

- **The 1996 World Food Summit defined food security as**: "a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious foods that meets their dietary needs and food preferences for a healthy life."

This definition incorporates several needs: availability of food, access to food, and for the food to be culturally appropriate. Many factors in today's global environment exacerbate Food security. It is true, we live in an age Where we are growing and producing more food than ever before. We have enough food to feed the world's population, but it is not distributed properly nor is all food culturally appropriate across the globe. Local Food access differs dramatically and the greatest difference exists between developed and developing countries. The Primary reason for this inequity is an income-related difference between these populations, It must be stated though, that in every country of the world there is hunger, and this often falls along economic and social lines. The Underprivileged – be it individuals or countries –often have less (Karyn & Mo D., 2011, p. 05).

TABLE (01): Food Security analysts have defined two general types of food insecurity:

	CHRONIC FOOD INSECURITY	TRANSITORY FOOD INSECURITY
Is….	long-term or persistent.	Short-term and temporary.
Occurs when...	people are unable to meet their minimum food requirements over a sustained period of time.	There is a sudden drop in the ability to produce or access enough Food to maintain a good nutritional status.
Results From **...**	extended periods of poverty, lack of assets, and inadequate access to productive or financial resources.	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.
Can be overcome with...	typical long-term development measures are also used to address poverty, such as education or access to productive resources, such as credit.	transitory food insecurity is relatively unpredictable and can emerge suddenly. This makes planning and programming more difficult and requires different

	They may also need more direct access to food to enable them to raise their productive capacity.	capacities and types of intervention, including early warning capacity and safety net programs (see Box 1).

The Concept of Seasonal food security falls between chronic and transitory food insecurity. It is similar to chronic Food insecurity as it is usually predictable and follows a sequence of known events. However, as seasonal Food insecurity is of limited duration it can also be seen as recurrent, transitory food insecurity. It occurs When there is a *cyclical pattern* of inadequate availability and access to food. This is associated With seasonal fluctuations in the climate, cropping patterns, work opportunities (labor demand), and disease.

2. THE FOUR DIMENSIONS OF FOOD SECURITY Food Security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

TABLE (02): Dimensions and indicators of food security

The dimension	food security indicators
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, 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 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 periodically, asking for 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.

Source: (Nations, p. 16)

For Food security objectives to be realized, all four dimensions must be fulfilled **simultaneously** (The EC, p. 02)**.**

3. Food Insecurity Multidimensional Index

Most multidimensional indices are of the composite index type where a series of dimensions specific to a particular issue are weighted and then an average is calculated. Food security (and Therefore also food insecurity) itself is a multidimensional issue that cannot be adequately recorded by a single indicator. A multidimensional index of food insecurity is preferred and means That countries can be compared on a complex matter like food security and also provide an instrument for policy analysis where trends and changes can be identified, and for informing public opinion.

The literature supports the Statistical evidence that the multidimensional approach is the right one to follow. Amartya Sen stresses the imperative of taking a multidimensional approach to both poverty and development: “Human lives are battered and diminished in all kinds of different ways, and the first task… is to acknowledge that deprivations of very different kinds have to be accommodated within a general overarching framework” (Sen 2000). Sen's generalized view also takes in hunger as being one of how human lives are battered and diminished and political philosopher Martha Nussbaum lists "being adequately nourished" as the second of her 10 basic capabilities.

The FIMI reflects the Food insecurity situation across 61 countries and although deeply constrained by data limitations, reveals a deeper pattern of food insecurity showing the degree to which each dimension contributes to the aggregated index (Napoli, 2010/2011, p. 16).

The Second Topic: The Vision and Strategic Objectives of Sustainable Agricultural Development

The vision and objectives of the Sustainable agricultural development strategy are based on the context of Tunis (2004) Arab Summit Declaration, which focused on the importance of coordinating Arab agricultural policies within a strategic framework, to achieve sustainable agricultural development. It is also based on the Algiers (2005) Summit's resolution which highlighted enhancing commodity competitiveness to reach international markets, achieving Arab agricultural integration, and meeting the needs of food commodities. The strategy's key trends and directives adopted by the AOAD Executive Council Served as a comprehensive framework to define such vision and objectives. Special emphasis and concern have been paid to formulate the perspectives and objectives of the strategy as it will delineate the future agricultural activities in the region, and serve as the backbone of all development process programs at both national and regional levels (League of Arab States Arab Organization for Agricu, 2007, p. 18).

