

Food Security in Arab Countries - Analytical Study for the years 2021-2022**Hemianioualid¹, Mezener nesrine²**

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Abstract:

The study aims to shed light on the concept of food security as a global vital issue, as it is linked to the stability and comprehensive development of countries; the lack of food availability for individuals in a country means the necessity of their delay and regression in the areas of civilization, economic, social, and even cultural progress. Achieving Arab food security requires intensifying Arab efforts and formulating a comprehensive strategy to address the obstacles hindering the achievement of food security.

The study showed that food security is an essential condition to ensure a healthy and disease-free life, and the issue of food security is of particular importance in the world and the Arab nation due to its ability to guarantee a healthy and safe life.

Keywords: food security; Arab countries; Efforts to enhance food security.

JelClassificationCodes: i 31, i 38, L 66.

1. INTRODUCTION

Nowadays, food security is a major challenge for many societies and countries because of its role in achieving stability and peace for these societies and countries. While failing to achieve it either makes them vulnerable to hunger, poverty, underdevelopment, political, social, and economic instability, or to other communities and countries that provide them with food, control them, and threaten their stability and security.

The tremendous scientific and technological advancement witnessed by the world since the mid-19th century, represented by the innovation of new agricultural and other methods, has played a major role in improving the living standards of societies and countries. In this regard, different countries continue their efforts to enhance food security pathways at all levels, especially in Arab countries, where food security is one of their main challenges despite the availability of natural and human resources. Therefore, they strive to avoid crisis damages, necessitating the adoption of strategies based on sound principles to achieve food security.

In view of the above, the main question can be raised: **What is the reality of food security in the Arab world for the period 2021-2022?**

1.1 Study importance

Food security is of interest to most countries worldwide, especially developing countries, in order to ensure a high level of food security, aiming to avoid malnutrition and prevent the economic, social, and political crises resulting from food shortages.

1.2 Study Objectives

This study aims to shed light on an important element in the field of humanitarian security in the Arab world, which is food security. This food security focuses on ensuring the right of every Arab individual to access a sufficient and healthy quality of food, considered a human right.

1.3 Study Methodology

In order to address the previously raised problem, a descriptive-analytical approach was adopted as the suitable methodology for this study. Data and information were collected, classified, and then analyzed by utilizing a range of references, research, and studies related to the study topic.

2. The Theoretical Framework on Food Security

Ensuring an adequate food supply has been and continues to be a major concern for governments, as there are several obstacles that may hinder countries from achieving food security such as climate change, population growth, rising food prices, and environmental pressures. Therefore, countries work to confront such obstacles by developing future strategies and policies aimed at mitigating their severity. (قندوز، 2022، صفحة 6)

2.1 Definition of Food Security

Food security can be defined as the ability of any country to provide food for its population at all times, in sufficient quality and quantity, whether through local production or imports, and to contain the necessary elements for a healthy and safe life. Four components of food security can be identified: food availability; economic and physical access to food; food utilization; and stability over time. (FAO, 2017, p. 107)

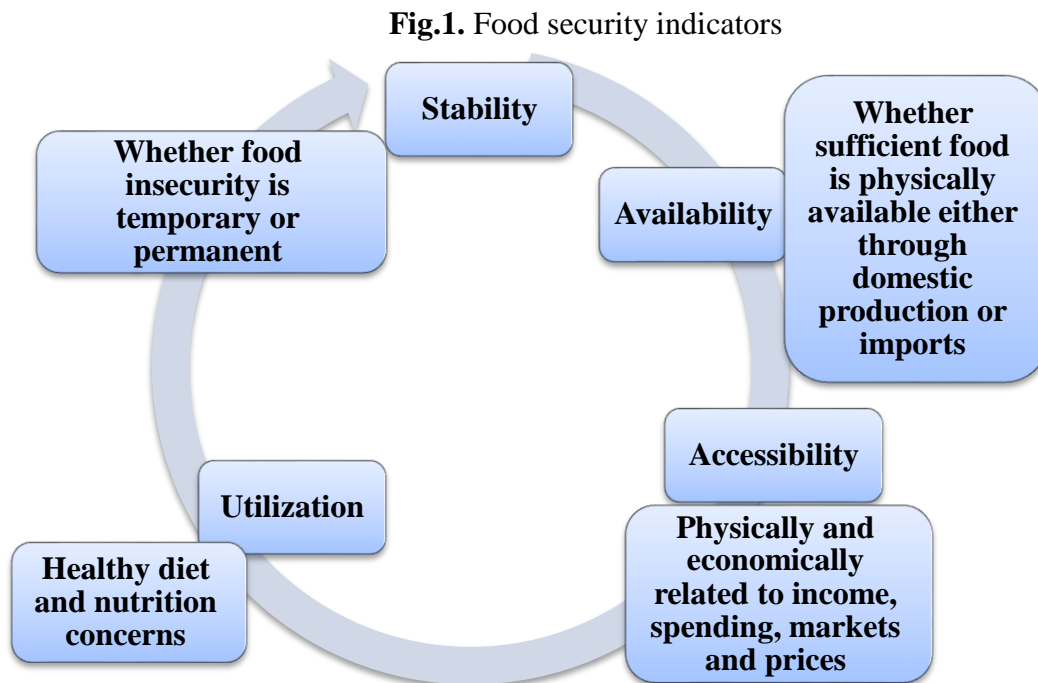
The definition of food security issued by the United Nations Food Security Committee is: Food security means that all members of society have physical, social, and economic access to

sufficient, safe, and nutritious food that meets their preferences and dietary needs for an active and healthy life. From this definition, a Food Security Index was developed called the "Global Food Security Index (GFSI)", which takes into account issues such as food affordability, availability, quality, safety, and natural resources. The index serves as a dynamic quantitative and qualitative model for benchmarking, calculated based on 58 sub-indicators that measure food security determinants in both developing countries and advanced economies.

