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Food Security and The Current Situation in Iraq

Mohammed Najeeb Albana
Northern Technical University, Administrative Technical College/ Mosul , Business Management Techniques

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Corresponding author:
Name: Mohammed Najeeb Albana
Affiliation : Northern Technical University, Administrative Technical College/ Mosul , business management techniques
Email: *Muhammed.ns@ntu.edu.iq*

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Abstract

Food is the basis of human well-being. Increasing food production represents a basic and important strategy to alleviate global food insecurity. But despite the fact that world food production for the last century has remained ahead of demand. About a billion people around the world do not have enough to eat. Another billion people lack adequate nutrition. Food insecurity faces many pressures on both sides of supply and demand. The most important of these factors are housing growth, climate change, globalization, urbanization, and diseases. In addition to other factors that cause a change in food consumption patterns, many countries have resorted to approaches and policies to achieve food security for them. They have tired of the approach of production support, the liberalization of food trade, the policy of subsidizing consumption, in addition to the micronutrient supply program. And starting to understand food security from the perspective of shifting from the pillars to the tracks and addressing food security by encouraging growth in the agricultural sectors and increasing knowledge to implement the foundations of food security and to define foodborne diseases and the correct management of urban centers.

Recently, international organizations have stressed the importance of sustainability to preserve natural and environmental resources and agricultural ecosystems, thus “achieving a comprehensive, food-secure and sustainable social system.” Considering food security and sustainability is an integral part, as today and in the future sustainable food systems will play a major role in maintaining nutritional well-being and health, in addition to sustaining food security in the future.

Introduction

The failure of local production to provide and meet the food needs of individuals is one of the most important problems facing societies, both in terms of the availability of food for individuals, the ease of access to it and its health, especially in light of the increase in population numbers accompanied by increased demand for food and limited natural resources. Where it is important to differentiate between Providing food for individuals and the ease of their access to it, for example, the markets are full of different types of food, but many individuals are unable to obtain it due to the high prices of foodstuffs or their weak financial income, and thus their purchasing power of foodstuffs decreases.

In 2015, the United Nations General Assembly set many goals to achieve a better future for the world, and these goals were called "Sustainable Development Goals (SDGs). It aimed to reduce the deterioration of the environment and "work to protect the planet" and provide a decent life for all and fight poverty and hunger. The second goal of the sustainable development goals included achieving food security and eradicating hunger, which means solving all the problems facing individuals, ensuring their food security and ensuring that they obtain sufficient and nutritious food throughout the year (Al-Rasoul and Fawzi, 2020).

Food security

Limited access to food affects health in multiple ways because food is the source of our energy. Where more than a billion people around the world suffer from malnutrition and their lack of adequate amounts of food (Barrett, 2010).

Individuals who are unable to consume adequate amounts of micro- and macro-nutrients result from malnutrition, and micro-nutrients are represented by essential minerals and vitamins, while macro-nutrients are represented by calorie, fat and protein content (Michaelsen et al., 2009 Benoist, 2007;) .

Malnutrition with macronutrients results in consequences such as (wasting, lethargy, stunted physical and mental development, weak immune response and other human diseases (Stephenson et al., 2000).

Malnutrition with micronutrients such as iodine, vitamin or iron results in cognitive impairment, blindness, cretinism, decreased immune system function and anemia (Stephenson et al., 2000).

Food security is a flexible concept that originated about 50 years ago at the time of the global food crises in the early seventies. Where the published writings included about (200) definitions of food security, from which contextual features of the definition of food security are deduced.

The Food and Agriculture Organization's definition of food security is the most widely used definition and is "a condition that exists when all

people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for a healthy life. (Food and Agriculture Organization, 2002). A fourth dimension was added at the 2009 World Value Conference on Food Security, which is "stability", where stability was considered a short-term indicator of the ability of food systems to withstand shocks, whether natural or man-made (FAO, 2009). This definition includes several needs (food being culturally appropriate, access to food, availability of food).

The aggravation of the food security crisis is in a state of constant increase due to the multiplicity of many factors in the global environment. This is true, as we live in an era in which we produce more food than ever before, an era in which we grow, an era in which we have enough food to suffice all the world's population, but the mechanism for distributing food does not work In addition, most foodstuffs are not culturally appropriate in most countries of the world, where access to food differs in developed countries than in developing countries due to inequality because the difference in income between the population has a significant impact. However, it must be noted that all countries of the world have hunger, which is often classified on social and economic bases (Barrett, 2010; Hazell and Wood, 2008).

Paper hypothesis

Governments, the Food and Agriculture Organization, the Rome-based agencies and stakeholders have emphasized the importance of food security and nutrition as an integral part of sustainable development.

In its documentation, FAO analyzes the different ways in which food security in its four dimensions interact with sustainability in its three dimensions. For example, sustainability in the management and use of natural resources is a prerequisite for achieving food security. Now and in the future, social and economic development are two important and essential factors for eliminating malnutrition, hunger and poverty. But malnutrition and hunger represent a long-term burden on societies and hinder social and economic development and sustainable management of resources. This approach was well highlighted in the Rio+20 outcome document. It affirmed the "commitment to enhance food security and access to adequate, safe and nutritious food for present and future generations" and recognized "the need to preserve the ecological and natural processes that support food production systems".