1. Adoption of an Integrated Approach to the Utilization of Arab Agricultural Resources and Enhancing the Capacity for Providing Safe Food:

1.1 Adoption of an Integrated Approach to the Utilization of Arab Agricultural Resources:

Because of the wide geographical expanse of the Arab countries, the Arab countries have been characterized by wide variations in their agricultural environments. Such variations made a number of Arab countries, compared with others, have a relative advantage of producing various crops. In light of the limited available agricultural resources in the Arab countries, there is an urgent need to use the available agricultural resources in developing the various production patterns within a regional framework that integrates with the national level. This means that each Arab country should shoulder development burdens and its impact that corresponds with its

resources, and the agricultural development it enjoys (League of Arab States Arab Organization for Agricu, 2007, p. 19).

1.2 Enhancing the Capacity for Providing Safe Food:

In light of the current situations of production and consumption of major food commodities in the region and the self-sufficiency rates of these commodities, the main objective of this strategy should be to increase the capability to provide sufficient amounts of food through self-reliance and without neglecting the economic efficiency and environmental consideration, provided that such food would meet the necessary standards that make it safe for human consumption.

2. Developmental Programmes and Components

Within the framework of a future vision, and to realize the objectives proposed for the Strategy for Sustainable Arab Agricultural Development (2005-2025), main and sub-programs have been developed to identify the areas and priorities of action in such as manner as to serve the achievement of these objectives. When formulating the elements and components of these programs, the following points have been taken into consideration (League of Arab States Arab Organization for Agricu, 2007, p. 20):

2.1 Linkage between the programs and the developmental Strategic objectives:

Each one of the Suggested programs seeks to realize one or more of these strategic objectives, either directly or indirectly.

2.2 Coordination and integration amongst the programs:

Any progress achieved in implementing the elements and components of a certain program will contribute successfully to the implementation of elements and components of the other programs, i.e the working programs with their minor elements and components as a whole cover most, if not all, of the development activities.

2.3 Focusing on development priorities:

The suggested programs took into consideration the principle of focusing on areas and activities in which Arab agriculture suffers from clear failure, either due to scarcity of resources or the limited efficiency of their use.

2.4 The Arab official commitments towards going ahead in establishing an Arab economic bloc, whose nucleus has been realized in the Greater Arab Free Trade Area:

The completion of Such a march requires to give priority to the execution in a number of areas, in the forefront coordinating several policies and legislations dominating agricultural trade, among other agricultural policies which have a similar impact on the inter-Arab agricultural trade.

2.5 Logical successive implementation:

Implementation of some components necessarily requires implementation of others. Therefore the top priority components have been given a ten years time frame to be, in sometimes, followed or accompanied by an implementation of other components.

According to the strategic vision and objectives of the strategy, and along with the development priorities, the Strategy composes seven main programs, articulated into 34 sub-programs, with 114 developmental components. The Seven main programs are as follows (Arab Organization for Agricultural Development (AO)**:**

* The main program for developing appropriate agricultural technologies in Arab Countries;

* The main program for encouraging Investment in agriculture and agro-industry in favorable agricultural environments;

* The main program for enhancing the competitiveness of Arab agricultural products;

* The main program for setting policies and agricultural legislation structures;

* The main program for human and institutional capacity-building;

* The main program for the prosperity of rural areas;

* The main program for developing appropriate management systems for agricultural and environmental resources.

The third Topic: the reality of agricultural trade and food security in the world.

Understanding sustainable agricultural development in order to achieve food security and nutrition requires examining the dynamics of agricultural development, its work, results and performance in relation to the two main objectives of sustainability and food security and nutrition.