2.2 Food Security Indicators

The Global Food Security Index reflects the level issued by the Economist Intelligence Unit (EIU) on the food security situation in the world, which includes four indicators for food security that help guide food security and nutrition policies, identify priorities, and provide a more accurate comprehensive picture of the food security situation in a country. (فريدة بن عياد، 2017،

صفحة 2)



Source: (Food and Agriculture Organization of the United Nations)

Through the figure, we notice that the concept of food security is based on four main indicators identified by the Food and Agriculture Organization of the United Nations, as follows:

A- Food availability indicator: Food availability is considered an important indicator of food security, reflecting the availability of sufficient food for individuals. The indicator of abundance does not only require the quantity of food, but also its quality and diversity. It includes indicators assessing the sufficiency of food energy supplies, the proportion of calories derived from various types of food, as well as protein supplies and the average value of food production.

B- Food access index: It means the extent to which food can be accessed appropriately and continuously by individuals to obtain a healthy diet. Opportunities for food access are determined by income; food prices; the ability to receive social support, as well as the possibility of accessing food considering the availability of transportation infrastructure and roads.

C- Food utilization index: The food utilization index depends on the quality of food, how it is prepared, stored, and other factors. The food utilization index includes two groups, the first of which includes variables that determine the ability to benefit from food (availability of household facilities and access to water), while the second group determines the results of benefiting from food as indicated by various diseases.

D- Food stability index: This index reflects the ability to continuously access food without interruption for any reason. In order for individuals to reach food security, they must have the ability to access suitable food at all times without interruption due to economic shocks, climatic events, or seasonal events. Therefore, the concept of food stability includes both availability and access to food.

2.3 Food Security Characteristics

The most important characteristics of food security are as follows: (فريدة، 2022، صفحة 169)

- **Self-sufficiency:** The ability to produce, store, and import sufficient food to meet the dietary needs of the entire community;

- **Self-reliance:** This reduces dependence on global market fluctuations and political pressures, ensuring that the impact of seasonal and cyclical variations on food access is minimized;

- **Sustainability:** Ensuring that the ecological system is protected and improved over time;

- **Justice:** Ensuring that all members of the community have access to sufficient food;

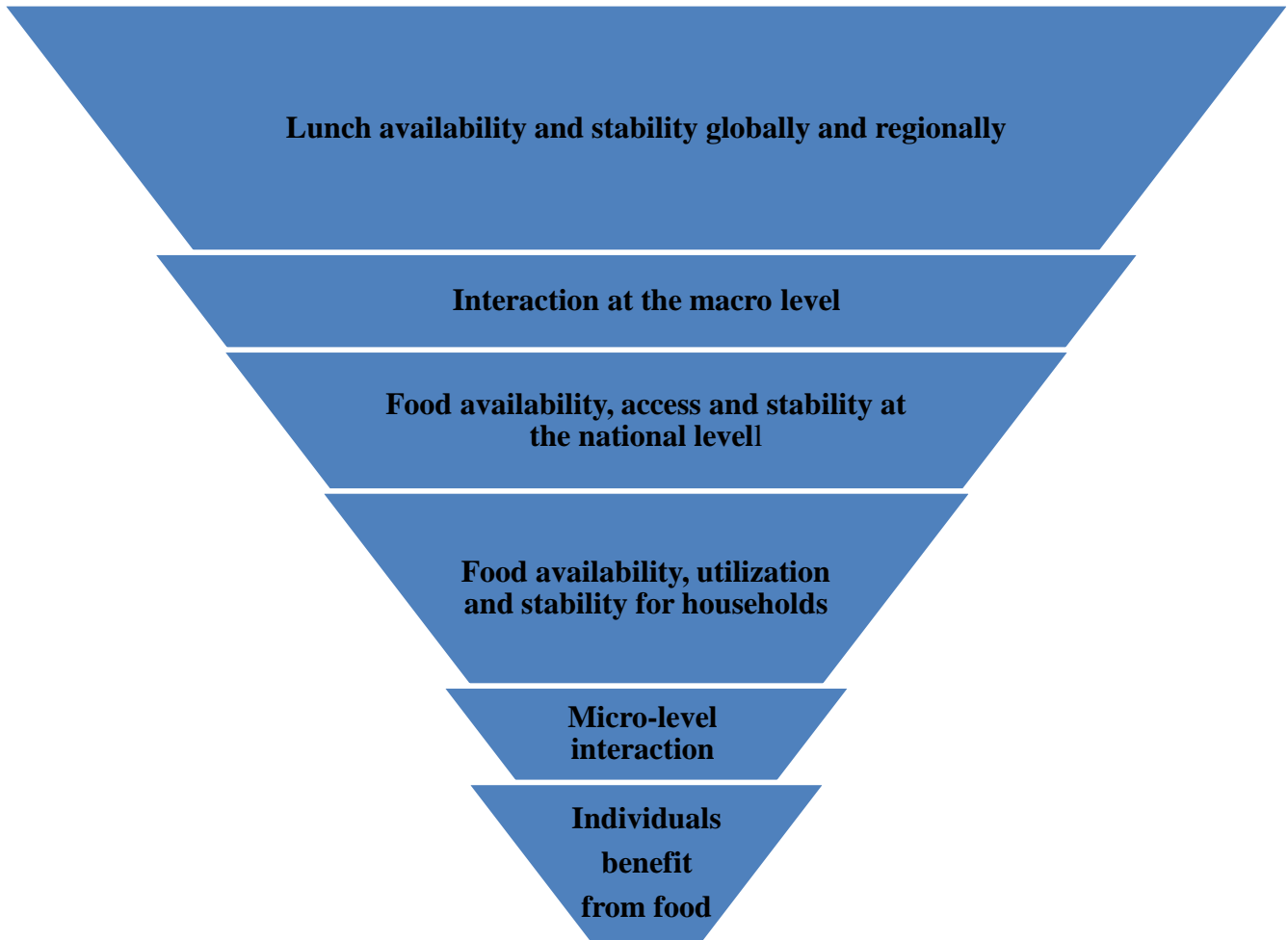
Based on this, a food system that lacks one or more of the above-mentioned characteristics will result in food security imbalance in the country.