Therefore, we can say, "Food security and nutrition for the current and future generations is an integral part of the sustainable development goals."

The aim of the paper

Availability and accessibility are the first issues of food security. And this issue may be exacerbated by poor distribution and overuse of resources resulting from social unrest and income inequality, so we must take appropriate measures in order to solve food security problems.

Paper problem

Food security is linked to health and nutrition. Thus, it is linked to the provision of food and ease of access to it. However, there are many factors that threaten food security, including food health, food safety, animal health, ecosystem deterioration, overpopulation, desertification, water shortage problems, income disparity and urbanization. As well as many problems that prevent food security

Paper importance

The paper contributes to highlighting the importance of food security and the great resources it brings to countries. In addition to contributing to reducing the problem of poverty and hunger that most of the Iraqi people suffer from.

Paper axes

The paper consisted of three main axes. In the first topic, we dealt with an introduction to food security. As for the second topic, we dealt with the importance of the study, the problematic of the study, the study sample, and the method of data collection. While the third topic included the theoretical framework of the study.

The study sample

The study sample included the statistical data issued by the Iraqi Ministry of Planning and the Central Statistical Organization for the year 2020 and a review of the relevant literature to explain the importance of food security.

Data collection methods

The study relied on the descriptive analytical method within the research axes. Analyzing data and statistics, relying on specialized references, and then drawing conclusions and making proposals.

Theoretical framework

global food

Globalization today determines the position of the state and reflects its main advantages through improving the living standards of the population, developing international trade and establishing a single market. and ensuring the price balance. And modern management methods and the dissemination of technological progress. Globalization is not without its negative aspects, as the crisis of one country will directly affect other countries, and this is what we experienced in the Russian-Ukrainian war. While the bulk of the revenue will remain in transnational

corporations and developed countries and underdeveloped countries with their sovereignty and national identification system.

In order for countries to determine their position in the global economy, strategic indicators have been identified. In this context, it can be said that food security in all countries of the world is subject to the influence of external factors. Where food security was and still is a source of economic and political pressure in international relations. On the other hand, the exporting countries had the impact on the rise in food prices globally because of their long-term impact on the importing countries.

At the beginning of 2000, the volume of public and private agricultural investment decreased due to the high yields and food stocks, which directly led to the decline in world market prices and thus caused the suffering of farmers and the absence of land resources from agricultural circulation.

In 2004 food prices began to rise significantly. In 2006, the price index reached 118.9%, and world cereal production decreased by 2.1%. The year 2007 witnessed a very significant increase in oil prices, which led to an increase in food prices, an increase in the cost of mineral fertilizers, and an increase in biofuel production from oilseeds. As a result, the food price index reached 161.4%, and the food price index was more than 200% in 2011-2014. As for the year 2019, the food price index reached 171.4%, as shown in Table No. (1).

Table No. (1) Global Food Price Index

Meat	Milk	Wheat	Vegetable oils	Sugar	Food price index	Year
96,5	95,3	85,8	69,5	116,1	91,1	2000
100,1	105,5	86,8	67,2	122,6	94,6	2001
89,9	80,9	93,7	87,4	97,8	89,6	2002
95,9	95,6	99,2	100,6	100,6	97,7	2003
114,2	123,5	107,1	111,9	101,7	112,7	2004
123,7	135,2	101,3	102,7	140,3	118,0	2005
120,9	129,7	118,9	112,7	209,6	127,2	2006
130,8	219,1	163,4	172,0	143,0	161,4	2007
160,7	223,1	232,1	227,1	181,6	201,4	2008
141,3	148,6	170,2	152,8	257,3	160,3	2009
158,3	206,6	179,2	197,4	302,0	188,0	2010
183,3	229,5	240,9	254,5	368,9	229,9	2011
182,0	193,6	236,1	223,9	305,7	213,3	2012
184,1	242,7	219,3	193,0	251,0	209,8	2013
198,3	224,1	191,9	181,1	241,2	201,8	2014
168,1	160,3	162,4	147,0	190,7	164,0	2015
156,2	153,8	146,9	163,8	256,0	161,5	2016
170,1	202,2	151,6	168,8	227,3	174,6	2017
166,3	192,9	165,3	144,0	177,5	168,4	2018
175,7	198,7	164,3	135,2	180,3	171,4	2019

Ref: Новый, 2017

In this context, countries began to impose restrictions on food exports in order to ensure that the required level of domestic food stocks remained. Where importers buy food stocks regardless of the price and it is known that the context of globalization prompted countries to take measures to ensure food security for their countries. These measures depended on the level of economic development and the level of protection, such as the economic, legal and social conditions.