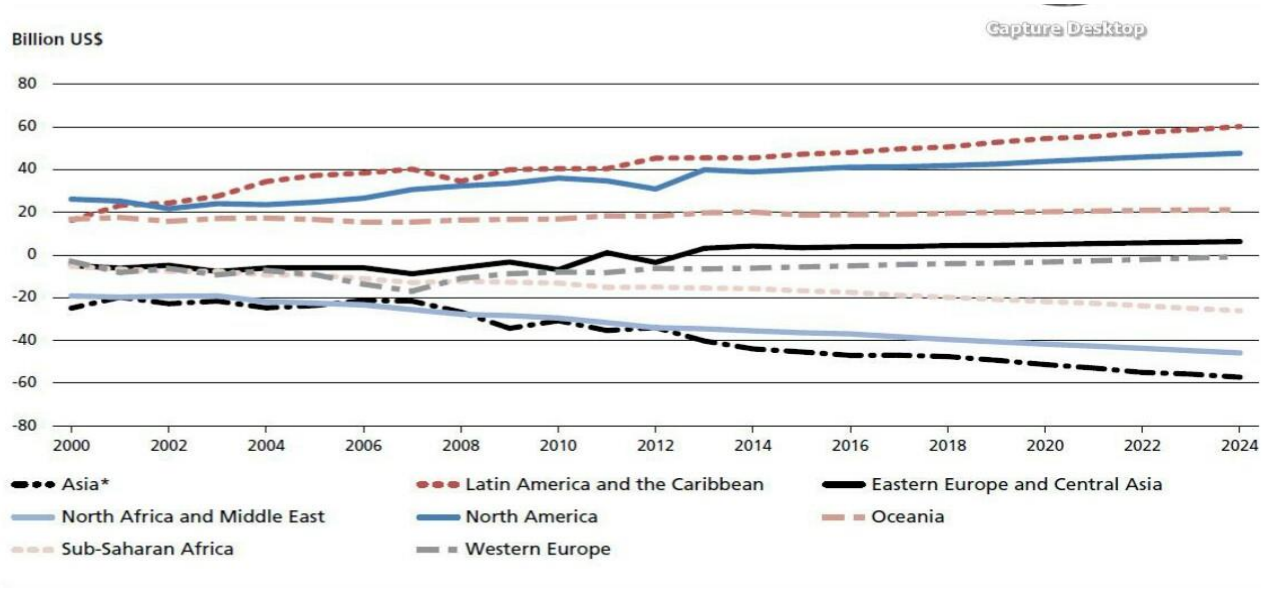
1. The reality of agricultural trade :

Trade of agricultural products has continued to expand, driven by high demand, particularly in emerging economies. The value of global agricultural exports nearly tripled between 2000 and 2012, while agricultural exports increased by about 60 percent in volume terms over the same period. With global demand for agricultural products expected to remain firm in future decades, this evolution is expected to continue. The *OECD-FAO Agricultural Outlook* examines the consequences of the interplay of supply and demand factors to project the likely evolution of production, consumption, and, as a result, net trade. It projects that the increasing divergence in trends in net trade in agricultural products by region since 2000 will widen further in the period to 2024.

Changing consumption patterns are a major driver of this evolution. Per capita consumption of animal protein in developed countries appears to have reached a

plateau, as has per capita consumption of staples in developing countries in aggregate, although in many countries there remains an excess demand for staples among the poor. In developing countries, increases in incomes, population, and urbanization – albeit occurring at different rates – are contributing to changes in lifestyle habits and dietary structure. Typically, the shift from a traditional cereal-based diet to a more protein-rich and diversified diet results in changes in the composition of trade, as global consumption tends towards value-added products, including processed and prepared foods, and developing countries account for a growing share of global consumption. More than 95 percent of consumption growth between now and 2024 will be in the developing world (OECD, 2015, p. 02).

FIGURE (01): Evolution of net trade in agricultural products by region, 2000–24



Source: (OECD, 2015, p. 03)

Changes in the importance of certain crops have reflected some extent in changes in the composition of exports, with increased exports of high-value commodities, such as meat, ethanol, sugar, oilseeds, and cotton, from the Americas.

Counterpoising production and consumption trends provide an indication of likely trends in the net trade position of different commodities by region (Food and Agriculture Organization of the United Na, The State of Agricultural Commodity Markets: Trade and food security: achieving a better balance between national priorities and the collective good, 2015/2016, pp. 02-03).