2.4 Food Security Levels

Food security can be assessed at an overall level, either globally, regionally, or nationally, or at a partial level, such as within households and individuals. At the partial level, nutrition issues are highlighted, focusing on access in addition to material availability and the ability to obtain food in terms of economic capacity and supply stability. At the overall level, the focus is on dimensions of availability, access, and stability, taking into account the ability of countries or regions to obtain supplies that can meet the food needs of the population.

At each level, food security is influenced by a wide range of factors, including general issues such as population size, economy, environment, and more specific issues like work, access to water services, sanitation, availability and quality of health services, the impact of local and global events, shocks and risks, quality of logistical performance/infrastructure, and others.

Fig.2. Food security indicators



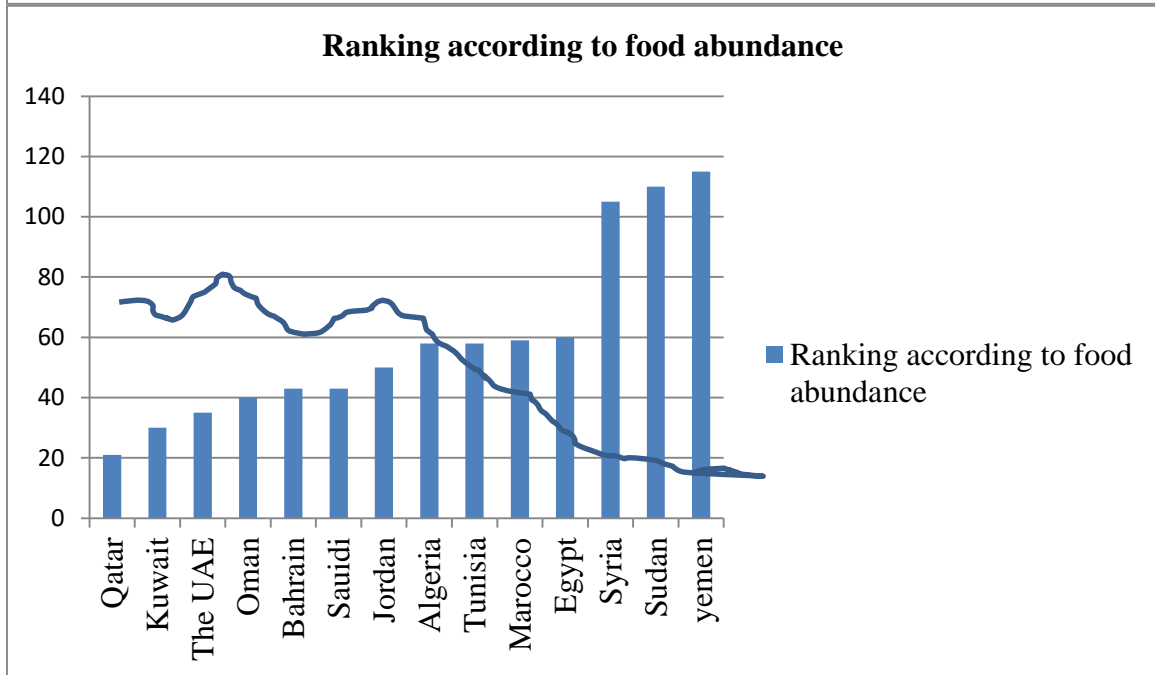
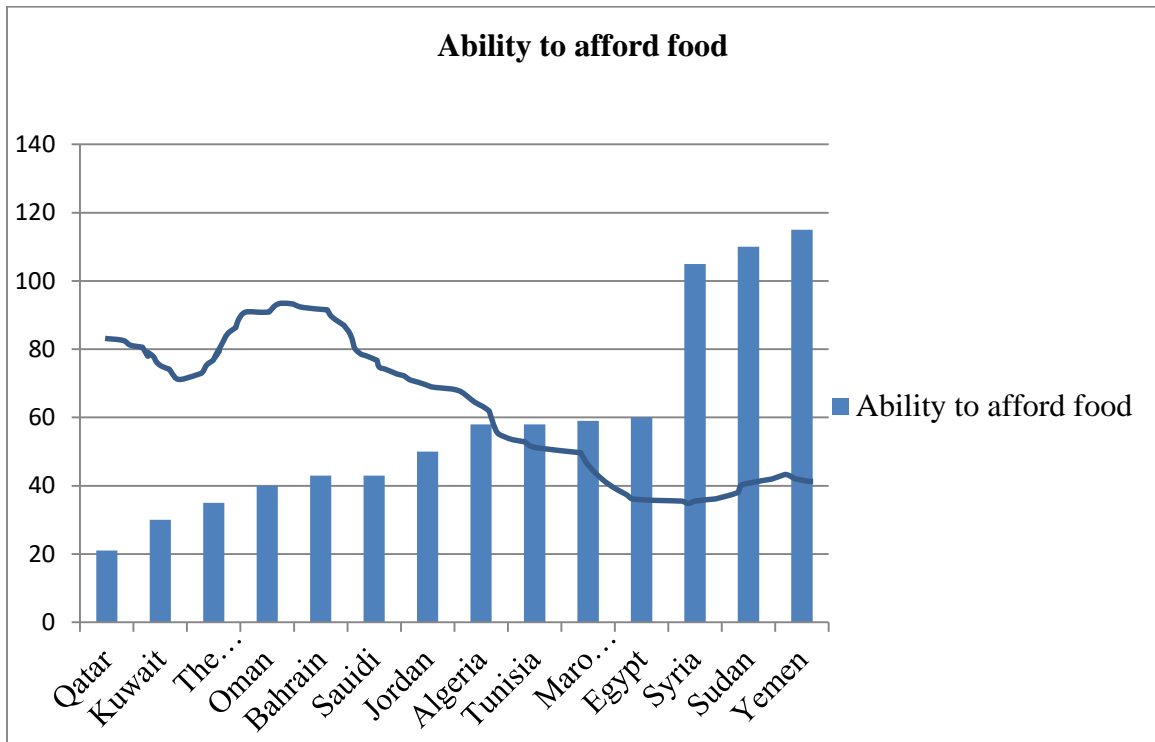
Source:(ALESCO, 2020, p. 23)