Features of the Iraqi Food Security Law

1- Poverty alleviation

2- Continuing to provide services to citizens

3- Achieving financial stability

4- Create job opportunities

5- Advance development
6- Maximizing the Iraqis' benefit from the state's resources
7- Resume work on stalled and stalled projects
8- Achieving food security

Dimensions of food security

Four dimensions of food security have been identified, which are as follows: -

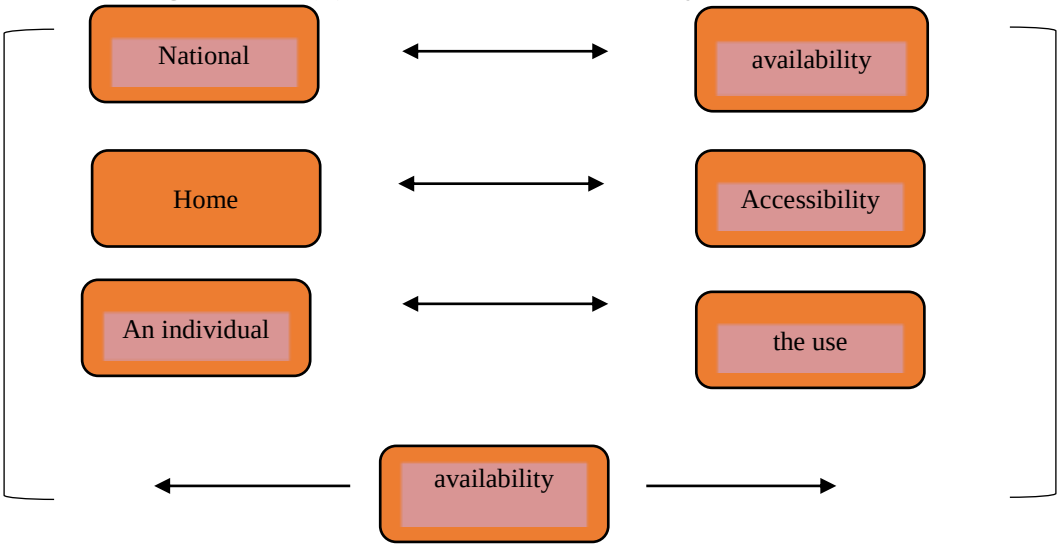
1- Availability of imported and locally produced foodstuffs.

2- Accessibility The consumer must be able and easy to access and have enough money to buy in addition to this physical, cultural, social and economic access to ensure access to culturally acceptable food.

3 - Use In order for individuals to live a healthy and full life, they must ensure that they eat sufficient quantities in terms of quality and quantity. Food and water must be safe and clean.

4- Stability deals with the ability of a person, society and nation to withstand shocks facing the food system, whether they are man-made such as wars and economic crises, or they are caused by natural disasters such as earthquakes and climate. Through observation, we find that food security includes several levels, namely: -

Figure No. (1) Levels of food security



Ref: Berry et al., 2015

The fourth dimension, "stability", affects all levels, so in order to achieve food security, the four dimensions previously mentioned must be "sound".

While recent developments have confirmed the existence of a fifth dimension of food security, which is “sustainability.” Sustainability has a significant impact on food security for future generations because of its indicators on climate change, biodiversity and at the supranational,

regional level of ecology, as well as on economic, cultural and social factors (Berry et al., 2015).

Countries have implemented programs and strategies in the field of international trade and agriculture. In return, these programs and strategies have brought positive and negative results. And from these directives (Мусаев , 2010).

1- In the first direction, the production support policy was followed. In early 1943, the Mexican government began its green revolution in its agricultural program by increasing crop yields. As for the Philippines, Sri Lanka, Pakistan, India and Colombia, they relied on the new type of seed. And new varieties of wheat spread. By 1990, new wheat varieties represented 70 percent of the total crops in Latin America and Asia, and 50 percent in Africa. As a result, food production increased. In the years 1960 and 2000, wheat yields increased globally by (8,20%), while the green revolution led to a decrease in prices and a crisis for farmers due to the increase in the production of the same type of food and the decrease in the diversity of agricultural production and the excessive use of pesticides and chemical fertilizers. Environmental and soil degradation. Thus, the Green Revolution highlighted the need for new approaches and strategies to solve the problem of hunger and poverty and focus on economic and social reforms. She highlighted that food security is not achieved through productivity and agricultural production alone.

2- The second trend was implemented in policies by restricting and liberalizing the trade of food resources. Despite the trade restrictions in the international food trade, 90% of local food products were consumed due to an increase in consumption. The reason for this increase is due to the restrictions on food imports imposed by countries to achieve food security. In the same direction and to provide economic opportunities for the population and to achieve stability in local markets, many countries imposed restrictions on their food exports, while international trade brought producers to determine the prices of their products at a lower cost and increase profitability through rational allocation of resources and increased productivity. The positive results and the restrictions that were imposed on exports and imports created a favorable environment for the exit of illegal trade and corruption in all countries.

Countries that have liberalized trade offer farmers compensation for their quantity of stock fluctuations Shame on world markets in addition to the subsidies provided by these countries to prevent excessive growth. And in a report by the Food and Agriculture Organization, that in the short to medium term, trade liberalization could lead to negative consequences on food security if a compensation program is not available.