TABLE (03): Trade balance in volume terms in 2023

	Africa	Asia and the Pacific	Europe	Latin America and the Caribbean	North America	Oceania developed countries	Other developed countries
The volume of net exports, thousand tones							
Wheat	–44 987	–49 963	45 788	–7 074	46 206	18 329	–8 299
Rice	–18 052	21 083	–1 368	–1 192	2 419	299	–2 637
Coarse grains	–22 851	–63 999	30 402	21 795	53 574	4 154	–19 595
Oilseeds	–3 494	–98 449	–11 469	57 748	58 323	2 921	–5 185
Protein meals	–4 461	–27 206	–19 586	49 715	8 963	–2 669	–4 912
Beef	–877	–2 105	–1 110	3 341	42	2 224	–1 147
Pork	–714	–2 625	1 715	–376	3 621	–362	–1 280
Sheep	53	-790	-140	9	-71	1 032	-40
Poultry	-2 192	-5 234	877	3 677	4 710	57	-1 729
Fish	-3 323	9 625	-1 822	2 015	-3 406	-220	-2 769
Fish meal	43	-1 418	-7	1 398	125	-28	-112
Fish oil	56	-124	-189	296	4	-12	-30
Butter	–161	–413	80	–22	98	476	–39
Cheese	–219	–633	879	–284	318	518	–365
Skim milk powder	–387	–1 241	640	–367	826	642	–95
Whole milk powder	–618	–1 372	379	–46	4	1 656	–21
Vegetable oils	–8 775	5 447	–2 366	8 362	235	–386	–2 279
Sugar	-11 684	-17 342	-591	38 337	-4 511	3 636	-4 475
Cotton	1 620	-7 164	48	927	2 562	1 035	741

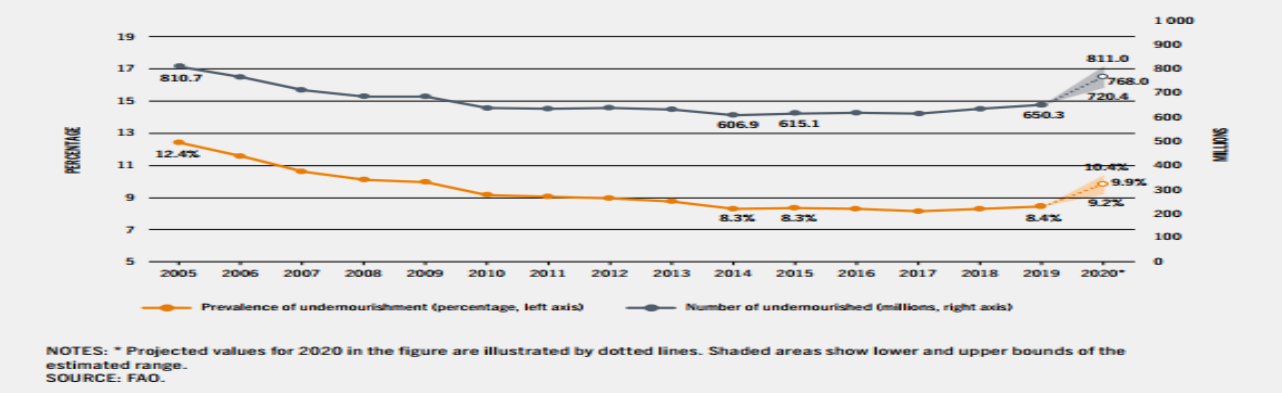
Source: (Adapted from FAO and OECD, 2015).

2. Prevalence of Undernourishment :

World hunger increased in 2020 under the shadow of the COVID-19 pandemic. After remaining virtually unchanged for five years, the prevalence of undernourishment increased from 8.4 to around 9.9 percent in just one year, heightening the challenge of achieving the Zero Hunger target by 2030, It is projected that between 720 and 811 million people in the world faced hunger in 2020, Considering the middle of the projected range (768 million), around 118 million more people were facing hunger in 2020 than in 2019 or as many as 161 million more, considering
the upper bound of the projected range, While the global prevalence of moderate or severe food insecurity (measured using the Food Insecurity Experience Scale) has been slowly on the rise since 2014, the estimated increase in 2020 was equal to that of the previous five years combined. Nearly one in three people in the world (2.37 billion) did not have access to adequate food in 2020 – an increase of almost 320 million people in just one year.

he number of people in the world affected by hunger continued to increase in 2020 under the shadow of the COVID-19 pandemic. After remaining virtually unchanged from 2014 to 2019, the PoU increased from 8.4 percent to around 9.9 percent between 2019 and 2020 (Food and Agriculture Organization of the United Na, THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD, TRANSFORMING FOOD SYSTEMS FOR FOOD SECURITY, 2021, p. 14).