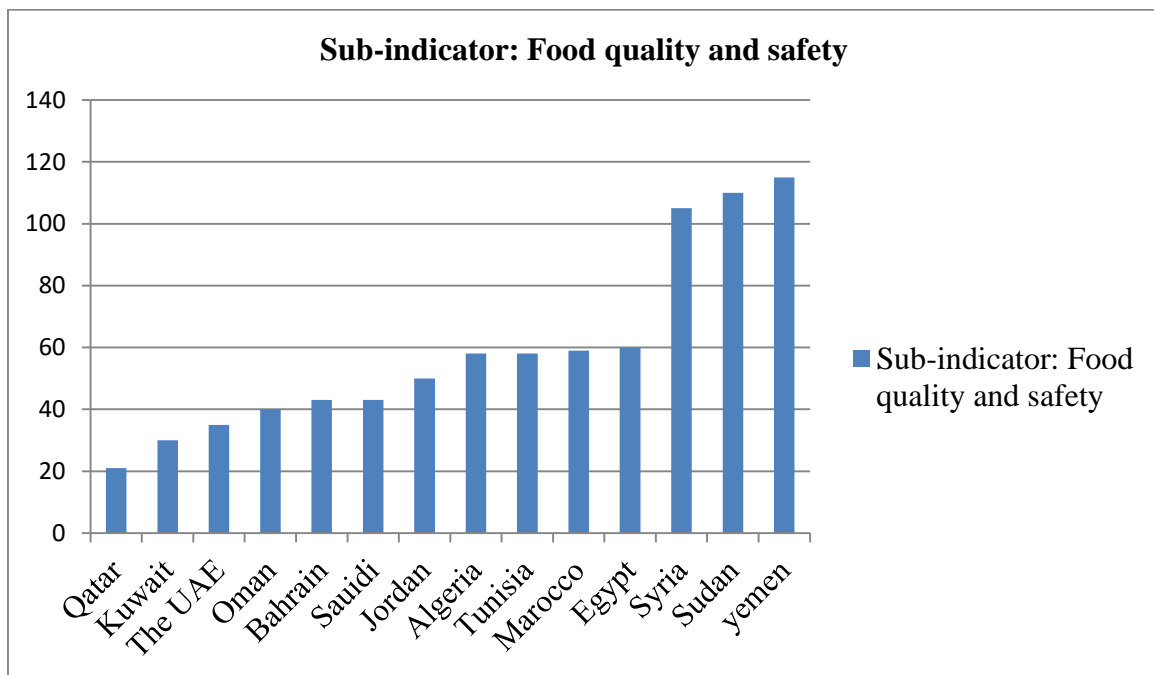
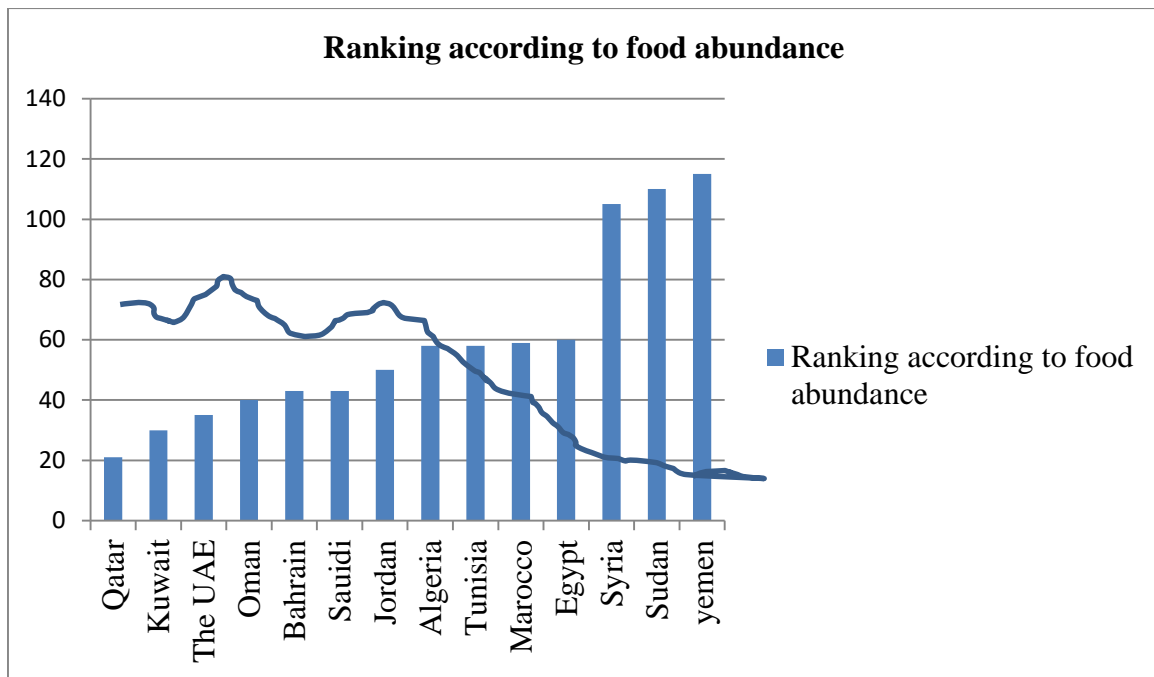
Food security can be achieved at a certain level, such as the national or regional level, and not achieved at another level, such as in specific local communities or at the individual level. Food security can also be achieved at the individual or household level, but this does not necessarily mean that it is achieved at the national or regional levels. This often occurs when periods of food insecurity and their frequency are taken into account. (آسيا، 2020، صفحة 23)