3- In the third direction, the consumption support policy approach was followed, in addition to a food support program whose main objective is

to ensure food security for the entire population. Similar to the approach followed by the former Soviet government, which aimed to increase the consumption of animal revolution products by providing subsidies to manufacturing industries. The countries of Eastern and Central Europe began to follow the same approach and as a result the consumption of animal products increased. While the United States of America implemented a food voucher program. Subsidies were provided at the national level in addition to the implementation of the food support program to ensure a minimum consumption of a group of products or a specific food product for the entire population. Compared to the economic costs, the subsidies provided to consumers were of low efficiency and thus led to an increase in imports.

4- The fourth trend represented by the micronutrient supply program, which means enriching foods with micronutrients (minerals and vitamins), as many countries have followed this program because of its effective methods for the prevention of diseases and public health, in addition to the low cost. For example, the cost of iodine enrichment for the world's countries is (02'0 - 06'0) per capita annually. However, most of the world's population suffers from iodine deficiency and thus the risk of micronutrient deficiencies (http://www.fao.org/3/a-mu263r.pdf).

The previously mentioned trends aim to solve food security problems globally or on a local scale. The Iraqi government sought to solve the food security problem through emergency support for the Food Security and Development Law.

Understanding food security from the perspective of shifting from pillars to pathways

Food security is an interdependent and causal pathway consisting of production And through distribution

At the 2009 World Summit, the Food and Agriculture Organization used in defining food security for the first time the term “the four pillars of food security,” which were represented by the four dimensions, which are “food security availability, accessibility, utilization, and stability” (FAO and Agriculture, 2009). The visualization of the columns gives an “unclear and misleading” perception of the concept of food security, since the four dimensions are not fixed, separate and interrelated. The pillars do not give any clear concept about the relationship between the dimensions of food security. As the elements of food security are not of equal importance as shown by the pillars. For example, accessibility in developing countries depends on transport infrastructure, which has a negative impact on physical access to food. Whereas in developed countries, economic access is the main obstacle to food security. From this perspective, we can say that the dimensions of food security should

not be equal. (Bansal, 2013; Dobbie and Daila 2013; Decancq and Lugo, 2013).

Instead of pillars, the best measure to describe the relationships between the four dimensions is to use the Food Insecurity Pathway 2013 (FAO, WFP, 2013).

To show the links from food production (availability) the household (accessibility) to the individual (use accessibility relates to physical (transport and infrastructure) and economic (food purchasing power). Access also contains cultural and social preferences (Timmer, 2012). Health Signal (Marmot et al., 2012) and confirmed the stability of the time dimension of food security, even if this dimension was short-term (Anderson, 2018).

Thus, the food security path can be considered a circular path due to the existence of a feedback loop that starts from use to availability because human capital is formed from the optimal nutritional status of the workforce in all different production sectors (Berry et al., 2015).

Among the important ideas in this circular shape:

- The importance of food losses (from agriculture, post-harvest and distribution).

Wasting food (from processing and consumption in the matter and society).

As the goal of food security in the first place is to provide global food in the future.

Challenges facing food security in Iraq

Population growth

By 2050, the world population is expected to rise to nine billion. Therefore, more wild land is required to feed the world's population at the expense of providing ecosystem services and biodiversity (Green et al., 2005; Kaimowitz and Angelsen, 1998; Lambin and Meyfroidt, 2011).

While Iraq witnessed an increase in the population, bringing the total population to (40,150,200) million people for the year 2020, divided into urban and rural.

Table No. (2) shows the population number in Iraq (urban and rural) for the year 2020.

the total	countryside	Attended	Governorate	No.
1361417	381742	979675	Duhok	1
3926931	1101106	2825825	Nineveh	2
2278380	638859	1639521	Sulaymaniyah	3
1683046	471925	1211121	Kirkuk	4
1954268	547976	1406292	Erbil	5
1722983	483124	1239859	Diyala	6
1864516	522808	1341708	Anbar	7
8563951	2401329	6162622	Baghdad	8

2173124	**609343**	**1563781**	**Babylon**	**9**
1283348	**359851**	**923497**	**Kerbala**	**10**
1451512	**407003**	**1044509**	**Wasit**	**11**
1678554	**470667**	**1207887**	**Salah Al-din**	**12**
1549876	**434587**	**1115289**	**Najaf**	**13**
1359053	**381077**	**977976**	**Diwaniyah**	**14**
856907	**240274**	**616633**	**Muthanna**	**15**
2206079	**618587**	**1587492**	**Dhi-Qar**	**16**
1171971	**328618**	**843353**	**Maysan**	**17**
3064284	**859224**	**2205060**	**Basra**	**18**
40150200	**11258100**	**28892100**	**The total**	

Ref: Ministry of Planning / Central Statistical Organization Report 2020

2- The problem of deteriorating agricultural production

More than one billion hectares of natural habitats will soon need to be converted to agricultural production around the world. As the arable area in Iraq, according to the statistics of the Ministry of Planning / Central Statistics Organization, reached (18,142,800) dunams. Nineveh Governorate occupied the highest percentage of arable area with 30% of the total arable area. While the total cultivated areas amounted to (15,141,703) dunams, and Nineveh Governorate occupied the highest percentage of the total cultivated areas with 42.7% of the total cultivated areas in Iraq.

Table No. (3) shows the total arable and cultivated areas in the governorates of Iraq for the year 2020.