FIGURE (02): THE NUMBER OF UNDERNOURISHED PEOPLE IN THE WORLD CONTINUED TO RISE IN 2020. BETWEEN 720 AND 811 MILLION PEOPLE IN THE WORLD FACED HUNGER IN 2020. CONSIDERING THE MIDDLE OF THE PROJECTED RANGE (768 MILLION), 118 MILLION MORE PEOPLE WERE FACING HUNGER IN 2020 THAN IN 2019 – OR AS MANY AS 161 MILLION, CONSIDERING THE UPPER BOUND OF THE RANGE

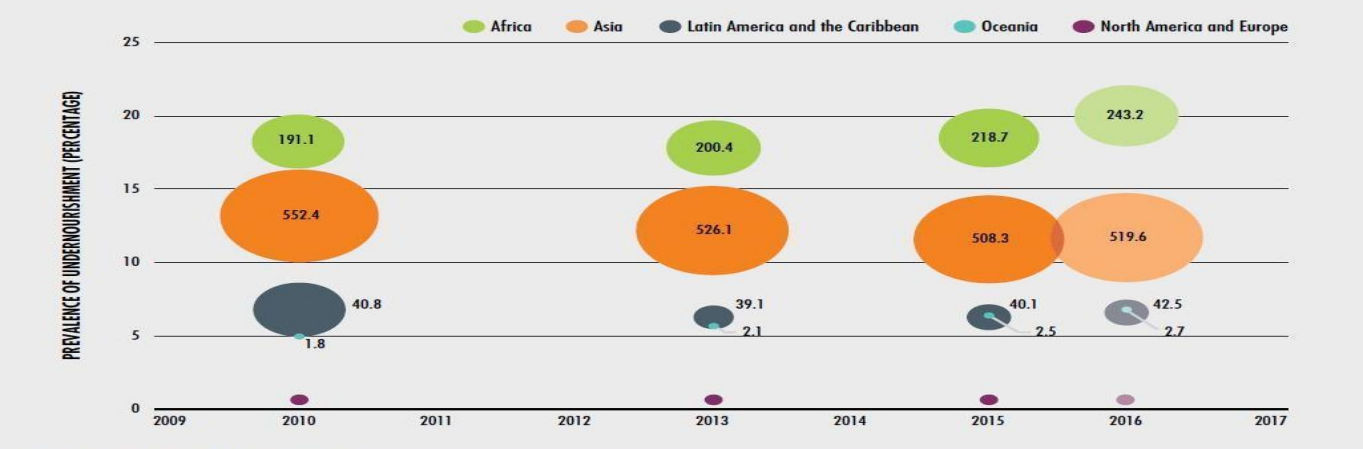


Source: (Food and Agriculture Organization of the United Na, THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD, TRANSFORMING FOOD SYSTEMS FOR FOOD SECURITY, 2021, p. 14)

Zero Hunger target in 2030, The 2020 estimate ranges from 9.2 to 10.4 percent, depending on the assumptions made to reflect the uncertainties around the assessment, In terms of population, it is estimated that between 720 and 811 million people in the world faced hunger in 2020. Considering the middle of the projected range (768 million), 118 million more, people were facing hunger in 2020 than in 2019, with estimates ranging from 70 to 161 million.

The numbers show enduring and troubling regional inequalities. About one in five people (21 percent of the population) was facing hunger in Africa in 2020 – more than double the proportion of any other region. This represents an increase of 3 percentage points in one (Food and Agriculture Organization of the United Na, THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD, TRANSFORMING FOOD SYSTEMS FOR FOOD SECURITY, 2021, p. 14).