3. Ranking of Arab countries for food security

The following four figures illustrate the international ranking of Arab countries according to the pillars of food security, which include the ability to afford food, sufficient food availability, food quality and safety, natural resources, and resilience. (قندوز، 2022، صفحة 18)

Fig.3. Ranking of Arab countries for food security for the year 2021





Source: (EIU Global Food Security Index for 2021, 2022)

Through Figure 3, it can be observed that there is variation in the ranking of Arab countries in achieving food security. GCC countries such as Qatar, Kuwait, UAE, Oman, Bahrain, and Saudi Arabia ranked highest in the Food Security Index for 2021. The financial resources, political stability, and social stability of these Gulf countries have contributed to their advanced ranking in the index. These countries are also designing future strategies and plans to achieve food security goals.

For example, the UAE has developed a future strategy to achieve the top ranking in the Global Food Security Index by 2051 through the National Food Security Strategy. Qatar has adopted the Qatar National Food Security Strategy (2018-2023) and ranked first among Arab countries and 24th globally in 2021 compared to 13th globally in 2019. Saudi Arabia is working

on a comprehensive food security strategy through the Ministry of Environment, Water, and Agriculture to achieve self-sufficiency in food commodities, enhance productivity, support farmers, and promote food manufacturing.

Other Arab countries that are ranked in the middle or lower positions often lack financial resources, natural resources, political stability, or security.

Table 1. Ranking of Arab countries for the year 2022

Sustainability and adaptation		Quality and safety		Abundance		Ability to bear costs		Ranked globally 113		Country
The result	Rank	The result	Rank	The result	Rank	The result	Rank	The result	Rank	
54.2	56	54.7	82	57.3	63	66.8	64	58.9	68	Algeria
49.7	74	58.8	70	54.1	74	74.5	54	60.3	62	Tunisia
55.8	51	45.9	101	54.2	73	65.2	67	56	77	Egypt
60	31	73.1	44	42.9	100	74.6	53	63	57	Marocco
35.7	109	53.9	86	48.2	92	35.2	106	42.8	105	Sudan
58.9	32	55.4	80	59.8	55	85.3	35	66.2	47	Jordan
47.3	78	76.3	32	60.1	52	91.3	11	70.3	38	Bahrain
55.2	53	81.3	16	73.8	7	86.7	32	75.2	23	The UAE
53.7	57	71.6	49	67.2	24	83.2	40	69.8	41	Saudi
38.4	103	50.8	93	26.6	113	32	111	36.3	113	Syria
53.6	60	73.2	42	64.3	34	88.6	22	71.2	35	Oman
51	72	71.7	49	72.9	9	88.6	23	72.4	30	Qatar
45.5	85	67.8	59	62.9	41	80	45	65.2	50	Kwait
37.8	105	48.7	98	26.9	112	46.4	95	40.1	111	Yemen

Source : (EIU Global Food Security Index for 2021, 2022)

<https://impact.economist.com/sustainability/project/food-security-index/explore-countries>

Through the table, we notice the absence of data in nine Arab countries, which are Libya, Western Sahara, Mauritania, Comoros, Djibouti, Somalia, Iraq, Palestine, and Lebanon. We also notice that some Arab countries rank well in the food security indicators for the year 2022, and these countries are the United Arab Emirates, Qatar, Oman, Bahrain, Saudi Arabia, Jordan, Kuwait, and other countries ranking in the middle positions such as Morocco, Tunisia, Algeria,

and Egypt. As for countries like Sudan, Yemen, and Syria, they rank at the bottom of the global food security ranking.