The percentage of the cultivated area	Area in dunums / cultivated	The percentage of arable area	Area in dunums suitable for cultivation	The percentage of the total area	The area is dunums	Governorate	No.
42.7	6461476	30.5	5539200	9.4	14929200	Nineveh	1
5.2	793790	10.4	1883040	2.4	3871600	Kirkuk	2
5.5	835981	7.8	1418080	6.2	9745200	Salah Al-din	3
5.3	799936	11.9	2164000	4.5	7074000	Diyala	4
4.4	664840	2.3	417640	34.8	55123200	Anbar	5
2.6	401193	0.2	41920	1.2	1822000	Baghdad	6
3.8	569376	6.8	1236000	1.3	2047600	Babylon	7
1.1	171175	0.4	74880	1.3	2013600	Karbala	8
3.4	51231	0.9	169160	7.3	11529600	Najaf	9

	9						
7.7	1169000	8.3	1508840	4.3	6861200	Wasit	10
6.5	982352	5.4	988000	2.1	3261200	Qadisiyah	11
3	458038	1.6	288520	13.1	20696000	Muthana	12
4.4	661620	5.6	1019320	3.3	5160000	Dhi-Qar	13
3.9	589156	6.5	1184520	4.1	6428800	Maysan	14
0.5	71451	1.2	209680	4.8	7628000	Basra	15
100	15141703	100	18142800	100	158191200	The total	

Ref: Ministry of Planning / Central Statistical Organization Report 2020

Molden et al (2007) and Pretty (2009) argue that current levels of world food production are already sufficient to feed a growing population but that a change in diet from grain to meat and diversion of agricultural crops for non-nutritional uses will lead to a shift towards urbanization and accompanying trends. The shift from increasing agricultural production. Hence the loss of biodiversity.

The demand is increasing day by day, especially in urban areas than in rural areas, and meat production is a significant drain on resources, through the use of a greater proportion of grains and oilseeds to feed these animals such as livestock and poultry instead of people. In addition, the increased consumption of meat and dairy products leads to an increase in greenhouse gas emissions. For example, more than a third of the corn crop in the United States of America is used to produce ethanol fuel. This excessive consumption of the corn crop contributed to a rise in the prices of grain and meat, a large proportion of food was wasted, and the prices of basic foodstuffs increased, as well as an increase in environmental deterioration.

(Dapice, 2011; Dixon, 2009; Scherr and Mcneely, 2005; Pimentel, 2003; Schutter, 2011)

On the local level, the average dunum and production of the wheat crop for the year 2020 in Iraq for the cultivated and harvested areas, as shown in Table No. (4)

Table No. (4) Cultivated and harvested area of wheat for the year and average yield for the year 2022

production / tons	dunam yield rate kg/ dunum		Area in dunums		Governorate
	harvested	planted	harvested	planted	
1417208	528.3	524.8	2682651	2700326	Nieveh
627324	962.5	960.2	651785	653295	Kirkuk
571748	856.6	840.1	667458	680606	Diyala
285088	660.9	577.2	431382	493942	Anbar
133831	859.6	859.6	155683	155683	Baghdad
295465	983.1	982.5	300550	300720	Babylon
98040	963.3	943.8	101777	103879	Karbala
811384	856.5	856.5	947294	947374	Wasit
633101	847.2	846.2	747328	748189	Salah Al-din
186730	733.2	732.4	254674	254948	Najaf
495224	898.7	898.7	551045	551045	Diwaniyah
154975	610.4	610.4	253898	253898	Muthana
257243	737.7	737.7	348710	348710	Dih-Qar
248296	710.5	709.4	349460	350000	Maysan

22735	731.8	731.8	31068	31068	Basra
6238392	736.1	727.6	8474763	8573683	The total

Ref: Ministry of Planning / Central Statistical Organization Report 2020

Table No. (5) Cultivated and harvested area of barley for the year and average yield for the year 2022

production / tons	yield rate kg/ dunum		Area in dunums		Governorate
	harvested	planted	harvested	planted	
1360166	375.41	374.16	3623177	3635270	Nineveh
3101	497.19	497.19	6237	6237	Kirkuk
29873	469.81	444.38	63585	67224	Diyala
7245	487.35	411.69	14866	17598	Anbar
8816	531.6	512.65	16584	17197	Baghdad
14812	443.14	331.99	33425	44616	Babylon
1951	500.13	383.23	3901	5091	Karbala
31494	418.95	418.95	75174	75174	Wasit
8198	547.01	524.3	14987	15636	Salah Al-din
3528	430.66	430.66	8192	8192	Najaf
105529	510.92	510.92	206548	206548	Diwaniyah
51054	347.49	347.49	146922	146922	Muthanna
57786	407.46	407.46	141820	141820	Dhi-Qar
72647	521.02	518.91	139431	140000	Maysan
-	-	-	-	962	Basra
1756200	390.71	387.81	4494849	4528487	The total