FIGURE (03): THE PREVALENCE OF UNDERNOURISHMENT IS HIGHEST IN AFRICA; THE ABSOLUTE NUMBER OF UNDERNOURISHED PEOPLE IS LARGEST IN ASIA



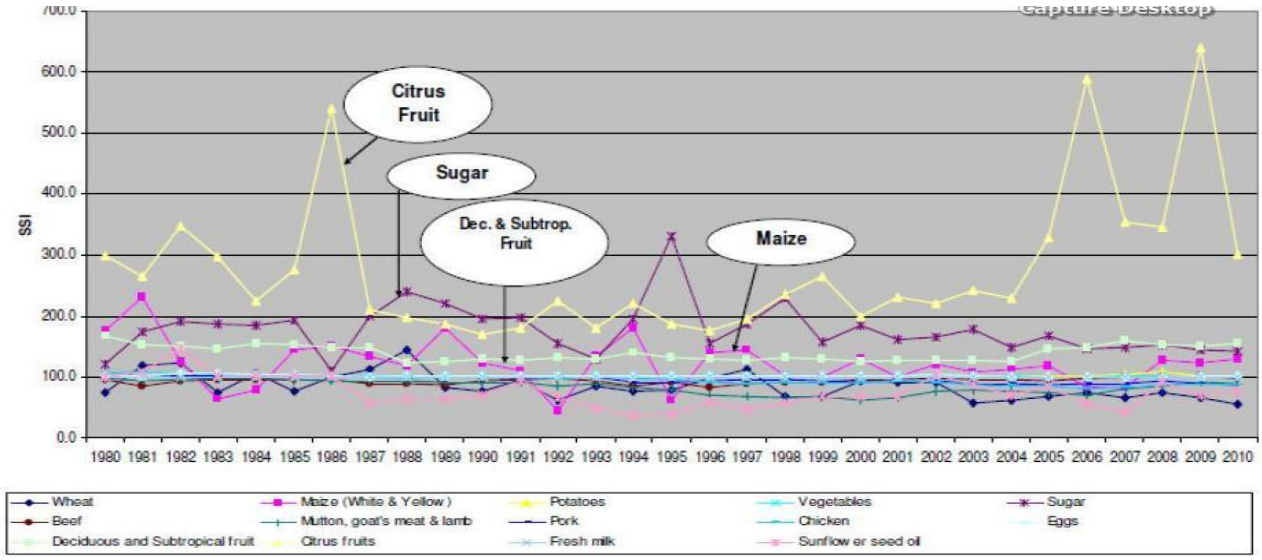
Source: (Food and Agriculture Organization of the United Na, The former reference, p. 07)

- Food security status in South Africa

South Africa is largely deemed a food secure nation producing enough staple foods or having the capacity to import food if needed to meet the basic nutritional requirements of its population (FAO 2008). Hart *et al* (2009) supported the argument that South Africa seems to be food secure at the national level but the same cannot be said about households in rural areas.

The national food self-sufficiency index (Figure 1) clearly illustrates that South Africa is food self-sufficient or nearly self-sufficient in almost all the major food products, with the ability to import shortages when necessary (D. C., 2011, p. 04).

Figure (04): National food self-sufficiency index



Source: (Agriculture)

- The State of Food Security in the World: About 850 million people in the world are undernourished - a number that has hardly changed since the 1990-92 base period for the World Food Summit and Millennium Development Goal commitments on reducing hunger by half by 2015.

Of particular concern are hunger hotspots, marked by the widespread persistence and prevalence of food insecurity, especially in protracted crises. As of May 2006, 39 countries in the world were experiencing serious food emergencies and required external assistance for dealing with critical food insecurity: 25 in Africa, 11 in Asia and Near East, 2 in Latin America, and 1 in Europe. indicates the importance of human agency in inducing crises, either directly (through wars and civil strife) or through interaction with natural hazards that would otherwise have been of minor importance (Brief, June 2006, Issue 2, p. 04).