4. Efforts to enhance Arab food security pathways

Arab countries pay special attention to the issue of food security and nutrition due to its economic, social, and political impacts. In order to achieve this, the Arab Organization for Agricultural Development coordinates with member countries to prepare and implement various programs within its annual plans. (فريدة، 2022، صفحة 180)

4.1 Efforts at the national level

In the Arab region, there are continuous efforts in the field of food security, including the preparation and implementation of various strategies, programs, and projects; focusing on enhancing the sustainability and governance of food security. The following are some of the key efforts in some Arab countries:

- **In Algeria:** The state pays great attention to the agricultural sector as a means to achieve sustainable food security from all aspects. These efforts aim to bridge the food gap and enhance agricultural development, including introducing structural balance in agricultural product exports and reducing reliance on imports in the consumer products sector. Efforts are being intensified to provide the financial, material, and human resources necessary to achieve the desired goals in agricultural development. In addition, the state is working on developing new developmental strategies to enhance agricultural production and improve productivity, as evidenced by the implementation of government

- **In the United Arab Emirates:** Work is carried out within the national system of sustainable agriculture to increase the self-sufficiency rate of targeted agricultural crops by an annual rate of 95%, and to improve the economic return of the farm by 10% annually. The workforce in the sector is also increased by 5% annually, and the amount of water used in production units is reduced by 15% annually. The national food security strategy has been launched in the UAE, which aims to develop a comprehensive national system based on enhancing sustainable food production and determining the national food basket.

- **In the Sultanate of Oman:** Efforts to achieve food security and ensure its sustainability include increasing agricultural, livestock, and fish food production at the local level, as well as enhancing and providing diverse sources for the Sultanate's food imports, while avoiding reliance on a single source. This is in addition to building contingency stores for emergencies and investing in secure environments.

- **In Morocco:** The state works within the latest agricultural plans, such as the Green Morocco Plan 2008 and the Green Generation 2020, to ensure the stability of food security, and the state takes into account continued population growth and future needs within agricultural policies. The government is prioritizing the purchasing power of households and seeking to avoid social tensions and rising living costs. It is also working to reduce reliance on foreign markets by increasing local production of food items and ensuring their availability. Undoubtedly, complete dependence on foreign markets is insecure and not guaranteed at all times. Programs and activities have been included regarding the stability of food security in Morocco to address the

challenges of climate change, consecutive years of drought, soil degradation, as well as recurring international animal and human health crises, especially the **COVID-19** pandemic and its repercussions on global trade and hindrance of goods transportation. In this context, Morocco has been working on developing and expanding its strategic storage infrastructure to secure the needs of Moroccan citizens and their livestock for extended periods, rather than relying on the current capacity of just a few months.

4.2 Efforts at the National Level

According to the report issued by the Arab Organization for Agricultural Development, a sustainable program for Arab food security has been launched. This program consists of eight main axes. These axes include: (أوضاع الامن الغذائي العربي ، 2020 ، صفحة 37)

- Component of improving productivity growth rates in existing crops;
- Component of expanding the use of arable land resources in rainfed areas for agriculture;
- Component of expanding irrigated crops through the development of field irrigation systems;
- Component of mitigating the risks of the Covid-19 pandemic on agriculture and food;
- Component of agricultural investment projects in food and manufacturing;
- Component of reducing food loss and waste;
- Component of moving towards sustainable food consumption patterns;
- Component of mitigating the risks of climate change on agriculture and food security;

Within the framework of these components, the program aims to achieve food security sustainability through:

- Developing and improving food supply chains, and enhancing integration and linkages between its links in Arab countries and beyond, whether within countries or among them;
- Increasing the irrigated agricultural area by maximizing the efficient use of water in existing irrigated crops;
- Maximizing the return from the land and water units in both the irrigated and rain-fed sectors, as well as maximizing the return from animal units;
- Providing agricultural and non-agricultural employment opportunities in rural areas, especially for young people of both genders; improving living conditions and general welfare levels, especially in rural communities and for workers in the agricultural sector;
- Reducing the deficit in major food commodity groups, either completely or partially, in a phased and programmed manner. According to a targeted quantity ratio, more investments are to be pumped into the agricultural sector, especially in the rain-fed sector in infrastructure and agricultural fields;
- Expanding in the rain-fed sector in arable lands that are not utilized in Arab countries.