Ref: Ministry of Planning / Central Statistical Organization Report 2020

Table No. (6) Cultivated and harvested area of strawberry for the year and average yield for the year 2020

production / tons	Yield rate in dunums, kg / dunum		The area is in dunums		Governorate
	harvested	planted	harvested	planted	
17	566.67	566.67	30	30	Nineveh
2068	818.36	818.36	2527	2527	Diyala
15070	1100	1100	13700	13700	Babylon
7392	850.14	850.14	8695	8695	Wasit
251580	1222.4	1222.4	205810	205810	Najaf
163425	1123.2	1123.2	145500	145500	Diwaniyah
6967	708.17	674.7	9838	10326	Muthanna
8763	851.44	851.44	10292	10292	Dhi-Qar
8877	889.3	889.3	9982	9982	Maysan
464159	1142.2	1140.8	406374	406862	The total

Ref: Ministry of Planning / Central Statistical Organization Report 2020

Table (7) The area planted and harvested for the yellow corn crop for the year 2020

production / tons	Yield rate in dunums, kg / dunum		The area is in dunums		Governorate
	Harvested	planted	harvested	planted	
30747	1502.8	1502.8	20460	20460	Nineveh
174648	1841.5	1841.5	94842	94842	Kirkuk
563	592.6	248	950	2270	Diyala
21022	677.3	677.3	31037	31037	Anbar
31375	786.6	786.6	39887	39887	Baghdad
88819	1150.4	1123.7	77206	79043	Babylon
6557	1079.2	960.6	6076	6826	Karbala
48119	682.3	682.3	70528	70528	Wasit
10351	1150.1	768.2	9000	13475	Salah Al-din
-	-	-	-	1050	Najaf
3142	651.9	651.9	4820	4820	Qadisiyah
228	501.1	410.8	455	555	Muthanna
3774	552.8	95.1	6827	39699	Maysan

-	-	-	-	935	Basra
419345	1175.7	918.3	362088	405427	The total

Ref: Ministry of Planning / Central Statistical Organization Report 2020

3- Human mismanagement of livestock

The problem of human mismanagement of livestock has been divided into three areas:

1. Limited problem veterinary care
2. The problem of illegal slaughter
3. The problem of overgrazing

4- Climate change

Climate change has a direct impact on different countries of the world and is considered one of the biggest threats to food security. In the deserts of South Africa, drought has become more prolonged and more frequent, as continued grazing and water shortages stress the ecosystem, which in turn leads to food insecurity (Homann et al., 2008; Solomone et al., 2007).

In terms of supply, climate change can change the geography of food production in a way that will negatively affect the developing regions of the world. Estimated statistics indicate that agricultural productivity in developing regions will decline by 9-12% by 2050. (Clinc, 2007; Easterling et al., 2007; Ericksen et al., 2011; Fischer et al., 2005).

Climate change leads to changes in the amounts and patterns of precipitation and changes in average temperatures, which will have negative effects on yields and thus change production costs. Extreme weather phenomena may lead to an increase in temperatures or an increase in the incidence of double droughts, which results in these effects of the destruction of agricultural crops (Herrero et al., 2009).

Climate change is one of the effects that have a direct impact on food security by restricting the availability of food and reducing the potential for food production. As for the indirect effects, although they are not well understood, but we can say that they have a significant impact on food security, including macro and micro economies, drinking water and sanitation, and human diseases such as (human immunodeficiency, viruses, malaria, etc.). It is certain that climate change leads to pressure on fragile sectors and thus deepens human development challenges in developing countries, including Iraq (AIACC, 2004; Uion, 2005; Fischrt et al., 2002; Gregory et al., 1999; Rosegrant and Cline 2003; Swaminathan, 2001; Turpie et al., 2002; USAID. 2003).

Climate change in Iraq has led to many negative effects on the reality of food security, the most important of which is the phenomenon of desertification that the country has witnessed since 1992 and has begun

to exacerbate recently due to the increase in the area of land affected by salinity and the occurrence of wind erosion and the increase in the areas of land covered by moving sand dunes and Poor human management of natural resources and water. Therefore, desertification can be defined as "the occurrence of an imbalance and a negative change in the natural and biological balance of the soil in a region due to a group of overlapping factors, and as a result there is a continuous deterioration in the original properties of the soil." It gradually loses part or all of its natural properties and fertility, and tends in general to the characteristics of desert lands and with the passage of time, it becomes a threat to the lands adjacent to it."

Desertification is a problem facing all countries of the world, where arable lands are transformed into desert or semi-desert lands. The two factors below can be considered a cause of desertification, and they are:

• Natural factors such as climate, soil properties, and others.
• Factors related to human misuse of natural resources.

The desertified lands have the following characteristics:

• Lack of organic matter and moisture
• The disappearance of wild animals
• fading of wild plants
• Soil loss of the surface layer rich in nutrients, such as the silt layer, leaving the sand that brings with it the problem of immersion, soil disintegration, and a decrease in biological activity.

All of the above-mentioned characteristics lead to the difficulty of exploiting the soil, its low productivity and consequently its desertification, which negatively affects food security.

5- Urbanization

In the foreseeable future, urbanization can be a strong trend at the global level in general and at the local level in particular. Where it is possible that the period from 1950-2050 the relative share of the world's population in (urban and rural) has changed from 30:70 to 70:30, most of which is in developing countries (DESA, 2008).