3. VISION FOR A FOOD-SECURE 2030

The 2030 Agenda for Sustainable Development establishes an explicit link between sustainable development and peace, and we call for adopting a transformative approach and improving cooperation in the field of conflict prevention, mitigation, resolution and recovery. The 2030 Agenda recognizes peace as a vital condition for development, and as a development outcome, as it has Conflicts prevent the achievement of sustainable development, food security and nutrition. The comprehensiveness, broad scope and indivisibility of sustainable development goals leave important implications for work on the level of food security and nutrition in conflict-affected circles (Food and Agriculture Organization of the United Na, The State of World Food Security and Nutrition, Building Resilience for Peace and Food Security, 2017, p. 31)

A food security and nutrition policy approach that is grounded in a sustainable food systems framework embodies critical policy shifts that have been occurring in recent decades and which have been consistently advocated by the HLPE across all of its reports (FOOD SECURITY AND NUTRITION, pp. 15-16):

- SUPPORT FOR A RADICAL TRANSFORMATION OF FOOD SYSTEMS AS A WHOLE TO IMPROVE FSN AND ACHIEVE AGENDA 2030:

HLPE reports complement a growing literature that stresses the need to move beyond food policies that focus exclusively on agricultural supply and demographic change to instead implement policies that support fundamental changes to food systems as a whole in order to meet SDG 2 and support all the SDGs in an integrated way. Food system transformation thus requires a shift from an exclusive focus on quantity, to addressing multiple dimensions of quality. In this context, quality refers to, for example, the ability of citizens to exercise agency to shape food systems in ways that meet their needs and preferences, the sustainability of production systems, the resilience of food production and distribution networks, and consideration of the health and nutritional dimensions of food at all stages from production to consumption, among other important characteristics of food systems.

- RECOGNITION OF THE COMPLEX INTERLINKAGES BETWEEN FOOD SYSTEMS AND MULTIPLE SECTORS AND SYSTEMS THAT DRIVE CHANGE IN FOOD SYSTEMS:

HLPE reports, as well as a number of other international assessments, have consistently highlighted linkages among different systems and sectors as well as among all the SDGs with each other and in their relation to food systems. These findings illustrate a shift from seeing FSN policy as a sectoral issue to viewing food systems as connected in complex ways with other sectors (health, agriculture,1 environment, culture) and systems (such as ecosystems, economic systems, social-cultural systems, energy systems and health systems)

- FOCUS ON HUNGER AND ALL FORMS OF MALNUTRITION:

HLPE reports, along with a growing body of scholarly and policy literature, have consistently shown the need for a shift from a focus exclusively on hunger and undernutrition as the main FSN problem—albeit one that remains a huge challenge and should not be underestimated—to one that includes all forms of malnutrition, including not just chronic undernourishment but also overweight and obesity, micronutrient deficiencies, and diet-related non communicable diseases. These diverse forms of malnutrition can coexist in the same country, community, household and even in the same individual at different phases of the life cycle. As such, it is important to focus on inequalities and at-risk populations in all countries, from low- to high-income. Among the structural aspects of food insecurity and right to food violations that stand out are deep inequalities in terms of power, income, gender and access to natural resources and services

- TAKE THE DIVERSITY OF SITUATIONS INTO ACCOUNT AND PROPOSE VARIABLE AND CONTEXT-SPECIFIC SOLUTIONS:

Each context is specific and calls for policies that are designed and adapted for each situation. The consistency of this finding illustrates a shift from focusing solely on overarching global solutions to appreciating diverse situations that require diverse solutions. In previous reports, the HLPE highlighted the diversity of food systems across and within countries. These food systems are situated in different environmental, sociocultural and economic contexts and face diverse challenges. Hence, policy actors need to design context-specific transition pathways to sustainable food systems. Such pathways combine technical interventions, investments and enabling policies and instruments, and incorporate different types of knowledge, including local and indigenous knowledge. They also involve a variety of actors at different scales. Yet, both incremental transitions at local scales and more structural changes to institutions and norms at larger scales, are required in a coordinated and integrated way to achieve the transformation of food systems towards FSN and sustainable development.

- **Catalytic Development Assistance :**

Development institutions and technical agencies also have important roles to play in bringing new and increased capital into food systems and broader nutrition efforts. By making more targeted investments, donors can have a more catalytic impact across sectors and better address the root causes of protracted and recurrent food crises. Key activities include (A GLOBAL VISION 1 CALL TO ACTION, pp. 6-7):

- Strengthening Local Public and Private Sector Institutions.
- Incentivizing Investment Opportunities for the Private Sector.
- Strengthening Coherence between Humanitarian and Development Assistance.

Conclusion:

This study aimed to set the basis for the development of a food insecurity composite indicator to assess countries' vulnerability to food insecurity across all of its four dimensions.