5. Obstacles to global food security and ways to address them

Food security faces challenges and obstacles that are considered barriers to providing the material, social, and economic resources for people to access sufficient, healthy, and nutritious food that meets their nutritional needs. (الانوار، 2020 ، صفحة 196)

5.1 obstacles to achieving global food security

Global food security faces multiple challenges and obstacles that vary in nature, including:

A- Wars and crises: Food security is affected by conflicts and crises, as clearly demonstrated in the current Russian-Ukrainian conflict and its negative impact on global food security in general, and Arab food security in particular. Global food security has become threatened due to this conflict, with a severe shortage in global grain supplies recorded as a result of the suspension of agricultural exports from these two countries. This is likely to have negative repercussions on international security and peace due to the severe shortage of food commodities and their rising prices. This crisis may also lead to financial budget disruptions for countries and create a state of political instability, ultimately leading to popular uprisings seeking social justice and decent living standards worldwide.

B- Environmental threats to global food security: Global food security is facing environmental threats due to global environmental degradation, which is considered one of the biggest challenges to achieving global food security. This is linked to various forms of pollution, instability of ecosystems, increasing pressure on environmental resources, and food sources. The idea of environmental threat includes the belief in direct and indirect risks that hinder efforts for environmental sustainability. Environmental threat also means disruption in natural climatic conditions, such as temperatures, wind patterns, and rainfall that characterize each region in the world. In other words, it refers to changes in global climate in general and in specific time periods.

C- Economic barriers to food security: Poverty is one of the biggest obstacles to achieving human development and economic growth in many low-income countries, where increasing poverty and its consequences lead to malnutrition and hunger. Poverty and hunger are closely linked, as poverty hinders individuals' ability to produce and prevents them from accessing necessary food.

Therefore, poverty is an important factor that prolongs the period of hunger and malnutrition, as it affects individuals' ability to meet their food needs and hinders their opportunities to access sufficient food. This results in prolonged exposure to hunger and deterioration of the food situation, leading to a negative cycle that reinforces the connection between poverty and food security.

D- Wastage of Food: Food wastage is considered a detrimental behavior, with billions of edible items being discarded annually, predominantly in advanced countries, while people in developing nations suffer from hunger. The Food and Agriculture Organization (FAO) indicates that globally, around 1.3 billion tons of food are wasted each year.

E- Rapidly increasing the use of agricultural raw materials for biofuel: The use of agricultural raw materials to produce biofuels poses a real risk to food security, especially in the currently prevailing conversion technology (first-generation). According to projections by the Organization for Economic Cooperation and Development and the Food and Agriculture Organization, global biofuel production may reach its highest levels in the near future, depending on factors such as the future price of crude oils and support policies in key countries. As a result, demand for primary agricultural materials such as sugar, corn, and oilseeds for liquid biofuel production is expected to continue during the current decade and possibly in the future, putting

upward pressure on food prices and increasing the challenges facing food security. (حسين، 2021،
صفحة 76)

F- Population Growth Impact: The increase in population at a rate exceeding agricultural production growth rates results in shifts in population distribution. This leads to migration from rural areas to urban centers, causing a decline in agricultural output. The primary challenge of rapid population growth is the strain it puts on population infrastructure and increases food demand, consequently leading to urban overcrowding. Urban land areas expand at the expense of agricultural lands in many developing countries facing food security issues due to the inability of food production to keep up with population growth.

I- Distribution Aspect: This pertains to the geographic distribution of population growth, as a shift from rural to urban areas occurs due to better job opportunities and higher wage levels available in urban centers compared to rural areas.

k-Many countries suffer from a shortage of suitable agricultural land.

L-Economic improvements in some countries can lead to changes in individuals' dietary patterns, along with a shortage of agricultural laborers.

O-Many countries focus on developing and enhancing the industrial sector and increasing productivity, often neglecting the agricultural sector.

P-Many countries worldwide heavily rely on synthetic fertilizers in agriculture, though not always the optimal choice. Chemical fertilizers play a crucial role in achieving global food security and cannot be easily replaced by organic fertilizers where they are present.

5.2 Ways to Address Global Food Security Challenges

Despite sufficient food production to feed the world's population, nearly one billion people suffer from hunger. This issue faces various obstacles and challenges, necessitating the adoption of an international strategy based on effective guidelines to achieve global food security in reality. Among these guidelines, the following can be mentioned: (الانوار، 2020، الصفحات 198-
(199)

A- Closing the Production Gap: Estimates from the World Wildlife Fund suggest that approximately 120,000 square kilometers of natural areas are expected to be converted into agricultural land in developing countries by 2050. Many parts of the world underutilize agricultural land, with these areas producing less than 50% of their potential productivity. Bridging the gap between current and potential production could reduce the need to convert more land into agricultural areas, thus contributing to providing food for around 850 million people.

B- Improving Fertilizer Efficiency: Despite the widespread use of synthetic fertilizers worldwide, they may not be the optimal choice. With an increasing population desiring and able to enhance their dietary systems, fertilizer consumption is expected to rise. Non-organic fertilizers play a crucial role in achieving global food security and cannot be replaced by organic fertilizers if available. However, fertilizers must be used efficiently and effectively by considering fundamental fertilizer management principles, such as selecting the appropriate source, determining the correct ratios, and applying them at the right time and place Fertilizer use

must also be adapted to different cropping systems, with the aim of achieving improved productivity.