Urbanization brings with it very dynamic changes in the diet. Some of them may be positive and others negative, thus posing a threat to food security. Urbanization has been associated with overburdening social services, poverty, crime, and public health risks related to poor sanitation and water pollution. This is what our country is witnessing lately. In addition, malnutrition of children. The strong relationship between HIV, disease and food insecurity in urban areas is certain to have far-reaching effects on food systems.

6 - Globalization

Globalization is also changing the dynamics of food security. Perhaps the global culture and the increasing integration of the economy

have led to an increase in the average per capita income in all countries of the world. But it led to a great disparity between the rich and the poor (Chopra, 2004; Gina Kennedy and Shetty, 2004).

The intensification of this is the uneven technical progress in transportation and communication systems. As well as increasing economies of scale in "food systems", "transportation" and "industry" on a large scale. Globalization has also led to an increase in food prices, and thus economic shocks can affect the entire food system and may be exacerbated because the power of speculation dominates global experiences. At the level of the family and the individual, the instability of food prices results in damage to livelihoods. Moreover, food price volatility brings difficulties for producers in terms of planning and mitigating shocks in the absence of insurance markets (Fuentes-Nieva, and Seck, 2010).

Food orientation mechanisms will play an important role in providing food, and local needs and global markets will be consistent with food aid (Kaufmann and Heri, 2007).

In addition to the main problems mentioned above, other minor problems are added, including: -

7- The problem of importing agricultural products

8- The problem of low water levels

9 - The problem of agricultural ownership and tenure

10 - The problem of environmental pollution

11 - The problem of using the technology package

12 - The problem of financial and administrative corruption in Iraqi society

food security therapist

Availability and access are the first food security issues. This issue may be exacerbated by poor distribution and over-use of resources resulting from social unrest and income inequality. Therefore, we must take appropriate measures in order to solve food security problems through:

1- Encouraging growth in the agricultural sectors

Encouraging growth in agricultural sectors that leads to a focus on local agricultural crops instead of imported agricultural crops, which leads to the flow of community and rural development funds and the establishment of a national market. Where these projects must be based on local knowledge and structure. And to operate within the capacity of the ecosystem.

2- Education

Education is one of the important elements because it is a reason for the knowledge of reading and writing, which facilitates the unification of programs and procedures and their correct implementation during the implementation stages, in addition to this, current studies have proven that educating women leads to reducing the size of the family, which results in reducing poverty, and this in turn leads To improve the nutritional status of the family, which increases the chances of local food availability and its correct distribution and reduce pressure on the environment (Lomperis, 1991; Mishra and Retherford, 2000; Tyer-Viols and Cesario, 2010).

3- Foodborne diseases

Food safety increases with the improvement of infrastructure and knowledge, but food safety does not disappear at all. So we must do many things to alleviate this problem. Fortunately, we can say that proper nutrition reduces the risk of disease. Therefore, the task of addressing the availability and accessibility of food is very important. In addition to it, education about identifying disease in animals and the threats we can face from food, food preparation, food handling, food storage and proper slaughter.

Adequate education about food is very important, given that food is a source of disease transmission. While the defense of healthy food is more problematic because after itself it deals with many issues other than food, including the target population, food sources, inequality and poverty, extremist ideologies, however, encouraging community awareness and vigilance, and making plans Regulated and correct at the local and national level for processed food products, and educating people about the signs of disease in their livestock will be the first steps.

4- Political management of urban centers

Proper political management of growing urban centers is considered one of the important factors for the success of food security by providing the basic needs of the poor and reducing inequality. The correct plant health and sanitary procedures set by the World Organization for Animal Health and Safety and later adopted by the World Trade Organization.