Results: Among the obtained results are:

The value of the food gap is constantly rising as a result of the decline in food production;

- Unfavorable climatic conditions, where productivity is due to droughts or the level of precipitation prevailing during the agricultural season, despite the possible untapped water resources;

Classification of countries according to the increase in the prevalence of acute food insecurity for each country, based on documentation in a vertical manner between the two estimates: the measure of food insecurity based on acute food insecurity, and the prevalence of undernourishment.

Recommendations: The following recommendations can be suggested:

- Effective strategies should be developed to confront climatic challenges and reduce negative climatic effects by preserving the water wealth from rain and working to preserve it to benefit from it in irrigating agricultural lands to alleviate water shortages in the drought period;
-Reclaiming the largest possible number of agricultural lands to increase productivity to achieve food self-sufficiency and bridge the food gap;
- Establishing incubators and providing the opportunity for distinguished people to appear in their work;
- Development of human resources through the establishment of research centers, as well as centers for preparing agricultural training and extension programs;
- Taking into account international economic developments, and trying to adapt to them within the limits of not harming food flows locally or globally, and leading to maximizing food security conditions.

Referrals and references:

- Brief, P. (June 2006, Issue 2). *Food Security*
- Hamdan, Muhammad Rafiq Amin. (1999). Food security theory, system and application. Jordan: Wael Publishing House, first edition.
- Napoli, Marion. (2010/2011). Towards a Food Insecurity Multidimensional Index (FIMI). *MASTER IN HUMAN DEVELOPMENT AND FOOD SECURITY* . UNIVERSITY DEGLI STUDI, ROMA.
- Al-Saidi, Abdullah Abdel Aziz. (n.d.). The impact of the new organization of international trade on food security in the Arab world. Economic Horizons Magazine, Volume 17, Issue 67.
- Bakri, Fatima. June 2013). Sustainable agricultural and rural development and its role in achieving food security in Algeria. Administrative economic research, the thirteenth issue
- A GLOBAL VISION 1 CALL TO ACTION, .. *A FOOD- SECURE 2030, FEED THE FUTURE The U.S Government's Global Hunger & Food Security Initiative.*
- Adapted from FAO and OECD, .. (2015). OECD-FAO Agricultural Outlook 2014–2023. Paris: OECD Publishing.
- Agriculture, D. o. (n.d.). Forestry and Fisheries.
- D. C., d. T. (2011). Food Security By Directorate Economic Services Production Economics unit. REPUBLIC OF SOUTH AFRICA: agriculture forestry & fisheries.
- Food and Agriculture Organization of the United Na, .. (2015/2016). The State of Agricultural Commodity Markets: Trade and food security: achieving a better balance between national priorities and the collective good.
- Food and Agriculture Organization of the United Na, .. (n.d.). The former reference.
- FOOD SECURITY AND NUTRITION, .. *BUILDING A GLOBAL NARRATIVE TOWARDS 2030.* HLPE REPORT.

- Food and Agriculture Organization of the United Na, .. (2021). THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD, TRANSFORMING FOOD SYSTEMS FOR FOOD SECURITY. *IMPROVED NUTRITION AND AFFORDABLE HEALTHY DIETS FOR ALL* .
- Karyn, A. H., & Mo D., S. (2011, January). Food security: its components and challenges. *International Journal of Food Safety Nutrition and Public Health* .
- League of Arab States Arab Organization for Agricu, .. (2007, August). Strategy for Sustainable Arab Agricultural Development for the Upcoming Two Decades (2005-2025).
- Nations, F. a. (n.d.). The State of Food Insecurity in the World 2013. *Food Security in its Multiple Dimensions 2014* .
- OECD, F. a. (2015). OECD-FAO Agricultural Outlook 2015–2024. Paris: OECD Publishing.
- The EC, .. (n.d.). FAO Food Security Programme is funded by the European Union and implemented by FAO. *An Introduction to the Basic Concepts of Food Security* .
- Food and Agriculture Organization of the United Nations, .. (2017). The State of World Food Security and Nutrition, Building Resilience for Peace and Food Security.
- Arab Organization for Agricultural Development (AO, .. (n.d.). Retrieved from http://www.aoad.org/eactivity.htm