C- Enhancing Water Efficiency: Globally, and particularly in the Middle East and North Africa region, water scarcity is becoming increasingly concerning due to the continuous decline in annual water availability per capita. This has led to the prioritization of water resources towards critical sectors. The agricultural sector faces substantial water losses annually despite increasing food demand resulting from rapid population growth and other factors. These include declining water quantity and quality, climate change and its impacts such as reduced rainfall, increased drought, shortened growing seasons, and pest infestations. Therefore, it is imperative to promote integration and collaboration to enhance water efficiency and water resource management in the agricultural sector. Updating irrigation systems, adopting drought-resistant crop patterns, developing flexible ecological systems to address climate change, and improving food productivity are essential steps.

D- Reducing Food Waste: The Food and Agriculture Organization of the United Nations estimates that one-third of the world's food production is either lost or wasted, leading to significant greenhouse gas emissions from wasted food by households, distribution sectors, and supply chains. At the same time, around 800 million people worldwide suffer from hunger. Therefore, reducing a quarter of the wasted food globally could provide food security for all those facing food insecurity. Sustainable agricultural practices to minimize crop losses, increase farmers' profits, reduce losses in storage and transportation, and cut food waste by distributors and consumers are crucial measures that need to be implemented. Awareness of the importance of sustainable food production and consumption must also be increased among producers, retailers and consumers around the world.

E- Reducing Food Waste: Efforts should be made to decrease the amount of food waste sent to waste disposal sites by taking actions such as establishing food recycling plants, promoting food recycling processes, donating excess food to local charities, and utilizing food waste as animal feed.

F- It is essential for governments to implement effective measures to protect individuals' rights to access food.

H- Strategic development plans should be devised to harness agricultural natural resources, expand the use of modern irrigation techniques, and reclaim arid lands.

R - There is a need to expand agricultural land areas and work on reclaiming degraded lands in several countries worldwide to reduce food waste. Additionally, transitioning to alternative food types with high nutritional value that require less water and land is crucial. Improving packaging usage, employing environmentally.

6. CONCLUSION

Based on the foregoing discussion within this research paper, it is evident that food security is a vital and critically important issue in the present time. It is a fundamental and essential requirement for society, with significant implications for a country's economy and stability. Failing to achieve food security results in substantial social and economic impacts, imposing a heavy burden on society and its security. Consequently, we have reached the following conclusions:

- Food security is achieved when all individuals have the physical and social capabilities necessary to enjoy an active and healthy life at all times.

- Food security receives significant attention from many countries worldwide, especially low-income developing nations. The aim is to ensure a high level of food security for individuals, avoiding economic crises and food shortages by providing sufficient, healthy, and nutritious quantities that meet their dietary needs and align with their personal preferences.

- The Arab Organization for Agricultural Development has made various efforts at the national and regional levels to enhance food security pathways in Arab countries. Specific strategies have been adopted based on each country's capabilities to strengthen food security in the region.

- Food security is considered a fundamental requirement for ensuring a healthy, disease-free life, with significant importance globally and in the Arab world. Its ability to guarantee a healthy and safe life underscores the importance of food security.

- The current state of food security worldwide marks the beginning of a new phase in monitoring progress towards achieving a hunger-free world.

Among the prominent proposals in this regard are:

- Enhancing legislation and monitoring to prevent irresponsible conversion of forests and pastures into lands unsuitable for agriculture.

- Adopting a strategy to reduce food insecurity and ensure food security, with each country working on establishing principles that enhance food security through implementing developmental programs aimed at increasing production.

- Improving the quality and safety of locally produced and manufactured food is vital for safeguarding consumer health.

- Enacting legal regulations governing agricultural land reform and adopting a strict regulatory policy to maintain sustainable exploitation of these lands.

- Establishing agricultural solidarity funds aimed at developing seeds and covering potential damages that may arise due to natural disasters.

7. Bibliography List:

- EIUGlobal Food Security Index for 2021,the Economist Intelligence Unit the Economist Impact,(2022) .
- FAO,The State of Food Security And Nutrition In The World 2017, Building , (2017) .
- أوضاع الأمن الغذائي العربي، المنظمة العربية للتنمية الزراعية، (2020).
- اللجنة الاقتصادية والاجتماعية لغربي آسيا، رصد الأمن الغذائي في المنطقة العربية، آلاسكو، (2020).
- الوليد طلحة، عبد الكريم قندوز، الأمن الغذائي في الدول العربية: التداعيات الاقتصادية ودور السياسات الكلية. صندوق النقد العربي، (2022).
- راوية أبو الانوار، الأمن الغذائي العالمي بين معوقات التحقيق وسبل التصدي، المؤتمر الدولي العالمي: الأمن الغذائي في عالم متغير في ظل الكوارث والأزمات والحروب، (2020).
- قادري حسين، سبل تحقيق الأمن الغذائي المستدام، مجلة الباحث للدراسات الأكاديمية، 08، 01، (2021).
- مكيد علي، بن عياد فريدة، وضعية الأمن الغذائي ومؤشرات الأمن الغذائي العالمي دراسة تحليلية للمتاح من الانتاج خلال الفترة من 2002 – 2013، مجلة العلوم الاقتصادية والتسيير والعلوم التجارية، 17، 02، (2017).
- بن عياد فريدة، الأمن الغذائي وأهم المفاهيم المتعلقة به، المؤتمر الدولي العلمي الافتراضي: الأمن الغذائي في عالم متغير في ظل الأزمات والكوارث والحروب، (2022).