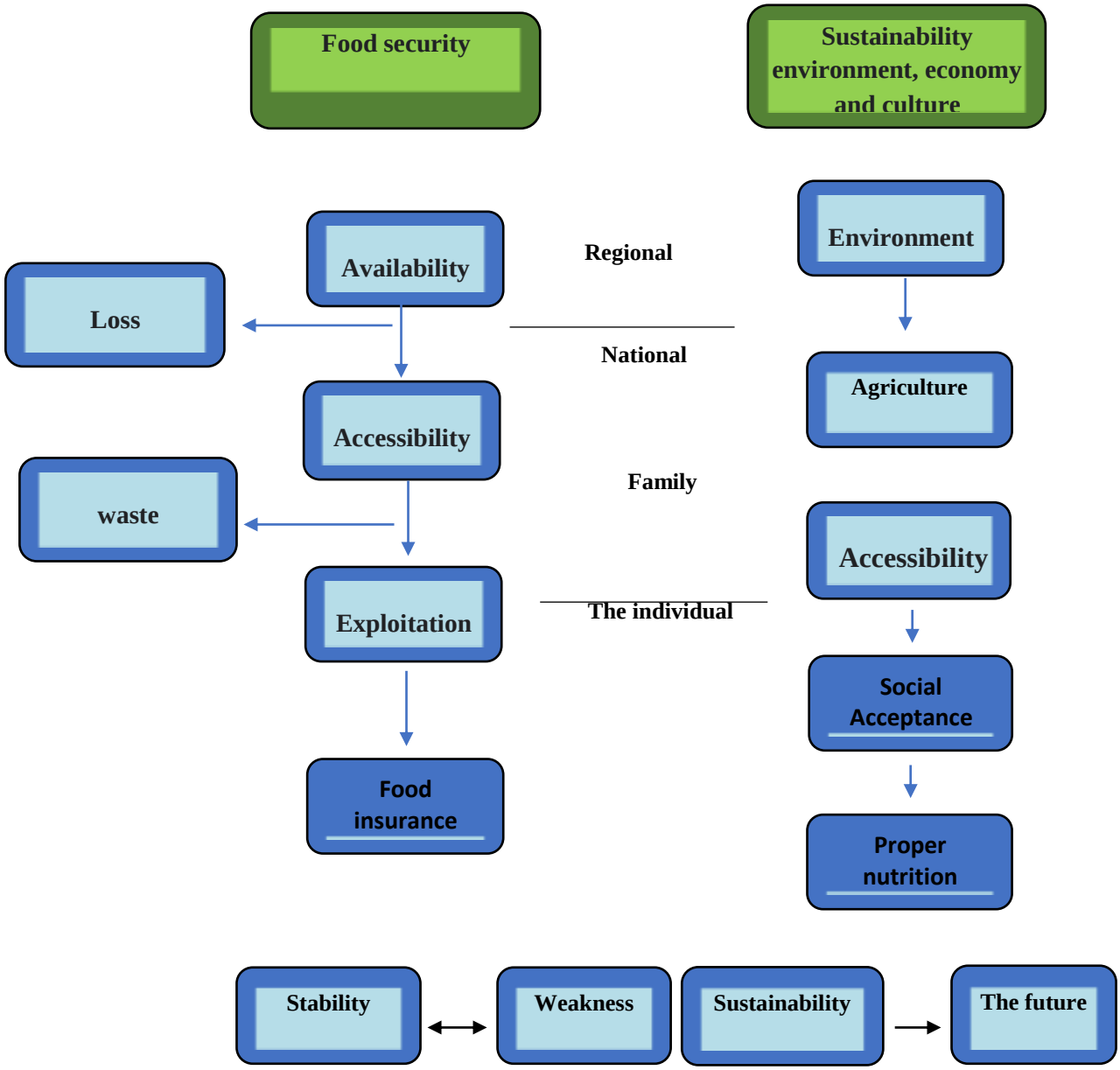
Linking food security to sustainability

As the environment, especially access to natural resources, climate and the accompanying factors that are affected by it are a prerequisite for the availability of food in addition to the preservation of biological diversity (Sperling and McGuire, 2012).

Social and economic sustainability is necessary to facilitate people's access to food. The dimensions of environmental, social and economic sustainability ensure the stability of the systems on which the stability of the dimensions of food security is based. On the other hand, the

relationships are reciprocal, as sustainability is increasingly seen as a condition of food security.And as shown in Figure No. (2)

Figure No. (2) linking food security with sustainability



Ref: Berry et al., 2015

However, we can say that most of the views agreed on sustainability,

which represents the long-term (generation) dimension. This dimension was included in the "Rome Five Principles for Sustainable World Food Security" in 2009 (FAO, 2009).

At the Rio+20 conference, the international community identified two main goals:

• Improving the integration of the dimensions of sustainable development.

• All of these dimensions are more realistic and practical.

Governments, the Food and Agriculture Organization, the Rome-based agencies and stakeholders have emphasized the importance of food security and nutrition as an integral part of sustainable development.

In its documents, the Food and Agriculture Organization analyzed the different ways in which food security in its four dimensions interacted with sustainability in its three dimensions. For example, sustainability in the management and use of natural resources is a prerequisite for achieving food security. Now and in the future, social and economic development are two important and essential factors for eliminating malnutrition, hunger and poverty. But malnutrition and hunger represent a long-term burden on societies and impede social and economic development and sustainable management of resources. This approach is well articulated in the Rio+20 outcome document. It affirmed the "commitment to enhance food security and access to sufficient, safe and nutritious food for present and future generations" and acknowledged "the need to preserve the environmental and natural processes that support food production systems."

Therefore, we can say that "food security and nutrition for current and future generations is an integral part of the sustainable development goals."

Conclusions

Given the complexities of current and future trends in the composition of global resources, we can say that food security today and in the future will be guaranteed to countries through their local production. That is, self-sufficiency at the expense of local production does not mean that countries will close themselves in their own cover, but rather mean improving the structure of imports and increasing the volume of production for exports. In addition to 'the opportunities that will be provided by global markets and the advantages of the international division of the labor market, and thus these conditions contribute to the food independence of countries.

The debates about food security, nutrition and sustainability are increasing day by day. Therefore, we must consider sustainability as an integral part of food security. The sustainability agenda has begun to

make long strides to achieve food security. The next task that we must undertake is to build a food system based on sustainability. The final path of these joint efforts is to achieve sustainable food security and nutrition. We can finally say that “not all safe food systems are sustainable. 'But all sustainable diets are food safe.'

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